



# Proceedings of

## The 8<sup>th</sup> BENJAMITRA NETWORK

National & International Conference

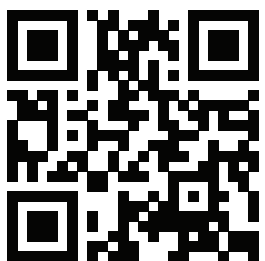
on From Research Through Sustainable Development

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National & International Conference  
8<sup>th</sup>

# เบญจมิตรวิชาการ Benjamitra Vichakarn



30 May 2018

Thonburi University, Bangkok, Thailand

Proceedings of The 8th BENJAMITRA NETWORK National & International Conference on  
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Proceedings of The 8th BENJAMITRA NETWORK National & International Conference on  
From Sufficiency Economy to Sustainable Development

The proceeding is a gathering of academic papers involved with changed situations in society, economics, and environment which have a great impact on the country's administration and development. This would lead to some problems that make our country unstable, and ineffective. And this could cause for being a slowly developing country. Thus, doing research, creating modern innovation, learning and academic development are the most important factors to develop the country among international competitiveness.



Welcome Speech

The 8th Benjamitra Network National & International Conference

Dr. Bancha Kerdmanee

President of Thonburi University

at Conference Room, Institute for Innovation Learning and International Relation Center,  
Thonburi University May 30<sup>th</sup> 2018

Dear The Head of the National Counter Corruption Commission ,The Presidents of the Universities ,Honorable Participants of Benjamitra Network and Ladies and Gentlemen,

I am Dr. Bancha Kerdmanee, president of Thonburi University. On behalf of the committee of the 8th Benjamitra Network National & International Conference, I would like to express my gratitude to Pol. Gen. Dr. Watcharapol Prasarnrajkit to give an opening speech and will deliver a keynote speech on this day.

The aims of this conference are

- 1) To provide a common platform to researchers and faculty members to exchange the ideas, information, and study research trends in terms of research and academic development.
- 2) To give an opportunity for researchers, lecturers, and students to showcase their research work and exchange their research experiences.
- 3) To create an excellent network that would benefit for academic and research groups in Thailand.
- 4) To establish strong connections between national and international networks in terms of research collaboration.

Thanks to the importance of researching and innovation development, this conference is collaboratively arranged by the 8 universities within Benjamitra Networks, which are Bangkok Suvarnabhumi University, North Bangkok University, Rajapruk University, North-Chiang Mai University, The Far Eastern University, Southeast Bangkok College, Lampang Inter-Tech College, and Thonburi University. The conference will encompass keynote addressed, 62 posters and 471 papers from many domestic and foreign academicians and researchers.

In conclusion, I would like to express my sincere gratitude to the reviewers, the organizers and all staff who have been working since the beginning until today. I am truly appreciated your dedication. Thank you.



Opening Speech

The 8th Benjamitra Network National & International Conference

Pol. Gen. Dr. Watcharapol Prasarnrajkit

Head of the National Counter Corruption Commission

at Conference Room, Institute for Innovation Learning and International Relation Center,

Thonburi University

May 30th 2018

Dear The Presidents ,Distinguished Participants of Benjamitra Network and Ladies and Gentlemen,

I am delighted and honored to be invited to give an opening speech on the 8th Benjamitra Network National & International Conference. As we can see that, there are many dramatically changes towards our country such as society, economics, and environment. These changes may result in developmental instability and inefficiency of the country.

Therefore, to increase country's efficiency, it is intended to stimulate a full development of academic, research, and innovation. I would like to express my sincere thanks to the organizers who foresee the importance of researching and innovation and hold this conference. To put the practices into action, the researchers must work on applied research, make the most use of the outcomes research, and integrate them into other knowledge.

Finally, this is an opportune time for me to declare the official opening of the 8th Benjamitra Network National & International Conference. I wish you filled with happiness, and prosperity. Best wishes for a productive and successful conference. Thank you.

The 8th BENJAMITRA NETWORK National & International Conference on “From Sufficiency Economy to Sustainable Development”, Thonburi University May 30<sup>th</sup> 2018

#### Rationale

Based on their awareness of a university's research mission to develop new body of knowledge and learning innovation for society in both basic and applied research level, seven higher educational institutions including Thonburi University ,North Bangkok University, Bangkok Suvarnabhumi University, Southeast Bangkok College, Rajapruk University, The Far Eastern University and Lampang Inter-Tech College have formed an academic cooperation network known as "Benjamitra Network" on February 5, 2011. The network members aim to join hands to develop teaching and learning, student, teacher and researcher capacities, research work and research publication. This form of academic cooperation will allow the exchange of knowledge and research experience in various contexts. In addition, Benjamitra network plans to link up with other academic networks in the future. Realizing these important matters, Benjamitra Network organizes "The 7th Benjamitra National and International Conference" on May 27, 2017, having Thonburi University as the host institution.

#### Conference Objectives

1. To be a place for scholars from both public and private sectors, as well as for graduate students, to publicize their research articles, academic papers and theses
2. To create an opportunity for scholars and researchers to exchange their knowledge and views and to seek cooperation among them
3. To promote cooperation and collaboration among the members of Benjamitra Network in improving their research and academic work.

#### Target Audiences

1. Researchers and academicians
2. Graduate students
3. General public

#### Organizers

Thonburi University, Thailand

#### Participant form BENJAMITRA NETWORK

Lampang Inter-Tech College, Thailand

Bangkok Suvarnabhumi University, Thailand

North Bangkok University, Thailand

North-Chiang Mai University, Thailand

Rajapruk University, Thailand

Southeast Bangkok College, Thailand

The Far Eastern University, Thailand

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53	Dr.Somchaivang Dethoudom	City Planning Officer, Vientiane Capital, LAO PDR
54	Associate Professor.Dr.Sombat Teekasap	Thonburi University





## Oral Presentation Schedule (Education)

May 30 th, 2018 10.45 – 14.45

International Session, Innovation Learning and International Relation Center, First Floor ,room I102

Moderator: Associate Professor Dr. Songsri Soranatsaporn

Coordinators: Aj.Duangrak Senavat , Aj.Sarunyar Jangkhum

No.	Time	Presenter	Article Title
1	10.45 -11.00	Bonggochpass Pinsawas, Kitti Sranachoenpong, Suwimol Supwarobol, Sineerat Pornkasemsuk, Pichanun Mongkolsucharitkul, Nantaporn Sittikho	Development of course curriculum for foodservice management to train lay-chefs in primary schools in Bangkok
2	11.00-11.15	Sineerat Pornkasemsuk , Kitti Sranachoenpong , Kerada Krainuwat , Bonggochpass Pinsawas , Nantaporn Sittikho and Pichanun Mongkolsucharitkul	Development of nutrition training program for community health workers
3	11.15-11.30	Urairat Yamchuti, Noppamast Sae-Tang, Amalia Jaramillo	Bingo Game as a Learning Tool in the subject English for Undergraduate Students
4	11.30-11.45	Rapeepat So-in	The Empowerment of Reading Comprehension of EFL Learners through CALL
	12.00-12.30	break	
5	12.30-12.45	Natnicha Bhoosahas	AN ANALYSIS OF RHETORICAL LANGUAGE USE OF AIRLINE COMMERCIALS 2017 IN YOUTUBE VIDEOS
6	12.45-13.00	Nattakan Sukchuen	Do Learner Differences Affect Learning in Technological Environments?
7	13.15-13.30	Wanida Wadecharoen, Rungsun Lertnaisat, Oeb Pongbugnor , Kosawat Ratanothayanon, Somchai Lertpiromsuk	Thailand Destination Image and Tourist Destination Satisfaction: The Case of United Kingdom and Australia (UK-AUS) Tourists Visiting in Thailand
8	13.30-13.45	Wanida Wadecharoen ,Rungsun Lertnaisat, Kosawat Ratanothayanon, Yuranan Musor ,Somchai Lertpiromsuk Akio Nishisawa	Exploring the Factors Affecting Japanese and South Korean (JK) Tourists on Thailand Destination Satisfaction
9	13.45-14.00	Tran Quang THAI	Rethinking Education and Culture
10	14.00-14.15	ฉันทนา กริมใจ, คมสิงห์ วิวัฒน์ภูษิต, พงษ์เทพ ศรีโสภากิจ	INFORMATION QUALITY OF PUBLIC RELATIONS OF THAI CREDIT GUARANTEE CORPORATION
11	14.15-14.30	ฉันทรัฐภูมิสร ศรีเพชร, บุศย์ วิสุทธี, สากล ศรีวันทา, ปราการ เกิดมีสุข	STAFF ADAPTATION ON WORK PERFORMANCE A CASE STUDY OF HUDSON MANUFACTURE (THAILAND)
12	14.30-14.45	Laddawan Petchroj	Curriculum Evaluation of Master of Education Program in Educational Administration at Rajapruk University

## Oral Presentation Schedule (Science)

May 30 th, 2018 10.45 – 15.00

International Session, Innovation Learning and International Relation Center, 2nd floor, room I203

Moderator: Associate Professor Dr. Piyabutr Wanichpongpan

Coordinators: Aj.ekkarat napakarn, Aj.weeranuch Saechin

Num	Time	Presenter	Article
1	10.45 -11.00	Nadol Cheawsopon and Suchitra Sueeprasan	Effect of memory color on color constancy of natural objects
2	11.15-11.30	Guangying Lei <sup>1</sup> , Xian Li <sup>2</sup> and Yaojun Qian <sup>3</sup>	A Study of Comprehensive Evaluation on Ecological City's Sustainable Development in Haikou
3	11.30-11.45	Nguyen Van Hieu, Le Thi Truc Linh <sup>1</sup> , Nguyen Phuoc Loi, Nguyen Duong Trieu, Truong Hoan Anh Khoa, Le Thi Bich Ngan, Nguyen Chi Nhan and Ho Thanh Huy	THE IoT TECHNOLOGY FOR THE AQUAPONICS SYSTEM WITH FISHES AND VEGETABLES IN THE MEKONG DELTA OF VIETNAM
4	11.45-12.00	Trung T. Pham, Phuong T. Nguyen, Quyet H. Do	Stack of graphene/-copper foils/graphene by low-pressure chemical vapor deposition as a new thermal interface material
	12.00-12.30	break	
5	12.30-12.45	TRAN Thi Thanh Van, CAO Thi My Dung and LE Van Hieu, LAM Quang Vinh	Upconversion properties of SiO <sub>2</sub> -SnO <sub>2</sub> glass ceramics codoped Er <sup>3+</sup> and Yb <sup>3+</sup>
6	12.45-13.00	Chau Thi Da	Evaluation of locally available feed resources for Tra catfish ( <i>Pangasianodon hypophthalmus</i> ) feed for the sustainable small-holder farming in the Mekong Delta, Vietnam
7	13.00-13.15	Chutima Ketsa and Aphicha Inmathanyatorn	Inspection Board PWB Record Management System
8	13.15-13.30	Chutima Ketsa and Aphicha Inmathanyatorn	Notification System Development of Computer Accessories Repairing
9	13.30-13.45	TRAN Van Man, HUYNH Le Thanh Nguyen and LE My Loan Phung	HIGH-VOLTAGE Li-ION BATTERIES BASED ON LiNi <sub>0.5</sub> Mn <sub>1.5</sub> O <sub>4</sub> AS CATHODE AND Li <sub>4</sub> Ti <sub>5</sub> O <sub>12</sub> AS ANODE
10	14.00-14.15	Khamphouth Phommasone	SOLAR POWER AS FUTURE ENERGY
11	14.15-14.30	Lemthong Lathdavong and Young Joo SONG	DEVELOPMENT AND FIELD TESTING OF A COST-EFFECTIVE 150W SINGLE-AXIS SOLAR TRACKING SYSTEM USING A REAL-TIME LABVIEW DAQ MONITORING MODULE

Oral Presentation Schedule )Social Science(  
May 30 th, 2018 10.45 – 15.00

International Session, Innovation Learning and International Relation Center, 2nd floor, room I204

Moderator: Assistant Professor Dr. Karansupamas Engchuan

Coordinators: Aj.kawisara tansakul, Aj. wasan leelatanarok

Num	Time	Presenter	Article
1	10.45 -11.00	Uayporn Panich	Television Program Viewing Behaviors and the Utilization for Educational Purposes of Communication Arts Lecturers.
2	11.15-11.30	Liu Ziyang, Sasanant Vivadhanajat and Chattayaporn Samerjai	THE RELATIONSHIP BETWEEN TOTAL BUDGET MANAGEMENT AND KEY PERFORMANCE INDICATORS OF YONGNIAN HONGDA STANDARD PARTS MANUFACTURING COMPANY in HEBEI PROVINCE CHINA
3	11.30-11.45	Du Yilin, Sasanant Vivadhanajat and Chattayaporn Samerjai	THE RELATIONSHIP BETWEEN LEADERSHIP AND PERFORMANCE OF EMPLOYEES: OF ZIGONG HUIDONG CO., LTD.
4	11.45-12.00	Gao Yi Ji Sasanant Vivadhanajat and Chattayaporn Samerjai	THE RELATIONSHIP BETWEEN ORGANIZATIONAL COMMITMENT AND EMPLOYEE SATISFACTION IN LOGISTIC INDUSTRIES: A CASE STUDY OF DEPPON COMPANY
	12.00-12.30		break
5	12.30-12.45	Anuwat Chanban, Sasanant Vivadhanajat, and Chattayaporn Samerjai	Marketing Mix Factors, Attitude Factors and Purchasing Decision on 7 seat Car Insurance in Nontaburi Province
6	12.45-13.00	Chumpon Rodjam, Thawischai Uratchat	Factors Affecting The Organization Commitment for Accountants in the Attitude of Chief Accountants in <i>Bang Kruay District</i> , Nonthaburi Province's Industrial Factories
7	13.00-13.15	Wanida Wadecharoen Akio Nishisawa	The Strategic Motive behind Thai-Japanese International Joint Venture (IJVs) Formation: A Case of Thailand Industrial Sectors
8	13.30-13.45	Wang Nan Nan, Prapatsorn Kittimanorom	THE RELATIONSHIP BETWEEN CHARISMATIC LEADERSHIP MANAGEMENT AND EMPLOYEE PERFORMANCE : STUDY OF ENLIG
9	13.45-14.00	Janak Nandan Pandey	Barriers to enter into a Foreign Market: A study on Ceramic Industry in Lampang, Thailand
10	14.00-14.15	Weifeng Li , Rebecca K. Webb	A Study of Motivation for Learning English: The Case of Chinese Non-English Major Students at Rangsit University, Thailand
11	14.15-14.30	Walaiporn Chaya	Writing Problems in English Paragraph Writing A Case Study of Thai Majoring in Business English



Num	Time	Presenter	Article
12	14.30-14.45	Aree Binprathan PhD, Chatkamon Piyajaruporn, Rattima Wecharattana, Rumrada Saraoup, Pinth Buranapinth	The Analysis of Guests' Dissatisfaction on Reviews on TripAdvisor: A Case Study of Boutique Hotels in Thailand.
13	14.45-15.00	สุธีรา ชาติรินรานนท์, จุฬาลักษณ์ พูลูโนะ, วิทย์ เมฆะวารกุล, จรุง ชำนาญไพโร	FACTORS AFFECTING TO THE SELECTION OF LOGISTICS SERVICE PROVIDERS IN THE AUTOMOTIVE PARTS INDUSTRY

Oral Presentation Schedule  
May 30 th, 2018 10.45 – 15.00

International Session, Innovation Learning and International Relation Center, 2nd floor, room I205

Moderator: Assistant Professor.Dr.Chaiyanant Panyasiri

Coordinators: Aj. Itthikorn Khamlai ,Aj. Chonticha Loonsumrong

Num	Time	Presenter	Article
1	10.45 -11.00	Wanida Wadecharoen Akio Nishisawa	A Qualitative Study on the Successful Predictors of Japanese Subsidiary in Thailand What are they via the Parent Firms Perspective?
2	11.15-11.30	Pallanit Ubonnuch	Cross-Cultural Adjustment of Chinese students in Huai Khwang District, Thailand
3	11.30-11.45	Yan-fu Tian	Undervalue Degree Research on Chinese Stock Markets : A Case Study of TCL
4	11.45-12.00	Wu Niu, Kittimanorom ,Prapatsorn	THE RELATIONSHIP BETWEEN TRANSFORMATIONAL LEADERSHIP AND EFFECTIVENESS OF AN KANG GUANG HUA EDUCATION COMPANY IN SHAANXI PROVINCE CHINA
	12.00-12.30		break
5	12.30-12.45	Panas Unhabandit, Indhira Meintarakerd, Saowapha Muangkaen	Differentiation Strategy Efficiently
6	12.45-13.00	Vutti Watcharodomprasert	An Analysis of Scientific Materials and Equipment Trading Business in Thailand
7	13.00-13.15	MR. LU SISHUAI DR. PRAPATSORN KITTIMANOROM	RESEARCH ON INCENTIVE FACTORS OF KNOWLEDGE EMPLOYEES: A CASE STUDY OF XI'AN SUANNI LEBO MAKER EDUCATION COMPANY LIMITED IN CHINA
8	13.15.13.30	Tanida Suppharangsarn	Job Satisfaction of Flight Dispatcher : A Case Study of Thai Air Asia
9	13.30-13.45	Sarinrat Sertpunya	Frozen Phrases of Goodwill in English Language Case study Sales Letters Written by Bangkok Hotel Sales Staff
10	13.45-14.00	Mayuree Siriyom	Administration in Accordance with Good Governance of Buenyitho Municipality, Pathumthani Province
11	14.15-14.30	Satchawat Ruengkankun	The Opinion about the tex law of government officials to the principle of

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**Development of course curriculum for foodservice management to train lay-chefs in primary schools in Bangkok**

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**Abstract**

**Background:** The prevalence of overweight and obesity in school-age children in Thailand had been increasing. They are factors of malnutrition problems that effect to children's health. School feeding program is one of several interventions that involve the nutrition and health problems of school-age children. School lay-chefs are important stakeholder of management of school lunch program but they were not supported appropriate training program on nutritional knowledge and foodservice management.

**Objectives:** The aim of this study was to develop training program for school lay-chefs.

**Methods:** The study consisted of 2 phases. The first phase comprised in-depth interview 3 principals, 3 nutrition teachers, and 3 school lay-chefs and used the secondary data of in-depth interview with 3 nutrition teachers and 6 school lay-chefs. A blended coding scheme was used to identify the key themes and categories. Information was linked relationships by using hurricane diagram. The second phase was development of the training program. The formative results were used to design the training program for school lay-chefs. The training program was advised by 3 experts and evaluated appropriateness of course by 3 school lay-chefs.

**Results:** School lay-chefs managed school foods, but they were supported nutrition knowledge. Although there were nutrition handbook or training, they were not appropriate with school lay-chefs. The formative evaluation and literature reviews from related sources could develop course curriculum that include 5 modules. They consisted of; 1) school meal planning, 2) food exchange and food portion size, 3) good quality of raw materials and products, 4) cooking that reduce sweet, fat, and salt, and 5) snacks and beverages for school-age children. The instruction of the training program was incorporated in both the classroom and workshop sessions. The duration time of the training program was designed to implement for 2 days

**Keywords**

School lay-chefs, school lunch program, foodservice management training program

**Introduction**

Overweight and obesity in children are factors of malnutrition problems that several countries had concerned. The prevalence data indicates that childhood overweight and obesity had been increasing in both developed and developing countries [1-2]. If they do not be prevented, they may have growth disorder and risk for non-communicable diseases [3-4].

School is place that school-age children spend large portions of their time, so the school environment influential to determine their health, growth, and behavior. There was many studies and the global strategy of World Health Organization suggest that promoting nutrition and physical activity in the school where should provide healthful environments and behaviors. The important stakeholders are governments, teachers, and other school staffs, students, parents and community-at-large [5-6]. School feeding program is one of several interventions that involved the nutrition and health problems of school-age children. It can also improve educational quality and efficiency [7]. Therefore, quality of school feeding program is important. The quality of foods is not based on good food sources only, but also they include menu planning, food purchasing, food preparation, and food serving [8]. These responsibilities of the managements are foodservice workers [9].



The studies that proposed to improve quality of school feeding program for supporting children's healthy food consumption. They emphasized on developing healthy food recipes and training staffs who managed school feeding program [10-11]. Thailand had some school-base projects that promoted health of children. However, most projects emphasized on improving nutritional knowledge of children and teachers [12-13]. School lay-chefs had learned nutrition and foodservice management from trained teacher in nutrition or handbooks [14].

Therefore, the objective of this study is to develop the training program for lay-chefs who are cooking for school lunch program in Bangkok. Specifically, this study proposes to develop the training program that applied to their familiar environment and to evaluate the training program in improving their knowledge.

## **Methodology**

This study was approved by the committee of Mahidol University Central Institutional Review Board. The study consisted of 2 phases. The first phase was formative evaluation. The second phase was development of the training program.

### **Phase 1: Formative evaluation**

#### *Study setting*

The formative evaluation phase was conducted with 1) principals to explore attitudes and expectations in the implementation of school lunch program and supporting performance of school lay-chefs; 2) nutrition teachers to assess quality, satisfaction and expectations of the school lunch program; and 3) school lay-chefs who work full time and participate in planning, purchasing, preparing, and serving foods to assess expectation of learning patterns and educational tools. They come from primary schools in Bangkok.

In addition, this phase of study used the secondary data of in-depth interview with 3 nutrition teachers and 6 school lay-chefs from Panrawee's Thesis to analyzed formative results [15].

#### *Study design*

This phase of study comprised in-depth interview 3 principals, 3 nutrition teachers, and 3 school lay-chefs.

#### *Data collection*

An in-depth interview was conducted by researcher and team. Question guideline for interview was open-ended questions. They were developed from literature reviews and school observation. Data was recorded by taking note and using recorder during interview. Before interview, participants were informed propose of interview, asked for permission to use recorder and clandestineness of interviewer's name.

#### *Data analysis*

The data from recorder and document notes of in-depth interview were transcribed and coded by hand. Transcribing associates with translating from oral language to written language with theory, selection, interpretation and representation. A blended coding scheme was used to identify the key themes and categories. Information was linked relationships by using hurricane diagram.

### **Phase2: Development of the training program**

#### **Development of the curriculum**

##### *Development of the curriculum and tools*

The training program focused on school lay-chefs to facilitate learning and improve knowledge of nutrition and foodservice management. Curriculum and tools were developed based on literature sources and formative results. The process of curriculum was designed based on 1)



experiential learning model of Kolb that integrated learner's experience to create a new learning [16]; 2) Transtheoretical theory to integrate across major theories of intervention for interpreting complexities of behavior change [17]; and 3) learning approaches, which were incorporated to support integrating new knowledge of learners [18].

#### *Examining contents of curriculum*

The contents of the training program were advised by 1 professor at the Department of Nutrition and Dietetics, Chulalongkorn University, Thailand and 2 researchers who have experiences in school lunch program management and training lay-person at the Institute of Nutrition, Mahidol University in Thailand. They were evaluated the concordance of contents by Content Validity Index (CVI). Acceptable concordance of content was more than or equal 0.9 [19].

#### *Appropriateness of course*

The training program was evaluated appropriateness of course before beginning implementation of the training program. This phase conducts with 3 school lay-chefs from public schools in Bangkok. They evaluated the appropriateness of course by using Likert's scales. Acceptable mean of appropriateness of curriculum contents was more than 3.50 [20].

### **Development of the questionnaire**

#### *Development of the knowledge questionnaire*

The knowledge questionnaire was developed to assess knowledge, attitude and practical skill of school lay-chef before and after implementation of the training program. The knowledge questionnaire was divided into 4 parts as follow:

1. Individual information: The first part included name, gender, age, education level, contact, work experience, responsibility of work, and training experience.
2. Knowledge on nutrition and foodservice management: The second part contained 10 items multiple choices.
3. Attitude on nutrition and foodservice management. The third part included both positive attitude questions and negative attitude questions. This part contained 10 items by using rating scale base on Likert's scale.
4. Practical skill of nutrition and foodservice management: The forth part contained 4 parts such as menu planning, food purchasing, food serving, and food preparation. This part included both completion part and true-false part.

#### *Development of the satisfaction questionnaire*

This questionnaire was developed to assess satisfaction with various aspects of training program. The questionnaire included both opened-end questions and ranking level questions base on Likert's scale.

#### *Examining contents of the knowledge questionnaire*

The knowledge questionnaire was advised by 3 experts and evaluated the validation by CVI.

### **Formative results**

The data of in-depth interview from principals, nutrition teachers, and school lay-chefs were analyzed thematic and linked relationships by using hurricane diagram [Figure 1]. From analysis found that school environment factors that associated with students' food had high energy and inappropriate nutrient distribution. These factors occurred from inappropriate management which



enough, they would buy raw materials from market or used raw materials that were in stock to cook easy menus, for example, omelet.

“We cook food taste of kindergarten students milder than primary students. They rarely eat vegetable menus but they eat menus that have soft vegetables, such as winter melon curry, and pumpkin curry. If menus are stir-fried ginger, stir-fried long bean, and stir-fried morning glory, we have to stir fry vegetables until they are soft.” (In-depth interview school lay-chef #3)

#### *Knowledge support*

School lay-chefs had to train about food sanitation. The training program was instructor-centered learning and emphasized on theory. Principals mentioned that school lay-chefs were practitioner. The practical training program and tasting were more appropriated than theoretical training and writing test. When they were asked about characteristic and quantity of foods that appropriate with school-age children, they said about the five food groups and served quantity of food that students want.

“This training had no topics about foods and menu setting. They taught about cleaning and collocating tools and purchasing raw materials. Nutrition knowledge is cooking sanitary food, such as cleaning vegetables before cutting and using potassium permanganate.” (In-depth interview school lay-chef #2)

#### *School food environment*

There were shops selling snacks and beverages in school. The shops were owned by school or outsiders. If shops were owned by school, snacks and beverages would be prepared by school lay-chefs. Principals mentioned that selling snacks and beverages in schools prevent students to buy them from elsewhere and teachers could select good snacks and beverages.

Almost schools sold yum-salad, jam bread, fried foods sweet drinking, yogurt drinking, green tea, and juice. Some schools sold snack bag chip but they selected especially cereal, cookie, and potato.

There were shops where were around the school. Principals mentioned that they could not manage these shops because they might have problems with people in the community. In addition, student's parents liked to buy foods from there. They tried to solve problem, such as teacher taught students about nutritional knowledge and told students' parent about quality of foods in school and shops where were around the school.

“There are shops in front of school. They sell noodle, rice with meat and toys in the morning. We cannot ban them because it effects to the community. The sellers are student's parents. We solve problem with inviting students to eat school foods.” (In-depth interview principal #3)

### **Curriculum of the training program**

Form the formative evaluation and literature sources could developed the course curriculum include 5 modules, [Table 1-2], and the knowledge questionnaire [Table 3]. The content of the training program covered responsibilities of school lay-chef. They effected to quality of school feeding program which related to children's nutritional health. The instructional of the training program was incorporated in both the classroom and workshop sessions. The duration time of the training program was designed to implement for 2 days.

After development, the contents of the training program the knowledge questionnaire were advised by experts and evaluated the concordance of contents by CVI. Content validity for scale of the training program was 0.96. Content validity for scale of the knowledge questionnaire was 0.99. Content validity for scale of both parts was acceptable. The training program was evaluated appropriateness of course by school lay-chefs. Appropriateness of course was  $4.20 \pm 0.17$ , which was



acceptable effected to quality of school feeding program which related to children's nutritional health. The instructional of the training program was incorporated in both the classroom and workshop sessions. The duration time of the training program was designed to implement for 2 days. After development, the contents of the training program the knowledge questionnaire were advised by experts and evaluated the

**Table 1 Five learning modules of foodservice management training program for school lay-chef**

Module	Topic	Learning objectives
1	School meal planning	<ol style="list-style-type: none"> <li>1. Participants will be able to set school meal for school-age children</li> <li>2. Participants will be able to calculate amount and cost of raw materials and products with amount of children</li> </ol>
2	Food exchange and food portion size	<ol style="list-style-type: none"> <li>1. Participants will be able to understand principle of food exchange</li> <li>2. Participants will be able to determine food portion size with their equipment base on the nutritional requirement of school-age children</li> </ol>
3	Good quality of raw materials and product	<ol style="list-style-type: none"> <li>1. Participants will be able to identify principle of examining quality of raw materials</li> <li>2. Participants will be able to identify principle of reading the nutritional label</li> </ol>
4	Cooking that reduce sweet , fat, and salt	<ol style="list-style-type: none"> <li>1. Participants will be able to understand cooking that reduce sweet, fat and salt</li> <li>2. Participants will be able to understand taste of children</li> </ol>
5	Snacks and beverages for school-age children	<ol style="list-style-type: none"> <li>1. Participants will be able to identify appropriate and inappropriate snacks and beverages for school-age children</li> <li>2. Participants will be able to select and create healthy snacks and beverages that appropriate with school-age children</li> <li>3. Participants will be able to describe benefit and discuss how to apply recipes of healthy snacks and beverages for their school</li> </ol>

**Table 2 Example of learning objectives, learning environment tasks, learning principles, and tool**

learning objectives	learning environment tasks	learning principles	Tools
Participants will be able to set school meal for school-age children	<ul style="list-style-type: none"> <li>- Participants will discuss about foods, snacks, and setting school lunch meals</li> <li>- Participants will practice planning school lunch meals for one week</li> </ul>	<ul style="list-style-type: none"> <li>- Building on prior knowledge</li> <li>- Skill development through practice</li> </ul>	<ul style="list-style-type: none"> <li>- School lunch meal power point</li> <li>- School lunch food recipe for lay-chef</li> <li>- School lunch meal planning form</li> </ul>
Participants will be able to determine food portion size with their equipment base on the nutritional requirement of school-age children	<ul style="list-style-type: none"> <li>- Participants will discuss about food portion size for school-age children</li> <li>- Participants will practice to determine food portion size with household utensil</li> </ul>	<ul style="list-style-type: none"> <li>- Building on prior knowledge</li> <li>- Skill development through practice</li> </ul>	<ul style="list-style-type: none"> <li>- Food requirement of school -age children power point</li> <li>- school lunch meal for school -age children poster</li> <li>- Foods for determining food portion size</li> <li>- Household utensil</li> </ul>

learning objectives	learning environment tasks	learning principles	Tools
Participants will be able to understand cooking that reduces sweet, fat and salt	<ul style="list-style-type: none"> <li>- Participant will discuss about how to reducing sweet, fat and salt in foods</li> <li>- Participant will discuss about challenge and limitation of this process with their experience</li> </ul>	<ul style="list-style-type: none"> <li>- Building on prior knowledge</li> <li>- Reflection</li> </ul>	<ul style="list-style-type: none"> <li>- Reducing sweet, fat and salt in foods power point</li> <li>- Food demonstrations</li> </ul>

**Table 3 Example of knowledge questionnaire**

Part of questionnaire	Scores	For example
Knowledge	10	School lunch menu is stir-fried kale but market has no kale. Which vegetable should exchange with kale? A. pumpkin B. cabbage C. morning glory D. bean sprout
Attitude	10	Chubby children are healthy children. ( )Strongly agree ( )Agree ( )Uncertain ( )Disagree ( )Strongly disagree
Practical skill	20	From school lunch meals planning table, please plan one week school lunch meals (5 days)
Total score	40	

## Discussion

This research collected data with stakeholders of school lunch program and school lay-chefs' working to studied school environment factors that associated with overweight and obesity in school-age children, including studying about barriers to and support for foodservice management training program for lay-chefs in primary schools in Bangkok.

This training was developed for school lay-chefs so formative evaluation was used to understand their skills, work environment, work restrictions, and factors that supported their work. These factors led to improving the effectiveness of design and implementation of the training program and school lay-chefs' participation and behavior change. Formative evaluation was used in process of educations and the training programs. Formative evaluation was important to support learner's performance, motivate learner, and enhance learner's satisfaction, including continuous improvement of the training program [21-22].

From formative results found that school lay-chefs did not cook foods only but they also work instead of nutritionists in management of school foods. They indicated that school lay-chefs were important to both physical quality and nutrition of foods, including school food environment that effected to eating habit of school-age children. Although they were trained about food sanitation, they were not supported nutritional knowledge. There were many nutritional handbooks and training programs that associated with school lunch program but they were not appropriated with context of school lay-chefs. Therefore, the training program included contents that covered the responsibilities of



school lay-chefs, learning patterns and evaluations that emphasized on practice, and tools that school lay-chefs were familiar. Furthermore, the training program aimed supportive knowledge with applying learners' experience and environment led to effective learning and applying their life [23-24]. The community-based program aimed at improving cooking skills, knowledge, and self-efficacy of general population. Experiential learning and social learning were applied in design process of program. This program had positive cooking confidence, cooking, eating behavior [25-26].

This research expects that training program, which will be implemented in the future study can properly support school lay-chefs' nutrition knowledge and skill. They will lead to improve quality of school foods, including eating habit of school-age children.

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**Development of nutrition training program for community health workers**

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**Abstract**

Thailand has classified as a developing country, which makes various change both economy and culture of living, rapid increase in food choice, and culture contributed to the increased prevalence of obesity and chronic diseases, both in urban and rural areas. One approach to alleviating the disease burden is to expand knowledge at the community level through community health workers who needs exists continuously to encourage more effective work. This research was developed and tested nutrition- curriculum for enhancing nutritional knowledge among health workers. The material in this study was applied nutrition knowledge integrating with various learning approaches. Learning modules, learning activities, quiz and E-learning were developed. Materials and contents were verified by 3 experts at Mahidol University. The reliability and difficulty of knowledge tests were assessed by participants with the same characteristic. The results indicated that CVI-score of knowledge test was 0.98, CVI-score of contents was 1.00 and CVI-score of learning activity was 1.00. Most contents and learning activities have been passed criteria, however some contents should be modified for learning appropriately. The reliability of knowledge test was analyzed by using Cronbach's Alpha statistics to calculated question items. The acceptance criteria should be higher than 0.7, which indicated high level of internal consistency. Results from this study was 0.69. Therefore, questions should be revised to improve reliability. The difficulty analysis of knowledge tests showed that 71 percent of questions have been passed criteria of level difficulty. Twenty-four percent of questions was reasonable easy and four percent was appropriately difficult for participants. Curriculum development should be considered to modify contents, learning activity, tests and questionnaire follow the suggestion to be accurate and reliable.

**Keywords:** Nutrition education, Training, Curriculum development, Health workers

**1. Introduction**

Malnutrition is the problem that affects children's health around the world either low birth weight, underweight, stunting, and wasting including overweight and obesity. Childhood stunting is one of the effects on maternal nutrition and health status, pregnancy in young age, including insufficient dietary intake. Other factors such nutritional, common infectious diseases, poverty, food insecurity, poor hygiene and sanitation [1]. Although the prevalence of stunting in children under-five between 1990 and 2014 was decreased, but this does not meet the global target of stunting. Paradoxically, the global epidemic of obesity has also affected the Thai population [2-3]. Thailand has classified as a developing country, which makes various change both economy and culture of living, rapid increase in food choice, and culture contributed to the increased prevalence of obesity and chronic diseases, both in urban and rural areas. Economic development in Thailand, rapid increase in food choice, and acculturation have contributed to the increased prevalence of obesity and chronic diseases, both in urban and rural areas.

One approach to alleviating the disease burden is to expand knowledge at the community level. Sustained community education by health workers is one approach as these workers have a unique ability to serve as "bridges" between community members and the health care system [4]. Capacity building refers to the strengthening of human resources development. The United Nations Development Program defines capacity as "the ability to perform functions, solve problems, and achieve objectives" at three levels: individual, institutional and societal [5]. The application of nutrition knowledge is important to access people in the community.

Health training programs have been available for health care staff and community health workers in Thailand for topics such as infection control, advanced cardiac life support, and HIV/AIDS prevention [6]. These have been organized regularly every year by the Ministry of Public Health, provincial hospitals, and university to reinforce knowledge and increase health worker ability to provide quality of care [7]. The clinical experience of health workers and long-term experiences with



no special educational may not enough to add up nutritional knowledge. While education only may not enough to change attitude and acceptance of appropriate practices. Previous research about nutrition knowledge in health workers who had health background found that both attitude and knowledge level of health workers influence to their responsibility. Even they have nutrition knowledge or attitude, the knowledge was not enough to change inappropriate behavior [8-10].

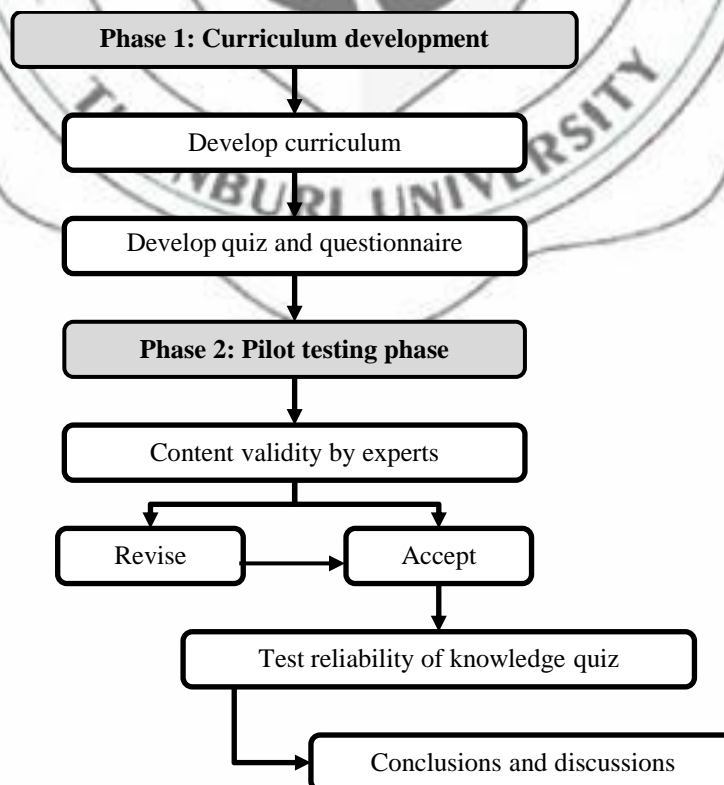
The traditional approach to training in Thailand has been a teacher driven didactic approach. A problem of the traditional approach to learning was not only that students lacked motivation and engagement in mastering the foundational knowledge/information, but also that they had difficulty remembering and understanding [11]. The previous development technology for education found that most of them focus on content or technology in the media. Although many tools and teaching materials have been developed, if the target groups are not adequately trained, they will not be able to use the tool in the most effective way [12]. In Thailand has been using Moodle for many years, mostly used in school or educational institutions. The use of technology for teaching has contribute to better learning including positive opinions toward learning [13]. The needs for professional development of health workers or public health professionals still exists continuously to encourage more effective work [14]. The aim of this study is to develop and test nutrition intensive course curriculum. The improvement and stimulation of nutrition knowledge may support health care workers to manage nutrition problem better. This study will be included nurse and health care staff or one who is responsible for health promotion.

## 2. Research objectives

The objective of this study is to develop and test nutrition intensive course curriculum for enhancing nutritional knowledge among health workers.

## 3. Research methodology

The study protocol and consent form were submitted to approve by the Committee of Mahidol University Central Institutional Review Board (MU-CIRB). This study divided into two phases which show in **Figure 1**.



**Figure 1: Flowchart of research methodology**

***Phase 1: Curriculum development***

## 1. Design and develop curriculum

Purpose of this training course was to facilitate learning and build capacity of health care workers about appropriate nutrition, including review and update nutritional knowledge to improve malnutrition and obesity prevention as well as skills improvement of counseling at the community level.

Curriculum was designed and developed to improve skills from theory of learning and applied various format in learning and teaching approaches, including developed closely to professionals at Institute of Nutrition, Mahidol University, Thailand. The key messages were generated along with learning approach. The contents of training program were updated based on previous problem and nutrition update to expand nutritional knowledge. The lesson will be updated from existing knowledge including add skills of teaching and learning by designing activities in each module including motivation and learning from experience.

Learning approaches applied from learning objectives and learning modules. The learning method applied from experience and participation in activities to encourage self-awareness and behavior change to develop their capacity of training skill. Principles of learning approach consist of problem-based, reflection, building on prior knowledge, skill development and self-assessment. The theoretical foundation of learning approach adapted in this course including MOOCs, Flipping classroom and Transtheoretical model. Content of training course consists of 5 learning modules and one module for evaluation after training program shown in **Table 1**.

**Table 1: Topics and focus of nutrition training program**

Module	Topics	Focus
1	Double burden of malnutrition and nutrition assessment	- Importance of factors that related to double burden of malnutrition - Measurement and evaluation nutritional status appropriately
2	The effect of overnutrition and obesity, screening risk of diabetes	- Importance of factors that related to obesity - Interpret data and screening risk of obesity, diabetes properly. - Record food correctly for assessment
3	Principles of nutrition	- Healthy food and nutrition based on Thai nutrition flag - Energy requirement - Food exchange
4	Dietary recall, carbohydrate counting and glycemic index	- Food exchange list and using equipment for measurement - Calculation in carbohydrate group - Food selection based on glycemic index
5	Nutrition labeling and the reduction of salt, fat and sugar intake, healthier choice and healthy snacks	- The benefits of nutrition labeling - Food selection to reduce amount of sugar, salt and fat
6	Support in follow up, post-test and program evaluation	- Recommend to use e-learning after training - Knowledge evaluation immediately after training - Program evaluation

Curriculum and learning process divided into in-class and online learning. In-class training was planned to implement in three days, each module will be taken 2-3 hours. The training program included learning activities of each module and summary by providing keywords. The learning activities and tools developed such as nutrition assessment, food exchange, carb counting, glycemic index and nutrition labeling. After finish in-class training, the knowledge information will be posted in e-learning via Moodle software. Participants will be assigned to access e-learning to study more by themselves and follow up (via website “<https://nutritionforhealth.moodlecloud.com>”). The materials designed and developed to verify in next phase shown in **Table 2**.



## 2. Quiz and questionnaires development

2.1 The questionnaires were developed by the researcher including questionnaires for experts to validate contents which topics as follow;

2.1.1) *Evaluation consistency of curriculum and nutrition training program*

2.1.2) *Evaluation of materials*

2.1.3) *Evaluation of worksheet and knowledge sheet*

Scoring of all questionnaire in part 1 used Likert's scale four level for rating acceptance of learning plan and materials as excellent 4 score, good 3 score, fair 2 score and poor 1 score. Another part was the development of questionnaires for evaluating curriculum and satisfaction of training program.

2.2 Knowledge quiz was developed including *Nutrition knowledge assessment* – questions were designed to assess knowledge at baseline and after follow up. The questions were included 30 multiple choice questions (4 choices) and 15 questions fill in the blank. Total score was 60 points and the correct answer was 1 or 2 point and wrong answer was 0 point. Passing score of knowledge test set at more than 70 %.

### **Phase 2: Pilot testing phase**

The curriculum was analyzed to verify content by using content validity index (CVI) by three nutrition experts at Mahidol University. Module and worksheet were selected to verify content. The evaluation included content consistency, clarity and readability. The scores were based on the decision of experts to yield internal validity of content. High content validity considered as CVI of 0.80 or higher. The equation of CVI calculations including; [15]

**Table 2: The materials design**

Module	Learning strategy	Activities/tools/materials				Evaluations	
		PowerPoint	Video clip	Worksheet	Quiz	In-class	Online
1	In class	✓		✓	✓	✓	
	Self-learning		✓				✓
2	In class	✓		✓		✓	
	Self-learning		✓				✓
3	In class	✓		✓		✓	
	Self-learning		✓				✓
4	In class	✓		✓		✓	
	Self-learning		✓				✓
5	In class	✓		✓		✓	
	Self-learning		✓				✓
6	In class				✓	✓	
	Self-learning						✓

$$\text{Item content validity index (I - CVI)} = \frac{\text{Number of experts scoring each item between 3 and 4}}{\text{Total number of experts}} \quad (1)$$

$$\text{Content validity for scale (S - CVI)} = \frac{\sum(I-CVI)}{\text{Total number of items}} \quad (2)$$

Sample selection with similar characteristic were recruited to test reliability of the knowledge quiz. The sample size according to previous study, the minimum required was 30 participants [8] and estimate drop out 20 %. Eligible criteria such as professional nurse, public health officer who were responsible for health promotion, age between 22-60 years old, education level at least public health background or public health certification or Bachelor degree.

### **Statistical analysis**

The data analysis used SPSS version 18.0 for windows to analyzed data such as characteristics of participants, reliability test which assessed by calculating the coefficient alpha (Kuder-Richardson 20 statistics) and items difficulty index of knowledge tests.

## Results

Total of forty participants was 90 percent female, the average age was  $35.38 \pm 10.79$  years. The results of content validity analysis from three experts indicated that CVI-score of knowledge test was 0.98, CVI-score of content was 1.00 and CVI-score of learning activity was 1.00. Reliability statistics Cronbach's Alpha of knowledge test was 0.69. The difficulty analysis of tests showed that 28.9 percent was moderately difficult, 4.4 percent was difficult questions and 24.4 percent was very easy questions which shown in **Table 3**.

**Table 3: Items analysis**

	Frequency	Percent
Very easy	11	24.4
Rather easy	8	17.8
Moderately difficult	13	28.9
Rather difficult	11	24.4
Difficult	2	4.4
Total	45	100.0

## Discussion

The curriculum was developed for community health workers to improve nutritional knowledge which involved in their duties. After the course has been developed, content validity has been reviewed by three experts. CVI-score was analyzed the acceptable score range were 3 or 4 which represent quite relevant and highly relevant respectively, which passing scores from 0.8 to 1.00. The results indicated that CVI-score of both contents and learning activity in five learning modules were 1.00. CVI-score of knowledge test were 0.98, two questions were lower than 3 or 4 scores. Scores were acceptable for used in the next phase similar to the study of Sukkarat (2013) which had high score level but should be revised content and questions according to the suggestion of experts for more complete [16-17]. Most of content and learning activities have been used to training program. Some of contents were revised such as nutrition terminology (both Thai and English), choosing appropriate pictures for learning. Questions and answer options were revised following the suggestion of experts including contents and learning activities which have been passed criteria were modified for learning appropriately [18-19].

After learning content has been modified, forty participants with the same characteristics were recruited to attend the reliability and item analysis tests. The reliability of knowledge test was analyzed by using Cronbach's Alpha statistics to calculated question items. The criteria was correct answer was "1" and wrong answer was "0". The acceptance criteria should be higher than 0.7 which indicated high level of internal consistency. Results from calculation was 0.69, the average score of items showed range between 0.6-0.7. Therefore, questions should be revised to improve reliability. The difficulty of knowledge test was assessed 45 question tests including 30 items of multiple choices and 15 items of fill in the blank. Questions consist of five topics from learning module. High quality test of items should have level of difficulty between 20 to 80 percent which represented rather difficult to rather easy question. Results showed that almost 29 percent (13 of 45 items) was moderately difficult question for participants, rather difficult question and very easy question was Twenty-four percent (11 of 45 items) equally, rather easy question (8 of 45 items) and difficult (2 of 45 items) question had a few items [20-22]. The questions which not met criteria has been changed including adjust choices before using in practice similar with research of Thummakul (2014) which developed training course and had alpha coefficient less than criteria [23].

The conclusion of this study show that contents and materials in curriculum had high relevant which appropriate to use in next phase. The reliability of test was almost in high level of internal consistency. Seventy-one percent of questions had been passed criteria of difficulty. Eleven questions found reasonable easy for participants and two questions were appropriately difficult for participants. Some of these questions should be eliminated or adjust them to make it easier or more difficult as appropriate. Similar to previous study (Malelohit, 2017) which developed workshop training and had been tested reliability of questionnaire and test before using in training [24]. Curriculum development should be considered to modify contents, learning activity, tests and questionnaire follow the suggestion to be accurate and reliable.

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**Bingo Game as a Learning Tool in the subject English for Undergraduate Students**

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**Abstract**

English is an important subject for all level of learners. For those who are proficient in English skill tend to have more opportunities when seeking for jobs. Each English learner may have different attitudes towards the English subject. The feeling of dislike in the subject could be a barrier hindering learners to succeed in English classes. Thus, it is important to find learning tools or techniques to support English learners. Those tools or techniques should efficiently attract learners to pay attention in the English subject in order to achieve effective learning outcomes. This research aimed to find the efficiency of Bingo, undergraduate students' satisfaction on the use of the game Bingo as a learning tool in the English subject, and to find the suitability of Bingo with the undergraduate students. This study is a classroom research. The pre-test and post-test on vocabulary and questionnaire were used as tool to collect data. The research was conducted with 43 undergraduates from Faculty of Marketing, Thonburi University in 2017. SPSS was used for data analysis including percentage, mean, maximum, minimum and standard deviation. The majority of undergraduate students (>60%) highly agreed that the game Bingo was suitable for learning English, built a feeling of fun in learning English, could assist them to learn new vocabulary, and the vocabulary and content could be used in everyday life. More than 50% of the undergraduate students were satisfied with the use of Bingo in the English subject and rated that the game was suitable with their English background with statistical significance at 95%. Notably, the results showed that students gained an average score of a pre-test 6.93 out of 20 points. In contrast, the students achieved higher score on a vocabulary's post-test with the average score 16.35 points out of 20 points. Overall, the game Bingo can still be used as a learning tool which is satisfactory and suitable for English learners at the undergraduate level.

**Key words :** Bingo game, English subject, undergraduate students

**Introduction**

In accordance with the Office of the Higher Education Commission (2016), the policy of increasing English standard in higher educational institution had been developed. The policy emphasized on improving quality of Thai people by encouraging educators to develop teaching techniques and methods as tools to support learners. There are several factors which are obstacles for learners to learn and improve English skill such as the bias attitude towards English of learners, the lack of motivation to practice English, English background of learners and teaching techniques and methods of educators [1], [2]. Regarding teaching techniques and methods, many educators have struggled with teaching. It is essential for educators to encourage learners to pay attention in class by having fun techniques in line with knowledge offer [8]. To achieve in learning language successfully, there are four skills that educators need to concern including listening, speaking, reading and writing skill [8]. Moreover, using language games can create relax environment in a classroom. Bingo game is one of common games which can be used in an English class and is one of learning tools. In fact, bingo game can be applied in different groups of learners or participants [8]. Thus, this research used a bingo game as a tool in English subject in order to find the efficiency of bingo, undergraduate students' satisfaction on the use of the game bingo as a learning tool in the English subject, and to find the suitability of bingo with the undergraduate students.

**Literature Review**

Nguyen Thi Nhu Y (2013) had conducted a research using vocabulary games to develop Thai vocabulary learning of the first-year students at the university of Social Sciences and Humanities in Ho Chi Minh City, Vietnam. The research aimed to use games to develop first-year students in learning Thai language and to find the students' interest toward the language games. The research tool included lesson plans, achievement test with the standard of 80/80 and questionnaire on opinion on vocabulary games. A sample was ten Vietnamese first-year students who took a major in Thai

language at the university of Social Sciences and Humanities in Ho Chi Minh City. A result of the learning achievement test showed the effectiveness of using the language game 93.75/93 which was higher than expected; 80/80. This revealed that the vocabulary games could develop the learning of Thai language. The results also showed that the students highly satisfied with the use of the language game (4.4/5).

Sintapanont (2010) advised principles for selecting language games as follows. The games should be suitable with a class, number of students, students' age, educational level, time, content of a lesson and learning objectives. Educators needed to consider students' interest and their capabilities, and opportunities for all students to participate in the game. Educators could apply the game in accordance with the suitability of the class and students' need. If there were many students in a class, the educators could use papers, pens or pencils as tools to play games. The tools should be easy to find and not too expensive. Importantly, the games must be safe and suitable with lessons.

Tietze (2007) conducted a research on a bingo game motivates students to interact with course material. The objective was to create a bingo game that would increase student interaction with course material and provide students with options for demonstrating learning and earning extra credit. Students who achieved bingo earned a five-point grade bonus. Students who participated in this research were college students taking clinical pharmacy skills course. The results revealed that the bingo game increased student interaction with course material throughout the semester.

Umpaipan (2002) stated that language games benefit both educators and learners as follows. Firstly, it assists educators to prepare content in an easier way to understand. Secondly, it can help to improve educators' teaching technique. Thirdly, the games can assist the educators to observe the learners' understanding and skill. Fourth, the games can get attention from learners. Next, the language games can be used and applied with all ages and genders. Lastly, the games can support in listening, speaking, reading and writing skill.

### Methodology

This research was a classroom action research. This research was conducted with a group of undergraduate students majoring in marketing who took a subject of English for Listening. It was carried out in August 2017 at Thonburi University. There were 43 students participated in this research. The English vocabulary was selected from a unit of a text book used in the semester. The selected vocabulary was about weather including 25 vocabularies and 8 frequently used sentences in the weather unit.

Prior to start the lesson, students were required to take a vocabulary pre-test for 20 questions. Each question was one point. Then, the researcher introduced the vocabularies by using a power point. Students were required to read out each vocabulary for three times to ensure that students were able to read the vocabularies. When finished the last slide of power point, the researcher repeated all the vocabulary.

After the completion of teaching the vocabulary, the researcher distributed four empty bingo tables to each student. Each bingo card comprised 24 empty blanks with one free point in the middle of the bingo card. Each table was used with provided vocabularies. To achieve this, the researcher showed a set of vocabularies on a power point. There were four sets of vocabularies. Each set of vocabularies consisted of 15 vocabularies (**Figure 1**). While showing each set of vocabulary, students were required to read out each vocabulary again. Then, the students were asked to write each vocabulary in an empty blank. Each vocabulary could be written for 1-2 times as to encourage students to memorize the vocabularies.

**Weather Report (cont.)**

- Activity – Bingo (1)
- โฉนดศึกษาเติมคำศัพท์ที่ให้ลงในช่องว่างทั้ง 24 ช่อง โดยคำศัพท์ 1 คำ สามารถเขียนซ้ำได้ 2 ครั้ง

cloudy, sunny, fog , windy	B	I	N	G	O
snowy, icy , hail , rainy					
warm, hot, cold,			free		
temperature , drizzle ,					
showery , freezing					

**Figure 1. An instruction for the game bingo presenting on a Power Point**

After completing in writing vocabulary in the tables, the researcher read out each vocabulary. If the read out vocabulary match the vocab that students had written in the table, students could cross the vocab. When the students had the vocabulary continually for 5 vocabularies in two rows, the student would be bingo. The researcher would let 3 students to get the bingo. The lesson would take approximately 1 – 1.5 hours. After finished the game, the students were asked to do a vocabulary post-test for 20 questions. The post-test was similar to the pre-test but the vocabularies in the test were random. In addition to the test and the game, the questionnaire was distributed to the students in order to assess the bingo game.

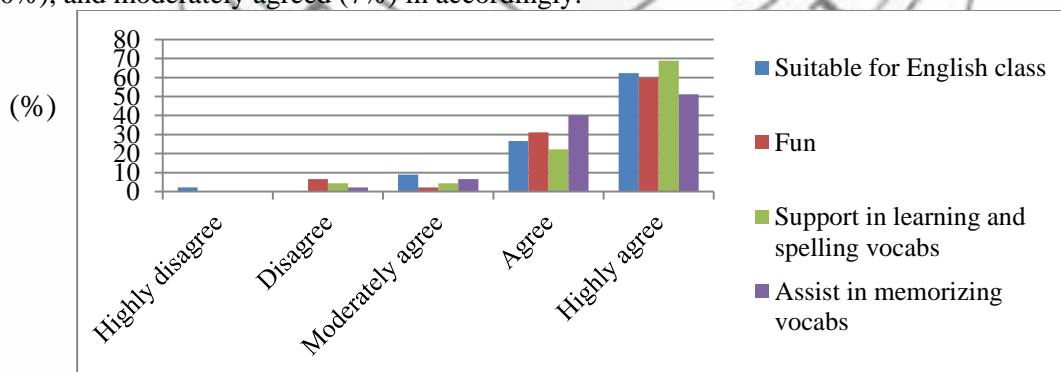
The results of the pre-test and post-test were analyzed and compared. SPSS was used for data analysis including percentage, mean, maximum, minimum and standard deviation.

### Results

The results showed that students gained an average score of a pre-test 6.93 out of 20 points with a maximum score at 14 points and a minimum score at 2 points. In contrast, the students achieved higher score on a vocabulary's post-test with the average score 16.35 points out of 20 points, a maximum score at 20 points and a minimum score at 7 points.

Participants of this research were female (85%) and male (15%). Most students who participated in this research were at the age between 18-22 years old (61%), followed by 23-27 years old (28%) and older than 27 years old (11%). Regarding English background of students, the majority of students received grade C (38%), followed by grade A (29%), grade B (24%) and grade D (9%). Attitude toward English subject, 67% of students liked English subject while 33% of them disliked the English subject.

Regarding the assessment of bingo game, the results showed that the majority of students highly agreed (62%) that the game was suitable for the English subject, followed by agreed (27%) and moderately agreed (9%) (**Figure 2**). Similarly, 60% of the students highly agreed that the game built a feeling of fun in learning English, followed by agreed (31%) and moderately agreed (7%). Furthermore, 69% of the students highly agreed that the game could assist in spelling English vocabulary, followed by agreed (22%) and moderately agreed (5%). In addition, 51% of the students highly agreed that the bingo game could help in memorizing the vocabulary, followed by agreed (40%), and moderately agreed (7%) in accordingly.



**Figure 2. Bingo game assessment (1)**

For English skill development, the majority of the students (60%) highly agreed that the game could support English skill development including listening, speaking, reading and writing skill, followed by agreed (31%) and moderately agreed (5%) (**Figure 3**). Moreover, the results showed that almost 60% of the students highly agreed that the game created a relax environment in a classroom, followed by agreed (33%), moderately agreed and disagreed (4%) respectively. Also, more than half of the students (53%) highly satisfied with the bingo game, followed by satisfied (36%) and moderately satisfied (7%). Lastly, the results revealed that most students highly agreed (62%) that the vocabularies and sentences using in this game were useful, followed by agreed (29%), and moderately agreed (7%).



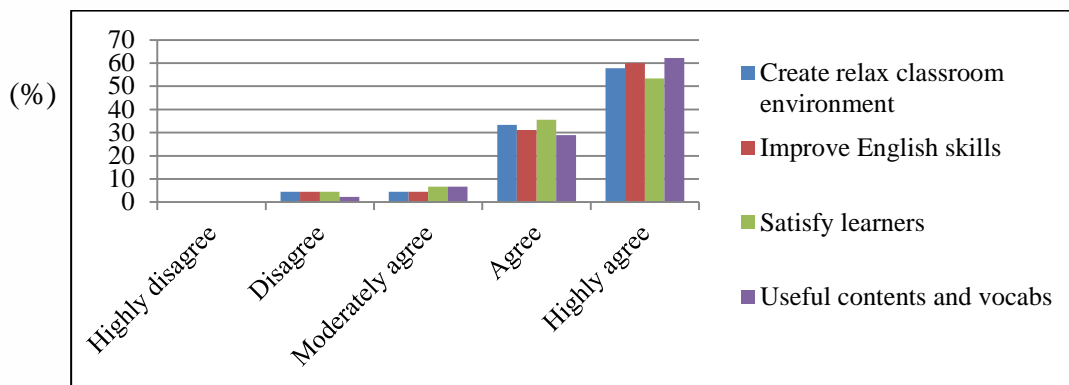


Figure 3. Bingo game assessment (2)

### Discussion

The use of bingo game with a group of undergraduate students satisfied the students and it was a good tool for the students in learning English. While playing the game, most students had fun. The game did create a positive environment as Umpaipan (2002) advised. The researcher observed that students very well participated in playing the game and the game could release students' shyness which was compatible with the findings of Nguyen Thi (2013). Additionally, a process of learning vocabulary and the game supported students in learning and memorizing the vocabs as well as created their motivation which was also corresponded to Tietze (2007). It was obvious that the game was suitable with the students which related to the principles for selecting language games of Sintapanont (2010). However, the technique of the bingo game could be designed in a more complicated way. Also, the bingo game may be used effectively for about 2-3 times per class per semester. Otherwise, students might feel bored.

### Conclusion

To select the game, it is necessary to consider number of learners, place, age, educational background, time, vocabulary, skill and tools. The bingo game is suitable with the undergraduate students. The majority of undergraduate students (>60%) highly agreed that the game Bingo was suitable for learning English, built a feeling of fun in learning English and could assist them to learn new vocabulary effectively as the results of the vocabulary post-test demonstrated the score received after participating in the game. The results showed that students gained an average score of a pre-test 7.09 out of 20 points with a maximum score at 14 points and a minimum score at 2 points. In contrast, the students achieved higher score on a vocabulary's post-test with the average score 16.35 points out of 20 points, a maximum score at 20 points and a minimum score at 7 points. Lastly, the use of game Bingo highly satisfied the students. As we can see, more than 50% of the undergraduate students were satisfied with the use of Bingo in the English subject and rated that the game was suitable with their English background.

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**The Empowerment of Reading Comprehension of EFL Learners through CALL**

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**Abstract**

Reading is the important language skill in an acquisition process for English as a foreign language learners. However, Thai students still encounter problems in comprehending the English reading text, which finally leads to failure in reading. Obviously, effective reading needs not only the active readers who process the text but also a language tool to help them to proceed easily from one step to another step and come up with the successful reading comprehension. As evidenced in the positive impact of computer used in businesses including education, one of the current trends of language teaching and learning is using technological tools to empower students' reading ability. Therefore, this paper emphasizes the empowerment of reading comprehension of EFL learners through computer-assisted language learning (CALL). First, the paper shortly reviews the problems the readers face when they read the text that affect their overall comprehension in a reading process. It, then discusses the need of computer to help EFL learners learn in a process of language learning, and finally it illustrates how the Thai reader's comprehension of the texts is improved by the use of computer. It is suggested that the use of computer as an instructional aid for teachers, and in particular, an assistance for learners to increase reading comprehension, yield a better, value added teaching and learning environment.

**Keywords:** CALL, EFL Learners, Reading Comprehension**Introduction**

A language tool widely and increasingly recognized for international communication is English. With the rise of its importance as a global language, the revised national curriculum of Thailand changed learning it from an elective to a compulsory course (Ministry of Education, 2001). As stated in the national curriculum, Thai students should be able to use English in their daily live communication (Ministry of Education, 2002). In other words, to communicate with the English-speaking foreigners, Thai students learning English as a foreign language (EFL) should be competent in the four language skills: listening, writing, speaking, and reading. However, among these skills, the most essential one that plays an important role in acquiring knowledge and gathering information, and in academic and professional success for EFL learners is reading (Hirunburana & Opanon-amata, 2003). Thai students are expected to demonstrate efficient reading skills because it influences other skills and a variety of sources of information in many fields, for example, in business, political sciences, engineering, and economics, and medical, is constantly introduced into Thailand from English-speaking countries. Thai students need to use reading skill the most to develop language learning ability, to retrieve, and understand information written in English. Therefore, for Thai students to access those sources in English, to overcome academic difficulties, and to become independent lifelong learners, an ability to read effectively is the most crucial (Hirunburana & Opanon-amata, 2003). Although Thai students are expected to use their reading skills to help them extract information from sources written in English (Kiritibodee, 2006), there is a lot of evidence indicating that Thai students of all academic levels still encounter problems in reading (Nuttal, 2000). For example, they have insufficient vocabulary, poor knowledge of rhetorical structures, and do not relate any of their background knowledge to what they read or are not familiar with the reading topics. In addition, it was found by EFL teachers and Thai educators that the reading problems of Thai students stem from various factors which include outdated course books or reading materials irrelevant to the student's interests, inappropriate reading skills, and inappropriate teaching methodology (Changpueng, 2005).

Therefore, to encourage the development and improvement of Thai students' reading skill, one which has an effect on other skills and finally results in their successful comprehension, they should be assisted with computer-assisted language learning (CALL). It is likely that the rich communication along with the multimedia features integrated and offered on the computer could help

make language input simply acquired, more comprehensible, learning strategies more accessible, and then promote interactions and facilitate greater reading comprehension of EFL learners.

### **The Role of Multimediality of Computer in Language Learning**

According to Hoogeveen (1995), a plethora of lively characteristics offered by CALL, namely, a high level of sense stimulation, intense human-machine interactivity, a great diversity of easily accessible information, an adequate use of reference models, a high quality of information representation, and instantaneous feedback, are presumed to be vital electronic language learning supports.

For intense sensory stimulation, learners are more emotionally aroused by and involved into the learning tasks, and are more able to increase information retention when exposed to a more intense sensory stimulation as developed by computers. As revealed in a study conducted by Faber et al. (1991), learning with moving pictures is apparently better and easier than learning with non-moving pictures, and leads to positive attitudes and a higher motivation in learning.

For intense human-machine interactivity, an electronically enhanced learning is expressed in the simultaneous interplay (resulting from sensory stimulation) of a learner's brain functioning and a computer program. Schad (1993) stated that the inclusion of interactive multimedia features in the learning process improves learners' sensorial stimulation. It allows them a better use of their brain to find solutions to problems and stimulates their senses such as vision, audition, and kinesthesia, to act simultaneously with the brain. It is estimated that reading requires 1% of the eyes' capacity for visual stimulation. Watching TV stimulates 25 to 30% of this capacity which in turn goes up to 60% for three-dimensional visual objects. To transfer information effectively, this variable is necessarily perceived to be important.

For high congruence of a variety of information, an appropriateness of the redundancy of the type of information used to express an idea could lead to a learner's capability to build associations and gain retention. Marmolin (1991) pointed to the redundant use of color as creating a more stimulating environment and to the learners' facilitation of choosing and processing information. Hepeshi and Jones (1992) remarked that the congruence use of synchronized video and audio representations, in which moving images better support the learner's comprehension of spoken material, was better than an incongruent presentation. They also described another study showing that the processing of an auditory message in a monologue or dialogue can be enhanced and facilitated by a visual display if the facial expressions such as the performer's face and lip movements in particular can be seen. Therefore, it is suggested that processing information is easier when the message is reinforced with congruent visual and auditory representations.

For adequate use of a reference model, meaningful reference pictures added to texts, meaningful sounds and animation expressing the intended ideas support a learner's cognitive ability. Illustrations like pictures, diagrams, or charts serve to make connections in the learner's intellectual processing. Schad (1993) stated that reference pictures added to a text help increase the understanding of a story by 75 % compared to a text without pictures, and increase retention by 25-35%. Text-and-picture stories are stored faster and more efficiently in readers' long-term memory than stories with text only.

For quality of information representations, the use of more realistic and authentic materials results in a higher emotional response and the acquisition of a more natural language. Graphics, utterances, animations, videos, music, and natural language are perceived as essential media components of information representations in a learning system. For the learners, such a realistic involvement facilitates an easier absorption of the target language.

In addition to the above multimediality offered by computer learning, instantaneous positive and negative feedback are important for self-directed learning in second language. The immediate feedback provided by a computer is influential on a learner's cognitive ability and second language acquisition. The immediacy of this feedback provides learners with an instant redefining of their understanding of a text and helps them recognize if their input is right or wrong, something that leads to better information retention. Positive feedback in the form of words, pictures, animations, and visual effects, for instance, heightens a learner's confidence and intrinsic motivation and encourages him or her to learn more (Pellone, 1995). On the other hand, negative feedback in the form of



wordings, statements of encouragement or informative explanations could change learners' behavior into a proper language cognitive ability and build up their confidence in language learning.

A learner's autonomy or self-directed learning is another one a computer offers to facilitate second language input. It assists the users in learning by themselves and allows creativity, more interaction, and the initiatives of their cognitive ability in a constructive process of second language learning. It is characterized by some researchers as constitutive of problem solving, knowledge transfer, success in learning, and academic success in general (Winne, 1997). Since self-regulated learning is the process consisting of self-observation, decision making, and self-reaction, all of which learners plan, control, and direct their own learning behaviors rather than response to external controls. Becker and Dwyer (1994) pointed out that "increasing the level of learner control may increase the level of self-determination, thereby increasing overall intrinsic motivation".

Apart from this, computers in education can be said to possess many attributes facilitating language learning. CALL, in particular, could be a new type of input leading learners to a richer language learning environment and providing them with a more focused and individualized input, and one of a better quality, (Pennington, 1996). Lightbown and Spada (1999) found that to help promote a learner's optimal, more authentic, and comprehensible input, the notion of providing the integration of CMC (a form of CALL) into learner-learner interaction in a foreign language classroom is necessary. CALL, therefore, has the potential to be another enriching channel for the learners, providing a diversity of opportunities for the development of language ability and helping make a variety of input learnable and accessible to each individual learner.

#### **Benefits of Computer-Assisted Language Learning (CALL) in Reading Process**

Regarding the use of computers to enhance the reading ability, the systematic presentation of materials and the greater stimulation of background knowledge provided by CALL lead to a reader's comprehension and improvement of reading performance. Leffa (1992) agreed that to enhance reading comprehension, printed materials are less important as language learning tool than computers since computer promotes interaction between a text and its readers. That is, a computer-supported text allows learners to participate in linguistic interactions more often than a text not supported by a computer. A high level of interactive multimodality facilitates the readers' vocabulary retention, understanding, and knowledge transfer and acquisition. As suggested by the dual-coding theory and the schema-based approach, which supports multimodality as facilitator to information processing. Regarding the dual-coding theory, it shows an effect on the learners' second language acquisition in that the verbal and non-verbal presentations enhance their recognition and retention of information. That is, in order to acquire information which brings comprehension, learners, in the process of language learning, use two different but interconnected sub-systems organized in one sensory system in the brain. One sub-system processes textual or verbal information and the other decodes pictures, objects, visual or non-verbal information. The pathway between these two symbolic sub-systems and the sensory system, which the pathway serves the memory, as proposed in "Psychology of Language" (Paivio & Begg, 1981), as illustrated in Figure 1.

Sensory Systems	Symbolic Systems	
	Verbal	Non-Verbal
Visual	Printed words	Pictures or objects
Auditory	Speech sound	Environmental sounds
Tactual	Braille	Feelable objects
Kinesthetic	Motor feedback from writing	Motor feedback from explanation of objects

**Figure 1 The dual-coding theory proposed by Paivio & Begg (1981)**

In the sensory system, it is believed that there is relatedness between the verbal and non-verbal sub-systems although their functions are independent. For example, "words can be evoked images and pictures can be named" (Al-Seghayer, 2001). This means that direct verbal memory codes are stimulated by words and direct non-verbal memory codes are stimulated by pictures. The dual functionality of these two sources initiates a link which leads to and enhances information recognition. In other words, to enhance a learner's retention and information retrieval, these two sources are said to have an effect on the learners' brain processing (Paivio, 1986).

In practice, computer-facilitated language learning has been used to help promote students' reading comprehension in providing a more advantageously interactive environment than the printed



text. The variety of authentic materials and enhanced features such as sound, color, moving pictures, graphics and animation, that the computers offer all help activate the reader's interaction in text processing.

Regarding the schema-based approach obtained through the rich multimodality of a computer, it theoretically plays a vital role in helping readers to comprehend textual information. A schema-based approach refers to the manner in which the readers process textual material, not only assimilating the actual information presented in the target language, but also working out the relevant mental structures or schemata stored in their own mind (Tudor & Tuffs, 1991). Cook (1997) defines schema as "a mental representation of a typical instance which helps people more quickly make sense of the world because people understand new experiences by activating relevant schemata in their minds."

In many studies on reading comprehension, two types of schemata, formal schemata and content schemata, play an important role in text processing. Formal schemata refers to the background knowledge the readers have on the rhetorical organizational structures of different types of texts, while content schemata refers to the background knowledge they have on the subject matter or the content of a text (Carrell, 1993).

Chevenick and Cecelia (1992) illustrated the impact of background knowledge on two groups of newly arrived immigrants taking the test for citizenship in America, who received two different passages. One group was given a passage related to Martin Luther King, Jr., and the other group was given a passage related to Abraham Lincoln. Both groups were required to give a written recall protocol on Abraham Lincoln after the reading test related to the passages. The results showed that the participants who had previously read a passage on Abraham Lincoln outperformed the participants who did not have the relevant background knowledge. It was found that background knowledge or schemata on the topic of a text has a significant impact on students' reading comprehension. As pointed out by Allen (2003), to attain comprehension, both novice and expert readers obtain clues on the texts they are reading by using prior knowledge and when prior knowledge is encouraged, for example, through video clips, comprehension can improve (Sharp et al., 1995).

Multimediality helps readers combine the information in the target language presented to them with their relevant mental structures. This leads to an ease in the integration of two different sources of knowledge, inner and outer information, which results in successful comprehension. As theorized by many researchers studying the approach to reading, reading is not viewed as a single level process, but is multilayered. It requires the reader's perception of an underlying interactive process. The readers need to recognize not only the graphic information provided by computers, but also the surrounding contextual information derived from the text. Effective reading comprehension comes from an integration of both visual and non-visual representations

Chun and Plass (1996) studied the effect of the CALL program *Cyber Buch* in its ability to initiate interaction with 160 German students and to aid their overall text comprehension. The findings showed that an annotation of vocabulary items composed of both visual and verbal information, and a dynamic visual advanced organizer helped in enhancing the global comprehension of the learners. This kind of word clarification is parallel to the dual coding theory contending that to master reading comprehension, a reader utilizes not only textual information but also non-textual information, such as color, shape, movement, and voice, into brain processing based on the interactive bottom-up and top-down operations.

Hirunburana & Opanon-amata (2003) explored the use of CALL program in developing English reading abilities, speed reading, reading comprehension of 99 students from the Faculty of Commerce and Accountancy. After having been trained in activities aimed at increasing reading speed, timed reading, paced reading, the results showed that the score of a treatment group derived from the comparison of pre and posttest yielded the significant gains in reading rates as well as the improvement of comprehension and proficiency.

Dorkchandra (2010) also examined the usefulness of the Text Structure Reading Strategy CALL program (TSRS) and hypothesize if it could really enhance the reading comprehension of students enrolled in English Foundation course at Kasetsart University. The results showed that the students with low English proficiency learning in technology-enhanced environment could benefit from using TSRS CALL program to help them increase their overall reading comprehension of the

texts. Moreover, those computer-assisted students showed the positive attitudes towards using such CALL program to help them learn.

From the many studies that investigated the instrumentality of computers in promoting learner's linguistic interactions through an enhanced language teaching and learning environment, it is apparent that the application of computer technology, particularly multimodality, has embraced many forms. These various forms of computer-based interactivity can be seen in software programs, CD-ROMs, and even Internet resources (Warschauer, 1996).

To sum up, the multimodality, or the variety of computational features, provided by CALL has helped promoting and facilitating readers' comprehension and knowledge transfer in many ways, as they interact with a computerized text. Visualizing authentic materials encourages active readers to create links between the new information and the one stored in their minds, and thus enhances their understanding. An instantaneous feedback provides readers with an awareness that helps them modify the output for a proper language internalization which is essential for an immediate acquisition of language abilities and information retention. Self-directing to access sources of knowledge via the computer enhances the readers' motivation in text interactions and frees them from a teacher-centered approach (Srisa-an, 1998).

### **Conclusion**

In conclusion, nowadays, computers play a vital role and have been widely used in almost every area of business and education, the application of computers in education, in particular, the uses of computers to help EFL learners learn in a learning process have been empirical for many years since they were introduced. To help EFL learners overcome linguistic difficulties and enhance the text comprehension of a reader, the empowerment of reader in a reading process of a text through computer is crucial. As seen in many educational settings, embracing EFL learners in an enhanced technology could lead to an easy access to linguistic input, language acquisition process, and knowledge transfer. Therefore, computer is a more important tool than printed materials since it empowers linguistic interactions between a text and its readers because the systematic presentation of materials and the greater stimulation of background knowledge produced by CALL could result in a reader's more comprehension, an improvement of reading proficiency, higher entire language ability, and apparently, becoming an independent, lifelong reader.

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**AN ANALYSIS OF RHETORICAL LANGUAGE USE OF AIRLINE COMMERCIALS 2017  
IN YOUTUBE VIDEOS**

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**Abstract**

The purposes of this study were to analyze how airline commercials were created to transform information and persuade readers by exploring the trend of language use in airline commercials 2017. The characteristics of language used in airline commercials both rhetorical approach and slogans were investigated. The data were collected from YouTube videos from May 2017 to December 2017, consisting of 26 airline commercials. The theories used in this study were based on Smith's (2002) "Rhetorical Approaches" as the basis to interpret the language use in airline commercials. The finding showed that the elements in each airline commercial were different. Still, advertisers employ varieties of language use based on the amount of time and the budget to transform information to audience.

*Keywords:* Airline, Commercial, Advertising, Rhetorical Approach

**Introduction**

Nowadays, people watch the world go by social media. Social media plays an important role in providing a network of people with a place to make connections. YouTube is a great source of a wide variety of commercials. It allows users to upload, view, rate, share, add to favorites, report, comment on videos, and subscribe to other users. Besides, it offers a wide variety of user-generated and corporate media videos for people to make you update what is going on in the world of business and tourism.

As a tool of marketing communication, a function of YouTube is to represent the identity of a product including persuade audience to purchase the products and services. YouTube can help raise awareness of a product and create an appealing product image. For tourism, airline commercials successfully capture the viewers' attention by using that dream and transforming it into reality by using natural beauty. From dream land to a touchable city, airline commercials take the audience.

on inspiring flights to beautiful cities in different countries to show the audience of what endless possibilities they could be facing. The ad may appeal to a wider audience not only beautiful scenery but also impressive spoken language. The spoken language in the commercial is English. Visuals are vital for the success of commercials because audiences do not share a price of air travel or any other pieces of valuable information. They rely on the emotions of people and the language used in airline commercials. Once audiences are motivated to satisfy their needs and wants, the purchase process begins. The more commercials are presented in the media, the more profit the media owner will receive.

In this research, the focus of the study has been directed towards airline commercials of domestic flights and international flights including slogans of airlines. Therefore, it is interesting to know the concept of the characteristics of language used in airline commercials. The rhetoric in commercials is interpreted by the audiences. This study is useful for students or readers to form a trend of writing airline commercials and understand how to use the words, slogans and styles in airline commercials appropriately.

**Purposes of the Study**

**The purposes of this research are as follows.**

- 1) To analyze rhetorical language use of airline commercials
- 2) To analyze rhetorical language use of slogans in airline commercials.

**Research Questions**

**This research aimed to answer two main research questions as in the following.**

- 1) What are rhetorical language use of airline commercials?
- 2) What are the slogans of airline commercials in terms of rhetorical approaches?



**Literature Review**

Literature review of this research discusses three areas of study: airlines, commercials, and rhetorical approach.

**Definition of Terms**

Several scholars define the term airline in various ways. The definitions of airline are given by these scholars as follows:

- Airline is an organization providing a regular public service of air transportation on one or more routes (Oxford Dictionary, 2018).
- Airline is a business that operates regular services for carrying passengers or goods by aircraft (Cambridge Academic Content Dictionary, 2006).
- An airline is a company which provides regular services carrying people or goods in aeroplanes (Cobuild Advanced English Dictionary, 2006).

In short, airline is a company that provides air transport services for traveling passengers and freight. It varies in size, from small domestic airlines to full-service international airlines. Airline services can be categorized into intercontinental, domestic, regional, or international, and may be operated as scheduled services or charters.

**Commercials**

Commercials is funded by the revenue from broadcast advertisements.

**Definition of Terms**

The definitions of commercial are given by many scholars as follow:

- Commercial is concerned with or engaged in commerce intended to make a profit (Oxford Dictionary, 2018).
- Commercial a paid advertisement on radio or television. (Cambridge Academic Content Dictionary, 2006).
- A commercial is an advertisement that is broadcast on television or radio (Collins English Dictionary, 2006).

**Advertisement**

Advertisement is an important method of marketing communication. It may appear in several media types used for advertising including magazines, newspapers, televisions, radios, internet and social networks. Advertising can help raise awareness of a product and create an appealing product image

**Definition of Terms**

-Advertising is defined as a paid method from a non-individual and identifiable source employed in presenting products, service, and idea to the audience and persuading and convincing the audience to use that product or service for a specific purpose (American Marketing Association (AMA) as cited in Vilanilam & Varghese, 2004).

-Advertising consists of four components: (1) payment – the space of advertisement is valuable and the advertiser must pay for it; (2) non-individual source – even though there are advertisements from individual in the market, advertisements refer to messages which are supported by an organization, group or business; (3) identifiable source – the advertisement must be completed in the full form of non-individuals' name address or telephone number to avoid a lack of source credibility if they are not well-known; (4) idea, products and services; some advertisement both sell products and sell ideas or services such as the advertisement motivating the public to save energy (Vilanilam & Varghese, 2004).

**1. Advertising Language**

Stovall (2009) mentions many ways in writing advertisement by employing the AIDCA concept as follows: (1) Use clear simple English; (2) Pay attention to the verb. A good advertiser frequently used verbs more than adjectives because adjective reflects lacking of interest and emotion. In contrast, the adverts will be lively and interesting with an action verb; (3) Be specific but don't overload the advertisement with details; (4) Use personal pronoun when appropriate; (5) Use the language precisely. The advertiser should select the word that relate directly to his purpose; and (6) Provide readers all information.

In addition, Newsom & Carrell (2001) points out that writers should create the message in the advertisement by following the guideline concept called "AIDCA": (1) A stands for attention – to write the message to get attention; (2) I stands for interest – to arouse the interest of the readers; (3) D stands for desire – to generate the reader's desire; (4) C stands for credibility – to convince the readers by creating a specific, concrete and direct message; (5) A stands for action – to require the reader to take an action about the advertiser product, idea, or services.

## 2. Tourism Advertising

The advertisement in the newspaper plays an important role in communicating and persuading the reader to act on something from advertising. Advertising can help raise awareness of a product and create an appealing product image. Advertising covers any communication that is paid for, from cinema commercials, radio and Internet adverts through to print media, television and billboards. It can reach a large audience at once and the same message can be repeated many times. Currently, tourism industry is one of the world's largest industries. That is to say, Thailand's tourism industry is a viable business generating billions of baht in income each year because the country has much to offer in terms of a variety of tourism resources, beauty of nature or a rich cultural, historical heritage and tourism activities as well as other tourist attractions.

## 3. Tourism

Several scholars define the term of tourism in various ways as follows:

- Tourism means the temporary short-term movement of people to destinations outside the places where they normally live and work, as well as their activities during their stay at these destinations (Beaver, 2005).

- Tourism refers to the provision of transportation, accommodation, recreation, food and related services for domestic and overseas travelers. It involves travel all purposes, including recreation and business (Ansett Airlines, 1977).

- Tourism can be defined as the science, art and business of attracting and transporting visitors, accommodating them and graciously catering to their needs and wants (McIntosh, 1977).

- Tourism is the study of man away from his usual habitat, of the industry which responds to his need, and of the impact that both he and the industry have on the host's socio-cultural, economic and physical environments (Jafari, 1977).

- Tourism comprises the activities of persons traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes (UNWTO, 2007).

- Advertising in the tourism industry is different from other industries. A holiday is an intangible product that the consumer can't see or touch before they buy. The customer will pay for the product before experiencing it. This is to say, advertising priorities should consider about product most appealing, potential customers' needs and desires, creative methods to generate interest in a particular product and the best way to reach customers.

Advertising is the means by which the necessary information is given on tourist and tourist areas, used to convince them to travel. In fact, advertising includes taking advantage of the written or spoken media to send the message to different consumers in travel and tourism, with the aim of getting an immediate response from the consumer market.

### **Rhetorical approaches**

Advertising can help raise awareness of a product and create an appealing product image. The language use in advertisement should be unique with different styles of writing. Rhetorical approaches are employed to create and produce the variety piece of writing and speaking to influence the audience.

Rhetoricians mentioned that any proposition can be expressed in a variety of ways, and that in any given situation one of these ways will be the most effective in swaying an audience. Thus, when persuasion is the overriding goal, the rhetorical perspective suggests that the manner in which a statement is expressed may be more important than its propositional content. The promise of rhetoric is that there exists a system for identifying the most effective form of expression in any given case. Thus, a rhetorical approach to advertising language will rest on three points: 1) variations in the style of advertising language, especially the presence of rhetorical figures, can be expected to have

important consequences for how the ad is processed; 2) these consequences can be derived from the formal properties of the rhetorical figures themselves; and 3) that these formal properties are systematically interrelated.

Smith (2002) points out that characteristics of language use in advertising related to rhetorical approaches as follow: (1) Alliteration is the repetition of initial or medial consonant sound. (2) Euphemism is the substitution of one word to present a neutral or positive attitude. Assonance is the repetition of the vowel sound. (4) Anaphora is the repetition of the same word or group of word at the beginning of the successive clauses. (5) Hyperbole is the language use for exaggeration or overstatement. (6) Internal rhyme is the rhymes of word in the same clause. (7) Metaphor is a word or phrase describing something or somebody in a way that is different from its normal use. You use metaphor when you say that one thing is something else, which creates a direct, vivid comparison in the listener's mind. The purpose of metaphor in advertising is to create a campaign that will associate a product with something that is desirable. (8) Pun is the use of more than two words that have similarity in sound but different in meaning.

Moreover, Mcquarrie and Mick (1996) proposed that there are three perspectives of rhetorical approaches: (1) Rhetorical approach used in advertisement can be expected to have important consequences for how the advertisement is processes. (2) These consequences can originate from the formal properties of rhetorical features themselves. (4) These characteristics are systematically interrelated.

### **Methodology**

This study was content analysis of both domestic and international airlines 2017. The data were analyzed based on Smith's (2002) "Rhetorical Approaches." In this study, 26 some examples of spoken language in airline commercials, were analyzed and identified the rhetorical language use of airline commercials and slogans in YouTube Videos. The materials used in this study were collected from a wide variety of airline commercials in YouTube Videos. Airline commercials deal with domestic and international airlines. The researcher selected a variety of airlines in order to obtain the more in-depth information. The more there are a variety of airlines, the more knowledge of advertising language we will get. Since the method of writing or spoken advertisements are different, the space of broadcast is limited by advertiser's budget. It means that duration of broadcast reflects styles of writing or spoken advertisements. In this study, the spoken language were transcribed and translated into written language in order to analyze the rhetorical language use of airline commercials and slogan

### **Data Collection**

The data in this study consisted of twenty-six airline commercials selected from YouTube videos from May 2017 to December 2017. Twenty-six advertisements were selected and spoken language were transcribed and translated into written language in order to analyze the rhetorical language use of airline commercials and slogans.

### **Data Analysis**

The analysis was based on the work of Smith's (2002) "Rhetorical Approaches". The observation approach was used to accumulate data from airline commercials in YouTube Videos. Twenty-six airline commercials were selected and spoken language was translated into written language. The data were analyzed into two parts. First, the researcher analyzed the structure of writing in each advertisement by using the rhetorical approach of Smiths (2002). Moreover, the researcher interpreted and described the rhetorical language use in great detail. Second, the researcher analyzed the rhetorical language use of slogans in airline commercials.

### **The Findings**

The finding revealed that the rhetorical language use of airline commercials are different causing the style of advertising writing to be varied in two perspectives.

Due to limited broadcast, the objective of the advertiser was to inform the audience about accurate details of products and to persuade and request the audience to buy or respond to the airline commercials. In order to persuade audience, the advertiser employed rhetorical approaches in creating motivational commercials which make readers remember words used in the commercials more easily. In addition, they aroused emotional expresses among the audience. Metaphors were tools used to announce the product and request the readers to act on the advertisements.



Slogans were also found in airline commercials. Many airlines are competitive nowadays increasing credibility for tourists. Short and memorable slogans played an important role to attract audience's interest. Therefore, the rhetorical advertising type may occur because of the amount of advertising space. For this reason, advertisers may have different purposes for writing advertisements. Consequently, in rhetorical language use of airline commercials, advertisers selected different approaches in forming and tailoring their messages effectively to accommodate the provided space.

### **Discussion and Conclusion**

This study focused on the rhetorical language use of airline commercials and slogans in YouTube Videos. The data were collected from YouTube Video from May 2017 to December 2017. Twenty-six tourism advertisements were selected and spoken language was translated into written language. Analysis of data was divided into two parts. First, the researcher analyzed the structure of writing in each advertisement by using Smiths the rhetorical approach. (2002). Moreover, the researcher interpreted and described the rhetorical language use in great detail. Second, the researcher analyzed the rhetorical language use of slogans in airline commercials.

First, the rhetorical language use of airline commercials were investigated and analyzed. The results were described in various perspectives. According to the collected data, there were metaphor, alliteration, euphemism, assonance, internal rhyme, pun and hyperbole. Besides, it was found that hyperbole and metaphor were frequently created through airline commercials— creating an exaggeration and showing that two things had the same qualities. Besides, puns were found to be less used.

Metaphor was also used especially a fabulous word to make the audience feel free to buy tickets with airline commercials such as “the elephant in the room here.(Delta Airlines Commercial) This is to identify the brand, give news about the brand and stimulate audience's curiosity.

For hyperbole, it was found that it was often used. For example, “Putting the Maple Leaf on tarmacs around the world.”, “conquer the world”. These are from Air Canada Achieving New Heights and Bangkok Airways. The advertiser selects the hyperbole word to arouse the superb feeling of audiences.

For anaphora, it was also employed to elicit emotion and tone in airline commercials. The advertiser attempts to create a spiritual sentiment. For example, “Book your low fare down at Southwest. Low fares nothing to hide that's transparency” This is from Southwest Airlines TV Commercial.

For alliteration, the advertisers select a series of words which created the rhythm to the text such as “going global”, “travel simply but treated specially”. These phrases are from Air Canada Achieving New Heights and Bangkok Airways. The advertiser intends to inform and transform short, clear and concise messages to the audience.

Second, the slogans of airline commercials were investigated. It was found that they are short with concise words and phrases. However, the meaning of the word and phrase are beyond the letters. For example, “Globally Yours”, “Keep Climbing”, “We go the extra smile.”, Bangkok Airways Asia's Boutique Airline”, “Now everyone can fly”, “Smooth as Silk”, These phrases are from Turkish Airline, Delta Airline, Brussel Airline, Bangkok Airways, Air Asia, and Thai Airways. Furthermore, rhetorical language use of slogan in airline commercials was analyzed. It was found that the advertiser uses hyperbole and metaphor to arouse the feeling of audience to come and fly with that airline.

To sum up, the rhetorical language use of airline commercials was varied because of limited time of broadcasting. The more broadcasting time the advertisers spend, the more the expenses the advertisers pay. Consequently, rhetorical approaches enable the audiences to remember their airline commercials easily by using fantastic words and phrases. It illustrates the product presented which may stimulate the reader's interest details. Advertiser uses rhetorical approach while presenting an important meaning to the reader.

Nevertheless, the findings were limited and only just based on the characteristics of language used in airline commercials. To obtain a clearer view of the trend of advertisement writing and spoken and the characteristics of language use, other topics or the same topics should be compared to determine the differences of commercials between different cultures.

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**Do Learner Differences Affect Learning in Technological Environments?**

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**Abstract**

This paper presents the review from various studies about learner differences in learning via technological environments. The attempt to enhance English language teaching and learning in technological environments has been in the researcher's interest for decades. One component that was taken into consideration is the characteristics of individual learners. Education Psychology (Eggen & Kauchak, 2001, Ormrod, 2000) emphasizes that learners have different characteristics such as intelligence, gender, culture, and socioeconomic status, and their learning is affected by their characteristics. Learner characteristics are unique to each learner since they include prior skills, attitude, experience, knowledge and learning styles (Simonson, Smaldino, Albright, and Zvacek, 2000). There are several studies claimed that learning styles improve learning outcomes in traditional classroom. Thus, there are some studies explore the difference between learners in traditional and online learning environment. The results indicated that differences do exist and they seem to be from learner differences. Strother and Alford (2003) emphasize that the most effective learning seem to occur when learning styles of the individuals engaged in the activity are accommodated. As integrating technology into the classroom could promote a benefit to learning, teachers need to have a theoretical framework which would enable them to understand and prepare the courses to ease the learning. Teachers need to understand that there are many variables involved in the acquisition process. If a teacher wants to teach a foreign language successfully, he or she must know not only the language acquisition theories but also the variables that are spun together to affect how and why one learn or fail to learn a second language specifically in technological environment.

**Keywords:** Cognitive styles, Learner difference, Learning styles, Learning in technological environment, Self-directed learning

**1. General details**

The concept of learner difference or in other term learner autonomy has played an important role in language learning in technological environments. Technology began to have influence on learning environments, especially on how knowledge is delivered to learners. Technological learning environments such as online learning or web-based learning are learner-centered. The main objective is to develop learner's language proficiency individually. Individualization of learning pace and anywhere any time environments are main advantages of using computer in teaching and learning. In the past decades, technology has made it possible for instruction to facilitate the learners' ability. Learners are more important than teachers; therefore, learners' role has been changing. They must have more responsibility because learning in technological environment requires self-directed learning. Some studies indicate that certain factors related to attitudes, values, and abilities of learners have been associated with readiness for self-directed learning. It is possible to find that an activity that is theoretically effective can be ineffective through the effects of some factors involving in language learning and individual learner characteristics. According to learning style dimensions, learners are different in their learning styles, cognitive styles, interest, and motivation. Thus, the pace in their learning varies. Researchers believe that student attitude not only influences achievement but also their participation in the learning processes (Shashaani, 1995, Waxman & Huang, 1996). Studies also show that student perceptions of instruction and learning environments explain a significant amount of variance for both student cognitive and affective outcomes (Ganguli, 1992). In a study of CBI (computer-based instruction), Ganguli found that the CBI group experienced higher motivation and better understanding of the concepts than a traditional classroom group. However, the findings are still a controversial issue. There are several studies comparing learning performance of learners with different cognitive styles. The results indicate that different cognitive styles: field-dependent and field-independent contribute to their self-directed learning differently. Additionally, learners with higher performance for learning with technology are more likely to become actively involved in class activities, have greater desire to learn English, and gain higher degree. However, the effectiveness of technological enhanced environment relating to individual learner is still questioned. Some researchers have found that giving students opportunity to use computers increases attitudes, but with



more experience student attitude may either increase or decrease (Rosen & Weil, 1990). Thus, it is interesting to investigate factors affecting language learning in technological environments for some reasons. Firstly, attention to affective aspects can lead to more effective language learning. Secondly, teachers can stimulate the different positive emotional factors such as motivation, cognitive strategy, and learning styles to greatly facilitate the language learning process.

## **2. Technology in language learning**

Since 1970s, psychologists and educators began to recognize the important of individual in the learning process. According to the humanistic approach, computer assisted language learning (CALL) is adapted to more humanistic based on intrinsic motivation. In 1970s and 1980s with the emergence of computer language teaching (CLT), communicative use of technology is developed. Online databases, telecommunications, computers offer opportunities to engage English language learners in functional uses of language by providing them collaborative learning environments and real-world tasks. In 1980s and 1990s, with a focus on the cognitive and academic language proficiency needs of learners, task-based instruction (TBI) and content-based teaching become widely accepted. At present, the development has moved from the age of information to the age of communication which more tools mediate communication and interactions between people. Learning via technology with an Internet can access connection anywhere in the world, learners can visit web sites to get assistance with their learning. Roles of technology are also changing from assisting learning (CALL) to enhancing learning (TELL). TELL includes wide range of devices such as mobiles, games, and tablets. Since learning in technological environment is different from learning in traditional classroom, designing online courses concern the following factors: a) theory, b) learning goals, c) content, d) learner characteristics, and e) technological capabilities. The theoretical background follows the behaviorist learning theory, the information processing theory, and the constructivist learning theory. Factors related to teaching via technology are learner characteristics. These characteristics involve cognitive styles, motivation, knowledge, and social context. There are ample studies indicating that those factors affect learning. A study of Lin (2003) reveals that learners show positive attitude towards the use of multimedia and this leads to the increasing interest in carrying the learning tasks. Research on language learning presents a number of variables that have influences on the process of learners' language learning. Therefore, learner characteristics and other factors such as attitude and motivation, learning styles and cognitive styles including learning environments (self-directed learning) should be in concern when learning in technological environments.

## **3. The definitions of self-directed learning**

There are several terms used for self-directed learning such as autonomous learning, language awareness, learner autonomy, flexible learning, self-directed learning, independent learning, and self-instructional learning. These definitions are also varying. In general, these terms share the same objective. Brockett and Hiemstra (1991:29) stated that self-directed learning is a broad term that encompasses such factors as the learner taking primary responsibility for planning, implementing, and evaluating learning as well as personality characteristics that shape one's thoughts and actions. Dillon and Zhu (1997) define the term self-directed learning as the ability that learners are willing to take responsibility in their learning. They mention that self-directed learning requires the following factors: self-study, skills for self-study, learning provided by educational institution, learners can accomplish the learning exercises by their own pace, and they can select learning strategies themselves. Similarly, Hedge (2000) defines the term self-directed learners or autonomous learners that they are learners who are self-motivated, ones who take the initiative, ones who have a clear idea of what they want to learn, and ones who have their own plan for pursuing and achieving their goal. According to Long (2000), self-directed learning contains three dimensions: motivation, metacognition, and self-regulation. Learners with high levels of self-directed learning are active learners who have strong desires for learning, make use of problem-solving skills, have the capacity to engage in independent learning activities, and autonomously manage their own learning (Knowles, 1975; Brockett & Hiemstra, 1991; Candy, 1991; Guglielmino, 1997; and Gibbons, 2002).

In summary, self-directed learning is the ability that learners manage their learning with their own pace to achieve their goal. In order to accomplish the task, it requires motivation, metacognition and self-regulation.

#### 4. Learning styles

Learning styles (LS) have developed from a focus on individual differences. These differences are identified as characteristics of learners for some time and adjusting to them in the learning process for improving the learning experience. Sternberg and Grigorenko (2001) relate learning styles to psychological theories of personality. Learning styles (LS) and multiple intelligences (MI) theories have been implemented in classroom research for several decades. The findings have made a significant contribution to language teaching by increasing awareness of the need to take individual learner variations into consideration and to diversify classroom activities in order to reach a wider variety of learners. Learning styles as defined by Brown (2001) refer to consistent and rather enduring tendencies or preferences within individual. Styles are those general characteristics of intellectual functioning that pertain to you as individual, and that differentiate you from someone else. These styles characterize a general pattern in your thinking or feeling. Learning styles mediate between emotion and cognition. People's styles are determined by the way they internalize their environments, and since the internalization is not strictly cognitive, physical, affective, and cognitive domains merge in learning styles. Definition of LS provided by Sternberg and Grigorenko (2001) indicate that LS is a set of habitual patterns, or preferred ways of doing things that appear to be consistent over time and between activities. The key elements in this definition are the terms habitual patterns and preferred ways. The term preferred ways indicates some choices on the part of the learner in how learning will occur, and since it is habitual pattern it occurs with regularity. Kolb and others (2000) indicated that this regularity is related to the neurophysiologic characteristics of an individual and is blended through cycles of experience. According to the process of experiential learning, a four- cycle inventory involves four adaptive learning modes: concrete-experience (CE), reflective observation (RO), abstract-conceptual (AC), active-experimentation(AE).

Kolb's four learning styles are diverger, converger, assimilator and accommodator. Diverger style has concrete experiment and reflective observation as their main learning preference. Learners with this learning style are best at viewing concrete situations from various points of view. They are good at generating ideas through brain storming. They are imaginative, emotional, interested in people and have broad cultural interests. They prefer group work and receiving feedback. Assimilator style has abstract conceptualization and reflective observation as their main preferences. Learners with this style are good at comprehending a wide range of information and organizing into logical and concise form. They are more interested in idea and concepts. This style is effective in science and information field. They prefer reading, lectures, analytical models and time to process information. Converger style has abstract conceptualization and active experimentation as their main preference. Learners with this style are good at finding practical application for theories and ideas. They prefer technical tasks to interpersonal matter. They prefer learning with experiment, and simulations. Accommodator style has concrete experience and active experimentation as their main preference. Learners with this style have ability to learn from hands on experience. They enjoy logical analysis. They prefer to work with others to accomplish the work, and try various approaches.

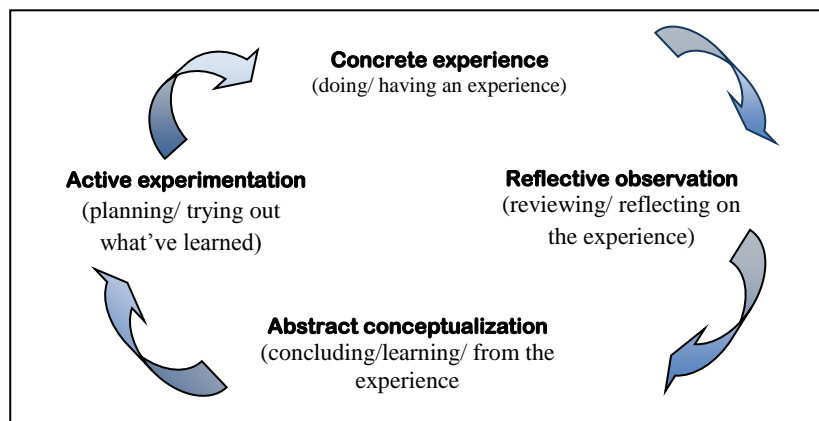


Figure 1 Kolb's Structural Dimensions Underlying the process of Experiential Learning



Several studies in online learning utilize Kolb's learning style inventory to illustrate validation of theory and also predict learning success or satisfaction when individual LS correlates with types of learning activities. They emphasize the common theme that Kolb's learning styles are excellent tools for exploring learning and that to maximize the learning experience. There are some researchers using Kolb's learning styles inventory in their studies such as Friedman and others (2002). They found that reflection and abstract conceptualization are better related to the online context than concrete experience and active experimentation. However, using Kolb's learning style models to predict the learning outcome in an online environment is still questionable. There is no argument to the value of learning from experience, but the criticism of Kolb's stems largely from his interpretation, lack of explanation or his descriptions of how learners move through the learning cycle, and what role that group may play on the individual process of moving through the learning cycle. Consistent to Kayes (2002) who has reviewed Kolb's experiential learning theory and criticized that it overlooks the role of social knowledge, personal knowledge, and the role of language plays in shaping experience.

In online learning, learning management systems (LMS) deliver various types of instructional content and support interaction between learners and faculty. Technology has an impact on how learning styles will be utilized. Therefore, the characteristics and features of these systems can support or hinder the accommodation of learning styles (Dagger et al., 2002; Giouvanakis et al., 2002).

Research results on learning styles in technological environment concluded that there were significant differences between learning styles of synchronous online learners and learners in a traditional classroom (Garland, 2002). Findings of Manochehri (2001) indicate that when comparing the significance of students' learning styles between online learners and 4 traditional instructor-based learners, learners' learning styles were found to be statistically significant for knowledge performance. Since learning in technological environment is increasing, individual learner's characteristics such as learning styles is crucial in developing effective learning. There are various viewpoints on learning style study. Several researchers' primary concern is to explore style preferences, strategies, and multiple intelligences. Additionally, some evidences indicating that individuals show particular preferences in certain circumstances such as time of the day. Although there are several studies support that learning styles have some impact on online learning outcomes, there are some studies indicate differently. Haseman, Polatagola and Ramamurthy (2002) explored the influence of interactivity on learning outcomes and found that there was no real effect of learning styles on interaction and outcomes. Other research demonstrated that learning styles are not a predictor of learning outcomes in online education environment since there was no significant finding between learning styles in distance education (Marks & Sibley, 2001). Other research on learning styles and online education demonstrated differences based upon specific learning style preferences. DiBatola's (2001) research explored learning outcomes and learning styles in two different online course formats and concluded that learning styles did not appear to affect learning outcomes with the exception of divergent learning style, where a positive relationship was established. Those with divergent learning styles had an advantage in an online learning environment. This is because an online learning environment allowing for time to observe before taking immediate action. Divergent learners rely on concrete experience and reflective observation when learning. Therefore, the online environment benefits their learning style. Aragon, Johnson and Shaik (2003) found that online students showed a preference for reflective observation when compared to face-to-face learners, consisting to the findings of DiBatola (2001). Aragon and others (2003) also found that online students demonstrated a higher preference for abstract conceptualization, or learning by thinking. Simpson and Du (2004) used Kolb's learning style inventory when they conducted research on learning style and student's online participation. The research results indicated that students' learning style significantly impacted the students' participation in the class. Specifically, convergent students were found to enjoy the online course format most while assimilating students enjoyed the online course least. The critical point is not which learning style preference is better or worse than another, but which is beneficial in accommodating learner's learning.



## 5. Cognitive styles

The theory of cognitive development derives from Piaget's theory. It emphasizes human intelligence that human can connect their cognitive development with external world through the learning process. Many researchers have suggested that cognitive style is an important variable in learning and learning outcomes. Learners' cognitive styles influence their interaction with learning environments. Among other cognitive styles, field-dependence (FD) and field-independence (FI) are more frequently studied. The difference between these two cognitive styles is that field-independent (FI) learners prefer to use internal references, whereas field-dependent (FD) learners use external references. Field-independent learners solve problem based on their understanding of the situation. They tend to be more self-directed and linear in their thinking and problem solving. Field-dependent learners depend on clues given by teacher to find solution to the problem. Research related to cognitive styles explore the learning environments and cognitive styles to enhance learning and increase learner's motivation indicated that different learning styles react differently to different presentation strategies. Studies investigating the relationship between field-independence and field-dependence indicate that field-independent learners can perform better in an informal learning situation than field-dependent learners. Inconsistently, some findings show that FD is an important individual characteristics relating to computer-mediated learning environment (Lee, 2004). Brown (2001) suggested that some learners may have flexible cognitive styles by combining FI and FD modes of processing and adapting their approach to suit different learning tasks.

There are some studies comparing field independent and field dependent learners to Kolb's learning model. The results positively support that field independence is related to abstract conceptualization while field dependence is related to concrete experience (Yamazaki, 2005). There are some similarities between field independents and the assimilating and converging learning style. These similarities include linear thinking, problem solving, preference for abstract concepts, preference to work alone and preference of working on tasks and problem solving. In contrast, similarities between field dependents and diverging and accommodating learning styles are preference for learning in a social setting, reliance on gut feelings over logical analysis, setting goals with others, receiving feedback from others and experience the environment more globally with broader cultural interests. The results in research in FI/FD are still controversial between cognitive styles and L2 learning. However, cognitive styles are found to be important individual characteristics in technological environment.

## 6. Attitude and motivation

It is widely accepted that motivation plays a crucial role in learning, and it is often mentioned as one of the important factors of successful language learning (Dörnyei, 2005). Motivation theories in the SLA field have been influenced largely by the theories in the field of psychology. Over the years, SLA scholars have demonstrated a strong link between students' motivation and language acquisition. Gardner and Lambert could be credited as pioneers in doing research to examine the role of motivation in FL learning. The results of the studies showed a strong correlation between motivation and the L2 proficiency (Masgoret & Gardner, 2003). According to Gardner, language learners with integrative motivation are likely to have higher chances of achievement in learning another language than learners with instrumental motivation. Instrumental motivation refers to learning the FL with instrumental orientation, such as using the target language in a future career. Moreover, Masgoret and Gardner's results revealed that learners who are instrumentally oriented could be more motivated than others who are integratively oriented. Additionally, their meta-analysis demonstrated a strong support that integrative motivation promoted successful second language acquisition. However, other SLA scholars such as Noels and colleagues (Noels et al., 2001; 2000); and Dörnyei (2011) disagree with Gardner's theoretical concepts and claims. Gardner and others (1985) defined the term integrative as social-emotional linked to L2 learning in order to communicate with the other community. Thus, integrative motivation referred to a combination of integrativeness, attitudes toward the learning situation, and motivation. He associated the term instrumental with the desire to achieve economic gains as a result of learning another language. On contrary, Dörnyei, defined the learners by need for achievement and need for self-confidence. The concept of self-confidence could be affected by anxiety, perceived L2 competence, causal attributions, and self-efficacy. Similarly, Larsen Freeman and Cameron (2008) considered the phenomenon of motivation

in foreign/second language as one of the continually changing factors in a complex, and dynamic system. According to Larsen-Freeman, the learning process is defined by a great deal of variation in learners' performances. That is L2 learning varied due to multiple factors with their many inter and intra variants. To conclude this argument, SLA researchers regard motivation as a more dynamic entity that changes over time.

As the research on motivation in SLA continued to grow, the scholars in the field pursued development of other theoretical models that explored motivation in L2 learning. For instance, Csizér and others (2010) suggested a theoretical framework for understanding the construct of motivation in SLA settings. As a result of their qualitative study, the researchers made a conclusion that attitudes and motivation of language learners tended to fluctuate dynamically throughout their language careers. This is consistent to Dörnyei (2005), and Dörnyei and Ótto (1998), who concluded that motivation should be viewed as dynamic in language acquisition. This reveals the aspect of individual differences. For them, motivational factors are affected by a number of individual and environmental variables that are continually interacting with each other during their learning process. Dörnyei (2010). Noels and others (2000), also propose looking into theories from the other fields of knowledge to help better understanding of motivation in SLA. All the aspects of motivation can be found in these categories including intrinsic/extrinsic and integrative/instrumental. Additionally, personal, social, cultural, psychological, and goal-orientation factors are all considered.

Motivation is a significant cause of variability in the success of second language acquisition (Dörnyei, 2001; Dörnyei & Ushioda, 2011). Thus, its place in the theories of SLA has been one that could mediate the influences from external factors to the extent that learning can never fail (Dörnyei & Skehan, 2005). Motivation and attitudes have been widely accepted by teachers and researchers as one of the key factors influencing the rate and success of L2 learning. Several studies between attitudes and learning success reveal that positive attitude toward self, the native language group and the target language group enhance proficiency. Learners tend to approach tasks with confidence if they have a positive perception of themselves, and see themselves as capable. It seems that L2 learners benefit from positive attitudes and that negative attitudes may lead to decreased motivation. Attitudes to learning and the perceptions (belief) which determine them may have a profound influence on learning behavior and on learning outcomes. Successful learners develop insightful learning strategies which facilitate learning.

Dulay and Bart (1977) first introduced the concept of the affective filter involving attitudes about learning the language and motivation. In this model, success or failure is influenced by the affective side of the learner. Favorable or unfavorable attitudes about language, weak or strong motivation, and comfort level in the learning environment are all affective filters that determine how much a person learns in formal or informal language settings. In contrast, negative feelings can block progress in learning progress.

More specifically, the aim of this paper is to investigate the factors that have influence on learning in technological environments. Because learning with technology appears to benefit motivation and course satisfaction, learners with higher preference in learning via technology are more likely to become actively involved in class activities, have greater desire to learn English, and gain higher achievement.

## 7. Conclusion

The advantages of technology can help learners develop their learning anywhere any time environments. However, web environments have both advantages and disadvantages. Thus, learning in these environments might affect learners' learning. If the technological environments accommodate learners' characteristics, it might lead to better outcomes. Thus, it is meaningful to investigate how individual learners interact in technological learning environments and to design a computer-based learning software to accommodate various learners characteristics.

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**Thailand Destination Image and Tourist Destination Satisfaction:  
The Case of United Kingdom and Australia (UK-AUS) Tourists Visiting in Thailand**

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### Abstract

Thailand destination image and national stability confidence become an important factor determining leisure destination for international tourists. Hence, in 2015 Tourism Authority of Thailand has launched *'Discovery Thainess'* campaign to enrich Thailand brand image become a quality leisure of global destination. United Kingdom and Australia tourists become a target group of the study. As reported by UNWTO Tourism Highlights, (2017), these countries were ranked on the 4<sup>th</sup> and 8<sup>th</sup> international biggest spender in global tourism market. United Kingdom contribute of US\$64 billion to global tourism industry and US\$27 billion from Australian tourists. Thus, targeting on these biggest spender and attractive those to visiting Thailand destination is the strategy needs to enhance of national income. The aim of the study is to investigate the perception of British and Australian tourists regarding to Thailand destination image, destination satisfaction and destination loyalty. The results of the study shows most of British tourist's perceived Thailand destination image as *'relax destination'* while Australian view as *'Amazing Thailand'*. British tourists have discover Thainess experience on Thai massage/spa and Thai food cooking become the must thing to do in Thailand while scuba diving is the Thainess experience don't miss via Australian tourists' eye. Thailand tourism image is the most important factor to predicting British and Australian tourists' satisfaction and also lead to destination loyalty.











**Keywords:** United Kingdom Tourist, Australia Tourist, Thailand Image, Tourist Destination Satisfaction

### 1. Introduction and Background of the Study

In October 2013 Thailand tourism industry had been suffered from the political turmoil erupted. The shutdown of Bangkok's governmental offices on 13 January 2014 by anti-government protesters, thus, prompted tourists to avoid visiting Bangkok Thailand. In May 2014, Thailand military coup cause international tourists drop down up to 27.67% in June, 11.78% in July, 11.50% in August and 6.31% in September, before, recovered surplus 7.46% in October, 1.98% in November and 12.24% in December, respectively (Immigration Bureau, Police Department, Aug 2016). The outcome of this result lead international tourists to perceived of risk, unsafe and likely to cancel and postpone their travel itineraries. Consequence in 2015, Thailand's tourist officials hardly promote *'Amazing Thailand: Discover Thainess'* campaign to promote Thailand wellness destination internationally. *'Thainess'* campaign emphasizes country's unique cultural treasures and the Thai way of happiness to be passed on to international visitors. Under this concept, tourists can immerse themselves in exclusively Thai activities, such as Thai boxing, Thai massage, Thai cooking, Thai classical dance, Thai way of life, Thai culture, and Thai experience. The result of *'Discover Thainess'* campaign has boost the number of international tourists from East Asia such as China up to 74.75% in 2015 and slightly improve to 10.34% in 2016 before nearly reach to 10 million in 2017. Similarly, the number British tourist improve to 4.30% in 2015, 5.89% in 2016 while in 2017 the number of tourist has little decline to (-0.9%). In Australian group, the number of tourists were continue decreasing (-7.62%) in 2014, (-3.11%) in 2015, (-2.47%) in 2016 before getting surplus to 817,091 visitors in 2017 (refer to Table 1).



**Table 1 Thailand Top-Ten Most Visited Nationalities 2013-2017**

Rank	Country or Territory	2017		17/16 Δ %	2016		16/15 Δ%	2015		15/14 Δ%	2014		14/13 Δ%
1	 <a href="#">China</a>	9,805,753	▲	+16.8	8,757,466	▲	+10.34	7,936,795	▲	+74.74	4,636,298	▼	-0.02
2	 <a href="#">Malaysia</a>	3,354,800	▼	-5.3	3,533,856	▲	+3.36	3,423,397	▲	+30.99	2,613,418	▼	-14.06
3	 <a href="#">Russia</a>	1,346,219	▲	+19	1,089,992	▲	+23.28	884,085	▼	-44.97	1,606,430	▼	-8.02
4	 <a href="#">Japan</a>	1,544,328	▲	+6.7	1,439,629	▲	+4.19	1,381,690	▲	+8.98	1,267,886	▼	-17.48
5	 <a href="#">South Korea</a>	1,709,070	▲	14.3	1,464,218	▲	+6.64	1,372,995	▲	+75.41	1,122,566	▼	-13.34
6	 <a href="#">India</a>	1,411,942	▲	15.4	1,193,822	▲	+11.63	1,069,149	▲	+14.64	932,603	▼	-11.26
7	 <a href="#">Laos</a>	1,612,647	▲	12.5	1,409,456	▲	+15.48	1,233,138	▲	+17.00	1,053,983	▼	7.92
8	 UK	994,468	▼	-0.9	1,003,386	▲	+5.89	946,919	▲	+4.30	907,877	▲	0.32
9	 <a href="#">Singapore</a>	1,028,077	▲	+3	966,909	▲	+3.04	937,311	▲	+11.04	844,133	▼	-11.65
10	 <a href="#">Australia</a>	817,091	▲	+3	791,631	▼	-2.47	805,946	▼	-3.11	831,854	▼	-7.62

**Source: Immigration Bureau, Police Department, Updated: 10 January 2018**

The major problems affecting international tourists satisfaction and confident is 'safety and security environment'. In 2014, Thailand's image via the eyes of the world's tourists was worse than the previous year in term of tourist safety, according to Thailand's poor score. Military coup in May and unsolved murder of two British backpackers in September 2014 made international tourists' perception justified Thailand as one of the insecure tourist destination on earth (Natalie Paris, 13 Nov 2014). Even through, TAT as tourism monitor organization was disappointed to hear about but they has much confidence in Thailand as long as the number of British travelers growing 946,919 in 2015, an increase of 4.30% from 2014 before reach over 1 million visitors on 2016 (refer to Table 1). The vast majority of visitor from European and Oceania region are enjoy safety and free time in Thailand as the number of repeating visitors were high 65% in European group and 71% in Oceania group (Ministry of Tourism and Sport, 2016). These evident are sufficiency to support that 'how much they love Thailand and wish to return year on year'.

Tourism Authority of Thailand (TAT) survey on Thailand's destination image show that 'safety problems' are destroying the image of Thai tourism (Chinmaneevong, 2012). Moreover, political instability such as protests and violence has impact on their holiday planning (Ingram, Tabari & Watthakhomthip, 2013). This is because travelers pay attention on safety and security as key planning factors for their holiday itineraries. The communication problem of tour guides, the quality of purchased products, inferior quality tours, safety, food tastes and beverages, uncomfortable staying environment in Bangkok such as insufficient of public restroom, inefficient public transportation, hot weather, pollution and also trolley parking in footpaths or roadsides, these factors were complained from Chinese tourists that make them dissatisfaction (Chernpech & Manarungsan, 2006). To maintain of international tourists destination satisfaction, Thailand's government is urging the country to do

more action to protect the safety of the record numbers of foreigners visiting Thailand. Mr. Andrew J. Wood, general manager of Chaophraya Park Hotel & Resort suggested on '*Thailand risks losing tourists to other destinations if we can't improve our country infrastructure*'. Malaysia might take away lucrative retirees because of their welcoming attitude towards international tourists (The Phuket News: 20 July, 2013). Thus, to avoid risk of losing tourists to other destination, Thailand's destination image, confidence and reputation must be recalled to draw attention of international tourists keep coming back to Thailand.

## 2. Literature Review

### 2.1 Destination Image

Destination image consists of two dimension namely '*cognitive*' and '*effective*', such cognitive component can be understood as a beliefs of knowledge about physical characteristic for those particular destinations while an effective refers to tourist attitude and feeling toward destination environment (Baloglu & MacCleary, 1999). Thus, destination image is the attitudinal concept of tourism beliefs, ideas and impression of a destination (Machinda, Serirat, Anuwichanont & Guild, 2010). Rendering of several studies indicate that to be a successful destination must have a strong positive image to influence tourist behavior and the travel decision making (Milman & Pizam, 1995; Woodside & Lysonski, 1989; Pearce, 1982). Tourism destination image have strongly influenced tourists decisions about tourism resources products and service (Hunt, 1975). According to Hunt, (1975) concluded that tourists who have never been to the destination and earn an experience with the destination before, they are rather making decision based on destination image attribute. Tapachai and Waryszak, (2000) examine the beneficial image mode influencing to potential tourists decision to visit Thailand and United Stage. In the study concluded that the used of specific country image model can take into tourist's decision to visit a destination rather than used of general characteristics of the destination image.

Despite, the limitation of destination images promoted by tourism authorities does not fully match the tourist's perception and demand in the following aspects; lack of regular monitoring and evaluation procedures cause difficult to defined strategy, de-concentration on the supply side while ignore the demand side, lack of consistency messages, generating confusion and discouragement regarding to possible visit, inadequacy of the communication channels make it difficult to achieve the target (Montenegro, Costa & Gomes, 2014). These factors are the major source of inefficiency to promote tourist destination image for supply and demand sides. Hence, based on the cognitive and effective images congruence we can conduct that image can be promote by tourism destinations and markets' perception. Moreover, cognitive and effective images congruence has a positive influence on tourist satisfaction and intention to revisit in Shanghai marathon tourism (Mao, Wang & Zhang, 2015).

### 2.2 Destination Satisfaction

The possibility for tourists returning to a certain destination depends on tourist's satisfaction level. Tourist satisfaction is depend up on the tourist quality, according to Eraqi, (2006) state that tourism service quality can be consider as a philosophy for guiding tourists traveling decision. He measure the term of Tourism Service Quality (TourServQual) into two aspects (1) to measure the satisfaction of the internal customer (employee) and (2) to measure the external customer satisfaction (tourists). The main conclusion of his study shows that tourism quality such as tourism service and tourism business environment does not support the internal customer satisfaction in Egypt due to lack of total quality management (TQM) in tourism system. Similarly, in the area of external customer satisfaction there is a need for thing to be done such as increase people awareness, safety and security enhancement and infrastructure quality improvement (Eraqi, 2006). There are a number of tangible and intangible aspects of tourism products which influence the perception of tourists before lead to tourist satisfaction. Beerli and Martin, (2003) purpose of nine dimensions/aspects which determine of tourist perception such as leisure and recreation, culture, history and art, infrastructure, tourist infrastructure, political and economic factors, natural resources, natural environment, social environment and the atmosphere of the place or destination.

### 2.3 Tourist Satisfaction and Destination Loyalty

Rajaratnam, Nair, Sharif and Munikrishnan, (2015) study the relationship between destination quality and tourists' behavioural intentions in Malaysia rural tourist destinations. They defined the

concept of *'destination quality'* in eight primary attributes namely, amenities, accessibility and logistic, core tourism experience, hygiene, information, security, value for money and hospitality contributed towards forming the construct. The result revealed that *'perceived destination quality'* significant influenced *'satisfaction'* which in turn significantly influenced behavioral intentions. Their study concluded that the tourists who have made prior visit or visits to rural tourism destinations in Malaysia were less satisfied with Malaysia destinations quality as compare with tourists who visited Malaysia at first time. In addition, international tourists who are satisfied with Malaysia destinations would be more likely to revisit Malaysia and recommend this destination to others. This results enable to confirm the finding from previous studies (Wong, Wu & Cheng, 2015; Chen, Lee, Chen & Huang, 2011; Zabkar, Brencic & Dmitrovic, 2010).

### 3. Research Methodology



#### 3.1 Research Instrument Development

Research questionnaire has been designed as the research instrument in order to obtain the primary data through survey method. Place and tourism attraction, infrastructure, accommodation and food, hygiene and sanitation was adapted from Mishra (2013), destination satisfaction and destination loyalty was adapted from Yoon and Uysal, (2005). Promotion and marketing, destination image measurement scale were designed by using multiple-items that has been empirically validated and reliable based cognitive and affective components (Beerli & Martin, 2004). All questionnaire items were test validity by using index of item objective congruence (IOC) with three professional experts ensure the content validity is cover all research objectives (Anastasi, 1982). There are some minor changes or adaptation of instrument statement so that it was more appropriate for the tourism sectors. The reliability score of the scales are adequate minimum requirement value of 0.70 (Nunnally, 1978). Thus, these measurement are consistent and reliable that can be usable for further data analysis.

#### 3.2 Research Sampling, Collecting Data and Analysis Methods

In order to examine the factors affecting *'destination satisfaction'* from the perspective of British and Australian (UK-AUS) tourists in Thailand, the purposive sampling method was employed to set up sampling collecting from British 600 cases and 600 in Australian group. The questionnaires will be filled out by a self-administered manner. The data were collected via Suvarnabhumi International Airport, Sukhumvit road, Ratchaprasong, Petchburi road areas etc. The trimming period between October-December 2017 (refer to Table 2).

Table 2: Data Collecting Method

No.	Country	Distribute	Returned	Place of Collecting Data	Period for collecting data
1	 British	600	550	Bangkok	Oct -Dec 2017
2	 Australian	600	570	Bangkok	Dec 2017
	<b>Total</b>	1,200	1,120		

The final 550 in British and 570 Australian tourists' cases will be tabulated and analyzed using a database designed specifically by using SPSS. The frequencies, descriptive statistics and multiple regressions will be used for interpreting data results empirically.

### 4. Result of the Study

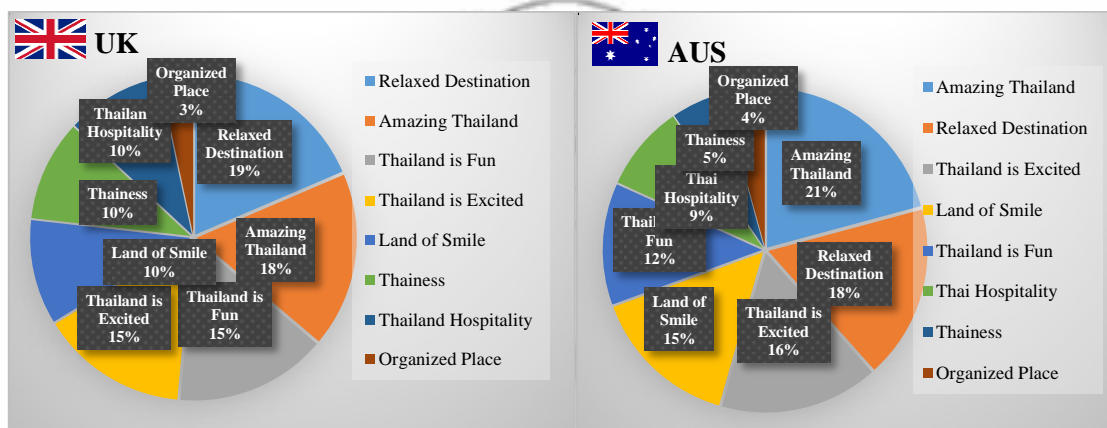
#### 4.1 Profile of Respondent

The majority of British tourist ages were ranged between 41-60 years (52%) while Australian ages were ranged between 21-30 years (36.2%), following by 31-40 (25.5%), 41-50 (14%) and 51-60 (9.5%), respectively. Most of the British tourist's status are single (53.8%) while Australian single tourist are higher at (72%). Both countries tourists majority are male (63.1%) from UK and (58%) from AUS. Most of British tourist's education are undergraduate (57.5%) while Australian tourist's education are postgraduate degree (56%). A Majority of British tourists occupation are employee (60.5%) following by business owner (21.8%) and student (12.8). Similarity, Australian tourists occupation are such employee (31.6%), follow up by business owner (26.3%), student (31.6%), respectively. Despite, Australian tourists income seem to be higher as compare to British since the 40.4% of respondents income was ranked between 10,001-15,000 USD while British 31.8% was about 5,000 USD and below (refer to Table 3).



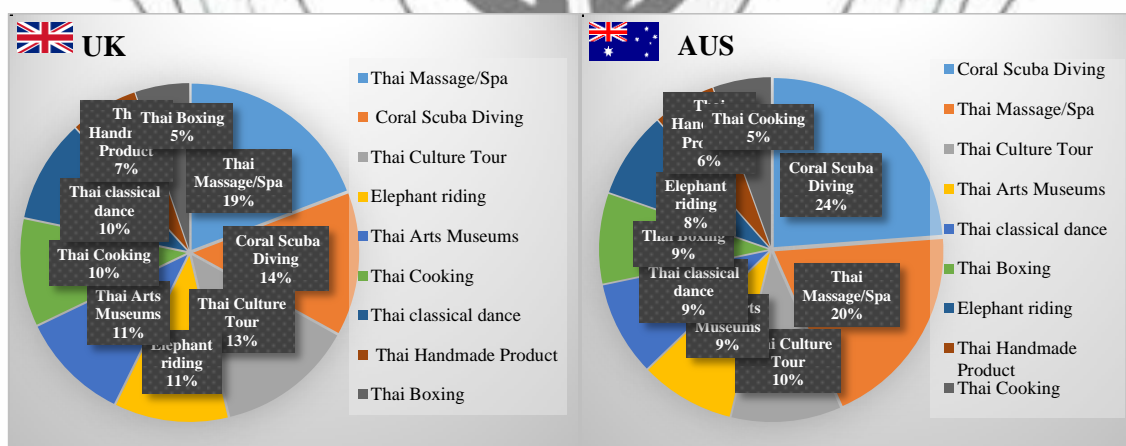
#### 4.2 British and Australian Tourists Perception on Thailand Destination Image

UK and AUS Tourist perceived about Thailand destination images differently based on their understanding about Thailand image categories by Tourism Authority of Thailand (TAT). UK tourist perception about Thailand destination image as 'relaxed destination' (19%), while Australian tourist perceived Thailand destination image as 'amazing Thailand' (21%). They understanding about 'Thainess' (10%) in UK group and (5%) in AUS group. Both UK and AUS group perceived that Thailand country is organized place (3%) in UK and (4%) in AUS groups (refer to Figure 1).



**Figure 1: UK-AUS Tourist Perception based on Thailand Destination Image**  
Sources: The concept was adapted from Tourism Authority of Thailand (2015)

The concept of 'Discovery Thainess' measures by nine conceptual adapted from Tourism Authority of Thailand (TAT) as exhibited in Figure 2.



**Figure 2: UK-AUS Tourist Understand Concept of 'Discovery Thainess'**  
Sources: Nine value of Thainess was adapted from Tourism Authority of Thailand (2015)



British tourists understand the concept of 'discovery Thainess' as Thai massage/Spa (19%), following by coral scuba diving (14%), Thai cultural tour (13%), elephant riding (11%), Thai art museums (11%), Thai cooking (10%), Thai classical dance (10%), Thai handmade (7%) and Thai boxing (5%), respectively (refer to Figure 2). Australian tourists understand the concept of 'discovery Thainess' as scuba diving (24%), following by Thai massage/Spa (20%), Thai culture tour (10%), Thai arts/museums (9%), Elephant riding (8%), Thai classical dance (9%), Thai boxing (9%), Thai handmade product (6%), Thai cooking (5%), respectively.

#### 4.3 Descriptive Statistics Analysis

The descriptive analysis methods were applied by using mean (X) and standard deviation (S.D.) via seven point Likert scale to interpret the finding results. Table 4 show the descriptive finding statement of Thailand destination image such as Thailand safety problems, military coup in May 2014 and unsolved murder of two British backpackers in September, 2014, these are the negative aspect were destroying the image of Thai tourism to global perspective. The finding show that British and

Australian tourists are very agree on these matter that very influence on Thailand destination image. In positive aspect, the respondent are agree and strongly agree on Thailand *beautiful beaches, variety of spas and wellness clinics*; these are the important factors attracted the large number of British and Australian tourists to visiting Thailand. (See more detail in Table 3).

**Table 3 Descriptive Statistics Data Results of UK and AUS Sampling (Mean and S.D.)**

No.	Statement of Independent Variables	 Descriptive		UK Interpretation	 Descriptive		AUS Interpretation
		Mean	S.D.	Rate	Mean	S.D.	Rate
	Thailand Destination Image						
IM 1	Safety problem problems are destroying the image of Thai tourism	4.93	1.242	Very Agree	5.58	1.124	Very Agree
IM 2	Military coup in May 2014 was destroying the image of Thai tourism	4.47	1.524	Very Agree	4.93	1.561	Very agree
IM 3	Unsolved murder of two British backpackers in September, 2014 was destroying the image of Thai tourism	4.86	1.396	Very Agree	5.25	1.195	Agree
IM 4	Thailand is the great value for money destination	5.35	1.397	Agree	5.85	1.053	Very Agree
IM 5	Thai tourism were welcome, friendly, amazing, happy and exciting	6.09	1.205	Agree	6.38	.925	Very Agree
IM 6	The most important factor for tourists coming to Thailand is ' <i>beautiful beaches</i> '	6.16	1.040	Strongly Agree	6.47	.912	Strongly Agree
IM 6	The most important factor for tourists coming to Thailand is ' <i>variety of spas</i> '	6.16	1.122	Strongly Agree	6.45	1.007	Strongly Agree
IM 7	The most important factor for tourists coming to Thailand is ' <i>wellness clinics</i> '	5.63	1.360	Agree	6.20	1.183	Strongly Agree

Sources: Destination image items developed by cognitive and affective theory (Beerli & Martin, 2004)



#### 4.4 Hypothesis Testing Results (UK-AUS Tourists Samples)

The purpose of the study was test hypothesizes relationship by using multiple regression analysis between each individual predictive variable and dependent variable. In British group the results of beta weights and *p-value*, four predictive variables showed significance with destination satisfaction are as place of tourist attraction ( $\beta=.170$ ;  $p=.000$ ), infrastructure ( $\beta=.036$ ;  $p=.038$ ), promotion and marketing ( $\beta=.035$ ;  $p=.013$ ) and Thailand destination image ( $\beta=.186$ ;  $p=.000$ ). Thus, supported hypothesis 1, 2, 5 and 6 respectively. In another hand, hygiene and sanitary, accommodation and food were not the predictors of destination satisfaction. The predictors variance is 40.8% (Adjust  $R^2 .408 \times 100 = 40.8\%$ ). Adjust  $R^2$  gives explanatory power of destination satisfaction towards destination loyalty. The results show that destination satisfaction level did significantly predict value of destination loyalty ( $\beta=.444$ ;  $p=.000$ ). Thus, hypothesis 7 was supported (refer to Table 4).

In Australian group, three predictive variables showed significance with destination satisfaction are such as place of attraction ( $\beta=.336$ ;  $p=.000^{***}$ ), promotion and marketing ( $\beta=.147$ ;  $p=.000^{***}$ ), Thailand destination image ( $\beta=.095$ ;  $p=.010^*$ ), thus, supported hypothesis 1, 5 and 6 respectively. Despite, the results show that infrastructure, hygiene and sanitary did not significantly predict value of destination satisfaction ( $\beta=-.041$ ;  $p=.084$ , *n/s*;  $\beta=-.033$ ;  $p=.075$ , *n/s*). Similarly, accommodation and food also has no significant effect on destination satisfaction ( $\beta=-.053$ ;  $p=.076$ , *n/s*). The variance to explain in the predictors of the variables is 48.9 % (Adjust  $R^2 .498 \times 100 = 48.9\%$ ). Adjust  $R^2$  gives explanatory power of destination satisfaction towards destination loyalty.

The results show that destination satisfaction level did significantly predict value of destination loyalty, thus, supported hypothesis 7 ( $\beta=.543$ ;  $p=.000***$ ).

**Table 5: Summary of Research Hypothesis Finding on UK-AUS Tourist Samples**

No.	Nationality	 UK	 AUS		
H	Hypothesis	Results	Results		
H1	Place of tourist attraction have direct significant effect on tourist destination satisfaction	.000** *	✓	.000** *	✓
H2	Infrastructure have direct significant effect on tourists destination satisfaction	.000** *	✓	(n/s)	×
H3	Accommodation and food have direct significant effect on tourists destination satisfaction	n/s	×	(n/s)	×
H4	Hygiene and sanitation has direct effect on tourists destination satisfaction	n/s	×	(n/s)	×
H5	Promotion and marketing have direct effect on tourists destination satisfaction	.013*	✓	.000** *	✓
H6	Destination image have direct effect on tourists destination satisfaction	.000** *	✓	.010*	✓
H7	Destination satisfaction has direct significant impact on destination loyalty	.000** *	✓	.000** *	✓

Note: \*Significant level at .05; \*\* Significant level at .01; \*\*\* Significant level at 0.001

## 5. Discussion and Conclusion

The term of 'Amazing Thailand' has barely registered in mind of tourists for Australian markets, nearly 20 year old "Amazing Thailand" promotion is still fondly remembered. Despite, Thainess was promoted for the year 2015 and continue promoting in 2016 and 2017 has little effect on Australian tourists market as the result show only 5%. Despite, Thainess campaign is more attractiveness in UK market since British tourist's perceived understanding about what does it mean and how its related to Thailand destination image approximately 10% (refer to Figure 1). After the campaign has launched, Thailand has more than 29 million international visitors at the end of the year 2015. In 2016, the number of tourists has reached over than 30 million visitors before arrival to 35 million tourists in 2017. This figure making a new history record from over past ten years in Thailand tourism (see more detail in Table 1).

British tourists imaging Thailand as 'relaxed destination' (58%), while Australian tourists visualizing Thailand destination as 'amazing country' (68%). As of this data indicated that British tourists are likely to revisited Thailand for holiday relax destination while Australian tourists come to Thailand for learning a new experience with the colorful activities. British and Australian tourists have discover the term and meaning of 'Thainess' in different perspectives up on their experiences. In UK group, Thai massage and spa, Thai culture tour, elephant riding, Thai art museums, Thai cooking and Thai classical dance become the most popular which is registered in their mind. In AUS group, 'scuba diving' become one of the activities do not miss in Thailand. Thus, Thai culture can be advertise and sold for British tourists market as long as (26.4%) perceived that Thailand country's unique culture treasures (refer to Figure 2). Australian tourists are male (58%), single status (72%) and over 30% of them are postgraduate students. Tourists from AUS market are in a new generation (Gen Y) age ranged between 21-30 years (36.7%). They are travel to Thailand alone (47%) and travel with group and colleague (23%). No wonder, these tourists were seeking information and arrange their trip, self-booking via internet. They are young male tourists market that like an adventure and colorful activities. Thus, Tourism Authority of Thailand (TAT) and travel agent should be promoting and advertising about adventure tourism to this market.



The finding shows that place of tourist attractions, promotion and marketing and Thailand destination image have positively related to destination satisfaction for UK and AUS groups. Infrastructure has positively related to destination satisfaction in UK group while has no relationship effect in AUS group. Accommodation and food, hygiene and sanitation have no significant relationship with destination satisfaction for UK and AUS groups (refer to Table 5). The finding of this study is equivocal from literature, some factors may significant in some country while insignificant for some particular countries (Suhartanto, Ruhadi & Triyuni, 2016; Rajaratnam, Nair, Sharif & Munikrishnan, 2015; Arasli & Baradarani, 2014; Mishra, 2013; Chen, Lee, Chen & Huang, 2011; Zabkar, Brencic & Dmitrovic, 2010). The destination image were created by cognitive and affective components (Beerli & Martin, 2004). As the study measurement of destination image relate on tourists attitudes towards Thailand destination. The perception of specific risks (illnesses, crime, political instability and terrorism), unpleasant experiences, and disappointments on holidays may cause to negative word-of-mouth and tourists dissatisfaction. Thus, generate tourist's perception of convenient (place of tourists attraction, transportation, accommodation, hygiene and sanitation), relaxing atmosphere (Thai hospitality), a low awareness of risks on holidays and commitment towards tourism related problems, these are highly relevant factors lead tourists attach with host society (Aschauer, 2010).

Moreover, since tourist satisfy with destination, it directly generated to destination loyalty. In this fact couldn't be deny by the loyalty theory (San Martin, Collado, & Rodriguez del Bosque, 2013; Dimanche & Havitz, 1994; Backman & Crompton, 1991; Baloglu, 2001; Iwasaki & Havitz, 1998; Lee, Backman, & Backman, 1997; Mazanec, 2000; Pritchard & Howard, 1997). As the result of this study found that British and Australian tourists are all loyal with Thailand destination. The finding shows that 49% of British tourists and 44% of Australian respondents are the repeated visitors (1-2 times). This finding was supported by department of tourism, Ministry of Tourism and Sport, (2016) record that (65%) of tourists from Europe and (71%) tourists from Oceania are repeated visitors. Similarly, they are likely to revisited Thailand again in the next two year. The finding show that (58%) of respondents are likely and (38%) very likely to revisited Thailand for another vacation. The tourist's perception about overall visiting Thailand found that '*this visit was so great, and I will come again*' (83.6%) in UK group and (68.4%) in AUS group. This argument is support by several study (Suhartanto, Ruhadi & Triyuni, 2016; Rajaratnam, Nair, Sharif & Munikrishnan, 2015; Arasli & Baradarani, 2014; Chen, Lee, Chen & Huang, 2011; Zabkar, Brencic & Dmitrovic, 2010). Thus, the complement of these evident enable to generated positive word-of-mouth (WOM) by recommend Thailand for holiday destination to their friend and relative (96.4%) in UK group and (94.8%) in AUS group.

## 6. Recommendation and Suggestions for Further Research

United Kingdom (UK) and Australian (AUS) tourists discovering Thailand destination image differently. Since, 72% of AUS tourists are single, the majority are male, age ranged between 21-30 years old. AUS tourist have seen Thailand as *the 'amazing destination'*, whereby a variety of adventure thing to discovering the new experience. Since, 31.6% of AUS tourists are students then the most popular activity is coral scuba diving in Phuket Island. Thus, Thailand should be promote '*advantage tourism*' for this market. In UK tourists discover Thailand as '*relaxed destination*', and the most of their favorite activities is Thai massage and varieties of spa. Moreover, UK tourists as the representative of Europe regional are well understand the concept of Thainess campaign better than AUS as the representative of Oceania region in this study sample. Thus, Thailand should be promote '*Thai culture tourism*' for UK as well as other Europe markets. These are the recommendation and guideline for further research in potential tourist markets.

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**Exploring the Factors Affecting Japanese and South Korean (JK) Tourists on Thailand  
Destination Satisfaction**

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**Abstract**

In 2015, Thai government has been promoting 'Amazing Thailand Discover Thainess' throughout the globally. As the effect of 'Thainess' campaign show that Thailand tourism receipts up to 16% from Japanese and 30% generated by South Korean tourists. The international tourist's arrivals contribute to Thailand indirect export via shopping whereby South Korea market is the third largest high purchasing power country after India and China. The results of the study shows that 71% of Korean tourists were female, single and age average between 21-40 years called this market 'single ladies market'. Japanese tourists 65% were male and average age between 41-60 years and 30% of the sample have been travel to Thailand over 10 times called this market 'long stay tourists market'. The hypothesis testing results shows that shopping and tourist attractions, Thai cuisine (food), environment and safety, and transportation facilities have positively related to destination satisfaction for Japanese and Korean tourists. Lodging and restaurant facilities is significantly in Korean tourist while insignificantly in Japanese tourists. Moreover, Japanese and South Korean tourists are all loyal with Thailand destination. They are likely to revisited Thailand again in the next two year.

**Keywords:** Japanese Tourist, Korean Tourist, Thailand Destination, Satisfaction

**1. Introduction**

Thailand is recognized as the world's leading international tourists' destination and ranked in the top 10<sup>th</sup> International tourism receipts charged. The World Tourism Organization reports that Thailand as the top 7<sup>th</sup> tourism earners for the year 2015 worth \$44.6 billion, with the United States by far the top earner worth \$240.5 billion. Similarly in year 2015, Thailand seem to be an outstanding country destination whereby the international tourism receipts have improve up to 16% as compare to 2014. In 2016. World Tourism Organization reports China is the largest international tourism expenditure country worth \$261 billion, the second large is United Stages worth \$122 billion and the third large country is Germany worth \$81 billion etc. There are three Asia region countries ranked in the list of top 10<sup>th</sup> international tourism expenditure, namely, China ranked in 1<sup>st</sup> South Korea ranked in 7<sup>th</sup> and Hong-Kong ranked in the last list (UNWTO Tourism Highlights, 2016)

In Thailand, South Korean ranked in the top 6<sup>th</sup> of international tourism receipts contributing to 56,847.18 million baht, an increase of 30.48% from previous year 2014. Japanese tourism receipts contributing to 56,430.67 million baht, an increase of 16.26% from year 2014. Table 1 shows the top 10<sup>th</sup> tourism receipts from international tourism arrivals based on the data provided by Department of Tourism, Ministry of Tourism and Sports in 2016. China is the largest contribute to Thailand industry worth 388,694.10 million baht, an increase of 93.71% from year 2014. In term of per capital spending worth 5,505.39 baht/day; their length of stay is 8 days while numbers of tourism arrivals 7,981,407 people. In other East Asia countries such as Korean and Japan, tourists per capital spending from these countries are 5,417.58 baht/day, 5,021.99 baht/day, their length of stay is 7-8 days while numbers of tourism arrivals are 1,359,211 and 1,349,388, respectively.

**Table 1 Top-Ten International Tourist Receipts Arrivals Jan-Dec 2015**

Country of Residence	No. of Arrivals	+/- (%)	Length of Stay (Days)	Per Capital Spending			No.	Tourism Receipts		
				Baht/Day	+/- (%)	US\$/Day		Mil. Baht	+/- (%)	Mil. US\$
<b>ASEAN</b>	<b>8,078,262</b>	<b>+19.31</b>	<b>5.60</b>	<b>5,106.35</b>	<b>+5.75</b>	<b>149.09</b>		<b>231,002.31</b>	<b>+25.95</b>	<b>6,744.59</b>
-Brunei	17,433	+25.17	6.92	5,819.71	+1.84	169.92		702.07	+36.34	20.50
-Cambodia	544,818	-199	6.45	4,559.05	+7.72	133.11		16,020.84	-10.40	467.76
-Indonesia	470,820	-5.01	5.66	5,286.42	+2.74	154.35		14,087.46	-3.60	411.31
-Laos	1,230,521	+15.68	5.79	4,267.36	+9.82	124.59		30,403.81	+28.14	887.70
-Malaysia	3,470,553	+30.87	4.83	5,240.74	+3.72	153.01	<b>2</b>	86,254.70	+41.30	2,518.39
-Myanmar	263,422	+26.80	8.28	4,988.37	+5.81	145.65		10,880.33	+34.50	317.67
-Philippines	301,297	+1.67	7.94	4,905.93	+3.16	143.24		11,736.47	+7.18	342.67
-Singapore	1,074,755	+11.90	5.60	6,136.30	+5.79	179.16		36,932.09	+26.76	1,078.31
-Vietnam	767,643	+33.93	6.22	5,023.23	+4.91	146.66		23,984.54	+37.41	700.28
<b>China</b>	<b>7,981,407</b>	<b>+72.31</b>	<b>8.14</b>	<b>5,982.79</b>	<b>+8.83</b>	<b>174.68</b>	<b>1</b>	<b>388,694.11</b>	<b>+93.71</b>	<b>11,348.73</b>
<b>Russia</b>	<b>877,120</b>	<b>-45.06</b>	<b>17.07</b>	<b>4,587.00</b>	<b>+0.66</b>	<b>133.93</b>	<b>3</b>	<b>68,678.73</b>	<b>-39.06</b>	<b>2,005.22</b>
<b>Australia</b>	<b>816,053</b>	<b>-2.56</b>	<b>13.43</b>	<b>6,001.49</b>	<b>+4.98</b>	<b>175.23</b>	<b>5</b>	<b>65,773.93</b>	<b>+7.92</b>	<b>1,920.41</b>
<b>UK</b>	<b>896,591</b>	<b>+2.91</b>	<b>17.29</b>	<b>4,294.89</b>	<b>+4.87</b>	<b>125.40</b>	<b>4</b>	<b>66,579.60</b>	<b>+8.93</b>	<b>1,943.93</b>
<b>Japan</b>	<b>1,349,388</b>	<b>+7.53</b>	<b>8.06</b>	<b>5,188.52</b>	<b>+3.82</b>	<b>151.49</b>	<b>7</b>	<b>56,430.67</b>	<b>+16.26</b>	<b>1,647.61</b>
<b>South Korea</b>	<b>1,359,211</b>	<b>+22.51</b>	<b>7.72</b>	<b>5,417.58</b>	<b>+2.64</b>	<b>158.18</b>	<b>6</b>	<b>56,847.18</b>	<b>+30.48</b>	<b>1,659.77</b>
<b>USA</b>	<b>827,110</b>	<b>+12.61</b>	<b>13.38</b>	<b>5,021.99</b>	<b>+1.34</b>	<b>146.63</b>	<b>8</b>	<b>55,577</b>	<b>+6.55</b>	<b>1,622.69</b>
<b>India</b>	<b>1,039,395</b>	<b>+14.67</b>	<b>7.64</b>	<b>5,849.26</b>	<b>+2.18</b>	<b>170.78</b>	<b>9</b>	<b>46,448.85</b>	<b>+23.98</b>	<b>1,356.17</b>
<b>France</b>	<b>648,382</b>	<b>+6.80</b>	<b>17.60</b>	<b>3,872.45</b>	<b>-0.03</b>	<b>113.06</b>	<b>10</b>	<b>44,190.48</b>	<b>+7.94</b>	<b>1,290.23</b>

**Source: Department of Tourism, Ministry of Tourism and Sports, as of data update on 5 Aug 2016**

In Asia regional, *South Korean tourist is the largest spender on entertain program worth 711.58 baht/day, following by Japanese tourist worth 672.18 baht/day.* To boost up international receipted and foreign exchange inflows to Thailand economic. International tourism is a significant player in international trade as seen in export earnings from international tourism and passenger transport sectors reached \$1.5 trillion in 2014. According to UNWTO secretary-general Taleb Rafai said that “*With decreasing commodity prices, spending on international tourism grew significantly in*

2014, providing the sector's capacity to stimulate economic growth, boost exports and create jobs." (Cited in Boonsong Kositchoththana, 2015).

Thus, Thai government should be focus on Japanese and South Korean as our potential markets. Specific marketing promotion for these particular targets sample should be developed and infrastructure should be emerging developed for the overall country. Thailand's dreaming destination image should be frequently promote and also generate awareness of international tourists' confidence for choosing Thailand as the first destination in the ASEAN region.

## 2. Research Objective

1. To examine the growth status of Japanese and South Korean tourists in Thailand.
2. To examine the Japanese and South Korean tourist's demographic and behavior in Thailand.
3. To examine the factors effecting '*destination satisfaction*' of Japanese and South Korean tourists visiting in Thailand.
4. To examine the relationship between '*destination satisfaction*' and '*destination loyalty*' of Japanese and South Korean tourists visiting in Thailand.

## 3. Literature Review

International tourists travel decision was motivated by push and pull factors to pursue of specific tourism experience. Pull factors refer to specific characteristic of tourism place that can attract tourists to a particular destination (Crompton, 1979). These are such as unique natural landscapes, specific activities or destination events. In other hand relaxation and seeking of unique experience were found to be push factors in rural tourism (Pesonen, Komppula, Kronenberg & Peters, 2011) and also become an indicator of destination loyalty (Yoon & Uysal, 2005). Thus, there are the relevant factors originated from pull and push theories in order to explain of international tourist's satisfaction and destination loyalty are as following:

### 3.1 Shopping and Tourist Attraction

Shopping is an essential leisure activity providing economic, social and psychological benefits to tourist customer (Yuksel, 2007). It's the most favorite activities for both domestic and international tourists. Thus, shopping can be defined as a popular tourist activity and often related with expenditure category for vacationers. Christanson and Senepenger, (2002) said that tourists shopping behavior is different from general shopping. This is because of tourists gain satisfaction from shopping experience not from the product. Broadly speaking, tourists do not go shopping with a list of products like normal customer directly go to buy consumer product from hyper market, rather, tourist's shopping behavior become more of the end-result of their travel experience. Tourist's shopping behavior is unlike the resident shopper because they tend to look for the tradition, local and unique products that they can't find from their home country (Paige & Littrell, 2003; Reisinger & Turner, 2002). A large number of tourists are satisfied to spend more money on some specific products item while they are on vacation, rather than they would if they were at home. For instant items such as souvenirs, tourist shopping includes clothing, books, jewelry, arts, crafts, and electronics (Thomas & Le Tourneur, 2001).

### 3.2 Food and Beverage

Food and beverage is the important factors to fulfill of tourist satisfaction as reported by Telfer and Wall, (2000) food spending accounts for around one third of total tourist expenditure. Public opinion survey of Thai-Nichi Institute of Technology on Laotian tourists visiting Thailand during to April-May, 2016 shows that 47 percent of tourist expenditure spend on food and beverage (Wadecharoen, 2016). Similarity to the study of Montenegro, Costa, Rodrigues and Gomes, (2014) show the best rate tourist products of Portugal were food and wine following by city brake, sun and sea. According the tourist's opinion, the Portuguese tourism products campaign should be communicated internationally must be '*wine*', followed by '*sun & sea*'. Driving on this finding, Portugal must highlight '*wine*' as the promotion tourism product according to the needs of target market and enhance of tourist's perception on product quality offered. Soriano (2002) claimed significance of fresh ingredients as well as the cost of food in the customer satisfaction and a reason for customers to repurchase. Wong, Wu and Cheng, (2015) state that Macau food festival (MFF) is become an important area of tourism attraction. MFF is the annual event with more than 100 stalls offering tasty morsels from Asia and Europe in every November, live music performance, game booths, and scrumptious dishes can stimulate tourists to attended festival. Hence, festival quality



which refer to staff, festival area, food, souvenir adequacy, convenience are the important dimension describe festival performance quality (Anil, 2012). The result of the study indicate that festival quality positively influence to attendee festival satisfaction and festival loyalty.

### 3.3 Lodging and restaurants

Lodging is one of the dimensions in destination satisfaction. Chen and Gursoy, (2001) mentioned the importance of satisfaction with lodging experience and restaurant meal that are the main determinants of total destination satisfaction, since the tourists spend most of their times in their hotels and restaurants. According to Kandampully and Suhartanto (2000) diagnosed the hotel image and customer loyalty in New Zealand hotel chains and found a positive correlation between customer loyalty and satisfaction with housekeeping services, reception, price, food and beverage. Poon and Low (2005) stated that the destination satisfaction of Western and Asian travelers was mostly based on the hospitality of staff within hotels. In a study by Gyimothy (2000) stated that more than half of the tourist respondents pointed out the importance of restaurant facilities as an essential part of visiting a destination.

### 3.4 Environment and Safety

The need for safety and achieving a safe environment is one of the fundamental conditions to guarantee tourism. Tourism flourishes in a peaceful environment, prosperity and likewise extremely vulnerable to perceived political instability and lack of safety. For Western travelers, the security and safety factor is out weights the other factors in explaining customer satisfaction, especially after September 11<sup>th</sup> (Poon & Low, 2005). Correia, Kozak and Ferradeira, (2013) examine the factors influence on international tourists visiting in Lisbon a capital of Portugal. The study results justify that '*facilities*' which refers to *safety and security, cleanliness, entertainment and available information* contributing to overall tourist's satisfaction. Similarly to Ibrahim and Gill, (2005) found the relationship of safety and comfort exerted the strong influence on the overall satisfaction. The result indicating that when tourists are satisfied with the level of safety and comfort then the overall destination considered to be satisfactory.

### 3.5. Transportation

Transportation service become an important factors perceived by tourists for evaluated quality destination and satisfaction (Weiermair, 2000). Hankinson (2004) who conducted research on the transportation under the accessibility dimension, he stated that transportation is one of the major factors that lure tourists choose a specific destination to travel. The ease of access the facilities, quality of the service, closeness of the airport and the motorways are contributing to transportation that make this service important for tourists destination satisfaction (Hankinson, 2004; Weiermair, 2000). In USA, tourists are prefer to rent personal automobiles which provided flexibilities, convenience and economic (Fowler, Lauderdale, Goh & Yuan, 2012). Despite, personal driving present a risk in navigating unknown surrounding or unsafe areas. Thus, Taxicabs become a challenges transportation in USA.

### 2.6 Destination Loyalty

Loyalty has been described as '*tourists*' commitment to a destination, expressed in a stable form over a prolonged period (San Martin, Collado, & Rodriguez del Bosque, 2013, p. 327). Repeat purchases or recommendations to other people are most usually referred to as consumer loyalty in the marketing literature. The concept and degree of loyalty is one of the critical indicators used to measure the success of marketing strategy (Flavian, Martinez, & Polo, 2001). Therefore, identifying the predictors of loyalty could enable destinations to allocate scarce resources more efficiently, thus increasing tourists' intentions of visiting. Prayag and Ryan (2012) identified three main approaches to measuring loyalty: (i) behavioural data; (ii) attitudinal data; and (iii) a combination of both. Early studies (Yoon & Uysal, 2005) used a behavioural approach in which loyalty implied repeated purchase or experience.

## 3. Research Methodology

### 3.1 Research Instrument

Research questionnaire has been designed as the research instrument in order to obtain the primary data through survey method. The measurement was designed by using multiple-items scale that has been empirically validated and reliable based on past empirical studies. Shopping and tourist attraction, food, lodging and restaurants, environment and safety and transportation was adapted from

Arasli & Baradarani, (2014), tourists satisfaction and tourist destination loyalty (Yoon & Uysal, 2005). The structure of questionnaire statement were test validity by using index of item objective congruence (IOC) by three professional experts to ensure the content validity that enable to cover all research objectives (Anastasi, 1982). The original English questionnaires structure was translated into Japanese and Korean languages. Next step all questionnaire structures were proofread by professional capable of Japanese and Korean native speaker and back translate to English to ensure the consistency of all questionnaires.

### 3.2 Research Sampling, Collecting Data and Analysis Methods

The purposive method was employed to set up research sampling of 600 Japanese and 600 in South Korean tourists. The data were collecting via Suvarnabhumi international airport, Sukhumvit road, Ratchaprasong, Petchburi road etc. The trimming period between October-December 2016 and January 2017 (refer to Table 2). The questionnaires data collecting were filled out by a self-administered manner then analyzed by using SPSS program. The frequencies, descriptive statistics and multiple regressions were used for interpreting the data results empirically.

**Table 2 Data collecting Method**

No	Country	Distribute cases	Returned cases	Place of Collecting Data	Questionnaire development	Period for collecting data
1	Japan	600	562	Bangkok	Japan Language	Oct -Dec 2016
2	South Korea	600	510	Bangkok	Korea Language	Dec 2016-Jan 2017
	Total	1,200	1,072			

## 4. Result of the Study

### 4.1 Japanese and South Korean tourist growth status in Thailand

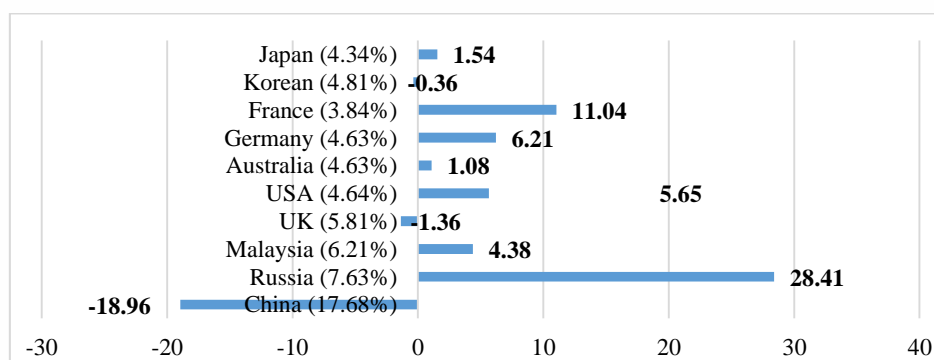
The number of Japanese and South Korean (JK) tourists trend to increase by year after year. In 2016, Japanese tourists was 1,439,629 approximately changed 4.19% from year 2015, South Korean tourists was 1,464,218 approximately changed 6.64% from year 2015. In term of international tourist expenditure, East Asia from major countries such as China, Japan and South Korea have spending averagely 5,760.30 (Baht/day/Person) and tourist from European have spending averagely 4,913.27 (Baht/day/Person), expanding over 8% (refer to Table 3).

**Table 3 The Average Expenditure of Tourists classified by countries of regional**

Reginal	Expenditure (Baht/day/Person)	Expanding (4/2558-4/2559)
East Asia	5,760.30	1.19
European	4,913.27	8.36
Other	6,027.81	1.41

### Source of Data: Immigration Bureau, Royal Thai Police

Thailand tourism has received income from international tourists classified by countries such as China (17.68%) ranked in the 1<sup>st</sup>, following by Russia 2<sup>nd</sup> (7.63%) and 3<sup>rd</sup> Malaysia (6.21). Japan and Korean contributing to Thailand tourism income approximately 4.34% and 4.81% (refer to Figure 1)



**Figure 1 Change in % Thailand tourism income last quarter of 2016 as Compare to year 2015**

Source: Ministry of Tourism and Sport, Thailand, last updated on 10 Jan 2017

Based on Figure 1 Thailand tourism income has decrease up to -18.96% in China market as compared to year 2015, while Russia become 1<sup>st</sup> of Thailand international tourism market or raise up to 258.41% increase from year 2015. Korean market has decline to -1.36% and Japan has little increase to 1.54%. Thus, Thailand international tourist market and income are based on the East Asia market whereby China is the 1<sup>st</sup> of Thailand visitor, Japan and Korea market consider in a top rank tourists from East Asia.

#### 4.2 Japanese and South Korean tourist's demographic and behavior in Thailand

Japanese and South Korean (JK) tourists demographic refer to age ranged between 41-60 years in Japanese group and ages ranged between 21-40 years in South Korean group. Most of the Japanese tourist's status were married while Korean tourists were single. The education of South Korean and Japanese tourists are similarly, most of them have four year university (56% and 59%), postgraduate degree (18% and 24%) and school (21% and 13%), respectively. South Korean tourist's income averagely 175,000 Baht/per month (42%), while Japanese tourist's ranged between 175,001-525,000 Baht/per month (32%). The majority of JK tourist's occupation are employee, business owner and student.

In generally information show that 39.1% of Japanese respondents come to Thailand over 10 time and 42% stay longer than 7 days, these sampling may be refer to long stay tourists. This is logically reasonable whereby 52% of Japanese tourists have an age average ranging between 41-60 years old and 12% of respondents are over than 61 years old. In case of South Korean tourists group, 41.8% come to Thailand 1-2 time and 22.5% come to Thailand at first time. Over half of South Korean tourists (64.9%) know about Thailand country from friend and family while (32.9%) know Thailand from media advertisement/news. Half of South Korean respondents (49.2%) stay in Thailand between 5-7 days, (27.3%) 2-4 days and (23.5%) stay in Thailand more than 7 days. 97.6% of them stay in hotel and guess house, 51.4% come to Thailand with group tour/friend/colleagues. As of these information enable to identify that South Korean tourists market have higher purchase power in term of budget spending in Thailand. Since, 41% of South Korean tourist's budgets ranged between 35,000-52,000 Baht while 48.4% of Japanese tourist's budgets is about 35,000 Baht and below. In South Korean tourists market (71%) are female, these market can be defined as '*ladies market*' whereby most of them are single.

#### 4.3 Hypothesis Testing (JK Tourists Samples)

The summary of hypothesis testing are exhibited in Table 4 below;

**Table 4 Summary of Research Hypothesis Finding on JK Tourist Sample**

H	Hypothesis	Japanese		South Korean	
		Results		Results	
H1	Shopping and tourist attractions have direct significant effect on tourist satisfaction in Thailand destination	.006**	✓	.000***	✓
H2	Thai cuisine (food) has direct significant effect on tourist satisfaction in Thailand destination	.010*	✓	.000***	✓
H3	Lodging and restaurant facilities have direct significant effect on tourist satisfaction in Thailand destination	n/s	×	.000***	✓
H4	Environment and safety have direct significant effect on tourist satisfaction in Thailand destination	.000***	✓	.008*	✓
H5	Transportation facilities and infrastructure have direct significant effect on tourist satisfaction in Thailand destination	.003**	✓	.024*	✓
H6	Destination satisfaction has a direct significant impact on Thailand destination loyalty	.000***	✓	.000***	✓
		R=.587 Adjust R <sup>2</sup> =.338 R <sup>2</sup> = .344 SE=.49804		R=.292 Adjust R <sup>2</sup> =.083 R <sup>2</sup> = .085 SE=.42674	

Note: \*Significant level at .05; \*\* Significant level at .01; \*\*\* Significant level at 0.001



Table 4 show Japanese and South Korean hypothesis finding are differently. For such Japanese sample, based on the result of *beta* weights regression and *p-value*, hypothesis 1, 2, 4, and 5 predictive variables show significance with destination satisfaction. These are such as shopping and tourist attractions ( $\beta=.100$ ;  $p=.006$ ), food ( $\beta=.075$ ;  $p=.010$ ), environment and safety ( $\beta=.144$ ;  $p=.000^{***}$ ) and transportation ( $\beta=.075$ ;  $p=.003$ ). In another way, lodging and restaurants did not significantly predict value of destination satisfaction ( $\beta=.037$ ;  $p=.222$ , *n/s*), thus, rejected hypothesis 3.

Based on the result of *beta* weights regression and *p-value* of South Korean group, hypothesis 1, 2, 3, 4 and 5 predictive variables show significance with destination satisfaction. These are such as shopping and tourist attractions ( $\beta=.135$ ;  $p=.000^{***}$ ), food ( $\beta=.299$ ;  $p=.000^{***}$ ), lodging and restaurants ( $\beta=.150$ ;  $p=.000^{***}$ ), environment and safety ( $\beta=.060$ ;  $p=.008$ ) and transportation ( $\beta=.051$ ;  $p=.024$ ). Thus, all hypothesis were supportive in South Korean group. Finally, destination satisfaction is the strongly predictor for destination loyalty at highly significance level 0.001. Thus, supported H6 ( $\beta=.464$ ;  $p=.000^{***}$ ) in Japanese group and ( $\beta=.238$ ;  $p=.000^{***}$ ) in South Korean group (refer to Table 4)

## 6. Conclusion and Discussion

Japanese and Korean tourists status are stability in term of number and tourism receipts to Thailand destination. Despite income from these countries are rates lower as compared to the number of visitor. As of this gap enable for future research to investigate *'how to increase tourists expenditure from these countries'*. Since, South Korean budget spending is rather higher than Japanese tourists and 71% of sample are young single female called this market *'single ladies market'* whereby high purchasing power ranged between 35,000-52,000 Baht. In Japanese group, over half of sample ages is 60 and above, the purchasing is about 35,000 Baht and below while the duration of stay is longer than 7 days called *'long stay tourists market'*. To increase Thailand tourism income, all tourism stakeholder should be emphasizing on these particular tourists behavior in some particular market. Thus, generating the specific strategy to supply of tourists specific demand enable to enrich both number of tourists and increase national tourism receipts.

This study aimed to examine the effects of shopping and tourist attractions, food, lodging and restaurant facilities, environment and safety and finally transportation facilities on Japanese and South Korean tourist destination satisfaction. In addition it also examined the relationship between destination satisfaction and destination loyalty. The finding shows that shopping and tourist attractions, Thai cuisine (food), environment and safety, and transportation facilities have positively related to destination satisfaction for Japanese and South Korean tourists (Montenegro et al., 2014; Correia et al., 2013; Yuksel, 2007). Lodging and restaurant facilities is significantly in South Korean tourist while insignificantly in Japanese tourists (refer to Table 5). These results similarly to Kandampully and Suhartanto (2000) found a positive correlation between loyalty and satisfaction with housekeeping service, reception price, food and beverage. Moreover, the hospitality of hotel staff and restaurant facilities become an essential part of visiting a destination (Gyimothy, 2000). However, lodging and restaurant facilities has not important for Japanese long-stay tourists market due to they pay attention on other facilities rather than depend on hotel service.

The study indicated that Japanese and South Korean tourists are similar in term of expectation and satisfaction. However, there are large number of factors to explaining international tourist's destination satisfaction in tourism marketing research. As of Yoon & Uysal, (2005) state that *"in an increasing competitive marketplace, the success of marketing destinations should be guided by a thorough analysis of tourist motivation and its interplay with tourist satisfaction and loyalty"*. In their research model composite of push and pull motivations; for push motives are such as trying new food, visiting historical places, safety and fun, away from home and seeing and relaxation; for pull motives are such as modern cities, budget accommodation, quality beach, high quality restaurants, local cuisine and personal safety etc. Thus, five predictors in this study model are concerned on pull motive factors while skip out of push motive factors which is should be testing parallel for further research model.

The predictor variables such as shopping tourist's attraction, food, environment and safety, lodging and restaurants and transportation given explanatory power towards destination satisfaction 33.8% in Japanese and 40.2% in South Korean tourists group (refer to Table 5). This implied that

these predictors influencing of Japanese tourists destination satisfaction at 33.8% in Japanese group while the rest of 66.2% can be explain by another factors may concerned. Similarly, in South Korean these predictors can be explain of 40.2% towards destination satisfaction while the rest of 59.8% may cause of other factors. As of Arasli and Baradarani, (2014) explore the European travelers destination satisfaction in visiting Amman Jordan. Their study shown that five pull motive factors (tourists attractive, local cuisine, safety, lodging and transportation) are predicting of 22.4% European tourist satisfaction perception towards Jordan. Lee, (2015) study tourist satisfaction with factory tour experience composed of seven pull motive factors namely lodging and dining facilities, internal accessibility, nearby attractions, external accessibility, provision of safety and emergency systems, on-site attractions and provision of information services can predicting of 53.4% tourists satisfaction in Taiwan. Hence, the predictors research model of this study are considered at moderate level as compare to past research in similar area. Since, most of the past research studies have done on full factors while lack of research doing on push and full motive factors. As of these argument, for the further study push motivate factors should be testing in order to predicting of Japanese and South Korean tourists destination satisfaction. Thus, since tourist satisfy with destination, it directly generated to destination loyalty. This fact couldn't be deny by the loyalty theory (San Martin et al., 2013). As the result of this study found that Japanese and South Korean tourists are all loyal with Thailand destination (Rittichainuwat, Qu & Mongkonvanit 2002). They are likely to revisit Thailand again in the next two year.

### 7. Recommendations and Suggestions for Further Research

Japanese and South Korean tourists have playing the significance role towards Thailand's tourism market. The tourists demographic are differ in term of age, income and duration to stay in Thailand. The research finding indicated that most of Japanese sample are long stay tourists who visiting Thailand over twice a year, we called '*long stay tourist market*'. In South Korean tourists, the majority are single female who have shopping budget spending (excluded air ticket and accommodation) up to 52,000 Baht (trip/person), we called '*lady tourist market*'. As of these suggestions are generated the roadmap for promoting Thailand tourism in specified tourists markets. Therefore, the specific factors attract the Japanese and South Korean tourists for selecting Thailand destination should be examine empirically for further research study.

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**Abstract**

The paper explores the correlations between culture and education in terms of value through its expressions in social reality. Based on the qualitative approach and the interpretive method, the paper analyzes the concept of education and that of culture, describing and interpreting the correlations between them. The obtained results show that firstly, the correlation becomes a synergy capable of developing the society when the contents of the cultural and educational value system are similar, compatible; second, the correlation becomes a drag on the potential for social change as the content of the value system of both contains contradictions. The finding may be helpful for each country's educational and cultural policy-making.

**Keywords:** Education, Culture, The correlations between education and culture.

**Introduction**

From the viewpoint of social institution, education and culture are independent but interrelated disciplines. The primary goal of education is to provide knowledge and skills to citizens in order to meet the needs of the society, while that of culture is to establish values and norms for cultivating citizens' perceptions and behaviors to meet the needs of the society. Thus, the objects of education and culture are citizens. Although education and culture are tangible and intangible in their structural system, that of the latter is more complex. We have been able to quantify education in the form of rating indicators but not yet for culture. In this paper, the correlations between these two disciplines are considered from a systemic – structural perspective, identifying their interrelated functions and roles. Does one's development necessarily lead to that of the other? The answer to this question may be helpful for each country's educational and cultural policy-making.

**Literature Review**

Lawrence Stenhouse (1967) investigated the role of education in social development, in which education is not only the science but also the philosophy of training the youths as decent citizens and self-respecting individuals.

James A. Banks, Cherry McGee Banks (2010) explored new concepts, paradigms, and interpretations that are necessary for an educator in a multi-cultural, multi-ethnic and multi-language classroom environment.

J. J. Smolicz (1999) studied the issue of intercultural relations with education in the Australian context, and found that individuals can construct a system of cultural values from a multicultural society.

Robert N. & Gurol I. (2005) stressed the role of education in shaping critical thinking for learners against constructivism, postmodernism and multiculturalism.

**Methodology**

The paper is conducted on an interpretative method, namely the analysis of the concept of education and that of culture, the description and interpretation of the relationship between them from social reality.

Education in the general sense is the learning style in which the knowledge, skill and habit of a group of people are transmitted from generation to generation through teaching, training and research. The educational goal is a system of norms of a personality pattern that needs to be formed in an educated person. It is a specific system of social requirements in every age for the personality of education objects. Therefore, the educational objective depends on each period of social development and each stage of the human educational process. Through the stages of social development, the approach to setting educational goals is changing.

There are many approaches to culture. In this paper, culture is referred to as the value system of society, including meaningful symbols such as belief, ritual practice, artistic forms, and informal cultural activities such as language, public opinion, stories in everyday life. Culture has the function

of guiding human perception and behavior by values. These are the principles, beliefs, ideals, norms and situations of life.

Educational activity takes place in the cultural context of a given society, and thus influenced by that cultural context in which the value system is a key factor. Education reflects and represents the social value system because the development of society depends largely on education. The social value system reflects different wills and interests, even conflicts among social groups: parents, employers, politicians, local communities, employers, taxpayers, religions, ethnics. Suitability or not, the contradiction of culture to education has a significant impact on the quality of education, in particular the personality, the capacity of the citizen, and in general the development of society. What happens when a science-focused education exists in a culture that promotes spirituality and religion? Similarly, does an education that pursues freedom, justice, and humanity exist in a culture in which slavery, injustice, and barbarism are viewed as values? An education aiming at practical, creative spirit exists in a culture that promotes degree, imitation.

Social values affect education through its organization, program, code of conduct, relationship between the teacher and the learner. Values are reflected in what the teacher allows or encourages in the classroom; for example, seating arrangements in the classroom, the teacher's emphasis on the accuracy of the learner's work, the praise of the learner's ability to use the imagination, the encouraging learners to show initiatives through care, patience or frustration, and many other situations.

Other values, generally mentioned in the context of school, reflect the diverse reality of the social structural system in each historical period. In the present context they include values related to cultural diversity, cultural identity and national consciousness; intellectual and academic value; peace, international understanding, human rights and environmental values; gender equality and anti-racism; employment and economic value; health; and universal human values such as tolerance, solidarity and cooperation. The transmission of these values can be done in a variety of areas: academic subjects, sports, community activities, charitable causes, extracurricular activities, relationships between teachers and students, school structures and management, school discipline, service systems, teaching and learning processes, code of conduct.

In the opposite direction, schools, along with families, the media and social groups, have a great influence on the development of learner values, and therefore of culture in general. An education that aims to form values for learners, that is corroborating with the cultural value of society, has the potential to make a great contribution to the preservation and promotion of socio-cultural values, the stability of the spiritual life of society, and a powerful social force. On the other hand, any distortion of what is taught in the school with what is supposed to be the true, the good, the beauty in the society may produce unexpected results for all.

Most parents, regardless of cultural differences, want their children to be taught good manners in social situations, and schools, although not the only place to teach moral, political, legal, aesthetic lessons, can greatly affect the perception and behavior of the learner. In the context of multicultural society, technological advancement and rapid change, the unity of values is often unclear, so schools play an important role in shaping the value of the learner. The attitude and belief, mutual respect, tolerance and understanding are essential for harmonious relationships in a multicultural society.

School culture drives the perception, behavior and attitude of the instructor and learner, either positively or negatively depending on the content of values it contains. School culture can promote personal creativity, form sincere love between members, and ensure co-operation for common goals. The teacher's personality influences directly the learner's personality, by means of active teaching methods;

the instructor creates the opportunity and learning experience for the learner to penetrate and develop his or her values. In this process, the learner performs two functions: firstly, to absorb the values conveyed from the outside through the instructor; and secondly, to create new values on the basis of individual identity along with the impact of social environment. These new personal values do not always fit in with the common values, which may differ, "deviation".

Positive school culture helps members share their experiences and knowledge, develop their ability to cooperate and respect each other. School culture is an important environment for training the personality of the learner according to the educational goal and becoming the social subject in the

future. It creates the confidence of society in the implementation of educational functions, especially in the training of the generation of citizens capable of preserving existing cultural values and of creating new cultural values, contributing to the development of culture for the changes of society.

### Results

The correlations between education and culture from the view-point of the value system takes place in two directions: firstly, the correlation becomes a synergy capable of developing the society when the contents of the cultural and educational value system are similar, compatible; second, the correlation becomes a drag on the potential for social change as the content of the value system of both contains contradictions. Thus the development of education does not necessarily lead to the development of culture and, on the contrary, the development of culture does not necessarily lead to the development of education. This is due to the relevance of the value of both.

### Discussion

The correlations between education and culture are considered here from a value perspective, which is an integral part of their content structure. In reality, the correlations between them are complex due to the diversity and particularity of educational activity and cultural activity itself. The development of a country's education is the result of many factors, including the element of value resonance from that nation's culture. Similarly, the development of a nation's culture is the result of many components, including the element of value resonance from the nation's education.

### Conclusion

Research on the correlations between education and culture can be carried out in a variety of approaches and methods and may be different in issues. In this paper, on the qualitative approach and the interpretive method, we explore the correlations between education and culture in terms of value and initially find that the value resonance of education and culture can develop both. However, further evidence will increase the persuasiveness of the paper. We think that the finding may be helpful for each country's educational and cultural policy-making.

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**INFORMATION QUALITY OF PUBLIC RELATIONS OF THAI CREDIT GUARANTEE CORPORATION**

นัชชา กริ่มมใจ, คมสิงห์ วิวัฒน์ภูมิต, พงษ์เทพ ศรีโสภาคจิต

<sup>1-3</sup> คณะบริหารธุรกิจ มหาวิทยาลัยกรุงเทพธนบุรี**Abstract**

The sample size of this study was 400 Small and Medium Enterprises (SMEs) in Chonburi Province. Reliability of questionnaires of this study was tested with Cronbach's alphas 0.89. The analytical tools included percentage, mean, standard deviation, t-test, and F-test.

The research found as follows.

1. Information quality of public relations was counted in the high level at average of 3.89 with standard deviation of 0.67 significance. The information quality in permanence dimension of public relations held the highest average at 3.91. Quality of public relations in speed and reliability obtained 3.90 and 3.87 respectively.

2. Respondents with different genders, educational levels, ages, and level of income were not significantly different in the attitudes toward information quality of public relations.

**Keywords:** Thai Credit Guarantee Corporation: TCG , Quality of public relations

**Introduction**

Public Relations played the major roles in activities to directly and indirectly indicate as managerial tools. It is also the fundamental managerial process for the corporation to survive. These activities of public relations promoted the coordination among stakeholders of the corporation. Further, public relations activities implicitly led to success or failure of the corporation. Public relations included communications among people within the corporation and between the corporation and outsiders. Management in the public relations department should not be overlooked. This department became vital as part of the corporate structure. In addition, management in the public relations department was part of the managerial process to proliferate the reputation and image of the corporation. The operation within this department complied with suitable modification to innovate and create the public correction. (Lapiratanakul, 2010: 476).

Moreover, public relations helped the corporation to adjust itself to fit the business environment aspects in its community. In some cases, public's relations helped the communication for referendum, public demand, and politics. Newly technology developed enhanced the Communications efficiently public relations.

Hence, the operation in the public relations department utilized the selected media to publish the required messages successfully. Message receivers or target people understood the transmitted message in clear, valid and speedy pace. The success was not easy for such a department to conduct. Learning process of each media was set differently. The task to select the right and effective media was the factor of success of this department. Planning to utilize the suitable media was suitably administered for success. In addition, the availability of types of media, the skill of message receivers towards suitable media affected the productivity of public relations operation (Shinnaworn, 2010: 27).

Thai Credit Guarantee Corporation (TCG) was assigned to be the special organization supervised by Ministry of Finance. It was formed by the Credit Guarantee for Small Industry Act 1991. This organization received the transfer of assets, liabilities, and responsibilities of Credit Guarantee Fund for Small Enterprise on 21 February 1992. The duty of this organization was assigned to help small and medium enterprises to issue credit guarantee by ensuring the financial institutions to approve credit loan while the small or medium private companies do not have enough credit guarantee. With the main purpose of this organization, the quality of public relations played the essential role to the success of the corporation. Incapability of public relations may lead to error in managerial operation

Public relations complied with the objective of the 4<sup>th</sup> Small and Medium Enterprises Promotion Plan (2560-2564) proposed by the Office of Small and Medium Enterprises Promotion in

2560. The objective aimed to promote SMEs to have access knowledge base for a variety of effective developments. A large number of SMEs was 2,079,267. 76.0% of total SMEs were individual type. In fact, only 0.5% were medium size while the medium size in the developed economies was at 5-10%. This reflected that the small sized enterprises hardly grew to medium. The reasons may fall into the lack of fund to expand business, the restriction of production and management, and the problem to enter the domestic or international markets.

Thus, the study of public relations relating to SMEs may yield the effective communication, thoroughly access data information for SMEs. The result decreased the problem of SMEs growth. This research aimed to study the information quality of public relations of Thai Credit Guarantee Corporation. The finding suggested to present the effective plan of public relations operation and comply to acknowledge of message receivers.

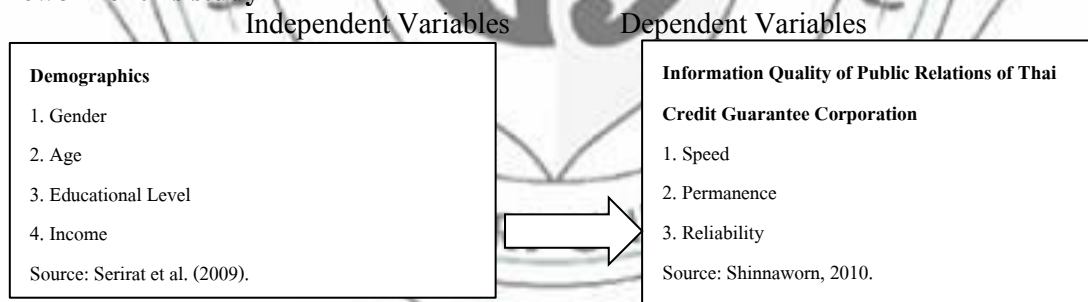
**The purpose of this research**

1. To study the information quality of public relations of Thai Credit Guarantee Corporation.
2. To compare the views of public relations of Thai Credit Guarantee Corporation categorized by demographics.

**Hypotheses**

1. Different genders of respondents had different attitudes toward information quality of public relations of Thai Credit Guarantee Corporation.
2. Different ages of respondents had different attitudes toward information quality of public relations of Thai Credit Guarantee Corporation.
3. Different educational levels of respondents had different attitudes toward information quality of public relations of Thai Credit Guarantee Corporation.
4. Different ages of respondents had different attitudes toward information quality of public relations of Thai Credit Guarantee Corporation.

**Framework of this study**



**Population and Sample**

Population of this study includes the registered small or medium enterprises in Chonburi Province with 7,754 respondents. Random Sampling or Convenience Sampling was employed to select from the population. The number of samples was from Yamane formula (Yamane, 1976: 886).

$$= \frac{7754}{1 + 7754(0.05)^2} = 380$$

Calculation of sample size of 380 was adjusted to 400 respondents

**Questionnaire design**

Data collection in this design was designed to follow the purpose of the study with literature review. Questionnaires were categorized into 2 parts as follows.

1. Questionnaires were designed to collect the data of demographics of respondents eg. Gender, Age, Educational Level, Occupation, and Income. The format of question was in inform of checklist.

2. This part of questionnaires was designed to measure information quality of public relations at Thai Credit Guarantee Corporation. The scale used was 5 rating Likert 's.

**Measure development**

Measures developed in this research employed the following steps.

1. Past research was reviewed to develop questionnaires.

2. Questionnaires were elaborated and tested with the unlinked population of 30 respondents.

3. Reliability of measure was tested by Cronbach's technique.  $\alpha$  - Coefficient of Cronbach was significant at 0.89

4. Pre-tested questionnaires were reviewed and surveyed.

#### **Data Collection**

Field survey was employed to gather data because this study focused in only one Province. It would be convenient to get a higher number of respondents through the field survey.

#### **Analytical Techniques**

Statistics techniques employed in this study included percentage, average, standard deviation, and descriptive analysis.

t-test was employed to analyze the difference in average. F-test was used to analyze the differences in different group average.

#### **Summary of this study**

1. The majority of respondents were male at 220 persons counted at 55.0 %. Age ranged 36-45 included 124 respondents counted at 31.0 %. Educational level at Bachelor Degree was devoted to 148 respondents of 37.0%. The level of income below 5,000 baht resulted in 43.0 %

2. Information quality of public relations of Thai Credit Guarantee Corporation remarked at high level of average 3.89 and standard deviation 0.67. The permanence quality dimension remarked the highest average at 3.91. The reliability and speed quality resulted in 3.90 and 3.87 respectively.

2.1 Speed quality of public relations included at high level of average 3.87 with standard deviation 0.75. The first three highest averaged measures of speed quality respectively remarked into entirely speedy service of information, interactive response of email, and minimum fee of enquiry governmental service.

2.2 Permanence quality dimension of public relations gained the highest average among measures of information quality of public relations. The average of this dimension was 3.91 with standard deviation of 0.63. The first three highest averaged measures of permanence quality explained a variety of public relations channels, availability of previous data provided, and sustainability of public relations follow-up. However, the measure of the lowest average detailed in previous and current data collection of public relations.

2.3 Reliability quality dimension of public relations highlighted the average of 3.90 with standard deviation of 0.63. All measures of reliability quality remarked at high level. The first three highest averaged measures detailed media selection to reach the target, trustworthy public relations, and information investigation.

3. Hypothesis test.

3.1 The finding remarked that there was no difference in gender toward the different attitude toward information quality of public relations.

3.2 This study found that differences in age of respondents unlikely led to the different attitude toward information quality of public relations at 0.5 significant level.

3.3 The result of this study explained that difference in level of education of the respondents unlikely had the different attitude toward information quality of public relations.

3.4 This research found that difference in income unlikely had the different attitude toward information quality of public relations

#### **Research Discussion**

The findings of this study were categorized as follows.

1. Information quality of public relations in the speed dimension was remarked in the high level because each type of media offered different speeds. Media with higher speed reflected the instant responses. Public relations may have to be compatible with the capability of the message receivers. This finding was complied with the previous study of Shinnaworn (2010). Shinnaworn (2010) remarked that the speed of public relations influenced the successful performance of the public relations. This success came from the cooperation and acceptance of the staff within the organization as well as the confidence of people outside. This may be explained by understanding and cooperation



between people outside and inside of the organization. The speedy public relations reflected the quality that enabled access the targeted receivers productively (Tavornkool, 2014)

2. The permanence dimension of the information quality of public relations at Thai Credit Guarantee Corporation spotted at the high level. The reasoning was that the permanence led to the continuous persuasion of information. The efficiency of public relations led to the knowledgeable change in attitude and behavior of the message receivers. Hence, the employment of public relations may have to be complied with the confidence and attitude of the message receivers. The qualified public relations was followed by the progress in planning in this public relations department. Programs and activities conducted in the public relations department should be monitored to examine the efficiency and difficulty in public relations operation. This follow-up enabled to notify the errors happened while this department operated the public relations activities. This notifications enabled to guide the improvement and modification for the next operation in public relations (Anupanphisit, 2016). The capacity of public relations was reflected from the permanence of information quality of public relations.

3. The reliability dimension of information quality of public relations from the result of this study was marked in the high level. The suitable public relations of the organization with the proven fact efficiently led to trust and confidence from the message receivers. Communication in the public relations between organization and message receivers was employed through the selected channels., so called media. The effective communication came from the right selection of media employed by the related department (Piriyakul, 2016). Public relations, including organization advertising, media conference, and public information, required reliability and credibility in order that the message receivers gained trust and confidence toward the organization.

#### **Practical implication**

1. The organization was suggested to improve and promote the knowledge base to explain and communicate to outsiders in order to gain trust and credibility.

2. The previous and current information should be collected and organized to ease the future follow-up and utilization.

3. Direct and honest publication for public relations should be employed.

#### **Further research recommendation**

1. Factors of information quality of public relations should be aimed. This enables to understand the success in the field of public relations.

2. Customer feedback, suggestion, and evaluation may assist the public relations department to comprehend the total context to gain further success of the organization.

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**STAFF ADAPTATION ON WORK PERFORMANCE  
A CASE STUDY OF HUDSON MANUFACTURE (THAILAND)**

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**Abstract**

A study of adaptation of employees in Hudson Manufacture (Thailand) Co., Ltd. The researcher selected 189 purposive sampling samples. The questionnaire consisted of 5 levels. The reliability of the questionnaire was 0.89. The data were analyzed by percentage, mean, standard deviation T-test, F-test, and multiple regression to predict the influence of variables.

The research found that:

Employee Adjustment It was found that overall, the level of feedback on the adjustment of the employees of the four respondents was very high. Considering the average level of opinions, the following rankings are as follows: Rank 1 in education, 2nd in demand, 3rd rank in cultural pattern and 4th in value in rank The results of the hypothesis testing showed that the adaptability of the employees affected the performance of Hudson Manufacture (Thailand) Co., Ltd. Overall, the respondents' 05.

**Keywords:** Adaptation, Performance

*Background and Significance of the Problem*

In a highly competitive business world, organizations often adapt differently to integrate change processes with the capabilities of people and organizations. To be able to survive and grow in the business under self-management to move quickly to align with the direction of the organization.

By nature, when people face the challenge of changing, such a change influences them to anxiety. The reasoning is from the lack of sufficient data to forecast the change. The organizations ensure to allocate the preserved resources to manage their own staff in every department or business unit in order to support the staff adaptation of the change. The past management experiences may not comply with the change context. The overview to adapt staff to harmonize with the organizational change may suit better than the past management experiences.

In Study of Thippayathorn (2012) to suggest one factor leading to the effectiveness of staff is the staff adaptation complying with modern management and technology which scope the style of management decision and technological convenience at work. Further, staff adaptation at work positively influences the appropriate operation within the organizations. Staff adaptation leads to relaxation and pleasure which benefit the mental health and overall to work commitment and success.

Hence, adaptation enables work effectiveness to learn to change and work in the new way to confront the uncertainty in the organization. Further, it helps manage in the emergency situation.

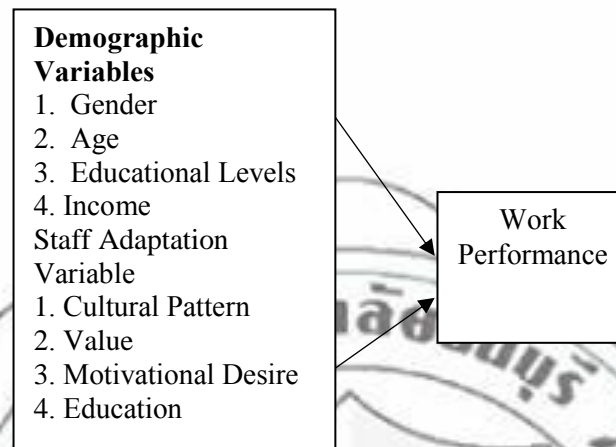
This research aims to investigate staff adaptation affecting the work performance in the case study of Hudson Manufacture (Thailand) located in Rayong. The finding of this research will be employed to guide how to manage the human resources department. The benefit of this study can influence the adaptation of the personnel in the same context.

*Purpose of this study*

1. To study staff adaptation of Hudson Manufacture (Thailand).
2. To study work performance of Hudson Manufacture (Thailand).
3. To study relationship between staff adaptation and work performance of Hudson Manufacture (Thailand)

**Research Framework**

Independent Variables      Dependent Variables

**Scope of Research**

1. Content of study this research aims to study staff adaptation affecting work performance at Hudson Manufacture in Rayong Province.
2. Population and sample population of this study is focused on the production department at Hudson Manufacture. Sampling technique used includes Purposing sampling resulting with 189 people.

**Research Technique**

Data collection technique includes questionnaire which is categorized into 3 sections.

1. First part of questionnaire is to interrogate respondents in demographic including gender, age, educational levels, and income. Respondents are to answer 4 questions in this section.
2. This part is employed to measure staff adaptation variable. Question style to measure Staff Adaptation obtains semantic differential scale with rating scale method.
3. The third section is conducted to measure work performance. Questionnaire style in this section includes semantic differential scale with rating scale method. Interval scale is divided into 5 levels of measurement.
  - 5 Level score reflects most important
  - 4 Level score reflects much important
  - 3 Level score reflects moderate important
  - 2 Level score reflects little important
  - 1 Level score reflects least important

Average technique is used to interpret by calculating of each interval. (Pothis Benjakul, 2007)

The average of each interval

**Analytical Technique**

1. The purpose of this study is set to examine staff adaptation on work performance in the case study.
2. Primary survey is conducted to investigate staff adaptation in the target company.
3. Past research review of adaptation as factor of work performance is studied.
4. Measurement of variables is reviewed from the past research in order to construct questionnaire.
5. Definition of variables covers to find relationship between staff adaptation and work performance at the targeted company.
6. Content validity and reliability are examined by try-out analytical tool. Relevant sample of 30 respondents is employed to test content validity and reliability of measurement. Cronbachs' alpha coefficient is found at 0.89 of 95% significance (Vanitch Buncha, 2002).



### Data Collection and Data Analysis

This study is directed into 2 sections.

#### Data Collection

1. Primary data is collected from 189 samples through questionnaire. A number of questionnaire is well prepared after it was tested with validity and reliability. The content validity of questionnaire was adjusted before the field survey is conducted. The respondents are explained what is the objective of this research and how the questions will be answered before they start responding the survey. All questionnaires are collected back and checked before they are analyzed with statistics.

2. Secondary data gathered from internet, governmental department, and private sources as well as the past research literature are employed to construct the questionnaire.

#### Data Analysis

1. The data is checked for accuracy and completeness by data editing. Coding technique is applied for data entry into computer.

2. Statistics software is used to analyze data descriptiveness and test hypotheses.

### Research Summary

1. To explain demographic factors of respondents, the study finds that 57.1 percentage of the respondents are male with 42.9 percentage, female. 47.6% are in the age range between 31-35 years old. 34.4% of respondents are graduated at high school or vocational certificate. The majority of 23.3% of respondents has income ranged from 15,001 baht to 20,000 baht.

2. To answer staff adaptation, the study remarks that overall average of 4 constructs of staff adaptation is occurred in the high level at 3.59. Education construct has the average in the first rank at 3.75. Secondly, motivational desire is ranked at the average of 3.62. Next is cultural pattern with average of 3.52. The last average rank is value construct at 3.46.

2.1 In cultural pattern construct, dimension of good relationship marks the highest average of 3.67. The dimension of unity in cultural pattern explains the average of 3.61. The dimension of achievement focus has the average of 3.58. The dimension of social acceptance obtains the average of 3.55. The last dimension of cultural pattern is proactive work style with the average value of 3.18.

2.2 Value has the high level of average at 3.46. Dimension of self-development obtains the average of 3.63. The dimension of reduction in age and qualification has 3.58. Understanding dimension holds 3.34 average. Change modification dimension is explained by the average of 3.28.

2.3 Motivational desire overall remarks in the high level of the average 3.46. Respectively, the first dimension of performance reward explains the average of 3.75. The second dimension is called open to comment. It obtains the average of 3.70. The third dimension includes relationship building among staff with the average of 3.69. Work climate and motivation falls in the fourth rank with the average 3.61. Finally, job understanding indicates the average level of 3.35.

2.4 Education variable have the overall high level of the average 3.75. To explain each dimension in the variable, the first ranked dimension called creative knowledge remarks the average of 3.89. The next rank includes intentional learning from colleagues and supervisor with the average of 3.79. Further study for work development obtains in the third rank with the average 3.56.

3. Variable of staff work performance in this case study has the average in the high level of 3.64. To remark each dimension in this dimension, expense dimension obtains the highest average level of 3.91. The second ranked dimension is time with the average of 3.84. Work volume comes in the third rank of the average of 3.56. The fourth rank explains in work quality of the average 3.53.

3.1 The average of work quality is 3.53. Operational accuracy aspect in this dimension explains the highest average of 3.69. Operational step and process has the average of 3.51. Supervisor's satisfaction marks the average of 3.38.

3.2 The average of work volume indicates at 3.56. This first aspect in this dimension includes success in assigned work with the average of 3.72. Plan follow-upset by supervisor obtains in the second rank with the average of 3.54. The next aspect indicates to balance of work volume and work force availability with the average of 3.41.

3.3 The dimension of time has the high level average of 3.84. The highest average of 3.85 indicates to time assigned according job importance. Accurate and speedy work explains the average of 3.85. Time saving by technology has the third average of 3.83.

3.4 Expense explains at the high level average of 3.91. The first ranked average of work learning with the minimum mistake is 3.98. Managerial technology of office material reduction remarks the average of 3.97. Effective expense control holds the average of 3.92. Resource consumption with maximum benefit indicates the average of 3.79.

4. Hypothesis testing finds that staff adaptation influences work performance at statistically significant 0.5 level with the explanation of 50.2%. The remain of 49.8% comes from other factors outside this research context.

### **Discussion**

This study finds that staff adaptation remarks the high level in all 4 constructs: education, motivational desire, cultural pattern, and value respectively. In addition, this research finds that staff adaptation significantly influences work performance at 5 % level with 50.2% explanation. The balance of 49.8% is explained by the other factors outside the study framework. It explains that staff adaptation contributes more than a half when it compares with other factors. The findings of this study can explain as follows.

1. For cultural pattern construct, the result implicitly suggests that culture influences structure, role, behavior, and work process in society. In addition, culture contributes to social structure eg. decentralization and centralization. Behavior from cultural influence can be visible and invisible. Culture also establishes its members' behavior, mind, belief, value, and learning. Members learn how to work through culture. Further, work enables members to earn self-respect through work position in their society. Budhthongdee (2014) suggests that work attitude is interactively related to cultural pattern. This relationship results in positive work performance.

2. For the construct of value, self-development helps staff to gain knowledge and skill. Yooprom (2013) remarks that value at work positively affects members' behaviors in a variety generations within the organization. Value at work in the aspects of understanding others, self-adaptation, and self-development positively contributes to members; behaviors in the organization. However, value in conservation unlikely has relationship with members' behaviors. Value of understanding others indicates difference between Generation Y and Baby Boomers.

3. For motivational desire, reward by performance comes in the first rank. This explains staff adapts in order to practically work to get reward for continuous development. Kongpalanon (2013) supports that work adaptation of staff to gain knowledge and skill to be become expert. Most workers desire to earn the new job for better reward and job security. Moreover, staff seeks suitable work schedule with appropriate work volume, freedom and responsible challenge. Also, staff is motivated to earn better knowledge to reduce anxiety and match the others' level. Unskilled workers adapt themselves to assigned jobs in order to make a better income.

4. For education construct, new knowledge and idea come in the first rank. This explains that work knowledge reflects the concept and principle of work. Knowledge base and learning from experience can be applied to work techniques. Kogpalanon (2015) finds that work adaptation to gain knowledge and skill leads to better performance.

### **Suggestion**

1. Cultural pattern is one factor of attitude. The organization should implement proactive plan to reach the organizational objective in the future. Information and past experience can be used to complement with cultural pattern.

2. Value within the organization should be promoted to underlie the change which is part of working process.

3. Motivational desire can help staff easily understand daily operation within the organization.

4. Education is the most important construct to develop and assist staff in the adaptation process. This explains the opportunity and development given to staff within the organization. It can be part of professional development.

**Further study suggestion**

1. Staff adaptation can be further studied in adaptation styles and patterns. They include job change, career transformation, or abroad work.
2. Qualitative research in staff adaptation can lead to in-depth understanding. Findings in this type of research can be applied to the organizational policy which leads to productive management.

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**Curriculum Evaluation of Master of Education Program in Educational Administration at Rajapruk University**

Laddawan Petchroj

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ladrojch@gmail.com, lapetc@rpu.ac.th**Abstract**

The objectives of this research were to study and evaluate the context, input, process, product, impact, effect, sustainability, and transportability of the teaching and learning systems of the Master of Education Program in Educational Administration at Rajapruk University. The sample was comprised of 77 persons including instructors, master graduates and master graduate employers. The data was collected by questionnaires, interview forms and meeting reports which were analyzed using frequency, percent, mean, standard deviation and content analysis.

The research results found that as following:

1. Evaluation results, of the Master of Education Program in Educational Administration from master graduates, rank the highest in the subject of theories and educational administration principles. They had opportunity and progress in working, were able to work hard, and had critical, synthesis, and creative thinking skills. They could also adapt themselves and were efficient in communication. The motivation and satisfaction to study at Rajapruk University was influenced the famous qualities and advice of the instructors. The master graduate employers evaluated that the characteristics ranked highest were morals and ethics, followed by responsibility, inter-personal skills, having a volunteering mindset and concern for social development, having knowledge, ability, and intellectual skills, and a high level in numerical analysis, communication and using information skills.

2. The result from the input evaluation showed that most instructors had a Ph.D. and held an academic rank as an associate professor. Moreover, 80% of the graduates in the Program had received their prior degree in educations. The process results emphasized in theories and strengthening leadership practices. The product evaluation showed that master graduates got jobs and had the highest satisfaction with the learning and teaching system. The impact was that some graduates had a higher work position and continued their education with a Ph.D. at a government university. The objective was that all students made a thesis and presented at the journal/ national conference. The work was sustainable by having an e-learning online program. The transportation was dispread using technology in the MBA and MPA programs.

**Keywords:** The evaluation of master education, educational administration

**1. General information**

To study in the higher education level, special a master graduate study focusing on a particular academic discipline or profession and developing specific skills and knowledge for a profession, graduate students should get new, advanced knowledge and skills about research methodologies in order to produce their thesis or dissertations for their master and doctoral degree. The student must have skills in their future career as the standard of Thailand Qualifications Framework for Higher Education (TQF), (Office of the Higher Education Commission, 2009) [1] by 1) Being the person who gets to know how to solve problems and deal with the contradictions both in personal and group status. The person should have leadership skills to seek for a new and proper way to use ideas in a practical way, 2) The person should apply the genuine understanding in theory and do research in his/her own major to solve problems and contradictions in other situations, 3) The person should be able to seek for and suggest solutions in academic or career fields by accepting the limitation of their own career, 4) The person should participate and follow the improvements in their own field to gain the newest knowledge, and accumulate information and understanding at all times, and 5) The person should be ethical and have high responsibilities in the context of academic and career subjects, emphasizing in communication and information technology skills, in order to communicate well in both speaking and writing in English and technology.

Rajapruk University is a private University with a master of education program in educational administration. In 2012, Rajapruk University had 44 master graduates and in 2014, the master graduates were working in government and private sections. According to the successful program, it

is very important to follow up and evaluate the educational administration system including instruction, master graduated competencies method, facility services and etc. Because of this situation, the researcher was interested in evaluating the context, input, process, product, impact, effectiveness, sustainability and transportability of the Master of Education in Educational Administration at Rajaprak University to improve the program in the future by 2019. The researcher would also like to get a better understanding of how to teach and practice with the students, improve the quality of teaching and studying, and improve the ability of new students properly and efficiently.

## 2. Purposes of Research

2.1 To create and find the quality of the teaching and learning methods of the Master of Education Program in Educational Administration at Rajaprak University.

2.2 To evaluate educational administration in terms of context, input, process, product, impact, effectiveness, sustainable and transformability.

## 3. Conceptual Framework of the Curriculum Evaluation in Educational Administration

3.1 The curriculum of the Master of Education Program in Educational Administration at Rajaprak University emphasizes knowledge on aspects of theories and practice in administration, having skills of research, technology, virtue and ethics of teaching profession, patient and positive minded, high responsibility, leadership potential in team and organization, ability in analysis and critical thinking in institute management.

3.2 The evaluation method followed the concept of CIPP model (Stufflebeam, 2003) [2], CIPPIEST Model (Stufflebeam and others, 2014) [3], (Shinkfield and Stufflebeam, 2007) [4]. The meaning of the alphabet is as follows: C=context (environment), I=Input (program, strategies, working plan), P=Process (Program activities), P=Product (output), I=Impact (program reach an appropriate group of beneficiaries), E=Effective (the quality and significance of outcomes), S=Sustainability, (successfully and continued over time), T=Transportability (=adapted and applied elsewhere).

3.3 The related variables of the evaluation of educational administration came from the research design of Nilphan (2010) [5] where CIPPIEST model was used in evaluating the Ph.D. curriculum. The data found that appropriate high levels were discovered in response to social needs, the highest rank was the quality of instructors. Kaewsuk (2009) [6] used the CIPP model to evaluate the master program's curriculum. It was found that ICT and research helped students to have more knowledge by self-directed learning.

## 4. Research Methodology

The sample was comprised of 77 people: 44 graduates, 23 employees, and 10 instructors. Instruments for collecting data were questionnaires and interview forms. The quality of the instrument was checked out by 3 experts who calculated the IOC value which was equal to 0.87 and the reliability was equal to 0.87. The data was collected by questionnaires, interview forms and meeting reports which were analyzed using frequency, percent, mean, standard deviation and content analysis.

## 5. Data Analysis Result

5.1 Result of Data Analysis from Graduates

**Table 1** Mean and standard deviation of opinions from the Program's graduates towards the curriculum.

	Description	$\bar{x}$	SD	meaning	number
1	Applying knowledge of education administration and ICT skills for developing and planning in working after graduation	4.91	.29	highest	2
2	Having opportunity and progress in duty working	4.90	.27	highest	3
3	Having more develop career ethics	4.90	.27	highest	3
4	Having more knowledge in education innovation	4.73	.45	highest	11
5	Having more intellectual skills	4.62	.44	highest	14
6	Having more interpersonal skills and responsibility	4.78	.30	highest	9

	Description	$\bar{x}$	SD	meaning	number
7	Having more skills in data analysis, communication and technology	4.81	.40	highest	7
8	Having mind in volunteer and social development	4.91	.28	highest	1
9	Motivation for studying is career progress	4.78	.29	highest	8
10	Motivation for studying is the high reputation of instructors	4.73	.45	highest	13
11	Satisfaction in curriculum accrediting	4.75	.40	highest	12
12	Satisfaction in learning and teaching	4.89	.27	highest	5
13	Satisfaction in education media	4.77	.36	highest	10
14	Satisfaction in university information management	4.54	.27	highest	15
15	Satisfaction in resources for learning/ research management	4.81	.30	highest	6

From table 1 the result analysis of opinion the program's graduates founded that every item was at a very high level. The highest number was having mind in volunteer and social development. The lower numbers were after graduation, they had applying knowledge of education administration and ICT skills for developing and planning in working, having opportunity and progress in duty working, develop career ethics, satisfaction in learning, teaching, resources for learning/ research management. They had more skills in data analysis, communication and technology. The motivation for studying is career progress, having more interpersonal skills and responsibility, satisfaction in education media, having more knowledge in education innovation, satisfaction in curriculum accrediting, motivation for studying is the famous of instructors, having more intellectual skills and satisfaction in university information management.

**Table 2** Mean and standard deviation of opinions from the Program's graduates towards the application of subjects/courses in work after graduation

	Description	$\bar{x}$	SD	meaning	number
1	Theory and Educational Principles	4.91	.29	highest	1
2	Curriculum and Knowledge Management	4.64	.49	highest	3
3	Policies and Strategic Management	4.09	.29	high	8
4	Education Administration to Internationalization	3.73	.76	high	10
5	Institution Management	4.55	.76	highest	4
6	Educational Research	4.27	.62	high	6
7	Research and Academic Management	4.00	.43	high	9
8	English for Master Students	3.73	.77	high	11
9	Seminar on Education Administration	4.18	.39	high	7
10	Leadership, Virtue and Ethics for Educational Administrator	4.73	.75	highest	2
11	Thesis	4.36	.75	high	5

From table 2, the analysis of the graduate's opinion towards subjects applying in working after graduation indicated that the highest mean subject was Theory and Educational Principles. The second was Leadership, Virtue and Ethics for Educational Administrator, followed by Curriculum and Knowledge Management and Institution Management.

## 5.2 Result of Data Analysis of Employer towards Master Graduates

**Table 3** Mean and standard deviation of employer's opinions towards the Program's graduates from the Master of Education of Educational Administration of Rajapruk University

	Description	$\bar{x}$	SD	meaning	number
1	Having honesty in teacher career	4.93	.27	highest	1
2	Having admire in teacher career	4.93	.27	highest	1
3	Having ability in learning and teaching management	4.86	.37	highest	4



	Description	$\bar{x}$	SD	meaning	number
4	Having intellectual skills in critical thinking, synthesis, and creativity	4.57	.60	highest	7
5	Having intellectual skills in applying theory to practice	4.57	.60	highest	7
6	Adaptable to situation and culture of organization	4.86	.36	highest	3
7	Having interpersonal skills and responsibility	4.76	.42	highest	6
8	Having skills in communication in Thai language	4.81	.40	highest	5
9	Eager to help community and social development	4.81	.40	highest	5

From table 3, the analysis of employers' opinions towards master graduates showed that every item was at the highest level. The highest performance was in honesty and admiring the teaching career, adaptability to many situations and cultures of organization, ability in learning and teaching management, communication in Thai language, eagerness to help community and social development, interpersonal skills and responsibility, intellectual skills in critical thinking, synthesis, and creativity, and application of theory to practice.

### 5.3 Result of Data Analysis of Instructors towards Master Graduates

**Table 4** The results from meetings of instructors and graduates from the Master of Education of Educational Administration of Rajapruk University

Items	Students/Master Graduate Characteristics/Context	Criteria	Evaluation Results
1. Context	Context - Classroom - Medias - Library	Context readiness	- Having comfortable classrooms with LCD and visualize medias, - Having a library with many text books context readiness
2. Input 2.1 Instructors	Having 5 responsible curriculum instructors	Responsible curriculum instructors had graduated doctoral degree or master degree and having academic rank as associated professor in educational administration at least 3 persons and related discipline 2 persons	Having 5 responsible curriculum instructors, 4 of them had graduated doctoral degree in educational administration and 1 person has a master's degree. There are 4 instructors having academic rank in associate professor and 1 in assistant professor.
2.2 Students	Complete the bachelor degree in education and have a certificate from Teachers Council of Thailand	Complete the bachelor degree in education or other fields	82% completed the bachelor degree in education and have a certificate from Teachers Council of Thailand
3. Process 3.1 Results of learning and teaching	3.1.1 Having emphasis learning and teaching skills in applying theory to practice in administration,	3.1.1 Student can get at least B grade.	3.1.1 There were 3 graduates in the first group had grade point average 4.00 while 16 graduates had 3.50-3.99.

Items	Students/Master Graduate Characteristics/Context	Criteria	Evaluation Results
	<p>leadership, school administration, curriculum management, knowledge management and administrator's ethics)</p> <p>3.1.2 Student's skills in Administration, Research, Technology and English Communication.</p>	<p>3.1.2 Student's abilities in</p> <p>1) Academic conference management</p> <p>2) Technology</p> <p>3) English communication</p>	<p>The second group had only 1 person had grade point average 4.00 while 15 graduates had 3.50-3.99</p> <p>3.1.2 student's abilities in</p> <p>1) Academic conference management</p> <p>- The first time in 2013 on topic of "The educational management model of schools under the Nonthaburi Provincial Administration Organization in preparation for the ASEAN Economic Community"</p> <p>- The second time in 2014 on topic of "Educational Leadership of Schools under Provincial Administration. Nonthaburi Province to Prepare for the ASEAN Economic Community"</p> <p>- Profession practice inside and outside school at list 90 working hours"</p> <p>2) Use online program, especially Class Start program.</p> <p>3) Study with English native speaking lecturers.</p>
	<p>3.1.3 Student's skills in leadership</p>	<p>3.1.3 Providing experience to improve student's skills in leadership.</p>	<p>3.1.3 Providing 2 programs for supporting experience to improve student's skills in leadership</p> <p>- <b>The first program</b> was study in the best practice institutions in the country such as: Mab-samklaew school, Burapha University, Vongchavalitkul University.</p> <p>- <b>The second program</b> was study in the best</p>

Items	Students/Master Graduate Characteristics/Context	Criteria	Evaluation Results
			practice institutions in the abroad such as : South Korea, Malaysia and Singapore
4 Product	1) Master graduate quality  2) Master graduate satisfaction	1) Work of master graduate  2) Master graduate satisfaction was at a high level.	1) 100% of master graduates have a job in the field of education or other related fields. 2) Master graduates' satisfaction was at a very high level.
5 Impact	1) Position  2) Doctoral degree program CIPPEST	1) Higher position  2) Continuing doctoral degree program	1) Some master graduate had higher position 2) Some master graduate can continue in doctoral degree program of government university.
6. Effective	Take a thesis course	12 credit	Every student must write a thesis and present it in a journal or at a national conference that has peer reviewers.
7. Sustainability	Using technology	Having e-learning course	Having e-learning online program, especially Class Start program in some subjects such as Research, Leadership, Theory and Educational Principles
8. Transportation	Dispread using technology in other program	Using technology in other program	Display dispread using technology in program of MBA and MPA

From table 4, the analysis of the evaluation results from interview and meeting of instructors towards master graduates of Rajapruck University in the Master of Education in Educational Administration curriculum found that classrooms were most comfortable when equipped with LCD and visualize media. This input has successfully qualified responsible curriculum instructors and students, almost complete with their bachelor degree in education, to receive the certificate of the teacher council of Thailand with 82%. The process of learning and teaching emphasizes student's ability skills in administration, research, technology and English communication. The product was 100% composed of master graduates that had been working and had weight in satisfaction in very high ranking. The impact found that some master graduates had a higher position and were able to pass the entrance examination to continue in the Ph.D. program at the government university. The objective was that every student was able to compose a thesis and present it in a journal or at a national conference that had peer reviewers. The e-learning online program was very sustainable, especially the Class Start program in subjects such as research, leadership, theory and educational principle. The transportation was displayed and spread using technology provided by the MBA and MPA program.

## 6. Conclusion

6.1 The evaluation of the curriculum of the Master of Education Program in Educational Administration found that the curriculum had provided the highest level in teaching and learning



administration. The items that masters graduates had ranked highest in were volunteering and social development, applying knowledge and ICT skills for development and planning, providing opportunity for progress, research skills, communication technology, and career ethics and morality. They were also satisfactory in highest level in teaching, gathering resources for learning/research, educational media, curriculum accrediting and studying with a variety of experts. While applying subject matter in work after graduation, the highest mean subject was theory and educational principles. The second subjects were virtue and ethics for educational administrators, curriculum and knowledge management, and institutional management. The employer evaluated that masters graduates had high levels of integrity, honesty, and passion for the teacher's career, adaptability to many situations and cultures of organization, ability in learning and teaching management, communication in Thai language, eagerness to help community and social development, interpersonal skills and responsibility, and intellectual skills in critical thinking, synthesis, creativity, and application of theory to practice.

6.2 The evaluation of the Master of Education Program in Educational Administration in terms of setting, input, process, product, impact, effectiveness, sustainability and transportability found that the context of a comfortable classroom was with LCD and visualize media. The input was responsible for delivering curriculum to instructors and students who have almost completed a bachelor degree in education and have a certificate of teacher council of Thailand at 82%. The process of learning and teaching emphasizes student's ability skills in administration, research, technology and English communication. The product was 100% of master graduate had been working and had weight in satisfaction in very high ranking. The impact found that some master graduates had a higher position and were able to pass the entrance examination to continue in a Ph.D. program at a public university. The objective was for every student to make a thesis and present it in a journal or national conference that had many peer reviewers. The sustainability was influenced by an e-learning online program, especially the Class Start program in some subject such as research, leadership, Theory and educational principle. The transportation was displayed and dispread using technology from the MBA and MPA programs.

## 7. Discussions

7.1 The evaluation of the curriculum of Master of Education Program in Educational Administration found that masters graduates have a high level aptitude in volunteering and social development, because Rajapruerk University encourages policies of volunteerism and social development. Many courses in core subjects of the master of education curriculum emphasize applying administration theory in practice, and relate to the information of the Doctor of Philosophy program Nanthachai (2012) [7] that had concluded that the objectives, structure, and subjects be the most appropriate. Applying knowledge and ICT skills for developing and planning i at work is important because in the 21<sup>th</sup> century, Integration of Information, Communication, and Technology (ICT) will assist teachers with global requirements to replace traditional teaching methods with technology-based teaching and learning tools and facilities (Ghavifekr, 2015) [8] . In Thailand, ICT is considered as one of the main elements in transforming the country for future development. And as Jindanuruk (2016) [9] and Pineida (2011) [10] suggest, to produce good quality learning using ICT, students should develop technological and learning competencies, and teachers should develop teaching, learning, professional, and technological competencies. It is believed that this can help students become lifelong learners and "experts in learning" and teachers become "experts in teaching". Loveless and Williamson (2013) [11] add that the curriculum in digital, cyber, information, and borderless communication networks should be aware of and adaptable to the fast changing technology.

The competencies of master graduates had high scores in honesty and passion for the teaching career, adaptability to many situations and cultures of organization, ability in learning and teaching management, communication in Thai language, eagerness to help the community and social development, interpersonal skills and responsibility, intellectual skills in critical thinking, synthesis,

and creativity, and application of theory in practice. Because all subjects of master curriculum had integrated various knowledge and emphasized skills of management in tasks, persons, technology, and research, especially leadership, virtues, and ethics for educational administrators. These evaluations relate to Dasa and others' (2010[12] ) findings that follow up on masters curriculum in science plan B of Srinakharinwirot University, which show that competencies of master graduates were highest in knowledge of content, skill of teaching, research, leadership, self-development, and sociability.

7.2 The evaluation of educational administration in terms of input, process, output, impact and context found that the input factors were responsible for 82% of instructors and graduate students earning the certificate of teacher council of Thailand. The process of learning and teaching emphasizes student's abilities skills in administration, research, technology and English communication. The product showed that 100% of master graduates had been working and were satisfied with the Program. The graduates got promoted and could pass the entrance examination to a Ph.D. program at a government university. The comfortable classrooms were equipped with LCD and visualize media. Because Rajaprek University has experts in their board of university council committees, every curriculum is checked for screening and permission before it is opened for learning and teaching. This information is related to Dasa and others (2010) [12] showed that through follow up research of the master curriculum in science plan B of Srinakharinwirot University, input, process, product, impact and context, the readiness of a curriculum in teaching and learning were completed.

### 8. Suggestions

8.1 The curriculum administrators should follow up with research and the academic administration, and this should be done repeatedly with new groups of students in the Program to make it internationalize for its students.

8.2 The curriculum administrators should add content educational quality insurance and improve student competency in English. Students must practice their English skills frequently and include it in their everyday life to increase the potential of conducting a research in English.

8.3 The curriculum administrators should improve the students' ability in using technology.

8.4 The curriculum administrators should improve wireless networks for stable internet access.

### 9. Acknowledgement

The sincerest thanks and appreciation is given to Rajaprak University, who gave us the research grants.

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**Effect of memory color on color constancy of natural objects**

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**Abstract**

Color constancy occurs when colors of objects remain the same despite the change in the color of the illumination. This phenomenon is very important as it helps us recognize the objects under different lightings. There are many factors contributing to achieving perfect color constancy. In this study, the contribution of memory color is investigated. A series of experiments were carried out on a computer screen. First, the memory colors of familiar objects were determined. Observers were asked to select colors of five natural objects (blueberry, tomato, sunflower, broccoli and salmon) based on their memories. Second, observers were shown a picture of natural objects and selected the color that they perceived. The experimental pictures of the natural objects consisted of an original picture taken under daylight and modified pictures as if they were taken under four different colored lights (red, green, blue and yellow). A color constancy index was calculated to determine whether the colors perceived under different lights were closed to memory colors. The result showed that Sunflower had the highest degree of color constancy. In the case of color light, Blue and Yellow showed to be the highest. Thus, the effect of memory color depends on objects and color of a light source.

**Keyword**

Color appearance, color constancy, digital image, lighting condition, memory colors

**Introduction**

Color perception depends on three factors: light from a light source, optical properties of an object and the human visual system of an observer. Light emitted from a light source hits an object. The object then absorbs some parts of the light and reflects the rest into an observer's eyes, where the human visual system interprets what color is perceived. Thus, color of an object is changeable depending on lighting conditions. However, the human visual system is able to compensate for the change in the color of the light source in such a way that the perceived color of objects remains constant under varying illumination conditions. This phenomenon is called color constancy [1].

The human visual system can adapt to the illumination changes so that the perceived color of objects is the same throughout the day. Chromatic adaptation plays an important role in achieving color constancy. Memory color is one of the mechanisms of chromatic adaptation. Memory color refers to a typical color of an object that an observer acquires through their experience with that object [2]. For example, when we think about banana, we associate it with yellow. Therefore we tend to perceive banana as yellow regardless of light reflected from banana entering the eyes. The influence of memory color on color constancy depends on many factors including experiences of individuals and physical properties of natural objects [3,4]. Shape, texture, highlight and shadow all affect memory color as well as color perception [3]. The effect of memory color found not only with natural objects but also with artificial objects, so long as observers are familiar with the object, e.g. Blue color of Smurf or yellow color of UHU glue [4].

This study aims to investigate the effect of memory color on color perception of natural objects under different color lights. When there is no such color light of the typical color of those objects entering the eyes but the typical color is still perceived, this reveals that memory color plays the important role in achieving color constancy. In this study, the degree of color constancy is determined in terms of color constancy index.

**Methods**

The visual experiments were carried out on a computer screen, where observers were able to select their memory colors as well as their perceived colors from a color chart. The RGB values of the selected colors were recorded and transformed to CIE xy chromaticity co-ordinates for analysis. To investigate the effect of memory color on color perception, two experiments were conducted.

## Observers

Five observers (two males and three females, 24-27 years old) took part in both experiments. They work for Digital Media Agency and are all Thai Nationality. One of the male observers is in Graphic Designer and the rest are in Marketing Team.

### Experiment 1

The purpose of the first experiment was to find the memory color of natural objects. The natural objects tested in this study were Broccoli, Blueberry, Salmon, Sunflower and Tomato. In the experiments, observers were shown a name of the natural objects, e.g. Tomato, and their task was to select a color from a color chart to match the color of Tomato in their memory.

### Experiment 2

This experiment aimed to find the perceived color of the natural objects in a picture. Having finished the first experiment, observers continued with Experiment 2 immediately. They were shown a series of experimental pictures, one at a time and in a random order, of natural objects that were given the names in the previous experiment. Their task was to select a color from a color chart that matched the color of the natural objects that they perceived in the picture.

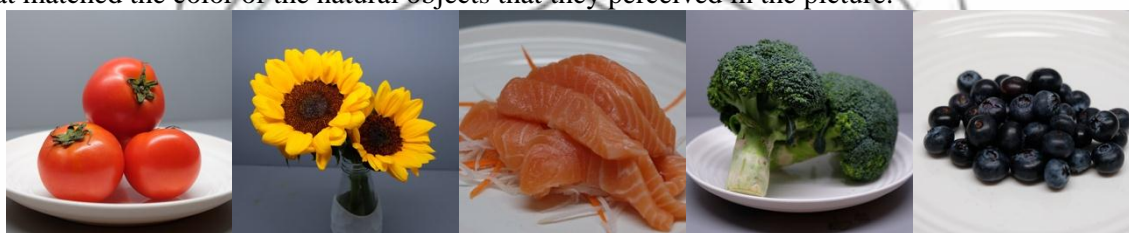


Figure 1 Experimental pictures: Tomatoes, Sunflower, Salmon, Broccoli and Blueberry, taken under daylight simulators D65

### Experimental pictures

In Experiment 2, the experimental pictures contained original pictures of each of the tested natural objects taken under D65 simulators (Figure 1) and four modified pictures for each of the natural objects. The modification was done to each original picture to simulate the same scene taken under different color lighting. To do so, color was applied to the entire picture using Color Filter in Adobe Photoshop with 50% opacity. Four colors were selected in this study: Red (150, 0, 0), Green (0, 255, 0), Blue (0, 0, 255) and Yellow (255, 255, 0). Figure 2 shows the examples of modified pictures for Tomato. In total, 25 experimental pictures were tested.



Figure 2 Examples of modified pictures in four different color lights: Red, Green, Blue and Yellow

### Data Analysis

The colors obtained from each observer were presented in terms of CIE xy chromaticity co-ordinates. The results from Experiment 1 denote “Memory Color”. The true colors of objects in the pictures, i.e. the colors taken directly from the pictures, denote “Actual Color”. These two colors serve as anchor points to determine the degree of color constancy. When the perceived colors, referred to as “Matches of reflected light”, fall in the same position as Memory Color, it means perfect color constancy, i.e. observers perceived the same color as their memory color regardless of light entering the eyes. On the other hand, when the Matches fall in the same positions as Actual

Color, it means zero color constancy, i.e. observers perceived the same color as the color light entering the eyes, no influence of memory color. The color constancy index (%CC) is defined by the distance between Actual Color and Memory Color and Matches of reflected color and Memory Color (Figure 3). The end of formula is multiplied by 100 to get percentage (Equation 1)

$$\%CC = \frac{a^2 + b^2}{c^2 + d^2} \times 100 \quad (1)$$

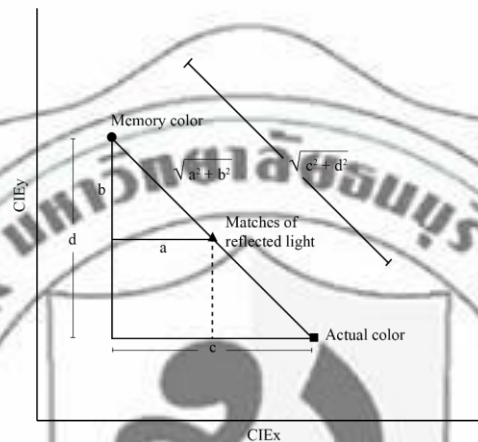


Figure 3 Concept of color constancy index. 1931 CIE xy color coordinates of Memory Color (circle; the color of natural object in observers' memory), Matches of reflected light (triangle; perceived color of natural objects in the picture) and Actual Color (square; the true color of natural objects in the picture)

### Experimental works

The color constancy indices from all observers were averaged for each natural object. The results are shown in Figure 4. Note that the higher the color constancy index, the higher the impact of memory color. The color constancy indices for five natural objects were 47.3%, 44.0%, 42.0%, 41.1%, and 38.5% for Sunflower, Blueberry, Salmon, Tomato, and Broccoli, respectively. The results showed that different objects affected color constancy in various degrees. The strongest effect was found for Sunflower. It could be that all observers are Thai and they are familiar with sunflower because sunflower is fairly common in Thailand. In contrast, broccoli is rarely found in Thai dishes. Therefore, the effect of memory color was weak.

Overall, the color constancy index is not much different between these five objects (8.8% difference between the max and the min %CC). However, from the raw data of each individual object, the difference in color constancy index between five observers was very high, e.g. for Blueberry, one observer got 12.3% and another one got 73.2%, so the difference was 60.9%, which was very high.

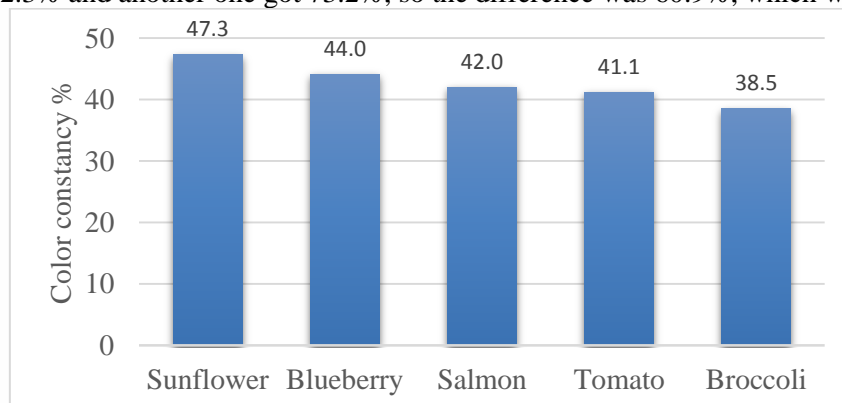


Figure 4 The average of color constancy index for the five natural objects



Figure 5 shows the color constancy indices averaged from all five objects for each color light. The highest color constancy index was yellow (53.7%) and the lowest was D65 (32.4%). The results for the other color lights are as follows: 53.0%, 39.3%, and 34.5% for Blue, Red, and Green, respectively. The results can be separated into two groups: one for Green, Red and D65 having the color constancy index around 35%, the other for Blue and Yellow with the color constancy index around 53%.

It is not surprising to see that under D65, the memory color had lowest effect. Since the objects were presented under natural color light, observers could perceive the actual color in the picture without relying on memory color to compensate for unnatural light in order to recognize the objects.

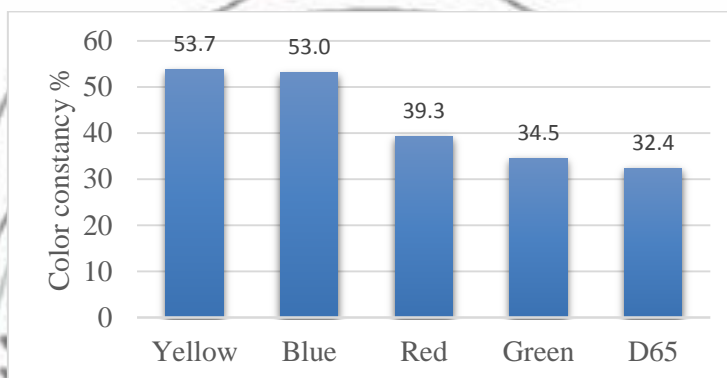


Figure 5 The average of color constancy index for five different color lights

### Discussions

On average, the effect of memory color on color constancy was about 40%. However, the effect depends on individual observers. The raw data showed high variation between observers. The lowest color constancy obtained was 1% for one observer, while another observer obtained 99% as the highest. Such results could come from two reasons.

First, viewing behavior can affect color constancy. Each observer had different behaviors while doing experiments. Some observers took time to choose the colors, while some did not. This could be the reason why color constancy did not occur to all observers.

Second, memory color depends on experience of individuals. In this experiment, one of the observers is a Graphic Designer. This observer works all day to design an artwork and is very familiar with color. He had the highest averaged color constancy of 57.2%, compared with the lowest of 30.8% for another observer who works in Marketing field.

### Conclusion

The effect of memory color on color perception of natural objects depends on types of objects and color lights. Even though the picture of the familiar object have no typical color of that object, the typical color of the object can still be perceived. Thus, the color of the familiar object remains constant. It was found that the color of natural objects under study was 40% constant as a result of memory color. The experience of individuals also affect color constancy since memory color depends on familiarity of individuals to the object.

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**A Study of Comprehensive Evaluation on Ecological City's Sustainable Development in Haikou**Guangying Lei<sup>1</sup>, Xian Li<sup>2</sup> and Yaojun Qian<sup>3</sup><sup>1</sup>Vice President, Haikou University of Economics, Haikou, 571127, China<sup>2</sup>Institute of Foreign Languages, Haikou University of Economics, Haikou, 571127, China<sup>3</sup>Economic and Trade College, Haikou University of Economics, Haikou, 571127, China**Abstract:**

To build ecological cities is an inevitable choice for those in China to realize sustainable development. The thesis adopted entropy method to evaluate quantitatively the sustainable development in Haikou through an index system established in it. It has been found that indexes on resources and environment are showing an unsustainable trend, which may become the main factors constraining Haikou's sustainable development. Moreover, its index on economic development fluctuated and that on social development sustained. Besides, obstacle degree method was employed to analyze the main factors hindering Haikou's sustainable development. Based on those studies, the author finally put forward the suggestions and countermeasures for Haikou's sustainable development.

**Key words:**

comprehensive evaluation, ecological city, entropy evaluation method, Haikou city, obstacle degree method, sustainable development

Located in the northern part of Hainan Island, Haikou is also renowned as the city of coconut that covers an area of 2,304.84 square kilometers, and a sea area of 830 square kilometers. The coastline of Haikou is 136 kilometers long and the climate of it is tropical marine climate. The annual average temperatures in Haikou range from 23.8°C to 28 °C and the annual average rainfall is 1,816 mm. As the hub of politics, economy, technology, culture, transportation and communication in Hainan province, Haikou's GDP reached 139.048 billion yuan by the end of 2017. Besides, it is home to 2.2721 million people, of which urban residents are 1.0395 million, contributing to 79.1% urbanization rate. The green coverage ratio of Haikou is 40.8% and public green area per capita is 11.5 square kilometers. According to the first Report on Global Urban Air Pollution released by WHO in 2011, Haikou was awarded as the cleanest city in China as its good air quality rate reached 96.4%, the top among China's cities. Inarguably, Haikou is entirely a vibrant tropical ecological garden.

Yet the rapid development and ever-increasing population have caused various damages to natural environment which intensifies the contradiction between human beings and nature. It remains a formidable challenge for Haikou to strike a balance between resources, environment, economy, society as well as sustainable development.

**1. Build a Sustainable Development Evaluation Index System for Haikou**

Based on the following aspects: theory of city ecology, theory of sustainable development, comprehensive researches of sustainable development index system by scholars at home and abroad; principles of science, hierarchy, comparability as well as Haikou's reality, this thesis has built a sustainable development evaluation index system for Haikou with four first-level of indicators: resources, environment, economy and society. The index system contains 3 levels, 15 second-level indicators and 39 third-level indicators. The main factors that fuel city development, including resources, environment, economy and society, are both independent and interactive.

**2. Comprehensive Evaluation on Haikou's Sustainable Development**

Based on entropy method and relevant data from 2006 to 2017, this article gave a comprehensive evaluation on Haikou's sustainable development and drew the relevant data. The following is the specific evaluation:

**1) Unsustainable Trend Shown in Haikou's Resources and Environment Indexes**

The score of Haikou's resources and environment presented a sharp downward trend from 2006-2017. The score of resources indicators dropped from 2.68 in 2006 to 1.76 in 2017. The major cause accounting for it is that the increasing urban population density has resulted in continued decrease in arable land per capita, daily water consumption per capita and other natural resources. The number of middle school students, an indicator that shows a city's human resources, has seen a remarkable fall

as well. Here are the major reasons: firstly, the amount of industrial sewage, waste residue and waste exhaust are increasing year by year. Secondly, soil environment pollution is exacerbating as the amount of fertilizer and pesticide used in per hectare are on the rise. Despite the government has rolled out pertinent policies that request centralized processing and reuse of industrial sewage, waste residue and waste exhaust, yet these wastes are still harmful to the environment.

## 2) The Rolling Development of Haikou's Economy

Falling into four stages, Haikou's economy has undergone a W-shaped development from 2006 to 2017.

In the first stage (2006-2009), the economy development was weakening with the indicator of economic development dropping from 2.61 to 1.76. The global financial crisis from 2007 to 2009 was the leading cause for the decline since it crippled the economic competitiveness. The total export volume of GDP fell from 31.93% in 2006 to 14.19% in 2009. The growth rate of secondary industry shrunk from 15.2% in 2006 to 1.7% in 2008. Besides, the growth rate of GDP diminished from 12.9% in 2006 to 10.8% in 2009.

In the second stage (2009-2010), Haikou's economy was going up with the indicator of economic development increased from 1.76 to 3.72. This is the result of the national strategy of building Hainan international tourism island in 2010. During that period, Haikou's economy competitiveness was rising and the total export volume of GDP grew from 14.19% to 14.91%. The secondary industry was up from 9.1% to 19.3% as well as the growth rate of GDP up from 10.8% to 17.5%.

In the third stage (2010-2011), Haikou's economy was going down with the indicator of economic development declined from 3.72 to 2.86. Affected by the European sovereign debt crisis and trade protectionism, Haikou's economy competitiveness was on the decrease and the total export volume of GDP dropped from 14.91 to 13.8%. The growth rate of the secondary industry fell from 19.3% to 13.5% and the GDP decreased from 17.5% to 12.3%.

In the fourth stage (2011-2017), Haikou's economy was going up with the indicator of economic development grew from 2.86 to 3.88. It was due to the gradual recovery of China's economy as well as the deepening of macro policy in expanding domestic demand. Meanwhile, the economic competitiveness was growing and economy recovering.

## 3) The Sustainable Trend in the Social Development in Haikou

The scores of social development index rises from 2.32 to 7.49 from 2006 to 2013, showing an obvious increase.

There are four reasons to this improvement. First, the government of Haikou has been actively implementing favorable policies to broaden the channels of employment, and in exchange, the registered urban unemployment rate has been decreasing. In 2017, 34,700 jobs were created in the city.

Secondly, policies that deliver benefits to people are put into effect step by step, and both social welfare and social security are improved along with it. The number of hospital beds and doctors either in western or traditional Chinese medicine owned by every 10 thousand people is increasing for years. Meanwhile the coverage of basic medical insurance system for urban residents, new rural cooperative medical care and old-age insurance for urban residents are extending. Furthermore, basic pensions have been paid to retirees for 100%.

Thirdly, the life quality of both urban and rural residents has been improved. Along with it, per capita house accommodation area, car ownership for every 100 people, and per capita road area are all on the rise.

Fourthly, the level of urbanization in Haikou is improving continuously.

## 4) The Sustainable Development in Haikou is Unstable

The sustainable development in Haikou as a whole has seen an upward trend from 2006 to 2017, but with fluctuations. It can be divided into four stages:

The first stage has seen an upward trend, the comprehensive score rose from 11 to 12.02 from 2006 to 2007.

In the second stage, the comprehensive score declined from 12.02 to 10.23 from 2007 to 2009.

In the third stage, the comprehensive score rose again from 10.23 to 15.19 from 2009 to 2012.

And in the fourth stage, the comprehensive score fell from 15.19 to 14.96 from 2012 to 2017.



There are two factors that are responsible for the above phenomenon. First, the compatibility between the first-level indicators is not ideal. Second, blindly pursuing economic and social development, we overlooked the damage to the whole city which is brought by the decrease in ecological resource and the destruction in ecological environment.

Thus, we can see from the above data that economic and social developments are the main factors that contribute to Haikou's sustainable development. However, resources and environment are the ones that worry us and constrain the development. Therefore, we should emphasize the continuous economic and social development, and more importantly, the protection of ecological resources and the improvement of ecological environment.

### **3. The Analysis on the Barriers to the Sustainable Development in Haikou**

The evaluation on cities' sustainable development is to assess the present condition, and more importantly, to find out and remove the barriers affecting the development. Through the obstacle degree method, the thesis has found out the following main factors: the area of farmland per capita, the number of middle school students, urban population density, urban GDP density, centralized sewage treatment rate, use of fertilizer per hectare of cultivated land, GDP per capita, growth rate of GDP, the proportion of total export in GDP, the number of hospital beds for every ten thousand people, the number of traditional Chinese (western) medicine doctors for every ten thousand people, Engel's coefficient, and per capita housing area of urban residents.

### **4. Countermeasures and Suggestions for the Sustainable Development in Haikou**

#### **1) Intensify resources protection and management for reasonable development and utilization**

Besides the construction of ecological city, it has become an important subject for Haikou on how to give its comparative advantages into full play, and intensify resources protection and management for reasonable development and utilization. Firstly, we should vigorously strengthen resources conservation and intensive utilization, save energy, water, materials and land, and use resources reasonably and efficiently to improve the rate of utilization and production; Secondly, we should take rigorous steps to protect farmland, put idle land into optimal use. Thirdly, we should enhance resources management, implement information engineering project, and realize resource sharing. Finally, we should accelerate the pace of talent resources development for talents reserve.

#### **2) Reinforce ecological environment governance, and actively promote the construction of ecological city**

A sound ecological environment is the foundation to sustain the economic and social development. To build a marine ecological industry base and a national historical and cultural city, the primary task for Haikou is to improve its urban ecological environment. However, ecological environment construction is a systematic and long-term project, requiring both protection and governance. So in the first place, we should expand the scope for the use of organic fertilizer, carry out the project for the reduction of pesticide and fertilizer to increase the utilization rate of pesticide. Secondly, focusing on the governance of vehicle emission and dust pollution in the construction site, we should control the total emission reduction, enhance the comprehensive environment governance, process and recycle industrial wastes. Thirdly, we should reinforce evaluation management, rigorously control the access to environment and approval of evaluation from the source so as to control construction project featuring high pollution, high energy consumption and low output. Fourth, the introduction of market mechanism could help resolve government failure in management in some areas, solve the shortage of investment in the construction. Finally, we should work harder to protect environment in nature reserves to increase forest coverage and the ability to build city gardens.

#### **3) Accelerate industrial upgrading and develop advantages for fast economic growth.**

There are many challenges ahead for Haikou to be built into a moderately prosperous society in all respects, a tropical tourist destination and a livable city. Therefore, we should place equal emphasis on both economic restructuring and increasing economic aggregate, improve growth quality and efficiency, and be committed to fostering the industrial and economic structure, which could facilitate and sustain economic growth to avoid negative effects brought by the structural imbalance. Then, we should exert our advantages to extend industrial chain, increase product's added value and science and technological content, enhance competitiveness and expand export. Finally, we should develop the tertiary industry, increase economic power to boost fast economic development.

## 4) Step up urbanization to improve people's livelihood

Urbanization is the historic task for China's modernization and an imperative for Haikou's eco-city construction. Improving people's livelihood is not only a dream of Chinese people and the hope of the government as well. So narrowing the disparity between rural and urban areas without increasing farmer's revenue would make China's modernization empty words. Hence, efforts should be made to realize a series of transformations from "rural" to "urban" in some fields including industrial structure, mode of employment, living environment and social security, to orderly help migrant workers become urban residents. In addition, we should invest more in education, increase education resources and quality; improve social security, enlarge investment in medical equipment and training of medical staff, so that people have access to medical care. Statistics show that Engel's coefficient is on the rise, so we should increase urban and rural residents' income level.

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**THE IoT TECHNOLOGY FOR THE AQUAPONICS SYSTEM  
WITH FISHES AND VEGETABLES IN THE MEKONG DELTA OF VIETNAM**

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**Abstract**

The well-known commercial-scale UVI aquaponic system from the University of the Virgin Islands (USA), the updated aquaponic system was designed to suit the geographic conditions, the source of supply and the size of the family farm, the type of vegetables and fish needed for farming, etc., to be applied to agricultural households in the Mekong. delta area- Vietnam (short name is improved aquaponics model for small farms in Vietnam: SFV- improved aquaponics).

This system combined with a shade net house with a total area of 5000m<sup>2</sup>, divided into 5 "cottage aquaponics" with an area of 1000m<sup>2</sup> is considered to be convenient for control and farming. Every cottage aquaponics are the direct controlling system by a microcontroller Adruino for lights (on/off), pumps, gates (open/close), fans or sprayer, alarm and sensors (getting the temperatures, humidity, moisture) in the air, water and soil. The operation of cottage aquaponics is monitored and controlled via PC or remotely via WAP / cloud. It means that the information technology and electronic devise are applied in the agriculture area as well as IoT.

In this report, the SFV-improved aquaponics are introduced in more detail that they were designed and used experimentally in a number of sub-farms in the Mekong delta area that have been successful in growing vegetables (lettuce, herbs, perils, ...) and combine with raising fish (eel, koi) with clean and special products and contributing to preserving domestic water supply and environment protection. This system will contribute to improve the productivity of farmers for reasonable investment because of human saving, time to recover after two years and contribute to the conversion into high-tech agricultural production. SFV- improved aquaponics will be the model of small and medium agricultural production for farmers in Mekong delta areas in Vietnam towards high-tech agriculture.

**Keywords:** improved aquaponics, shade net house, IoT technology, high-tech agriculture, Mekong delta Vienam.

**1. Introduction**

Many farmers still use the traditional methods of farming which results in low yielding of crops and fruits. But wherever automation had been implemented and human beings had been replaced by automatic machineries, the yield has been improved. Hence there is need to implement modern science and technology in the agriculture sector for increasing the yield. Most of the papers signifies the use of wireless sensor network which collects the data from different types of sensors and then send it to main server using wireless protocol. The collected data provides the information about different environmental factors which in turns helps to monitor the system. Monitoring environmental factors is not enough and complete solution to improve the yield of the crops. There are number of other factors that affect the productivity to great extent.

Aquaponics is considered as a solution for farmers to increase labor productivity in the field of fish and vegetables by using organic methods are friendly to the environment. In this section, aquaponics models are introduced in detail and applied to small farms.

The well-known commercial-scale aquaponics system was developed at the University of the Virgin Islands (UVI) that has been in operation since the year of 2003 (see in Fig.1)[1-2]. The UVI system, which has produced tilapia and a variety of vegetable crops, serves as a successful design model for the nascent aquaponics industry. The system consists of four fish rearing tanks, two cylindro-conical clarifiers, four filter tanks, one degassing tank, six hydroponic tanks, one sump and



one base addition tank. The total water volume and hydroponic tank growing area are  $110 \text{ m}^3$  and  $214 \text{ m}^2$ . The land area occupied by the system is  $1000 \text{ m}^2$ .

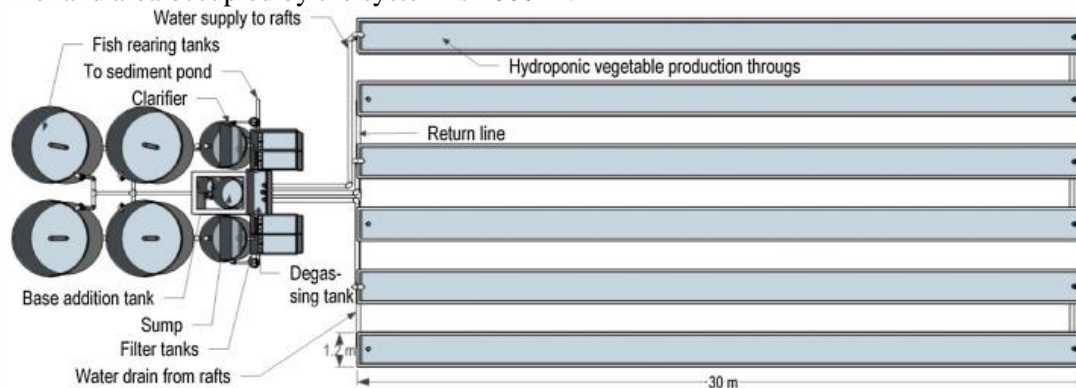


Fig.1. commercial-scale aquaponic system by Dr. James E. Rakocy (UVI).

Treatment processes consist of aeration, solids removal, denitrification, decomposition, degassing, nitrification and direct uptake of ammonia and other nutrients by plants. Aeration occurs in the rearing tanks (22 diffusers per tank), degassing tank (four diffusers) and hydroponic tanks (24 diffusers per tank). Aeration is provided by a 1.5-hp blower for the fish and degassing tanks and a 1-hp blower for the hydroponic tanks.

However, how to use the UVI system for many farms in over the world that will be the hard work. The updated aquaponic system was designed to suit the geographic conditions, the source of supply and the size of the family farm, the type of vegetables and fish needed for farming,...., will be needed. Many research group studied on the IoT for environment and smart agriculture [3-7]. Moreover, the research group in RCHAA already done some model of hydroponics with LEDs for plants and fishes [8,9] that will be easy to apply in aquaponics system. Here, we studied and applied for the agricultural activities in the Mekong delta areas.

## 2. System Overview

### 2.1. The trend of IoT technology in agriculture

Agriculture is considered as the basis of life for the human species as it is the main source of food grains and other raw materials. It plays vital role in the growth of country's economy. It also provides large ample employment opportunities to the people. Growth in agricultural sector is necessary for the development of economic condition of the country. Unfortunately, many farmers still use the traditional methods of farming which results in low yielding of crops and fruits. But wherever automation had been implemented and human beings had been replaced by automatic machineries, the yield has been improved.

In Asia, countries have achieved great results in high technology agriculture such as Israel, Japan, South Korea, and Australia on the basis of the achievements of the development of technology and technology for decades. Using IoT and electronic devices to manage agricultural activities helps to reduce costs, increase accuracy, reduce farming area, select good seed-seedlings, and protect habitats. Directly contributing to improve the productivity of agricultural workers of farmers.

The application of IoT (Internet of Things) in agricultural production has become an urgent need, because not only in usability but also in the development trend, especially in writing revolution of the industrial revolution 4.0.

### 2.2. The model of aquaponics for fish and vegetables for Mekong delta areas

#### a. The advanced of aquaponics model

In this work, we found the advanced of aquaponics model such as: Economical use of water due to the process of circulation; No use of chemical fertilizers and pesticides (direct impact on the development of fish and micro-beneficial in the system); Higher profitability (2 products: fish and vegetables in the same system); Water is circulated continuously in the system, virtually eliminates the environment, no chemical fertilizers and pesticides. Therefore, the aquaponics model shows the value of aquaponics brought to the environment. and the ability to develop sustainable agriculture, in line with the complex climate change and salt mismatches that have taken place in recent years.

Viet Nam should promote the development of high-tech agriculture because of the following advantages: High-tech agriculture of some advanced countries has been summarized; tropical conditions and river systems, the coast of more than 3,000 km long, providing silt for the delta; Over 70% of people live in rural areas or in agriculture; The Mekong delta products over 40% of total food production for the whole country (80 million tons in 2017). With the challenges of food security and product quality, labor efficiency should develop agriculture towards high technology. The solution is to promote the development of organic agriculture, save water for deep-sea-islands and combine vegetables and fish. Therefore, the aquaponics model is one of the optimal hydroponics solutions in agriculture today and in the future.

*b. The design of SFV- improved aquaponics*

The design of SFV- improved aquaponics model for small farms in Mekong delta areas can be shown in Fig. 2 in below:

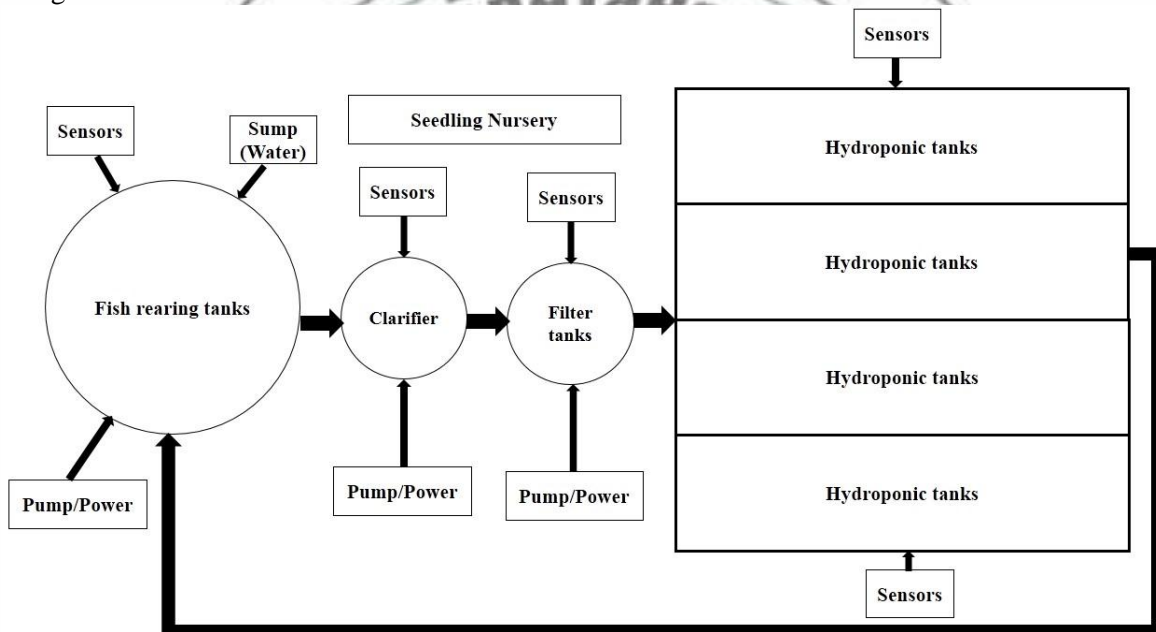


Fig.2. the SFV- improved aquaponics model for the small agricultural farm in Mekong delta areas. It consists: Fish rearing tanks, clarifier, filter tanks, hydroponic tanks and control system.

**Fish rearing tanks:** The tank is a circle to create centrifugal force in the middle of the tank, the sediment is collected in the middle of the tank and flows outside the pipeline is designed in the middle of the tank. Water is pumped into the tank from the edge of the tank wall, creating a natural flow in the tank, increasing the ability to absorb waste. The circular disk is located in the middle of the tank, to provide dissolved oxygen to the water uniformly in the tank. The pumping time in each tank is programmed according to the amount of fish contained in each tank, to ensure that fish waste is disposed of optimally. The time to pump water into each tank is calculated by the method: the amount of water each time is equal to the amount of water in the tank. The pump is selected with a flow rate of 8 m<sup>3</sup>/h.

**Clarifier:** The bio filter system converts waste from the nutrients into the nutrients needed by the plant and absorbs the nutrients it absorbs. The filtration system in the aquaponics process is calculated not based on the amount of waste required in the aquaculture cycle, because the water surface area of the hydroponic system itself, the largest that microorganisms live and grow.

**Filter tanks:** the mechanical filter system is made of composite according to the Radical Flow Filter method (RFF). This is the most effective mechanical deposition method without the use of electric power supply. Filtration system is designed and built with effective sedimentation capacity for total water flow with 10 m<sup>3</sup>/h for this system.

**Hydroponic tanks:** Hydroponic tanks are constructed of brick and lined with HDPE thickness of 0.4 mm, with a height from the bottom to the bed of 30 cm. Hydroponic tanks are divided into 4 beds and connected through an underground PVC pipe. Water circulation time is 4 times/day.

**Seedling nursery:** Build close to the hydroponic system to reduce the time for seedling to hydroponic system.

**Net house:** the type of agricultural screen house (standard Nguyen NNS-9.6) with a span of 9.6 m (span), fixed roof clearance 1.60 m wide has been certified suitable for agricultural production in the area tropical climate like Vietnam

**Control system:** Monitoring system, automatic water quality alert and display of fast and accurate environmental parameters by intelligent mobile devices, using IoT technology.

The advantage of our SFV- improved aquaponics model for the small agricultural farm in Mekong delta areas: In a continuous cycle, the water from the aquarium contains sediment, passes through the mechanical filter to retain large particles and passes through the filter. Water then passes through vegetable systems where plants absorb nutrients and eventually clean water. The filter converts waste into essential nutrients for the plant to absorb. The nutrient removal process cleans the water, eliminating water that contains toxic components with nitrogen (ammonia and nitrite) and allow fish, plants and bacteria to grow. The process is repeated so that all organisms work together to create a sustainable development environment that provides a stable, balanced system.

### 2.3. The application IoT in the SFV- improved aquaponics

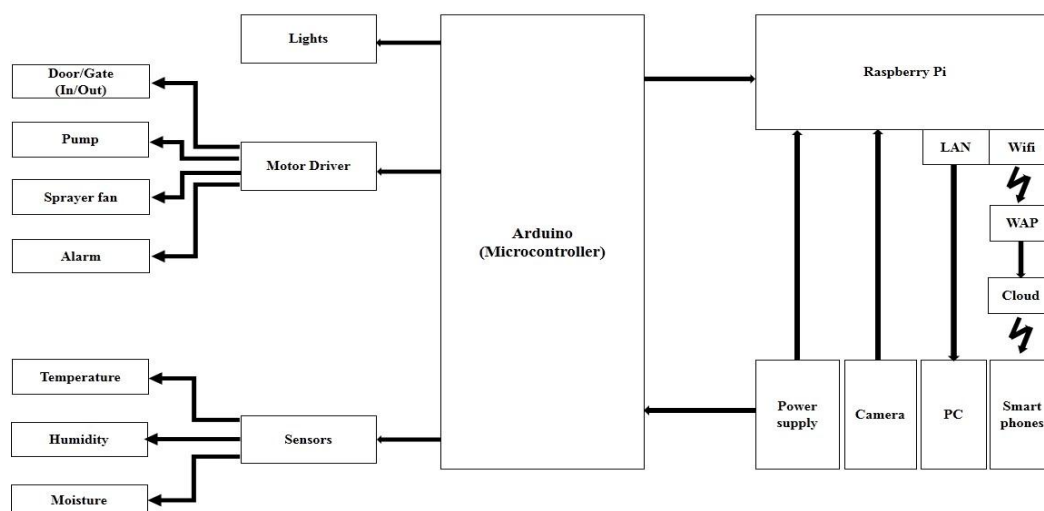


Fig.3. the control system for SFV- improved aquaponics for farm.

For synchronous control of this system, microcontroller- Arduino is used to control the function blocks: lights, motor diver (In/out gates, pump, sprayer fan and alarm in emergency), sensors (temperature, humidity, moisture and others); Raspberry Pi (camera, PC for monitoring by LAN or using the smart phone by wifi).

Here, the Raspberry Pi is small pocket size computer used to do small computing and networking operations. It is the main element in the field of internet of things. It provides access to the internet and hence the connection of automation system with remote location controlling device becomes possible.

In this model, Microcontroller- Arduino are used. Arduino Uno is a microcontroller board that uses ATmega328P chip (Datasheet), which is commonly used in monitoring and control applications at low cost. Devices based on the Arduino platform are programmed in their own language. This language is based on the Wiring language written for hardware in general. And wiring is a variant of C / C ++. Some call it Wiring, others are called C. Ethernet Shield is based on the Wiznet W5100



chip, supporting both Ethernet and TCP and UDP. Arduino Ethernet Shield supports up to four devices simultaneously. Use the Ethernet library available to connect to the internet via an RJ45 Jack. Cayenne monitoring and control software: Cayenne is one of the pioneering tools in interface design with hardware routing and dropping. Cayenne is designed for IoT, that is, Internalization of electrical equipment. It can control the hardware remotely, it can display the sensor data, and it can store data, analyze and do many other interesting things. You can control your device from the web, without the need to code

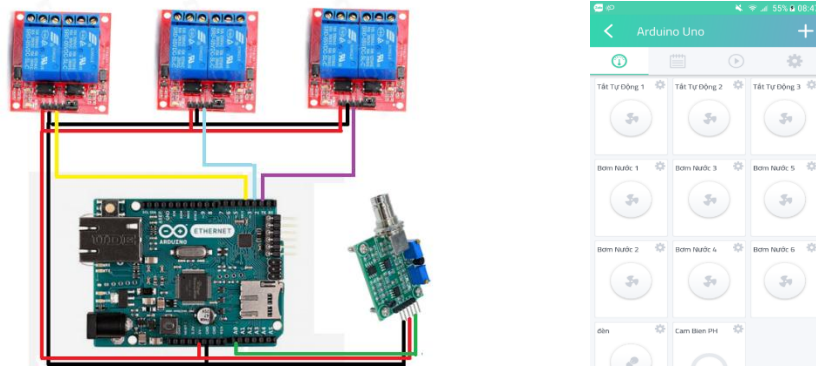


Fig.4. (in the left) The connection between nodes with IoT in the model and (right) Interface system for monitoring and control aquaponics system.

The technical requirements for water quality monitoring and online control systems using IoT are as follows:

- Monitoring pH, NH<sub>3</sub> and NO<sub>2</sub> levels in Fish rearing tank.
- Automatic control system added CaCO<sub>3</sub> when the pH value falls below the threshold.
- Issue warnings and directions when the environmental conditions exceed the warning level
- Set the control mode option so that the user can easily control and set.
- Controlling equipment such as pumps, aerators, fans,... via smartphone.
- Remote viewing for print / out management and fire safety incidents, etc. using camera and alarm alarms.

Control systems using IoT technology have worked well and synchronized control of some environmental parameters and water quality for growing vegetables and eels to gain weight. This control unit cost is about 10% of the total cost of this improved aquaponics model. Some parameters of water and soil of SFV- improved aquaponics sub-farms are presented in section 4 below.

#### 4. Experimentation and results

In this section, actual parameters of SFV- improved aquaponics sub-farm (RCHAA,VNU Ho Chi Minh City- University of Science); Some parameters for water quality and the calculating products of SFV-improved aquaponics sub-farm (total 500m<sup>2</sup>) have been described in detail to illustrate the success of this model for incorporating vegetables and fish in aquaponics system.

##### 4.1. The parameters for the aquaponic model

Table 1. Design parameters for the aquaponic model in the sub-farm area of 500m<sup>2</sup>.

Names	areas	Volume of water	Specifications / Description
Tank 1 (eel-growth fish)	7 m <sup>2</sup>	5 m <sup>3</sup>	<ul style="list-style-type: none"> <li>- Total: 350 fish/tank</li> <li>- Concentration: 70 fish/m<sup>3</sup></li> <li>- The eel-seeded weight: 100g, approximately 1 kg/fish after the harvest</li> <li>- Production: 350 kg/crop</li> <li>- Productivity: 70 kg/m<sup>3</sup></li> </ul>

Names	areas	Volume of water	Specifications / Description
Tank 2 (Koi fish)	7 m <sup>2</sup>	5 m <sup>3</sup>	The weight of eel-seeded: 30g/fish. Total is 150 fish. The yield depends on the amount of food and the time of harvest
Tank 3 (eel-seeded fish)	3 m <sup>2</sup>	2 m <sup>3</sup>	- Total: 700 fish/tank - Concentration: 140 fish/m <sup>3</sup> - The eel-seeded weight: 20g, approximately 100g/fish after the harvest - Production: 50 kg/crop - Productivity: 25 kg/m <sup>3</sup>
Tank 4 (Filter tanks)	1,13 m <sup>2</sup>	1,5 m <sup>3</sup>	Radical flow filter method
Tank 5 (Clarifier)	0,5 m <sup>2</sup>	0.4 m <sup>3</sup>	Use of micro-organisms
Hydroponic tanks	160 m <sup>2</sup>	48 m <sup>3</sup>	Harvested every month. Production: 2kg/m <sup>2</sup> / month. Total vegetable production: 3840kg/year
Nursery and walkways	77,37 m <sup>2</sup>	none	Can be optimized more areas
Total area	500 m <sup>2</sup>	~62 m <sup>3</sup>	

The above design parameters are consistent with wide area conditions in rural areas with the area used for Hydroponic tanks being 32% of the total of 500m<sup>2</sup> (see Table 1). However, if the design of these models in the inner city, the Hydroponic tanks will be classified into 2 to 3 floors. Then, we have to design a rigid mechanic and use the pulley system to change the position of the Hydroponic tanks when they want to care and harvest clean vegetables. At this point, the allocation of Hydroponic tanks can be over 50% of the total area because of space optimization.

#### 4.2. Some parameters for water quality

Ammonia (NH<sub>3</sub>) concentration:

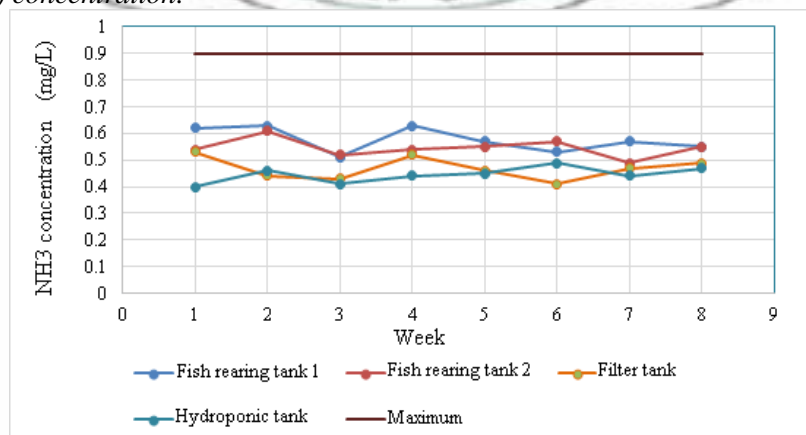


Fig.5. the concentration of NH<sub>3</sub> in fish rearing tanks during 8 weeks in our farm.

Nitrite ( $\text{NO}_2$ ) concentration:

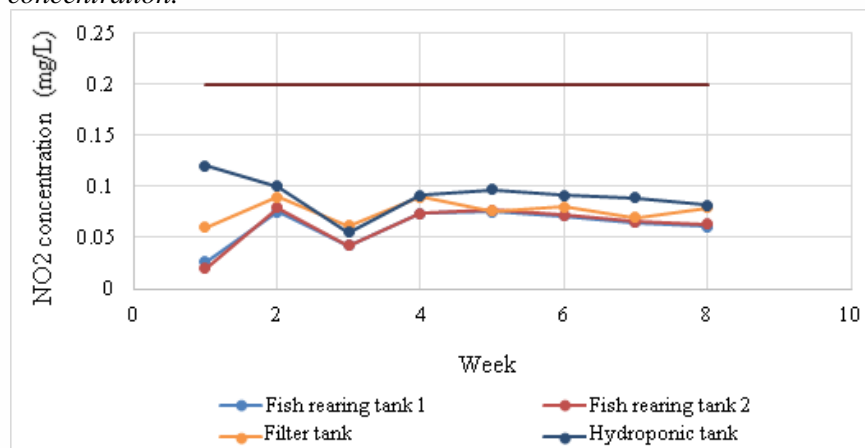


Fig.6. the concentration of  $\text{NO}_2$  in fish rearing tanks during 8 weeks in our farm.

Figure 7 shows the ammonia concentration in the 8-week study period indicating that  $\text{NH}_3$  is always at the permissible level ( $0.9 \text{ mg/L}$ ) to ensure the survival and development of aquatic life. Since the eel tanks have been cultured for a long time, the fish grows so that the  $\text{NH}_3$  values between the tanks do not change much.  $\text{NH}_3$  concentration in the two aquariums is always higher than the other tanks due to the large weight of the fish, the high amount of feed and the large amount of waste. In addition, the microorganism converts ammonia to nitrite in the fish tank relatively less compared to the other tanks leading to higher ammonia concentrations in the aquarium.

The nitrite ( $\text{NO}_2$ ) concentration for 8 weeks is within the allowable limit ( $0.2 \text{ mg/L}$ ). In the first week of study, due to the small amount of morning glory, the amount of microorganism that did not grow well led to the nitrite concentration of the unstable model.

*pH value in the fish rearing tank*

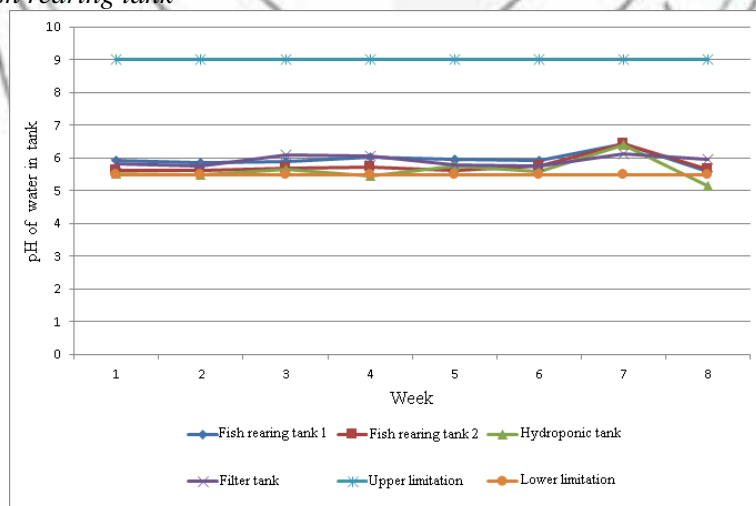


Fig.7. the graph shows the pH value in hydroponic tanks during 8 weeks in our farm.

pH is one of the most direct and indirect influences on aquatic life such as growth, survival, reproduction and nutrition. When the pH of the media is too high or too low, it is not conducive to the development of aquatic life. It is the determinant of the distribution of aquatic species and greatly affects the development of embryos, the nutritional and reproductive processes of fish. The results of the survey indicate that the position of the tanks is within the allowable limits ( $5.5 < \text{pH} < 9$ ) to ensure aquatic life, especially the eel can adapt the pH range from 4 to 10. However, the pH of the positions is quite low compared to the optimum pH range for the system from 6.8 to 7.0.

The reason for low pH in vegetable baskets is that algae are more abundant in the model and at night algae absorb oxygen, leading to more  $\text{CO}_2$  produced in the water. So, getting water early in the morning will have a low pH. In addition, less ammonia conversion results in less  $\text{H}^+$  production



and hence lower pH in the remaining tanks. Initial results showed that the system developed stably for a long time, yielding an average yield of 2 kg/m<sup>2</sup>/month.

#### 4.3. The calculating products in SFV-improved aquaponics sub-farm

For this aquaponic system, the amount of the fishes and vegetables after a crop is also shown in Table 2 and Table 3 as follows:

Table 2. The amount of feed for in the IFV- improved aquaponics sub-farm.

Name	Calculate	Note
foods for big fish (fish- growth)	$350\text{fish} \times 1\text{kg} \times 3\% = 10,5$ kg/day	Fish feed intake is 3% of body weight
foods for little fish (fish -seeded)	$350\text{fish} \times 0.1\text{kg} \times 3\% = 0,21$ kg/day	
Total of food	10,71 kg/day	

The amount of feed for fish in 2 tanks of eel fish for 1 day is 10.71 kg (see table 2) for 350 eel fish- growth and 350 eel fish-seeded. It is the good number for our aquaponics sub-farm and This amount of food does not need to store much to make it convenient for farmers in Mekong delta area.

On average, farmers collect about 27 kg (see in table 3) of clean vegetables. By increasing the area of Hydroponic tanks by two to three times (using the volume above) the amount of vegetables can be 60 to 90 kg / day on a 500 m<sup>2</sup> model. This amount of vegetables is a great source of income for farmers compared to the investment cost and the labor is very small (1-2 people). Only after 1 year, this model helps to harvest about 700 kg and 300 Koi. Including vegetables, the total income from this 500 m<sup>2</sup> farm is 20000-30000usd/year.

Table 3. The amount of green vegetables harvested on this aquaponic model.

Name	Calculate	Volume of harvested vegetables/
Main vegetable growing area in Hydroponic tanks	$8,25/0,06=137,5$ m <sup>2</sup>	137,5 m <sup>2</sup> x 1 time x 5kg = 687.5kg/month
Other vegetable growing area	$137,5 \times 0,2=27,5$	27,5 m <sup>2</sup> x 1 time x 4kg = 110kg/month
Total	160m <sup>2</sup>	797.5kg/month or 26,6kg/day

Eel grows as fast as calculated and vegetables grow well thanks to the waste water of Hydroponic tanks, which is the success of the RCHAA team (see the Fig. 8).



Fig 8. A shade net house of aquaponics –sub farm with fish (eel) and vegetable (lettuce) of RCHAA-University of Science (in Binh Hung ward, Binh Chanh district, Ho Chi Minh City, Vietnam).

With the results obtained for both vegetables and fish, the IFV- improved aquaponics sub-farm shows great profitability, river-lake water conservation, small capital investment, high school and technology,...., will attract farmers' investment. The state has a policy to support the development of this model in order to contribute to the restructuring of agricultural production to the direction of high-tech agriculture. This model is promising to appear rich farmers and become billionaires at Mekong delta areas in near future.

#### 5. Conclusion

The design of SFV- improved aquaponics model for small farms has been designed and performed well with the application of IoT technology in the observation and testing of some

parameters of the environment and water quality to ensure good living conditions. Best for fish and fast growing of greens in the same aquaponics. Calculations in the design of vegetable areas, fish farms, breeding areas, control systems,... are very detailed and accurate. Estimates of fish and vegetables indicate that SFV- improved aquaponics model for small farms will be a major source of revenue for growers or farmers in today's high-tech agricultural development.

This model will complete the system management software to apply the cloud computing (IoT) technology for further monitoring and management, or to improve the accuracy and simplicity of use for the farmer. People. In addition, bile clearance and decomposition, the linkage between SFV-improved aquaponics models, should be further studied to apply to larger farms in accordance with the docking principle. We look forward to the cooperation with many researchers/professors in the field of IoT and electrical engineering to upgrade the SFV- improved aquaponics model in next time.

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In the end, we also thanks the professors, reviewers and technical committee of the Journal help us to improve the quality of this paper.

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**Stack of graphene/copper foils/graphene by low-pressure chemical vapor deposition as a new thermal interface material**Trung T. Pham<sup>1,2,\*</sup>, Phuong T. Nguyen<sup>2</sup>, Quyet H. Do<sup>2</sup><sup>1</sup>Department of Materials Technology, Faculty of Applied Sciences, HCMC University of Technology and Education, Hochiminh city, Vietnam;<sup>2</sup>R&D center - Saigon High-Tech Park, Hochiminh city, Vietnam.**Abstract:**

Although there are several kinds of thermal interfacial materials using in electronic semiconductor industry such as thermal grease, thermal glue, thermal gap filler, thermal pad and thermal adhesive, heat dissipation still remains a challenge. In this context, chemical vapor deposition graphene on copper foils in vacuum is considered as a wonderful hybrid material (graphene/copper/graphene) for more demanding thermal management applications thanks to unique properties of graphene in comparison with other materials in recent trends. We found that the thermal properties of copper films change as graphene is covered on top of the copper surface. Especially, a single/double atomic plane of graphene can most significantly increase the film's thermal conductivity among studied samples. Our graphene on copper foils was analyzed by optical microscopy, Raman spectroscopy, scanning electron microscopy. This stack of graphene/copper/graphene materials may play a very important role as a potential material with superior thermal conductivity to replace traditional copper shim thermal pads in current electronic devices.

**Keywords:** Graphene, copper foils, chemical vapor deposition, thermal conductivity, thermal interface materials.

**I. INTRODUCTION**

Heat transfer is the process of transferring heat from one part of an object or from one object to another. If considering an area of a few centimeters, heat transfer occurs only when smaller molecules, atoms or particles such as electrons in the warmer (fast-moving) region interact with surrounding ones in the cold (slow-moving) region. Interactions between particles are stronger when the density of their appearance is greater. Conversely, as the density of particles decreases (the distance between the particles becomes farther), the collision between atoms is less, resulting in a decrease of the thermal conductivity. This explains the reason why liquids and gases have a poor thermal conductivity compared to solids. In the technology of thermal conductivity, it is extremely important to consider the ability of thermal contact of the materials. Such materials known as thermal interface materials (TIMs) refer to any material that is inserted between two parts (heat source and heat sink) in order to enhance the thermal coupling between them. There were several kinds of TIMs with different target applications such as thermal grease, thermal glue, thermal gap filler, thermal pad and thermal adhesive [1-5] where the TIMs are inserted between the heat producing device (heat source) and the heat dissipation device (heat sink). One can see that a large portion of current applications from TIMs are related to the heat dissipation. Among various TIMS, thermal pad derived from copper is considered as the most convenient performance because it has the advantage to be easy to apply. In the current nanotechnology of ultrafast nano-scaled devices, the number of chips on board are very large according to the Moore's rule. The generation of heat in the device components from the electric current imposes a challenge to operating performance and device lifetime. Heat management in a device is effective if the integrated materials are capable of transporting the heat to the sink or surroundings. Thus, high thermal conductivity of the TIMs is required. In this context, finding a new material to solve effectively this problem is so extremely crucial. Indeed, during the past ten years graphene - the newest member of the carbon family - has been considered as an exciting novel material for the purpose of this application. It was isolated and its electronic transport properties were first measured in 2004 [6]. It consists of a single layer of  $sp^2$  bonded carbon atoms in a two-dimensional honeycomb crystal lattice. In a graphene lattice, carbon atoms form a very strong bond with the three other atoms through  $sp^2$  hybridization in the same plane. This is responsible for the mechanical properties of graphene [7] while the remaining p orbital is available to form a  $\pi$  bond with adjacent atoms in the surface normal, which gives rise to graphene's unique properties [6,8-9].



This has brought graphene to the center of attention during the past ten years. Indeed, graphene exhibits ballistic electron transport (electrons can travel submicron distances without scattering) [10], very high electron mobilities have been observed ( $\sim 15000 \text{ cm}^2/\text{V.s}$  for graphene on  $\text{SiO}_2$  substrate [6],  $\sim 11000 \text{ cm}^2/\text{V.s}$  for epitaxial graphene on 4H-SiC substrate at  $\sim 0.3 \text{ K}$  [11] and  $\sim 200000 \text{ cm}^2/\text{V.s}$  for suspended graphene at  $\sim 5 \text{ K}$  [12]) and superior thermal conductivity [13] which make graphene emerge as an exciting novel material. In this paper, we grow directly graphene on both sides of a polycrystalline copper foil via a combination of  $\text{H}_2$  and  $\text{CH}_4$  gases in the condition of low pressure chemical vapor deposition at a substrate temperature of  $1000 \text{ }^\circ\text{C}$  and apply this graphene material as an interfacial material to quickly spread heat from intergrated devices on board. Our experimental results are analyzed in details by using different techniques as optical microscopy, Raman spectroscopy, scanning electron microscope, and heat transfer measurements.

## II. EXPERIMENTAL DETAILS

In this study, we used a low pressure chemical vapor deposition (LPCVD) method to grow graphene materials on copper foils from a combination of  $\text{CH}_4$  and  $\text{H}_2$  at a substrate temperatures of  $1000 \text{ }^\circ\text{C}$  from using an equipment of CN-200TH of ULVAC - Japan. This is a method of synthesizing thin-film solids deposited from the vapor phase through chemical reactions that occur near the substrate surface which is heated to high temperatures. Thin solid films are usually obtained in the form of mono-crystalline coatings. By changing the growth conditions such as substrate material, substrate temperature, composition of the reaction mixture, and pressure (flow) of the air, the various structures and properties of the material can be achieved. Due to advantages of purity, uniformity, high level of coverage and low deposition velocity, controlling single layer graphene materials with high crystalline quality can be achieved on copper foils.

### 1. Graphene growth:

Before graphene growth, the copper foils (99.99% purity,  $25 \text{ }\mu\text{m}$ -thick pieces) are prepared by doing a sonification in acetone for 15 min, then in isopropanol for 15 min, and finally gently blown dry with nitrogen. Afterwards, superficial copper oxide is removed by a treatment with acetic acid (99.5% purity) at room temperature for 10 min, followed by washing in deionized water and the copper piece is blown dry with nitrogen without prior rinsing [14]. Immediately, the sample is deposited over a quartz boat introduced into a horizontal quartz reactor at room temperature. The synthesis process is summarized by the temperature-time diagram shown in Fig. 1.

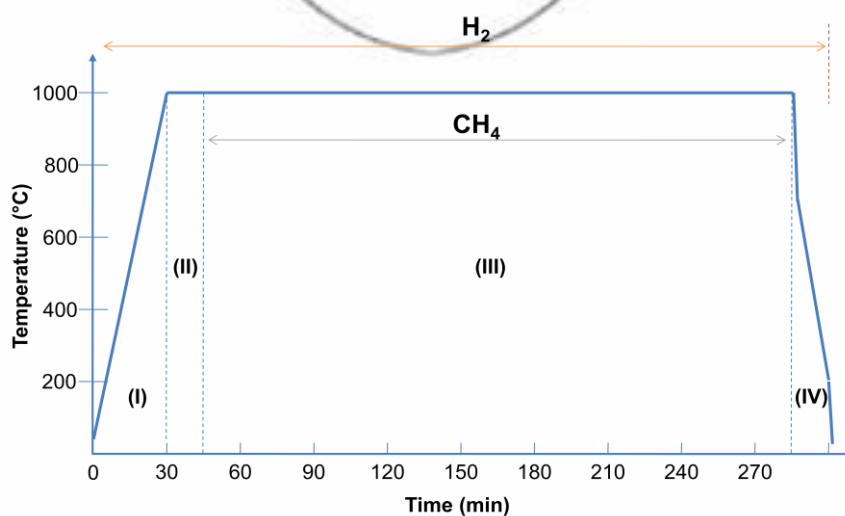


Fig. 1. Temperature profile of a typical 4-stages LPCVD growth process of graphene on copper foils: (I) Temperature ramp - up; (II) Annealing; (III) Growth; (IV) Cool-down.

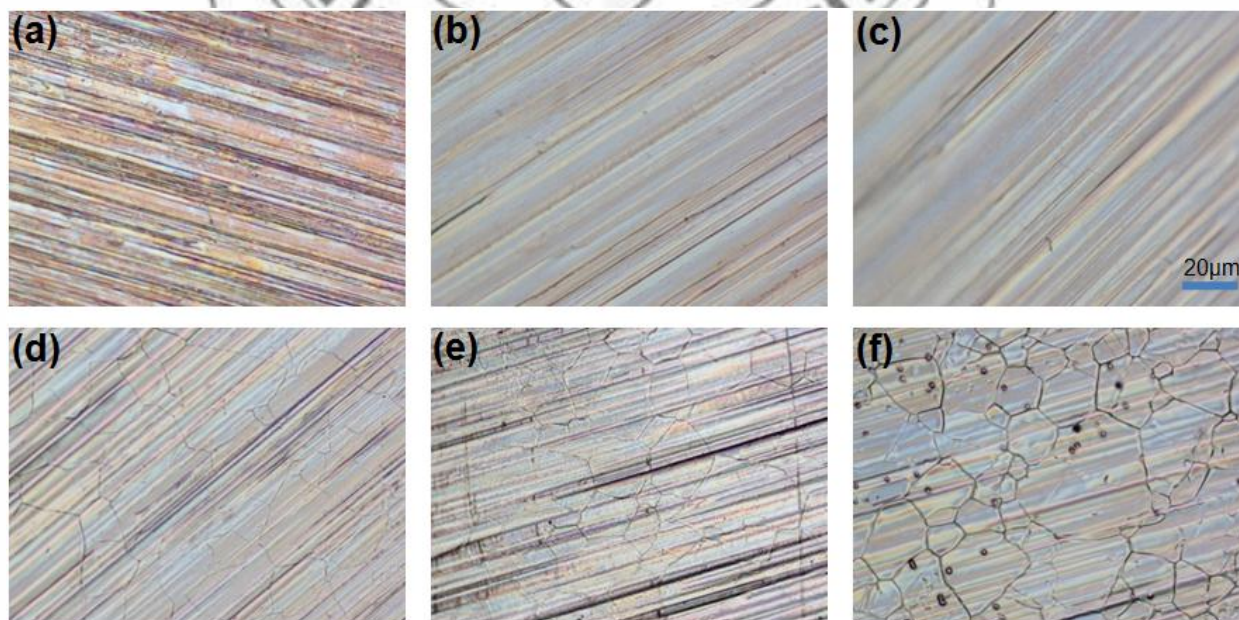
After sealing the reactor, the copper piece is heated slowly up to 1000 °C in H<sub>2</sub> (100 sccm, 99.999% purity) environment. When the temperature of LPCVD chamber is raised to 1000 °C and maintains at these conditions for 20 min. Monolayer graphene is then grown by admitting 0.35 sccm of CH<sub>4</sub> (99.99% purity) for 3 hours as detailed by Zhu et al. [15] at pressure of vacuum chamber ~0.075 Torr. The cooling is performed rapidly (100 °C/min) between 1000 °C and 700 °C, then slow cooling between 700 °C and room temperature). The whole process is done under constant environment of 100 sccm H<sub>2</sub>.

## 2. Characterization:

Samples are made using an optical microscope (Olympus) in the reflection mode with a 20x objective. Morphology and microstructure of graphene domains are examined with a Field Emission Scanning Electron Microscope (FE-SEM, Hitachi S-4800 (Japan)). Appropriate conditions of measurement as working distance of 3 mm, accelerating voltage of 1 kV, emission current of 5 μA) are set via using mixed secondary and backscattered electron signals to clearly observe graphene (15% of backscattered electrons). Raman spectroscopy is performed at room temperature with a HORIBA XploRA ONE™ spectrometer with a laser wavelength of 532 nm. The laser beam is focused on the sample with a 100x objective and the incident power is kept below 1 mW. The interface thermal resistance of samples was analyzed by using a home-made system based on the standard of ASTM-D5470.

## III. RESULTS AND DISCUSSION

To begin our preparation, bare copper foils were examined carefully by optical microscopy. Results show that stripes are available on the surface of copper foils which may be formed during the manufacturing process of making thin sheets. This could be due to the nature of copper material when is laminated. In addition, its surface is stained which may be a result of the coverage of a native oxide layer after exposure to air. According to Kaplas et al. [18], this oxide layer has a thickness of a few hundreds nanometers on the surface of copper foil as shown in Fig. 2(a).



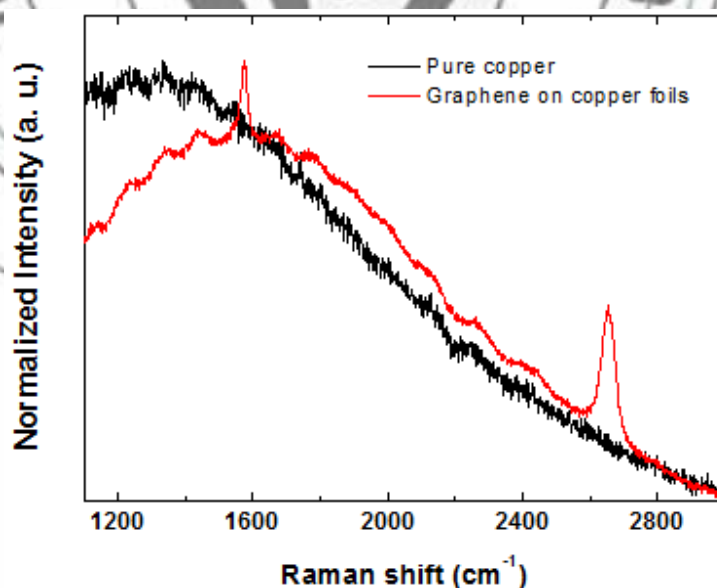
*Fig. 2.* Optical images of copper surface: (a) copper covered with native oxide layers, (b) copper after etching (c) copper after annealing at 500°C (30 min), (d) copper after annealing at 800°C (30 min), (e) copper after annealing at 1000°C (30 min) and (f) copper after graphene formation at a substrate temperature of 1000°C (30 min).



Before graphene growth, the native oxide layers on copper surface are etched in acetic acid ( $\text{CH}_3\text{COOH}$ ) for about 10 min and then washed with de-ionized water along with acetone to remove the remaining impurities on the sample. Recorded results are shown in Fig. 2(b). One can see that the copper surface is more uniform and brighter than the one before etching, meaning that its surface is quite clean. Following the copper etching, sample was heated to different temperatures in the  $\text{H}_2$  environment in order to evaluate changes in the surface morphology of copper under effects of heating/annealing temperature. Figs. 2(c), (d) and (e) are samples after heating to 500 °C, 800 °C and 1000 °C and maintaining at this conditions for 30 min. Careful observation of samples by the optical microscopy, it was found that the surface of copper foils begins to appear grain boundaries. The density of the grain boundary increases with an increase of the substrate temperature. It is clear that the number of grain boundaries acts as a function of the annealing temperature.

Following the annealing at 1000 °C in the  $\text{H}_2$  environment,  $\text{CH}_4$  is injected for graphene synthesis on the surface of copper catalyst in Fig. 2(f). For a fast and simple assessment of the growth conditions, we have made an extensive use of optical microscopy. In order to facilitate the visualization of graphene on copper, the copper foils are baked on a heating plate at 150 °C for 5 min in air [16]. It results that bare copper is oxidized and graphene covered copper is not, providing a very good contrast by means of optical microscope.

To investigate the crystalline quality of graphene via the vibrations related to the C-C bonds in the samples, Raman measurements were carried out using a 532 nm laser source. A careful inspection of the data reveals that all the samples present the typical  $\text{sp}^2$  carbon-related bands (G and 2D bands at  $1580 \text{ cm}^{-1}$  and  $\sim 2700 \text{ cm}^{-1}$ , respectively). Fig. 3 is Raman spectra recorded on copper samples before and after graphene formation.

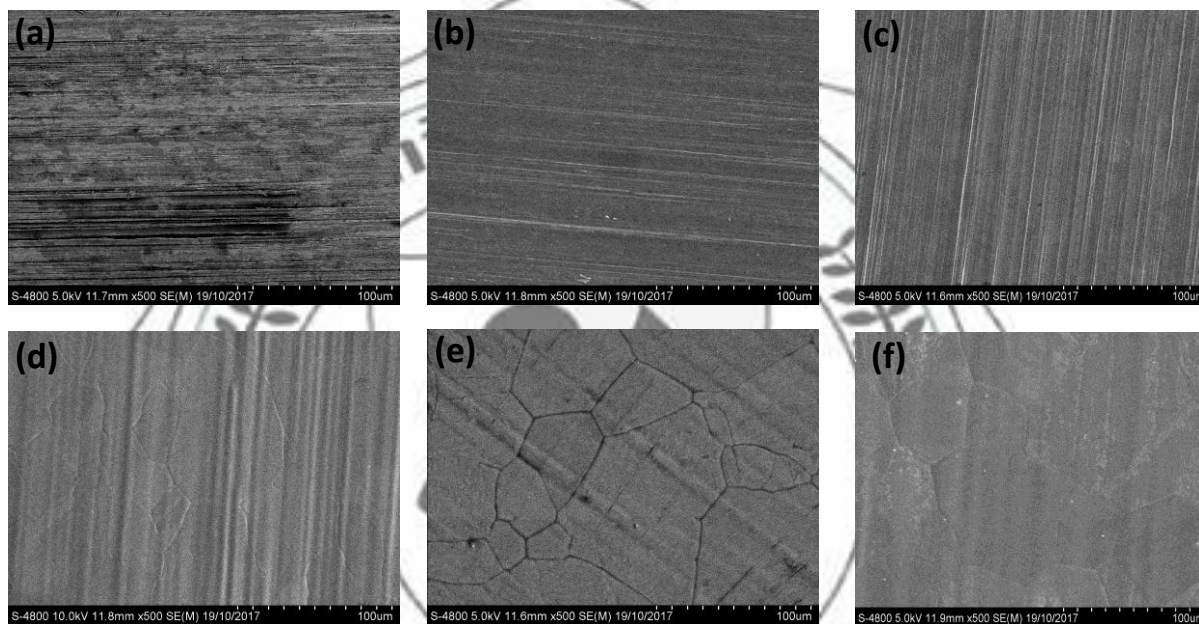


*Fig. 3.* Raman spectra of bare copper before and after graphene formation were randomly measured at 3 different points on the sample surface which gives the same results. No D peak ( $1350 \text{ cm}^{-1}$ ) was detected while G ( $1580 \text{ cm}^{-1}$ ) and 2D ( $2700 \text{ cm}^{-1}$ ) peaks are very intense. Ripples on the graphene Raman spectrum (red) is due to the influence of fluorescent in laboratory conditions.

As observed, no peak D peak (at  $1350 \text{ cm}^{-1}$ ) was detected while G ( $1580 \text{ cm}^{-1}$ ) and 2D ( $2700 \text{ cm}^{-1}$ ) peaks are very intense. By means of peak fittings, a quantitative analysis of the main spectral features was carried out and information about the intensity ratios  $I_{2D}/I_G \sim 3$  of the studied samples which is present for single-layer graphene formed on copper foils.



Scanning electron microscope is an electron microscope that can produce images with high resolution by using a narrow electron beam (several hundreds Angstrom) on sample surface. The resolution of SEM is determined from the size of converging electron beam which interacts the sample surface with electrons. Imaging of the sample is done by recording and analyzing the radiation emitted from the sample surface. Indeed, experimental observation by scanning electron microscopy on the samples is shown in Fig. 4.



*Fig. 4.* SEM of copper surface: (a) copper covered with native oxide layers, (b) copper after etching native oxide layers (c) copper after annealing at 500°C (30 min), (d) copper after annealing at 800°C (30 min), (e) copper after annealing at 1000°C (30 min) and (f) copper after graphene formation at a substrate temperature of 1000°C (30 min).

Fig. 4(a) is a surface morphology of copper foil with the coverage of native oxide layers showing distinct contrast between surrounding areas with rough stripes which represent the nature of copper foils as indicated earlier by observations of optical microscope. The surface looks quite rough which containing block of oxide clouds due to reaction of copper surface with air during manufacturing. After surface etching, pixel contrast shows that the sample surface is quite uniform with a clear appearance of stripes (Fig. 4(b)), showing that the sample surface has been cleaned. Indeed, visual observation reflects a difference in color contrasts before and after etching (see Fig. 2). Also, careful analyses of 500 °C sample presents a formation of very blur grain boundaries on the copper surface (Fig. 4(c)). These boundaries appear more clearly for sample at the temperatures of 800 °C in the same time of annealing condition as imaged in Fig. 4(d). The boundary thickness is greater for sample at 1000 °C in Fig. 4(e). Based on this evolution, it indicates that the density of grain boundary on the copper foils follows as a function of the annealing temperature. The density of grain boundaries increases with an increase of the heating temperature. For this reason, the surface roughness of the sample increases, the continuity of copper surface is interrupted. Also, Fig. 4(f) is a surface morphology of the copper foil after graphene coverage. Apparently, the copper surface is now smoother with a lower surface roughness, indicating continuous graphene which may help to bridge among grain boundaries on the surface of copper foils.

To interpret the rate of heat transfer, all samples were measured by using a home-made system based on the standard of ASTM D5470 undergoes a process from one equilibrium state to another. The difference of temperatures between heat source and heat sink as designed in Fig. 5 causes the driving force for heat transfer - just as a voltage difference for electrical current.

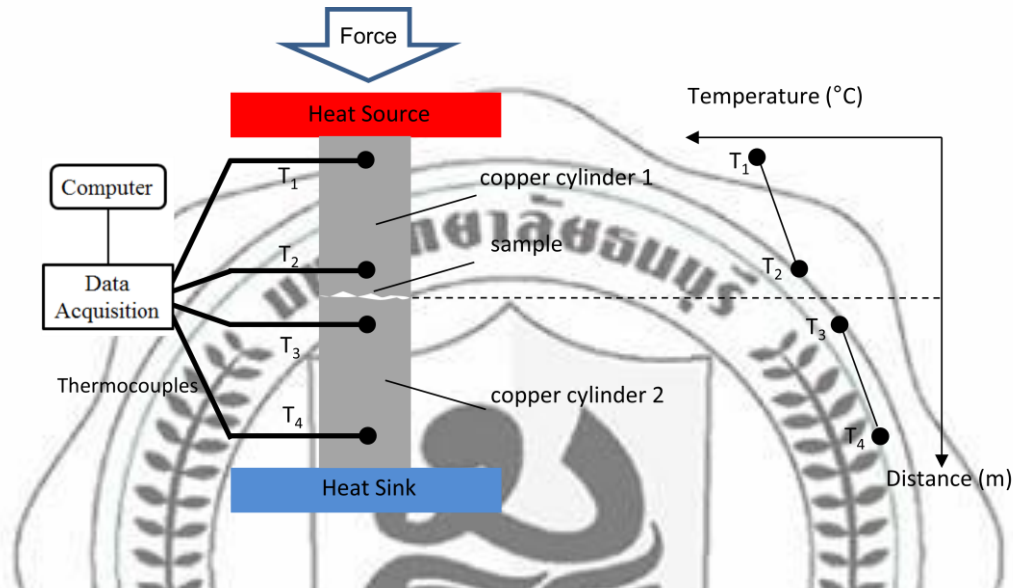


Fig. 5. Schematic diagram of the guarded heater meter (based on ASTM D5470) with four thermocouples  $T_1$ ,  $T_2$ ,  $T_3$ , and  $T_4$  as located between heat source and heat sink.

According to the measurement configuration for thermal interface materials, the interface thermal resistance of graphene/copper/graphene can be analyzed and calculated according to various physical parameters as follows:

Heat  $Q$  of the cylindrical copper is given by

$$Q = \frac{\lambda A}{d_A} \Delta T$$

where  $\Delta T = T_1 - T_2 = T_3 - T_4$ : Temperature difference (K),  $\lambda$  is the thermal conductivity of copper (W/mK),  $A$  is the cross-sectional area of cylindrical copper ( $m^2$ ) ( $A = \frac{\pi d_A^2}{4}$ , with  $d_A = 25\text{mm}$  is the distance between thermocouples  $T_1$  and  $T_2$ ).

Temperature  $T_A$  recorded at front side of the sample is determined by

$$T_A = T_2 - \frac{d_B}{d_A} (T_1 - T_2)$$

where  $d_B = 5\text{mm}$  is the distance between thermocouple  $T_2$  and back surface of sample. Similarly, temperature  $T_D$  at back side of sample is

$$T_D = T_3 + \frac{d_D}{d_C} (T_3 - T_4)$$

where  $d_D = 5\text{mm}$  is the distance between thermocouple  $T_3$  and back surface of the sample,  $d_C = 25\text{mm}$  is the distance between  $T_3$  and  $T_4$ . Therefore, the interface thermal resistance of studied sample is given by

$$R_T = (T_A - T_D) \frac{A}{Q} = (T_A - T_D) \frac{d_A}{\lambda \Delta T}$$

By reading the values from thermocouples of  $T_1$ ,  $T_2$ ,  $T_3$  and  $T_4$ , the interface thermal resistance of all corresponding samples can be obtained as shown in Fig. 6.

In this study, seven different samples were measured in the interface thermal resistance with the same measurement conditions.

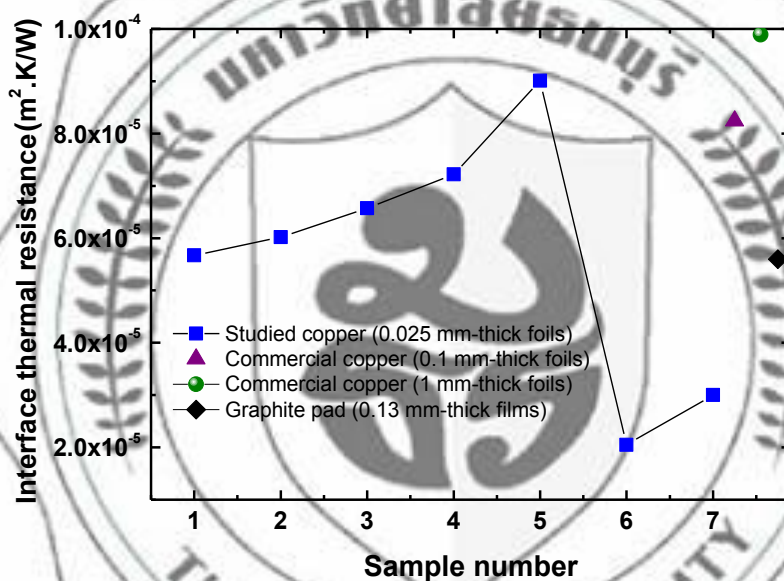


Fig. 6. The interface thermal resistance of graphene/copper/graphene compares with other copper samples as analyzed earlier: Sample #1 (copper covered with native oxide layers); Sample #2 (copper after etching native oxide layers); Sample #3 (copper after annealing at 500°C (30 min)); Sample #4 (copper after annealing at 800°C (30 min)); Sample #5 (copper after annealing at 1000°C (30 min)); and Samples #6 and #7 (copper after corresponding mono-layer and multi-layer graphene formation at a substrate temperature of 1000°C (30 min)); Graphite pad [17] and commercial copper with different thicknesses as references.

From above calculations, one can see that the thermal resistance of copper sample covered with the native oxide layer is smaller than the one in the copper sample of removing native oxide layer. This can be explained by the fact that this oxide layer plays a thermal buffer to increase the thermal contact between the sample and heat sources/heat sink. It could help to fill stripes on the surface of copper foils while the copper etched sample gives a higher thermal resistance. This value increases as the sample is heated at higher temperatures. Experimental calculations show that thermal resistance changes in heating temperature. The higher the heating temperature is, the greater the thermal resistance of the copper sample can be obtained. The cause of this change may be due to the formation of the number of grain boundaries in the copper surface as the temperature rises. This leads to an increase of root mean square surface roughness. As a result, the thermal exposure of the material to a measuring device is reduced. Especially, thermal resistance of sample with a coverage of mono/double graphene presents a much less thermal resistance than a bare copper. This confirms the ability of thermal contact and thermal conductivity of graphene sheets compared to other copper



samples. It plays an important role as a buffer of heat transfer between sources and measured sample. In addition, it was found that multi-layer graphene presents a little higher thermal resistance with respect to single/double layer graphene/copper. In order to ensure the reliability of our measurement, we reproduce experiment on other samples of graphene/copper foils with a presence of similar results. This may be explained by a delay of heat transfer through multi-layer graphene which could result in a higher thermal resistance. Compared to graphite pad (multilayer graphene) [17] and other commercial coppers, our materials of graphene/copper/graphene presents the lowest thermal resistance among all studied samples.

From the above analyses, we must point out that graphene/copper/graphene enhances the thermal conduction compared to other copper samples. This prevents us from reaching systematically the formation of graphene on copper foils which opens a new possibility for an application of thermal conductivity.

#### IV. CONCLUSIONS

The growth of graphene on copper foils with  $\text{CH}_4$  and  $\text{H}_2$  by LPCVD in a vacuum furnace is explored. Experimental observations with optical microscopy and scanning electron microscope showed that graphene film covers on copper surface with millimeter-size of high purity and uniformity. Raman spectra confirm the high crystalline quality of graphene with no presence of D peak (defect-free graphene). Characterization of the ratio  $I_{2D}/I_G$  confirms the formation of single-layer graphene on copper foils. Furthermore, the measurement of heat transfer through studied samples also shows that graphene/copper foils/graphene presents an improvement of the interface thermal resistance compared to the bare copper samples. It suggests that graphene could play a main factor in increasing the thermal contact between heat source/sink and the sample. In addition, we found during experimenting on copper foil that the higher temperature annealing of copper foils leads to the higher thermal resistance. This is due to the appearance of grain boundaries on the copper surface at high temperature annealing which could result in a reduction of the thermal exposure on the measuring material. It is clear that graphene is a key interface material to improve the heat transfer between heat source and heat sink. This stacked structure of graphene interface materials may open a new possibility to improve heat dissipation in electronic component heaters.

#### V. ACKNOWLEDGMENTS

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**Upconversion properties of SiO<sub>2</sub>-SnO<sub>2</sub> glass ceramics codoped Er<sup>3+</sup> and Yb<sup>3+</sup>**TRAN Thi Thanh Van<sup>1,\*</sup>, CAO Thi My Dung<sup>a</sup> and LE Van Hieu, LAM Quang Vinh<sup>2</sup><sup>1</sup> Faculty of Materials Science and Technology, VNUHCM - University of Science<sup>2</sup> Vietnam National University Ho Chi Minh City, Linh Trung, Thu Duc, Viet Nam**Abstract**

The use of SiO<sub>2</sub>-SnO<sub>2</sub> glass-ceramics as host materials for RE ions has improved their luminescence efficiency due to high solubility of these species in glass-ceramics. Tin dioxide nanocrystals formed and dispersed homogeneously in silica matrix, so they can act as sensitizers for the RE ions allowing efficient pumping schemes. These SnO<sub>2</sub> semiconductor crystals with high absorption coefficient will absorb UV light and transfer their energy to RE ions. Moreover, a high concentration of RE ions can be incorporated in SiO<sub>2</sub>-SnO<sub>2</sub> glass ceramics without luminescent quenching. In addition, co-doping Er<sup>3+</sup> and Yb<sup>3+</sup> will also increase luminescent efficiency at IR region of Er<sup>3+</sup> ions because energy is transferred from Yb<sup>3+</sup> ions to Er<sup>3+</sup> ions. In fact, the <sup>4</sup>I<sub>11/2</sub> level of Er<sup>3+</sup> ions matches well <sup>4</sup>F<sub>5/2</sub> level of Yb<sup>3+</sup> ions. Hence, Yb<sup>3+</sup> ions are easy to transfer their energy efficiently for Er<sup>3+</sup> ions. In this study, the Er<sup>3+</sup> and Yb<sup>3+</sup> ions are incorporated in SiO<sub>2</sub>-SnO<sub>2</sub> glass-ceramics containing SnO<sub>2</sub> crystals with the size of 5 nm. The results of XRD and TEM show that the SnO<sub>2</sub> particles dispersed homogeneously in the glass matrix. Moreover, the evidence of energy transfer between Yb<sup>3+</sup> and Er<sup>3+</sup> is also provided.

*Keywords:* upconversion, glass-ceramics, rare earth ions, SnO<sub>2</sub>

**1. Introduction**

Recently, photo luminescent materials were studied in many advanced photonic fields such as solid-state lasers, optoelectronic devices [1]–[3], solar cell, fiber optics, bio-imaging, security ink [4]–[8], .... Over the past decade, quantum dots (QDs) [9], organic dye [10], [11], ... have been concerned by many scientists. CdS or CdSe used to make QDs is high toxicity. QDs have wide band gap so they need UV light sources, besides they have the short fluorescent lifetimes. For that reason, rare earth (lanthanide) doped luminescent materials were studied for replacing materials because they have long fluorescent lifetimes, many choices of excitation sources from UV to NIR [12]–[15]. Materials are friendly with human. Solid-state lanthanide luminescent materials have the combined advantages of typical lanthanide luminescence and photo physical stability. In these materials, lanthanide ions are trapped into the rigid crystal host lattice, avoiding adverse quenching by environmental oscillators. Two types of luminescence modes, down conversion and up conversion, are known for lanthanide luminescence. Photon Up-conversion (UC) is a process in which the sequential absorption of two or more photons lead to the emission of light at shorter wavelength than the excitation wavelength. Down-conversion (DC) is the process by which one high energy photon is inefficiently absorbed and converted into two or more lower energy photons. Therefore, the main goal of our research is to develop transparent glass ceramic with high doping concentration of rare earth without lead to quenching effect, besides, materials exist two UC and DC process. Therefore, the main goal of our research is to develop transparent glass ceramic with high co-doping concentrations of Er<sup>3+</sup> and Yb<sup>3+</sup> ions. The size of SnO<sub>2</sub> crystals are controlled at nano scale to reduce the scattering loss. Energy transfer mechanism between Yb<sup>3+</sup> and Er<sup>3+</sup> ions as well as upconversion properties of these systems will be demonstrated.

**2. Experimental**

SiO<sub>2</sub>-SnO<sub>2</sub> glass-ceramics single-doped with 1 mol% Er<sup>3+</sup> and co-doped with 1 mol% Er<sup>3+</sup>, 1 mol% Yb<sup>3+</sup> were prepared by sol-gel technique. The starting materials were tetra-ethyl- orthosilicate (TEOS-Si(C<sub>2</sub>H<sub>5</sub>O)<sub>4</sub>), tin chloride (SnCl<sub>2</sub>.2H<sub>2</sub>O), nitrate salts of RE ions [Er(NO<sub>3</sub>)<sub>3</sub>.5H<sub>2</sub>O, Yb(NO<sub>3</sub>)<sub>3</sub>.5H<sub>2</sub>O] and ethanol used as a solvent, hydrochloric acid (0.05M) as catalysts. All substances are high purity from Sigma Aldrich. First, mixing of TEOS and ethanol was stirred for 15 minutes and then hydrochloric acid was added to allow the pre-hydrolyzation of TEOS. This solution was stirred at room temperature in 2 hours. The molar ratio of TEOS: C<sub>2</sub>H<sub>5</sub>OH: HCl was 1:4:10. Separately, SnCl<sub>2</sub>.2H<sub>2</sub>O and RE nitrates were dissolved in ethanol by stirring at room temperature for an hour. After, mixing this solution with that of TEOS and added the amount of hydrochloric acid that remains, the final mixture was continuously stirred for 2 hours. The resultant solution was poured in

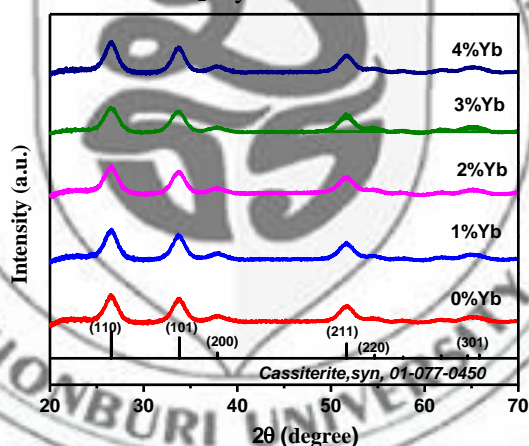


sealed polypropylene containers and placed them at ambient temperatures for a week to complete gelation. In order to obtain dry gels, the gel containers were placed in the oven at 50°C for 5 days and 80°C for 2 days. To complete the hydrolysis and polymerization of terminal  $\equiv\text{Si-OH}$  groups, the dried gels are heated in water vapor at 50°C in 2 days. Finally, the resulting xerogels were annealed at 900°C for 5 hours in the air, with a ramp of 1°C/min, thus forming a stiff glass network. By optimizing the synthesis parameters, crack-free and transparent monolithic glass-ceramics of 5 mm in diameter and 10 mm in height were obtained.

Structure and crystallinity of samples were analyzed with a Smartlab-Rigaku diffractometer, Japan using the  $\text{Cu}_{K\alpha 1}$  radiation. The grain size and morphology were determined by transmission electron microscopy (TEM) using a JEM-1400 (JEOL, Japan). PL measurements were carried out with a Horiba Nano Log modular spectrofluorometer. Excitation source utilized a xenon lamp for excitation from ultra-violet (UV) to near infrared (NIR) in combination with a double-grating monochromator. Signals in PL excitation (PLE) experiments were calibrated with excitation power.

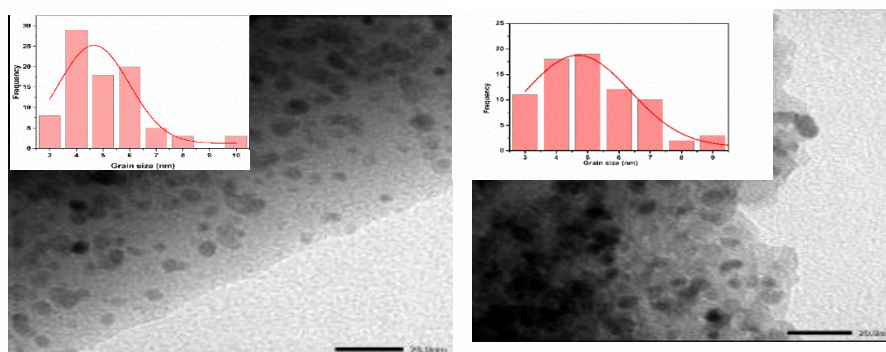
### 3. Results and discussion

The existence of  $\text{SnO}_2$  nanocrystals was confirmed by XRD measurements in Fig.1. All samples appear peaks located at  $2\theta = 26.54^\circ$ ,  $33.81^\circ$ ,  $37.89^\circ$ ,  $51.67^\circ$  and  $65.84^\circ$  corresponding to index crystal plane as (110), (101), (200), (211) and (301) of  $\text{SnO}_2$  rutile phase. The crystal sizes estimated from XRD data are around 5 nm for all samples. This observation indicates that the  $\text{Yb}^{3+}$  doping have no effect on the structure as well as the size of  $\text{SnO}_2$  crystals.



**Fig. 1: XRD patterns of samples doped different Yb concentrations**

The TEM images show a relatively homogenous distribution of  $\text{SnO}_2$  in amorphous silica matrix and the size of  $\text{SnO}_2$  crystals correlates very well with XRD data.

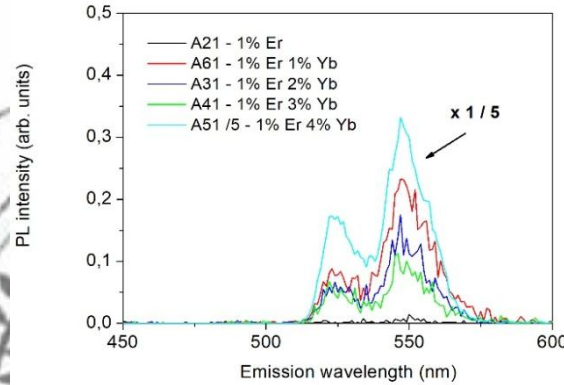


**Fig.2: TEM images of Yb undoped (left) and 1% Yb doped (right) samples.**

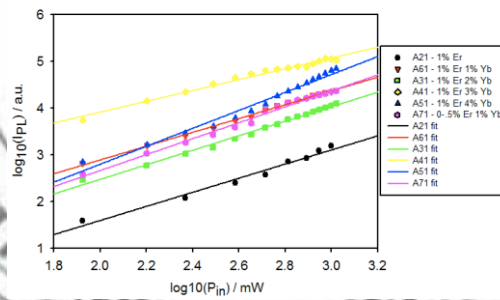
To investigate the role of Yb co-doping, we analysed the  $\text{Er}^{3+}$  PL emission under 980 nm excitation in the visible region by upconversion mechanism, comparing the Er only doped samples with the Er-Yb co-doped samples.

In up-conversion process, the up-conversion emission intensity  $I_{PL}$  increases in proportion to the  $n^{\text{th}}$  power of infrared (IR) excitation intensity  $P_{in}$ , where  $n$  is the number of IR photons absorbed per visible photon emitted. A plot of  $\log I_{up}$  versus  $\log I_{IR}$  yields a straight line with slope  $n$ . The PL spectra were recorded in the 500-720nm range upon increasing power excitation with 980 nm laser source. The 550 nm were integrated on a fixed interval and the obtained values were plotted against incident power.

By plotting the logarithm of the luminescence intensity against the logarithm of the incident power it was possible to fit the linear function and extract the slope.



**Fig.3:**  $Er^{3+}$  emission at 550 nm region under excitation at 980 nm

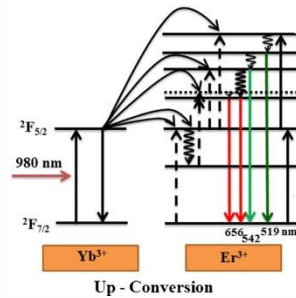


**Fig.4:**  $Er^{3+}$  integrated intensities as a function of laser power and fitted lines.

The slopes of traces corresponding to different Yb<sup>3+</sup> concentrations is presented in the table following:

	1% Er	1% Er 1% Yb	1% Er 2% Yb	1% Er 3% Yb	1% Er 4% Yb	0.5%Er 1% Yb
550 nm	1.507	1.476	1.553	1.158	1.917	1.704

The obtained values ranging from 1.5 to 1.9 imply that the  $Er^{3+}$  emission in visible band follow the two photons absorption through energy transfer between  $Yb^{3+}$  and  $Er^{3+}$ . The energy transfer mechanism and two photons absorption is described in Fig. 5



**Fig.5:** Scheme of energy transfer from  $Yb^{3+}$  to  $Er^{3+}$  and two photons absorption process.

#### 4. Conclusions

Using sol-gel method, the transparent free-crack SiO<sub>2</sub>-SnO<sub>2</sub> glass-ceramics undoped and doped Er<sup>3+</sup>, Yb<sup>3+</sup> were obtained. The SnO<sub>2</sub> crystals with the size of 5 nm are formed homogeneously in the glass matrix. PL spectra indicate that the rare earth ions incorporated in two kinds of sites that are the amorphous silica and the SnO<sub>2</sub> nanocrystals. Under excitation at 980 nm, PL spectra indicated that the energy transfer from Yb<sup>3+</sup> ions to Er<sup>3+</sup> ions takes place. The Yb<sup>3+</sup> doping improves remarkably the emission at 550 nm of Er<sup>3+</sup> in comparing with Er<sup>3+</sup> single doped sample.

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**Evaluation of locally available feed resources for *Pangasius catfish* (*Pangasianodon hypophthalmus*) feed for the sustainable small-holder farming in the Mekong Delta, Vietnam**

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**Abstract**

This research presents studies on feed use in farmed *Pangasius catfish* (*Pangasianodon hypophthalmus*) farming and on the nutritive value of local feed sources. The objectives of this study were to investigate the digestibility of dietary components and amino acids in potential feed sources. To provide baseline data on the digestibility of nutrient contents of available natural feed resources that can be used to replace or reduce the use of trash fish or fish meal to a minimum. Finally, the effect of replacing fish meal protein with protein from local feed sources on growth performance, feed utilisation and carcass traits of *Pangasius catfish* was assessed. The results of research was based on the five papers have been published on international journal of Aquaculture, Aquaculture Research, Aquaculture Nutrition, Internal Aquatic Research. The result showed that the dietary protein of this fish species is the major and most expensive component of formulated aquafeeds and feed costs have tended to increase with the rising price of fish meal. Digestibility trials on selected potential feedstuffs showed that the apparent digestibility (AD) of DM, CP, OM and energy was highest in soybean meal, groundnut cake, broken rice, shrimp head meal, golden apple snail and catfish by-product meal and earthworm meal, whilst the digestibility was in lower cassava leaf meal and sweet potato leaf meal. The average AD of most essential amino acids (EAA) in selected feed ingredients was high (range 70-92%), indicating high protein quality of these feedstuffs. In general, the AD of individual EAA was high for all diets except those with cassava leaf meal, rice bran and earthworm meal. Two different growth experiments with the same diet (20-100% replacement of FM) were performed in an indoor and an outdoor culture system. A significant finding was that DWG was much higher (3.2- to 6-fold) in outdoor culture conditions compared with indoor. FCR and feed utilisation were also 0.2-0.7 units (kg feed DM/kg WG) higher in the outdoor system. The results suggest that FM protein in feed for *Pangasius catfish* fingerlings can be replaced with protein from locally available plant and animal ingredients without compromising growth performance, feed utilisation or carcass traits.

**Keywords:** *Pangasius catfish*, local feed resources, amino acids digestibility, alternative protein, growth performance.

**1. Introduction**

Diets for most farmed carnivorous and omnivorous fish, marine finfish and crustaceans are still largely based on fish meal from marine resources, especially low-value pelagic fish species. Fish meal is the major dietary protein source for aquafeeds, commonly making up between 20-60% of fish diets (Watanabe 2002, Glencross, Booth et al. 2007, FAO 2012). It has been estimated that in 2008, the aquaculture sector used 60.8-71.0% of world fish meal production (Lim, Webster et al. 2008, Tacon and Metian 2008, FAO 2012). Dietary protein is the major and most expensive component of formulated aquafeeds (Wilson 2002) and feed costs have tended to increase with the rising price of fish meal. Thus, the cost of aquafeeds increased by 73% from 2005 to 2008 (FAO 2012). Therefore, in order to reduce feed costs and the use of fish meal in aquafeeds, more extensive use of alternative feed ingredients is needed (Glencross, Booth et al. 2007, Lim, Webster et al. 2008, Hardy 2010, Burr, Wolters et al. 2012).

Freshwater *Pangasius catfish* is a species of high economic value for fish farming in South-East Asia (Hung, Suhenda et al. 2004). This fish species has become an iconic success story of aquaculture production in Vietnam and has evolved into a global product (Phuong and Oanh 2010, Silva and Phuong 2011). Glencross, Hien et al. (2011) reported that improvement of the nutrition and feed management of the expanding local *Pangasius catfish* industry in Vietnam has been identified as a key priority to improve production efficiency. Although soybean meal has been used in *Pangasius catfish* feed as a replacement for fish meal, trash fish (marine origin) and fish meal are still the main

dietary protein sources for *Pangasius* catfish, comprising 20-60% of the feed (Hung, Truc et al. 2007, Phumee, Hashim et al. 2009, Da, Hung et al. 2011). However, using fish meal is not a sustainable long-term feeding strategy (Naylor, Hardy et al. 2009, FAO 2010), and it will lead to the decline of some trash fish species and even to extinction (Edwards, Tuan et al. 2004). As the aquaculture industry is projected to continue expanding, fish meal must be used more strategically as the required aquafeed production volumes increase (Güroy, Şahin et al. 2012). This will be a major challenge for thousands of small-scale *Pangasius* catfish producers, as the feed is a major component of the total production costs and many fish farmers still rely heavily on trash fish and fish meal (Tacon and Metian 2008). Increased use of cheap, locally available feed resources and more sustainable protein sources is considered a high priority in aquafeed industry and could provide a way to reduce the total production costs (Edwards and Allan 2004, Hardy 2010). Thus, development of feeding systems based on locally available feed resources for small-scale *Pangasius* catfish farming in the Mekong Delta of Vietnam would be a way to improve the profitability of the industry and make the production more sustainable. The objective of this research was to evaluate the potential of alternative locally available feed resources to replace trash fish and fish meal in *Pangasius* catfish feed. To evaluate the growth performance, feed utilisation and carcass traits of fish fed diets in which fish meal protein has been replaced with protein from local feed resources. Finally, we are expected to recommend to fish farmers how to develop this aquaculture sector more sustainable in the future.

## 2. Materials and Methods

### 2.1. Study site

Four experiments of this research were carried out under this research: two experiments of the digestibility (**I** and **II**) of local feed sources and one indoor experiment (**III**) of growth performance and feed utilization of *Pangasius* catfish were carried out at the Laboratory of Aquaculture Nutrition, Faculty of Agriculture and Natural Resources, An Giang University, Vietnam. The one outdoor experiment (**IV**) of growth performance and feed utilisation was carried out at a fish pond farm in Long Xuyen city of An Giang province in the Mekong Delta of Vietnam.

### 2.2. Experimental design

Four experiments were set up as a substitution experimental design, with seven diets fed in triplicate for each experiment. At the beginning and end of the experiment, each acclimatised fish was individually weighed using a digital scale. Fifty homogeneous fish were distributed into each tank for each treatment in each experiment. The average initial body weight (BW) was  $8.5 \pm 0.3$  and  $25.3 \pm 5.3$  g/fish for experiment (**I and II**) (digestibility experiments), respectively. For indoor experiment (**III**), 30 homogeneous fish with an average initial BW of  $16.3 \pm 4.0$  g/fish were selected and stocked into each tank. For outdoor experiment, 200 homogeneous fish with an average initial BW of  $16.5 \pm 0.1$  g/fish were selected and distributed into each hapa net cage for each treatment. The fish densities (fish/m<sup>3</sup>) were equal in the indoor (**IV**) and outdoor experiments (**V**).

### 2.3. Experimental diets

The experimental diets in the digestibility experiments (**I and II**) constituted one reference diet and six test diets. The six test diets were made by mixing 70% of the reference diet and 30% of each test ingredient (Table 1). The reference diet used in the experiments (**I and II**) was formulated to ensure that fish obtained all essential nutrient requirements for *Pangasius* species (Hien and Yen 2005). In addition, 1% chromic oxide (Cr<sub>2</sub>O<sub>3</sub>) was incorporated as external marker for assessment of digestibility by the indicator method (Khan 1994).

However, due to problems with the Cr<sub>2</sub>O<sub>3</sub> analysis, it was later decided to use acid-insoluble ash (AIA) as the indigestible marker for assessment of digestibility. In the growth performance and feed utilisation experiments (**III and IV**), the diets were composed of one reference diet and six test diets (Table 2).

Table 1. Ingredient composition (g/kg) of reference diet (RD) and test diets used for *Pangasius catfish* fingerlings in experiment I and II

Ingredient	RD	Test diets in experiment I							Test diets in experiment II						
		Maize meal	Cassava leaf meal	Sweet potato leaf	Broken rice	Soy-bean meal	Duckweed meal	Shrimp head meal	Golden apple snail	Earthworm meal	Catfish byproduct meal	Groundnut cake	Rice bran		
Fish meal	260	182	182	182	182	182	182	182	182	182	182	182	182		
Vegetable protein mix	480	336	336	336	336	336	336	336	336	336	336	336	336		
Wheat flour	200	140	140	140	140	140	140	140	140	140	140	140	140		
Squid liver oil	20	14	14	14	14	14	14	14	14	14	14	14	14		
Vit-min premix	10	7	7	7	7	7	7	7	7	7	7	7	7		
CMC <sup>3</sup>	20	14	14	14	14	14	14	14	14	14	14	14	14		
Maize meal	-	300	-	-	-	-	-	-	-	-	-	-	-		
Cassava leaf meal	-	-	300	-	-	-	-	-	-	-	-	-	-		
Sweet potato leaf meal	-	-	-	300	-	-	-	-	-	-	-	-	-		
Broken rice	-	-	-	-	300	-	-	-	-	-	-	-	-		
Soybean meal	-	-	-	-	-	300	-	-	-	-	-	-	-		
Duckweed meal	-	-	-	-	-	-	300	-	-	-	-	-	-		
Shrimp head meal	-	-	-	-	-	-	-	300	-	-	-	-	-		
Golden apple snail meal	-	-	-	-	-	-	-	-	300	-	-	-	-		
Earthworm meal	-	-	-	-	-	-	-	-	-	300	-	-	-		
Catfish byproduct meal	-	-	-	-	-	-	-	-	-	-	300	-	-		
Groundnut cake	-	-	-	-	-	-	-	-	-	-	-	300	-		
Rice bran	-	-	-	-	-	-	-	-	-	-	-	-	300		



**Table 2. Ingredient composition (g/kg) of the reference diet (RD) and test diets used for Pangasius fingerlings in experiment III (indoor experiment) and experiment IV (outdoor experiment)**

	RD	Test diets in experiment III and IV						
		Ground-nut cake	Cassava leaf meal	Sweet potato leaf meal	Soy-bean meal	Golden apple snail meal	Shrimp head meal	Rice bran
Fish meal (FM)	260	195	195	208	0.0	0.0	0.0	0.0
Vegetable protein mix <sup>1</sup>	480	480	400	400	450	480	480	0.0
Wheat flour <sup>2</sup>	200	200	200	200	200	220	260	0.0
Squid liver oil <sup>3</sup>	20	20	20	20	20	20	20	20
Vit-min premix <sup>4</sup>	20	20	20	20	20	20	20	20
CMC <sup>5</sup>	20	20	20	20	20	20	20	20
Groundnut cake	—	65	—	—	—	—	—	—
Cassava leaf meal	—	—	145	—	—	—	—	—
Sweet potato leaf meal	—	—	—	132	—	—	—	—
Soybean meal	—	—	—	—	290	—	—	—
Golden apple snail meal	—	—	—	—	—	240	—	—
Shrimp head meal	—	—	—	—	—	—	200	—
Rice bran	—	—	—	—	—	—	—	490
Rate of replacement of fish meal (FM) (%)	0	25	25	20	100	100	100	100

<sup>1</sup> Commercial product used for Pangasius catfish feed in the Mekong delta of Vietnam. The product is based on soybean and rice products; (% in DM), CP 21.2%, EE 7.6%, NDF 25.5%, ash 3.1%.

<sup>2</sup> Wheat flour: high wheat flour: content of protein: 9.10 g, fat: 1.32 g, carbohydrate: 76.3g, calorie: 354 Kcal, Natri: 37 mg, ash: 0.55 % Max, moisture: 14% Max. Viet Nam Ky Nghe Bot Mi - VIKYBOMI JSC. Lot 32C/I, 2G Street, Vinh Loc, Binh Chanh Dist. Ho Chi Minh city.

<sup>3</sup> Squid liver oil: VIME-DAU GAN MUC, Vemedim Vietnam company, April 30<sup>th</sup> street, Can Tho city, Vietnam.

<sup>4</sup> Vitamin and mineral premix; content per kg: vitamin A, 4.000.000 UI; vitamin D3, 800.000 UI; vitamin E, 8.500 UI; vitamin K3, 750 UI; vitamin B1, 375 UI; vitamin C, 8.750 UI; vitamin B2, 1.600 mg; vitamin B6, 750 mg; folic acid, 200 mg; vitamin B12, 3.000 mcg; biotin, 20.000 mcg; methionine, 2.500 mg; Mn, Zn, Mg, K and Na, 10 mg.

<sup>5</sup> Carboxymethyl cellulose (CMC): Imported from Korea.

The reference diet contained fish meal as the main crude protein (CP) source, whilst in the six test diets 20-100% of the fish meal CP was replaced with CP from sweet potato leaf meal (20% replacement), cassava leaf meal (25% replacement), groundnut cake (25% replacement), soybean meal (100% replacement), golden apple snail meal (100% replacement) and shrimp head meal (100% replacement) (Table 2). The diets were formulated to meet the nutrient requirements of Pangasius catfish (Hung, Liem et al. 2002). In addition to the six diets tested, plain rice bran diet was also used in the outdoor study (experiment IV), since rice bran without inclusion of fish meal is a traditional diet used for Pangasius catfish (Table 2).

#### 2.4. Experimental fish

All fingerlings of Pangasius catfish used in experiments were bought from the Research Center of Aquaculture Seed Production of An Giang province. To eliminate ectoparasite infection, all fish were treated with a solution of 3% NaCl for 15 min at arrival. Fish fingerlings of experiment I, II and

**III** were reared and quarantined in composite tanks (3 m<sup>3</sup> water) for one month to acclimatise them to experimental conditions at the Laboratory of Aquaculture Nutrition. All fish fingerlings of experiment **(IV)** used in the outdoor experiment were reared and quarantined in a hapa net cage (4 m x 8 m x 2 m) in an earthen fish pond for one month to acclimatise to experimental conditions. The acclimatised fish were selected randomly, weighed and then transferred to each experimental tank **(I, II and III)** or to each hapa net cage (2 m x 3 m x 2 m) (experimental **IV**) for one week before the experiment commenced for adaptation to experimental conditions.

### 2.5. Experimental system and management

Three experiments, **(I, II and III)** were carried out in a series of 21 composite settlement tanks with a volume of about 500 L/tank (**Figure 1**). These settlement tanks were connected to a sedimentation tank, which contained sand (1-2 mm) as a biological filter. Tap freshwater was aerated for 24 h to allow chlorine to evaporate and supplied into each tank at a flow rate of 3 L/min. In the digestibility experiments **(I and II)**, sedimentation tubes were connected with the funnel at the bottom of each tank where the fish faeces settled. The collection container was surrounded with ice, salt and rice husks to keep the temperature at 4-5 °C in order to minimise microbial degradation of the fish faeces during collection.



**Figure 1: A closed re-circulation of tank and hapa net cages system culture system of experiment.**

In the outdoor experiment **(IV)**, a series of 24 hapa net cages with 2.0 mm mesh size were placed in the pond and were used to hold the fish. The hapa net cages were rectangular (2 m x 3 m x 2 m deep) and were suspended by tying them to four melaleuca poles (**Figure 1**). One feeding sieve (feeding trap), 30 cm in diameter, was placed in each hapa net cage to retain feed and to prevent feed falling to the bottom. The feed was distributed to each feeding sieve using a small boat. About 20% of the water in the pond was replaced with new water from the river every second week during the experiment.

### 2.1. Feeding and feed preparation

The feed was produced by careful mixing of the dry ingredients before adding squid oil and distilled water. The amount of distilled water was adjusted to get the mixture to form a stiff dough. The pellet feed was made using an electronic meat grinder (Quoc Hung Company, Vietnam) with diameter and length of pelleted feed in the range 1-2 mm. All diets were sun-dried for 2-3 days, and then weighed and stored in sealed plastic bags in small portions at 5 °C until use. New batches of experimental feeds were made biweekly. The fish were fed daily manually to apparent satiety at 9.00 h and 14.00 h, at a fixed rate of 3-5% BW dry feed per day.

### 2.2. Sample collection and calculations

In digestibility trials **(I and II)**, fish faeces samples were collected twice a day for 30 days from the faecal settling tube (at 21.00 h and 8.00 h the next morning). Samples collected were pooled in sealed pots for each tank and kept frozen at -20 °C until analysis. Digestibility calculation: The

apparent digestibility (AD) for dry matter ( $AD_{DM}$ ), organic matter ( $AD_{OM}$ ), crude protein ( $AD_{CP}$ ), energy ( $AD_E$ ) and EAA in the reference and test diets was calculated as described by Cho, Slinger et al. (1982):

$$AD_{diet}(\%) = 100 - 100 \times (\%M_{diet}/\%M_{faeces}) \times (\%Nutrient_{faeces}/\%Nutrient_{diet})$$

where %M = marker concentration (% in DM) and %N = nutrient content (% in DM).

The AD of test ingredient was calculated as described by Bureau and Hua (2006):

$$AD_{test\ ingredient}(\%) = AD_{test\ diet} + [(AD_{test\ diet} - AD_{reference\ diet}) \times (0.7 \times D_{reference\ diet}) / (0.3 \times D_{ingredient})]$$

where  $D_{reference\ diet}$  = % nutrient of reference diet and  $D_{ingredient}$  = % nutrient of test ingredient.

In the experiments on growth performance and feed utilisation (experiment III and IV), the following calculations on the growth performance, feed utilisation and biological indices were made:

$$\text{Specific growth rate (SGR\%)} = [(ln W_f - ln W_i) / T] \times 100$$

$$\text{Daily weight gain (DWG)} = (W_f - W_i) / T$$

where  $W_f$  and  $W_i$  refer to the mean final weight and the mean initial weight, respectively, and T is the feeding trial period in days.

$$\text{Survival rate [(SR\%)]} = (TF_f / TF_i) \times 100$$

where  $TF_f$  is total number of fish at finish (harvest) and  $TF_i$  is total number of fish at start.

$$\text{Protein efficiency ratio (PER)} = \text{wet weight gain (g)} / \text{total protein intake (g)}$$

$$\text{Protein intake (PI)} = \text{feed intake (g)} \times \text{per cent protein in diet}$$

$$\text{Total feed intake per fish (FI)} = [\text{total feed intake (g)} / \text{number of fish}] \quad \text{Feed conversion ratio (FCR)} \\ = [\text{total feed intake (g)} / \text{total wet weight gain (g)}]$$

### 2.3. Chemical analysis

Samples of feed ingredients, diets and faeces, fish fillet, liver and kidney were analysed in duplicate using standard methods (AOAC 1997). Acid-insoluble ash (AIA) in feed and faeces was analysed with the 4N-HCl procedure according to McCarthy, Aherne et al. (1973) (experiment I and II).

All samples of experimental diets, feed ingredients, fish faeces and fish carcass were analysed for chemical composition (g/kg DM), gross energy (MJ/kg DM) and amino acids (g/kg DM). Dry matter was determined by drying samples in an oven at 105 °C for 24 h. Nitrogen (N) was determined by the Kjeldahl method and crude protein (CP) was calculated as N x 6.25. Crude fat (EE) content was analysed using the Soxhlet method after acid hydrolysis of the sample. Crude fibre (CF) content was determined by the standard method (AOAC 1997) and neutral detergent fibre (NDF) according to Van Soest, Robertson et al. (1991). Ash content was determined by incineration in a muffle furnace at 550 °C for 12 h. Amino acid content of ingredients and diets was analysed by high-performance liquid chromatography according to Vázquez-Ortiz, Caire et al. (1995). Gross energy (MJ/kg) was determined with a bomb calorimeter (Calorimeter Parr 6300, Parr Instrument Company, Moline, IL, USA).

### 2.4. Statistical analysis

All digestibility data and all data on fish growth performance, feed utilisation and carcass traits were statistically analysed by one-way analysis of variance (ANOVA), using Tukey's post hoc ANOVA test for individual comparisons ( $P \leq 0.05$  level of significance). All statistical analyses were carried out using the IBM SPSS STATISTIC (2011) program, version 19.

## 3. Summary of major results

### 3.1. Chemical composition of diets

The CP content of experimental diets used in experiment **I and II** ranged from 185 g/kg DM for the rice bran diet to 339 g/kg DM for the shrimp head meal diet (Table 4). The EE content was highest in the catfish by-product meal, groundnut cake, rice bran and soybean meal diets than in the other experimental diets. The highest NDF content was found in the vegetable diets based on groundnut cake, sweet potato leaf meal, soybean meal, rice bran and duckweed meal. For diets with feed ingredients of animal origin, the NDF content was higher in earthworm meal. The highest content of ash was found in broken rice and the lowest in duckweed meal, and the gross energy (GE) content was quite similar among all experimental diets and ranged between 16.2 and 17.9 MJ/kg DM. The EAA profile varied among experimental diets with a range of 69.7-108.1 g/kg DM in Paper II and 76.9-130.6 g/kg DM in experiment II (Table 4).



Table 4. Chemical composition (g/kg DM), gross energy (MJ/kg DM) and amino acid (g/kg DM) content of the reference diet (RD) and test diets used in experiment I and II

	Test diets in experiment I										Test diets in experiment II															
	Maize meal	Cassava leaf meal	Sweet potato leaf meal	Broken rice	Soybean meal	Duckweed meal	Shrimp head meal	Golden apple snail	Earthworm meal	Garfish byproduct meal	Groundnut cake	Rice bran	RD	Maize meal	Cassava leaf meal	Sweet potato leaf meal	Broken rice	Soybean meal	Duckweed meal	Shrimp head meal	Golden apple snail	Earthworm meal	Garfish byproduct meal	Groundnut cake	Rice bran	
Crude protein	228	194	225	205	185	291	217	339	285	283	351	243	203	46	42	43	42	34	51	37	45	48	52	74	56	66
Lipid	46	42	43	42	34	51	37	45	48	52	74	56	66	189	166	153	249	109	227	225	185	157	214	147	289	224
NDF	101	79	84	109	67	90	123	108	99	98	78	76	88	101	79	84	109	67	90	123	108	99	98	78	76	88
Ash	16.2	16.2	17.0	15.5	16.2	16.5	15.5	16.8	16.7	16.2	17.9	17.0	16.5	16.2	16.2	17.0	15.5	16.2	16.5	15.5	16.8	16.7	16.2	17.9	17.0	16.5
Gross energy	13.2	15.9	11.1	23.2	10.7	17.5	32.7	12.85	15.01	22.21	12.6	14.12	12.67	13.2	15.9	11.1	23.2	10.7	17.5	32.7	12.85	15.01	22.21	12.6	14.12	12.67
AIA	<b>Essential amino acids</b>																									
Arginine	14.8	11.5	13.7	12.7	11.4	17.9	13.0	21.8	20.2	12.6	21.3	18.8	12.8	6.4	4.8	5.5	5.1	4.7	5.9	5.5	7.8	8.1	6.3	9.0	6.0	5.0
Histidine	9.7	7.5	10.0	9.0	7.6	12.3	9.5	13.0	12.4	15.1	15.4	10.4	8.4	9.7	7.5	10.0	9.0	7.6	12.3	9.5	13.0	12.4	15.1	15.4	10.4	8.4
Isoleucine	17.6	14.3	17.5	15.6	13.7	21.1	17.4	23.5	23.2	25.4	26.1	18.3	14.9	17.6	14.3	17.5	15.6	13.7	21.1	17.4	23.5	23.2	25.4	26.1	18.3	14.9
Leucine	9.3	6.8	8.5	7.3	6.9	11.0	7.9	14.1	11.4	6.8	14.6	8.1	7.4	9.3	6.8	8.5	7.3	6.9	11.0	7.9	14.1	11.4	6.8	14.6	8.1	7.4
Methionine	5.9	4.7	5.7	5.4	4.6	6.1	5.5	8.5	7.4	7.6	9.8	5.3	5.0	5.9	4.7	5.7	5.4	4.6	6.1	5.5	8.5	7.4	7.6	9.8	5.3	5.0
Phenylalanine	6.3	5.2	6.9	5.9	5.0	8.6	6.9	7.1	7.7	5.8	7.5	6.4	5.7	6.3	5.2	6.9	5.9	5.0	8.6	6.9	7.1	7.7	5.8	7.5	6.4	5.7
Threonine	10.5	8.3	10.8	9.9	8.2	12.8	10.5	13.1	13.6	15.1	14.4	11.4	9.1	10.5	8.3	10.8	9.9	8.2	12.8	10.5	13.1	13.6	15.1	14.4	11.4	9.1
Valine	90.3	70.9	88.6	80.0	69.7	108.1	86.2	121.5	115.8	107.6	130.6	96.0	76.9	90.3	70.9	88.6	80.0	69.7	108.1	86.2	121.5	115.8	107.6	130.6	96.0	76.9
Total	90.3	70.9	88.6	80.0	69.7	108.1	86.2	121.5	115.8	107.6	130.6	96.0	76.9	90.3	70.9	88.6	80.0	69.7	108.1	86.2	121.5	115.8	107.6	130.6	96.0	76.9

The chemical composition, gross energy content and EAA profiles in the growth performance trials (experiment **III and IV**) were similar among diets, with a CP content of 225-234 g/kg and a GE content of 16.2-17.2 MJ/kg (Table 5). Lipid content was highest in the rice bran diet, while the NDF content was higher in the rice bran, sweet potato leaf meal and cassava leaf meal diets than in the other test diets and the reference diet (Table 5). The highest Ca content was found in the groundnut cake, shrimp head meal and sweet potato leaf meal diets, whilst the rice bran, RD, groundnut cake and sweet potato leaf meal diets had a higher P content than the other experimental ingredients. In general, the content of Mg, K, Na and S was similar between the reference diet and test diets. Total EAA content ranged from 43.0 g/kg DM for the rice bran diet to 90.3 g/kg DM for the reference diet (Table 5).

**Table 5. Chemical composition (g/kg DM), gross energy (MJ/kg DM), mineral (g/kg DM) and amino acid (g/kg DM) content of the reference diet (RD) and test diets in experiment III and IV**

	RD	Test diets (% of fish meal crude protein replaced)						
		Ground- nut cake (25%)	Cassava leaf meal (25%)	Sweet potato leaf meal (20%)	Soy- bean meal (100%)	Golden apple snail meal (100%)	Shrimp head meal (100%)	Rice bran
Crude protein	225	230	227	223	234	227	225	124
Lipid	44	39	44	38	35	31	35	106
NDF	166	242	261	278	201	253	259	290
Ash	102	81	73	84	41	41	89	72
Gross energy	16.2	16.7	17.1	16.5	17.2	16.8	15.6	17.6
Ca	15.7	20.0	13.3	16.0	2.8	7.3	18.9	2.1
P	8.5	8.4	6.3	7.5	3.2	1.1	3.2	10.2
Mg	1.7	1.8	2.0	2.2	1.6	1.5	2.2	5.2
K	5.0	5.2	5.0	7.1	10.1	4.4	4.1	9.3
Na	4.8	4.0	3.5	5.1	1.4	1.8	6.0	1.5
S	2.7	3.1	2.5	3.0	2.3	2.0	2.1	1.6
<b>Essential amino acids</b>								
Arginine	14.8	14.7	13.4	13.2	13.7	14.6	14.7	7.7
Histidine	6.4	5.6	5.5	5.5	3.2	4.8	4.2	1.8
Isoleucine	9.7	9.3	9.3	9.0	10.2	9.7	9.5	5.0
Leucine	17.6	16.6	16.6	16.0	16.5	17.3	16.3	8.1
Lysine	9.3	8.0	8.2	7.9	6.9	6.6	7.8	2.7
Methionine	5.9	5.3	5.4	5.4	4.0	4.9	5.3	2.6
Phenylalanine	9.8	9.7	9.5	9.1	10.6	9.6	9.6	5.5
Threonine	6.3	6.1	6.3	5.8	7.7	6.6	5.7	4.2
Valine	10.5	10.1	10.1	9.8	10.5	10.5	9.5	5.4
Total	90.3	85.4	84.3	81.7	83.3	84.6	82.6	43.0

### 3.2. Feed digestibility

#### 3.2.1. Digestibility of diets

There were no differences in apparent digestibility (AD) between the reference diet and test diets ( $P > 0.05$ ) (experiment **I and II**). In general, the highest values of AD were found in the diets based on catfish by-product meal, shrimp head meal and soybean meal, followed in descending order by the diets based on groundnut cake, golden apple snail meal and sweet potato leaf meal (Table 6). However, the AD of the reference diet and test diets tended to differ for dry matter ( $AD_{DM}$ ) and organic matter ( $AD_{OM}$ ), within a range of 80.4-89.6% and 78.9-89.5%, respectively.

**Table 6. Apparent digestibility (%) of dry matter (AD<sub>DM</sub>), crude protein (AD<sub>CP</sub>), organic matter (AD<sub>OM</sub>) and gross energy (AD<sub>GE</sub>) in the reference diet (RD) and test diets in *Pangasius catfish* fingerlings<sup>1</sup>**

Experiment I	AD <sub>(DM)</sub>	AD <sub>(CP)</sub>	AD <sub>(OM)</sub>	AD <sub>(GE)</sub>
RD	87.2	86.8	89.5	84.3
<i>Test diet ingredients</i>				
Maize meal	85.9	83.9	82.6	89.8
Cassava leaf meal	81.1	80.0	81.6	78.7
Sweet potato leaf meal	85.0	83.3	80.5	81.9
Broken rice	88.1	84.9	81.5	89.9
Soybean meal	88.0	89.0	81.6	87.6
Duckweed meal	81.1	82.5	78.9	79.6
SEM	0.94	1.11	1.28	1.77
<i>P-values</i>	0.064	0.095	0.051	0.053
Experiment II	AD <sub>(DM)</sub>	AD <sub>(CP)</sub>	AD <sub>(OM)</sub>	AD <sub>(GE)</sub>
RD	87.9	85.9	88.4	85.3
<i>Test diet ingredients</i>				
Shrimp head meal	88.7	89.2	86.9	89.0
Golden apple snail meal	85.9	83.2	85.0	87.7
Earthworm meal	84.6	81.8	83.3	82.8
Catfish by-product meal	89.6	91.8	87.9	90.0
Groundnut cake	85.3	86.2	83.5	87.2
Rice bran	80.4	79.7	79.3	83.1
SEM	0.97	1.19	1.29	1.65
<i>P-values</i>	0.076	0.056	0.081	0.053

SEM = Standard error of the mean; ( $P > 0.05$ ).

Apparent digestibility (AD) of gross energy (AD<sub>GE</sub>) and crude protein (AD<sub>CP</sub>) tended to differ between diets and ranged from 79.7% for the rice bran diet to 91.8% for the catfish by-product meal diet (Table 6).

There were no differences ( $P > 0.05$ ) in AD of EAA between RD and test diets. The average AD of individual EAA in Papers II and III was highest in the soybean meal, catfish by-product meal, golden apple snail meal and shrimp head meal diets, followed in descending order by the reference diet and the groundnut cake, duckweed meal and broken rice diets. In general, the AD values of individual EAA in the earthworm meal, rice bran and maize meal diets were lowest for arginine, histidine, lysine, methionine and valine (Table 7).

**Table 7. Apparent digestibility (%) of essential amino acids in the reference diet (RD) and test diets in *Pangasius catfish* fingerlings**

Experiment I	RD	Test diets							SEM	<i>P-values</i>
		MM	CSLM	SPLM	BR	SBM	DWM			
Arginine	90.8	88.8	82.6	87.5	82.9	91.1	88.1	1.42	0.16	
Histidine	87.1	81.9	78.3	87.5	90.3	89.9	86.2	1.42	0.05	
Isoleucine	88.8	82.6	86.8	83.1	85.7	95.4	86.1	2.51	0.26	
Lysine	90.3	78.2	84.9	87.6	81.8	91.9	88.4	1.29	0.09	
Leucine	90.5	80.0	78.6	85.6	88.4	89.8	88.3	1.54	0.08	
Methionine	87.4	82.2	78.4	84.1	88.2	96.9	87.2	2.08	0.31	
Phenylalanine	88.3	80.7	84.8	82.8	86.3	87.7	87.0	1.78	0.22	



Experiment I	RD	Test diets							
		MM	CSLM	SPLM	BR	SBM	DWM	SEM	<i>P-values</i>
Threonine	83.4	79.0	79.2	81.9	83.7	84.4	82.8	1.32	0.06
Valine	87.6	85.9	81.2	84.4	85.2	96.8	85.8	2.28	0.10
Average	88.8	80.3	78.3	85.1	87.9	91.5	86.9	1.45	0.06

Experiment II	RD	Test diets							
		SHM	GAPS	EWM	CFPM	GNC	RB	SEM	<i>P-values</i>
Arginine	87.0	89.5	89.3	81.6	89.9	92.1	82.5	1.50	0.06
Histidine	88.2	88.0	90.5	84.6	91.8	91.2	88.2	0.93	0.05
Isoleucine	81.0	89.3	85.9	85.9	88.6	85.9	83.9	1.06	0.22
Lysine	87.2	90.4	88.5	75.3	89.9	86.7	84.3	1.95	0.09
Leucine	84.8	88.3	88.8	87.8	89.9	88.2	85.6	0.68	0.08
Methionine	79.8	85.1	84.8	84.7	88.4	84.9	82.3	1.01	0.05
Phenylalanine	81.5	84.4	84.2	82.0	84.8	85.2	82.5	0.56	0.21
Threonine	78.9	88.0	84.2	87.3	82.1	80.8	76.3	1.62	0.07
Valine	81.2	84.8	86.1	85.7	86.4	86.9	82.7	0.79	0.06
Average	81.7	87.8	87.3	84.6	88.4	87.6	80.3	0.81	0.07

MM, maize meal; CSLM, cassava leaf meal; SPLM, sweet potato leaf meal; BR, broken rice; SBM, soybean meal; DWM, duckweed meal. SHM, shrimp head meal; GAPS, golden apple snail meal; EWM, earthworm meal; CFPM, catfish-by product meal; GNC, groundnut cake; RB, rice bran SEM = Standard error of the mean; ( $P > 0.05$ ).

### 3.2.2. Digestibility of feed ingredients

Apparent digestibility of feed test ingredients ( $AD_i$ ) in experiment I and II differed significantly ( $P < 0.05$ ) and ranged from 66.2 to 89.8% for  $AD_{iDM}$ , from 63.6 to 91.3% for  $AD_{iCP}$ , from 65.4 to 86.9% for  $AD_{iOM}$  and from 69.8 to 89.3% for  $AD_{iGE}$  (Table 8). The highest  $AD_{iCP}$  values among test ingredients were obtained for soybean meal, catfish by-product meal and shrimp head meal, followed in descending order by golden apple snail meal, groundnut cake and duckweed meal.

**Table 8. Apparent digestibility (%) of dry matter ( $AD_{iDM}$ ), crude protein ( $AD_{iCP}$ ), organic matter ( $AD_{iOM}$ ) and gross energy ( $AD_{iGE}$ ) in test feed ingredients in Pangasius catfish fingerlings in experiment I and II**

Experiment I	$AD_{(DM)}$	$AD_{(CP)}$	$AD_{(OM)}$	$AD_{(GE)}$
Maize meal	82.0 <sup>a</sup>	66.0 <sup>bc</sup>	79.3 <sup>ab</sup>	86.4 <sup>a</sup>
Cassava leaf meal	79.4 <sup>ab</sup>	63.6 <sup>c</sup>	77.0 <sup>ab</sup>	76.7 <sup>bc</sup>
Sweet potato leaf meal	79.3 <sup>b</sup>	71.8 <sup>b</sup>	74.4 <sup>b</sup>	78.9 <sup>b</sup>
Broken rice	89.6 <sup>a</sup>	70.3 <sup>b</sup>	81.8 <sup>a</sup>	89.3 <sup>a</sup>
Soybean meal	88.9 <sup>a</sup>	91.3 <sup>a</sup>	85.3 <sup>a</sup>	87.3 <sup>a</sup>
Duckweed meal	66.2 <sup>c</sup>	81.7 <sup>a</sup>	65.4 <sup>c</sup>	69.8 <sup>c</sup>
SEM	3.51	4.29	2.80	3.06
<i>P-values</i>	0.002	0.012	0.001	0.011

Experiment II	$AD_{(DM)}$	$AD_{(CP)}$	$AD_{(OM)}$	$AD_{(GE)}$
Shrimp head meal	84.9 <sup>a</sup>	89.4 <sup>a</sup>	80.4 <sup>a</sup>	81.8 <sup>ab</sup>
Golden apple snail meal	84.9 <sup>ab</sup>	88.1 <sup>ab</sup>	83.6 <sup>bc</sup>	86.3 <sup>a</sup>
Earth worm meal	81.1 <sup>b</sup>	84.0 <sup>b</sup>	81.2 <sup>b</sup>	79.0 <sup>c</sup>
Catfish-by product	89.8 <sup>a</sup>	90.0 <sup>a</sup>	86.9 <sup>a</sup>	87.8 <sup>a</sup>
Groundnut cake	85.8 <sup>a</sup>	87.6 <sup>a</sup>	84.3 <sup>ab</sup>	86.0 <sup>ab</sup>
Rice bran	82.2 <sup>b</sup>	76.3 <sup>b</sup>	78.7 <sup>c</sup>	80.5 <sup>a</sup>

<i>SEM</i>	1.51	1.44	1.39	1.43
<i>P-value</i>	0.032	0.045	0.013	0.046

SEM = Standard error of the mean

Means with different superscript letters within rows are significantly different ( $P < 0.05$ ).

The highest AD<sub>GE</sub> was obtained for broken rice, catfish by-product meal, soybean meal, maize meal, golden apple snail meal and groundnut cake (Table 8). The highest AD<sub>IDM</sub> and AD<sub>IOM</sub> were found for soybean meal and catfish by-product meal, while duckweed meal, cassava leaf meal and sweet potato leaf meal had lower AD<sub>IDM</sub> and AD<sub>IOM</sub> values than the other feed test ingredients (Table 8). The highest average AD values of individual EAA (in Experiment I and II) were obtained for soybean meal, catfish by-product meal, golden apple snail meal, shrimp head meal and groundnut cake ( $P < 0.05$ ). The AD of individual EAA of test feed ingredients was lowest in maize meal and rice bran, followed by cassava leaf meal, sweet potato leaf meal and earthworm meal ( $P < 0.05$ ) (Table 11). In general, the AD value of arginine, histidine, isoleucine, lysine, methionine and valine was lower in maize meal, cassava leaf meal, sweet potato leaf meal and duckweed meal ( $P < 0.05$ ) than in the other feed ingredients (Table 9).

**Table 9. Apparent digestibility (%) of essential amino acids in test ingredients in *Panagiasius catfish* fingerlings**

Experiment I	Maize meal	Cassava leaf meal	Sweet potato leaf meal	Broken rice	Soybean meal	Duckweed meal	<i>SEM</i>	<i>P-values</i>
	Arginine	70.2 <sup>d</sup>	82.5 <sup>abc</sup>	92.0 <sup>a</sup>	80.8 <sup>abc</sup>	91.3 <sup>a</sup>		
Histidine	86.8 <sup>a</sup>	57.4 <sup>b</sup>	90.6 <sup>a</sup>	92.0 <sup>a</sup>	98.4 <sup>a</sup>	92.4 <sup>a</sup>	5.97	0.001
Isoleucine	67.3 <sup>b</sup>	76.5 <sup>b</sup>	66.2 <sup>b</sup>	78.2 <sup>ab</sup>	88.0 <sup>a</sup>	79.2 <sup>a</sup>	3.32	0.021
Lysine	50.7 <sup>c</sup>	78.6 <sup>b</sup>	75.1 <sup>b</sup>	92.1 <sup>a</sup>	94.2 <sup>a</sup>	79.5 <sup>ab</sup>	5.78	0.001
Leucine	73.4 <sup>b</sup>	78.5 <sup>a</sup>	79.8 <sup>a</sup>	69.4 <sup>bc</sup>	89.3 <sup>a</sup>	93.6 <sup>a</sup>	3.77	0.031
Methionine	87.2 <sup>ab</sup>	77.8 <sup>bc</sup>	73.7 <sup>cd</sup>	95.4 <sup>a</sup>	88.9 <sup>a</sup>	86.7 <sup>ab</sup>	3.22	0.012
Phenylalanine	65.4 <sup>b</sup>	68.5 <sup>b</sup>	68.2 <sup>b</sup>	57.3 <sup>c</sup>	87.0 <sup>a</sup>	80.4 <sup>a</sup>	4.39	0.004
Threonine	80.1 <sup>a</sup>	29.6 <sup>c</sup>	77.6 <sup>ab</sup>	89.5 <sup>a</sup>	85.7 <sup>a</sup>	89.3 <sup>a</sup>	6.35	0.001
Valine	75.0 <sup>b</sup>	76.0 <sup>b</sup>	75.5 <sup>b</sup>	79.8 <sup>b</sup>	88.1 <sup>a</sup>	81.8 <sup>ab</sup>	2.06	0.038
Average	68.2 <sup>bc</sup>	70.3 <sup>bc</sup>	74.4 <sup>b</sup>	81.3 <sup>a</sup>	89.9 <sup>a</sup>	82.6 <sup>a</sup>	4.59	0.020
Experiment II	Shrimp head meal	Golden apple snail meal	Earthworm meal	Catfish by-product meal	Groundnut cake	Rice bran	<i>SEM</i>	<i>P-values</i>
	Arginine	89.5 <sup>b</sup>	91.8 <sup>ab</sup>	55.7 <sup>c</sup>	92.6 <sup>ab</sup>	98.3 <sup>a</sup>		
Histidine	88.0 <sup>ab</sup>	93.4 <sup>a</sup>	75.5 <sup>b</sup>	95.4 <sup>a</sup>	91.5 <sup>a</sup>	88.2 <sup>ab</sup>	2.89	0.031
Isoleucine	89.4 <sup>ab</sup>	91.7 <sup>a</sup>	89.9 <sup>ab</sup>	94.6 <sup>a</sup>	89.8 <sup>ab</sup>	95.9 <sup>a</sup>	1.13	0.052
Lysine	90.4 <sup>a</sup>	89.3 <sup>a</sup>	72.6 <sup>b</sup>	92.2 <sup>a</sup>	86.7 <sup>a</sup>	63.3 <sup>b</sup>	3.79	0.021
Leucine	88.3 <sup>ab</sup>	94.3 <sup>a</sup>	90.6 <sup>a</sup>	80.6 <sup>b</sup>	88.3 <sup>ab</sup>	97.4 <sup>a</sup>	2.36	0.041
Methionine	85.2 <sup>b</sup>	91.2 <sup>a</sup>	84.6 <sup>bc</sup>	94.7 <sup>a</sup>	85.4 <sup>b</sup>	82.5 <sup>c</sup>	1.88	0.032
Phenylalanine	84.4 <sup>ab</sup>	88.1 <sup>a</sup>	82.4 <sup>b</sup>	88.9 <sup>a</sup>	85.4 <sup>ab</sup>	86.6 <sup>a</sup>	0.98	0.040
Threonine	95.1 <sup>a</sup>	90.2 <sup>a</sup>	91.7 <sup>a</sup>	85.4 <sup>b</sup>	90.1 <sup>a</sup>	65.5 <sup>c</sup>	2.36	0.031
Valine	84.8 <sup>b</sup>	91.9 <sup>a</sup>	89.9 <sup>ab</sup>	91.9 <sup>a</sup>	94.6 <sup>a</sup>	87.6 <sup>ab</sup>	1.43	0.048
Average	88.3 <sup>a</sup>	90.7 <sup>a</sup>	82.0 <sup>bc</sup>	92.0 <sup>a</sup>	84.5 <sup>bc</sup>	81.0 <sup>c</sup>	1.49	0.022

SEM = Standard error of the mean.

Means with different superscript letters within rows are significantly different ( $P < 0.05$ ).

### 3.2.3. Growth performance and feed utilisation

Two different growth experiments with same diets were performed in an indoor culture system (300 L/tank) (experiment III) and an outdoor culture system (earthen ponds) (experiment IV). The most obvious findings were that the daily weight gain (DWG) was much higher (3.2 to 6-fold) under

outdoor culture conditions compared with indoor conditions, although the fish were fed the same diet. The feed conversion improved by 0.2 to 0.7 units (kg feed DM/kg weight gain) in the outdoor group (Table 10).

**Table 10. Growth performance and feed utilisation of *Panagiasius catfish* fingerlings fed the reference diet (RD) and the test diets**

	RD	Test diets (% of fish meal crude protein replaced)						SEM	P-value	
		Ground-nut cake (25%)	Cassava leaf meal (25%)	Sweet potato leaf meal (20%)	Soy-bean meal (100%)	Golden apple snail meal (100%)	Shrimp head meal (100%)			Rice bran
<b>Experiment III</b>										
Final BW	51.9 <sup>ab</sup>	56.7 <sup>a</sup>	42.7 <sup>b</sup>	59.9 <sup>a</sup>	54.0 <sup>a</sup>	57.2 <sup>a</sup>	61.8 <sup>a</sup>	*	0.08	0.11
WG	35.5 <sup>bc</sup>	40.5 <sup>ab</sup>	26.2 <sup>c</sup>	43.8 <sup>ab</sup>	37.7 <sup>ab</sup>	41.0 <sup>ab</sup>	45.4 <sup>a</sup>	*	5.12	0.04
DWG	0.3	0.3	0.2	0.4	0.3	0.3	0.4	*	5.15	0.03
SGR	0.9	1.0	0.8	1.0	1.0	1.0	1.1	*	0.04	0.23
FCR	1.9	1.8	2.3	1.9	1.9	1.9	1.8	*	0.07	0.08
PER	1.5	1.4	1.2	1.4	2.2	2.1	2.1	*	0.20	0.22
PI	0.222 <sup>ab</sup>	0.224 <sup>ab</sup>	0.224 <sup>a</sup>	0.216 <sup>b</sup>	0.228 <sup>a</sup>	0.221 <sup>ab</sup>	0.221 <sup>ab</sup>	*	0.24	0.13
FI	98.6	97.6	98.9	96.8	97.7	97.3	97.3	*	0.002	0.16
SR (%)	94.4	97.2	93.3	100	96.7	97.8	97.8	*	0.77	0.52
<b>Experiment IV</b>										
Final BW	229.4 <sup>ab</sup>	219.0 <sup>b</sup>	177.9 <sup>c</sup>	204.9 <sup>bc</sup>	132.5 <sup>d</sup>	222.3 <sup>b</sup>	257.0 <sup>a</sup>	83.8 <sup>c</sup>	0.85	0.61
WG (g)	213.3 <sup>ab</sup>	202.1 <sup>b</sup>	161.7 <sup>c</sup>	188.8 <sup>bc</sup>	116.3 <sup>d</sup>	206.1 <sup>b</sup>	240.8 <sup>a</sup>	67.7 <sup>c</sup>	6.91	0.01
DWG (g)	1.78 <sup>ab</sup>	1.69 <sup>b</sup>	1.35 <sup>c</sup>	1.57 <sup>bc</sup>	0.97 <sup>d</sup>	1.72 <sup>b</sup>	2.01 <sup>a</sup>	0.56 <sup>c</sup>	0.07	0.02
SGR (%)	2.19 <sup>ab</sup>	2.13 <sup>b</sup>	1.96 <sup>c</sup>	2.06 <sup>bc</sup>	1.74 <sup>d</sup>	2.16 <sup>ab</sup>	2.29 <sup>a</sup>	1.38 <sup>c</sup>	0.04	0.03
FCR	1.3 <sup>c</sup>	1.6 <sup>c</sup>	1.6 <sup>bc</sup>	1.5 <sup>c</sup>	1.7 <sup>bc</sup>	1.4 <sup>c</sup>	1.3 <sup>c</sup>	4.9 <sup>a</sup>	0.05	0.02
PER	3.2 <sup>a</sup>	2.9 <sup>a</sup>	2.4 <sup>a</sup>	2.7 <sup>a</sup>	2.7 <sup>a</sup>	3.2 <sup>a</sup>	3.2 <sup>a</sup>	0.8 <sup>b</sup>	0.12	0.01
PI	0.59 <sup>ab</sup>	0.74 <sup>a</sup>	0.56 <sup>ab</sup>	0.56 <sup>ab</sup>	0.54 <sup>b</sup>	0.69 <sup>a</sup>	0.77 <sup>a</sup>	0.40 <sup>c</sup>	0.04	0.03
FI	326.1	320.8	347.3	351.7	359.1	305.5	340.0	293.2	1.22	0.14
SR (%)	95.2	93.2	90.5	96.3	92.5	93.5	95.2	92.2	0.74	0.62

BW (g): body weight; WG: weight gain; DWG: daily weight gain; SGR: specific growth rate; FCR: feed conversion ratio; PER: protein efficiency ratio; PI: protein intake; FI: total feed intake per fish; SR: survival ratio.

SEM = Standard error of the mean.

Means with different superscript letters within rows are significantly different ( $P < 0.05$ ).

In the indoor experiment (experiment **III**), final body weight (BW) and total weight gain (WG) were lowest for the cassava leaf meal diet ( $P < 0.05$ ), whilst there were no differences in BW and WG between the other diets (Table 10). In the outdoor experiment (experiment **IV**), the final body weight (BW), total weight gain (WG), daily weight gain (DWG) and specific growth rate (SGR) differed between diets ( $P = 0.01-0.03$ ). The highest final BW, total WG, DWG and SGR were recorded for the shrimp head meal diet, followed in descending order by the golden apple snail meal and groundnut cake diets, the sweet potato leaf meal and cassava leaf meal diets, and finally the soybean meal diet (Table 10).

There were no differences ( $P > 0.05$ ) in survival rate, feed utilisation (FCR), protein efficiency ratio (PER) and feed intake (FI) between the reference diet and the test diets, but protein intake (PI) differed between the diets in experiment **III** and **IV**. However, fish fed the traditional rice bran and soybean diet had lower protein intake (PI), in addition to poorer protein (PER) and feed utilisation (FCR), than fish on the other treatments (experiment **IV**).

#### 4. General conclusions

- Feed is the major cost in catfish fish production in the Mekong Delta, and small-scale fish farmers are searching for cheaper feeds as an alternative to expensive trash fish and fish meal and



commercial feeds. Locally available plant and animal feed sources are utilised sub-optimally at present, but have the potential to provide nutrients and energy to fish cultivation if they are used in suitable combinations.

- *Panagiasius* catfish appears to have a high capacity to digest dietary components and amino acids from locally available plant and animal feed resources.
- Selected feed ingredients such as shrimp head meal, golden apple snail meal, catfish by-product meal, groundnut cake and soybean meal could potentially be used to replace fish meal without any direct impact on diet digestibility of DM, crude protein, gross energy and essential amino acids.
- The apparent digestibility of dietary components was lower in duckweed meal, earthworm meal, cassava leaf meal and sweet potato leaf meal, which may impose limitations in feed formulation for the possible replacement of fish meal.
- Rice bran, broken rice and maize meal contain easily available carbohydrates, in addition to fibre, and are well utilised in *Panagiasius* catfish. They are potential energy sources in feed formulation, and could be used alone or in combination, depending on availability and price.
- Shrimp head meal, golden apple snail meal, catfish by-product meal, groundnut cake, cassava leaf meal and sweet potato leaf meal appear to be well-utilised protein-rich feed ingredients and could potentially be used to replace fish meal protein without compromising growth, feed utilisation and carcass traits in fish. However, the degree of replacement will depend on the properties of the individual feed ingredient.

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**PWB Inspection Records Management System**Chutima Ketsa<sup>1</sup> and Aphicha Inmathanyatorn<sup>2</sup><sup>1,2</sup> Informatics Technology, Faculty of Science and Technology, Bangkok Suvarnabhumi University**Abstract**

This research aims to design and develop information system management for monitoring data of electronic circuits, analyzing the effectiveness, and evaluating satisfaction of information systems management for departmental management. Window Application was developed by System Development Life Cycle principle in order to design and develop the system. The tools for this study were developed management system, questionnaire to evaluate satisfaction. Participants were 40 system integrators. The result found that the system management program can solved the problem of this case study and reduce labor to record the information.

**Keyword:** Inspection Board, Record Management System

**Introduction**

In the Auto 1 department of the AOI, has to inspect the work piece by the RNS-PT machine. After inspecting, the data need to be recoded every time in order to store inspecting data. The inspecting data is kept in Microsoft Excel program as excel file. However, the inspecting data which include figure and data need to be calculated value actually before keeping in excel file. This process for keeping file could lead to problem of data losing and waste of time, probably.

The research focused on solving the problem by creating information system management development. The information system management would be developed that could support more efficient working.

**Objective**

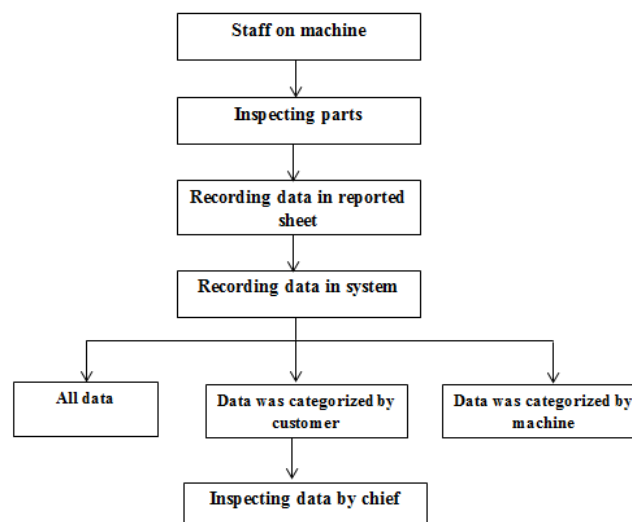
1. To design and develop information management system for monitoring electronic circuit boards.
2. To evaluate the participants' satisfaction on the developed management system.

**Method**

The researcher studied the need and problem of working, firstly to collect information. It was found as follows:

1. Repeating to record data,
2. Waste of time, and
3. Difficult to access data by manager

Therefore, System Development Life Cycle (SDLC) was used for a guideline in system design and development. When the problem was analyzed, the system could be developed by distributing data and recording the data at once, completely. The database system is used to improve the system to reduce the time and calculate the value. Moreover, if the data had been recorded, the system will show the recorded data in order to reduce time for recording data.



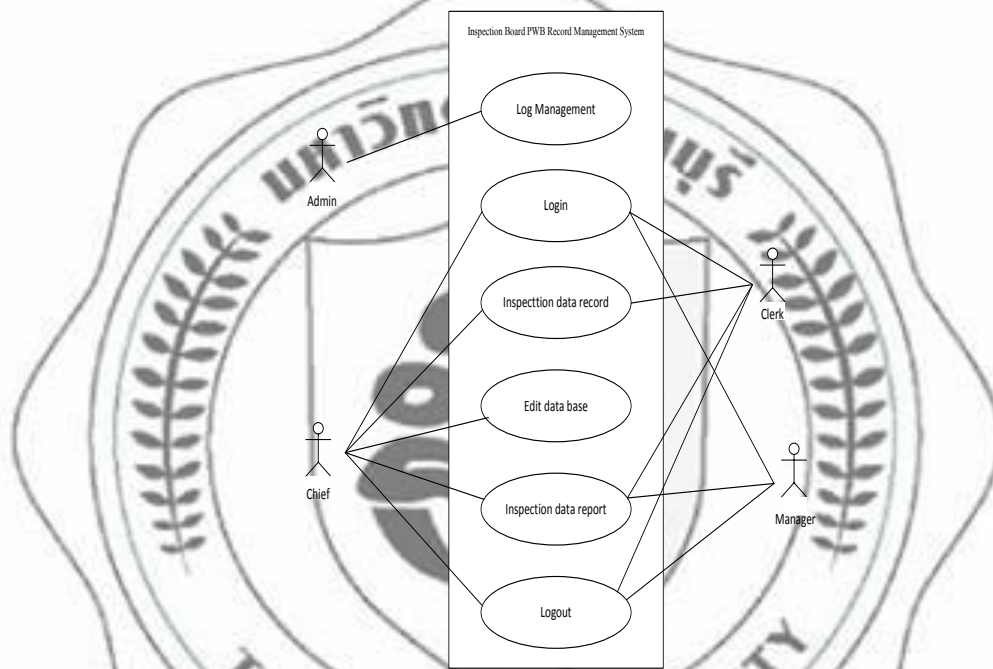
**Figure 1** Working Process



Figure1 showed the pattern of old working system of Auto 1 department. Automatic Optical Inspection inspected electronic circuit boards and recorded inspecting data in report. Then, inspecting data were recorded in computer system by Excel program in order to store information in the form of a file.

**Result**

1. Result of design and system development

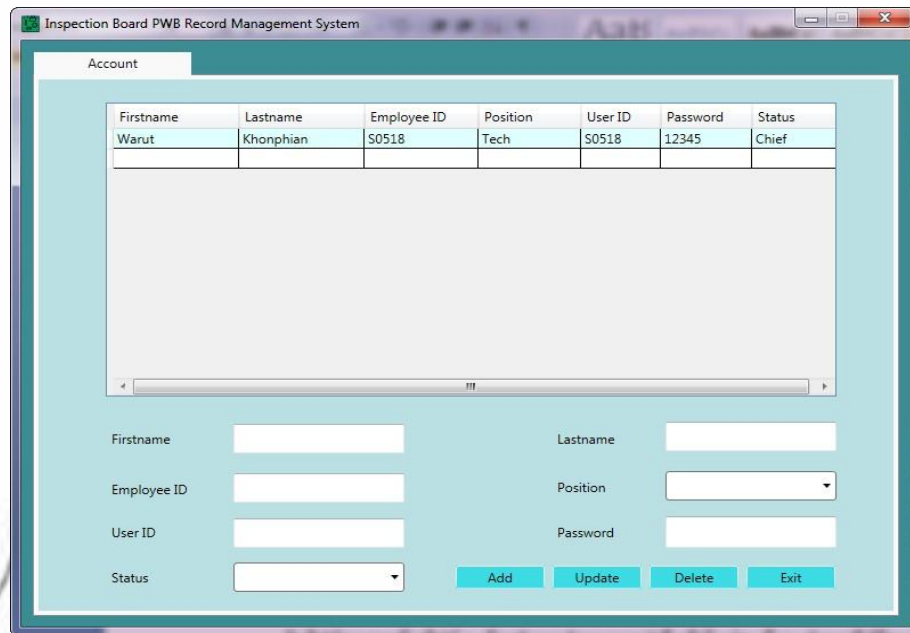


**Figure 2 Use Case Diagram**

2. Result of design User Interface with windows to support the system as figures 3 and 4



**Figure 3 Login Page**



**Figure 4** Home screen Page for Administrators

### 3. Result of efficiency and satisfaction of the system

In general information was collected from the basic information of employees. The details of the questionnaire could be summarized as follows.

**Table 1** The Status of employees

General information	Frequencies	Percentage
<b>Gender</b>		
Male	25	62.5
Female	15	37.5
Total	40	100.0
<b>Age</b>		
Below 25 yrs.	9	22.5
26-30 yrs.	15	37.5
31-35 yrs.	10	25.0
Total	40	100.0
<b>Education</b>		
Below bachelor degree	30	75.0
bachelor degree	9	22.5
Master degree	1	2.5
Total	40	100.0
<b>Work Experience</b>		
1-3 yrs.	7	17.5
4-6 yrs.	14	35.0
7-9 yrs.	10	25.0
More than 10 yrs.	6	15.0
Total	40	100.0

The results of the perception of convenience and advantage and acceptance to use of the developed system management found as shown in tables 2-4.

**Table 2** The perception of convenience of the developed system management

Perception	Mean	SD	Meaning
To use the system management program is explicitly, simple and not complicate.	4.50	0.51	Good
To use the system management program meets you need and fastness	4.47	0.68	Good
The system management program could be adopted with traditional working	4.47	0.63	Good
The system management program could be adjusted with the need of users	4.40	0.56	Good
Total	4.46	0.60	Good

**Table 3** The perception of advantage of the developed system management

Perception	Mean	SD	Meaning
Using the system management program could be supported goods distribution	4.60	0.50	Very Good
Using the system management program could be supported mode increasing	4.57	0.50	Very Good
Using the system management program could help your work efficiency.	4.53	0.51	Very Good
Total	4.57	0.50	Very Good

**Table 4** the acceptance to use the developed system management

Perception	Mean	SD	Meaning
You agree that the information provided by the system management be useful to your work.	4.57	0.50	Very Good
You agree to use the system management program	4.53	0.57	Very Good
You agree to use the system management program in working	4.37	0.49	Good
Total	4.49	0.52	Good

### Discussion

To sum up, the developed system management program could be solved the problem of this case study and reduce labor's time to record the information. Moreover, the developed system management program could solve the storage issue because the traditional system was distributed disorderly while SQL Server is used to efficient manage the database. Information that was recorded by using the developed system could be easily used.

According to the results of the assessment of the participants' satisfaction on the developed system is at good level. It showed that the developed system could solve the problem and meet the needs of the department of Auto 1 very well. The developed system could support the management more effecient and feasible using.

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**Notification System Development of Computer Accessories Repairing**Chutima Ketsa<sup>1</sup> and Aphicha Inmathanyatorn<sup>2</sup><sup>1,2</sup> Informatics Technology, Faculty of Science and Technology,  
Bangkok Suvarnabhumi University**Abstract**

This study aims to develop notification system of computer accessories repairing, a case study of Vision Nine Co., Ltd., in order to support working of this organization. PHP and Xampp programs were used in this study. When the notification system development of computer accessories repairing was used with IT department, the working was easier and faster. The executive could use information from the notification system development for purchasing new equipment.

**Keyword:** Notification System, Development, Computer Accessories Repairing

**Introduction**

The notification system of computer accessories repairing is an important system for using in organization. Because each organization usually used most modern technologies, for example, the computer use to support working every day. The computer was shown that it could support working, playing, and searching information quickly and easily. When any organization used computer to work, the image of organization was reliable and trust. Therefore, Vision Nine Co., Ltd. realized on benefit of computer system. The computer was the need function for every organization at the present. Therefore, computer maintenance system is important that the organization had to pay attention.

The original system of internal computer repair notification system of Vision Nine Co., Ltd. was complex and time-consuming to contact staff in IT, purchasing, and financial department, therefore, there should have the notification system of computer accessories repairing to facilitate the computer prompts and notification when the repair is convenient completeness.

Therefore, this study create the notification system of computer accessories repairing by developing from original system of the company. The new notification system of computer accessories repairing is feasible, convenient, and fast for using. The computer users do not feel that it takes a long time to report a computer repairing. The notification system of computer accessories repairing must be reported by logging into the repair service system. Moreover, this system keep statistics on the maintenance of computer equipment that the organization has programs to manage data and maintain computer equipment.

**Objective**

1. To develop web application for being database of the notification system of computer accessories repairing
2. To evaluate users' satisfaction of the notification system of computer accessories repairing

**Scope of this study**

1. The system has a logon check by dividing into 3 parts, as follows:
  - 1.1 Part 1- user
  - 1.2 Part 2- Member
  - 1.3 Part 3- Admin of the system
2. To develop the program to be a feature of the Web-Based Application by the user (User) that could notify computer repairing through the network within the organization.
3. Using database management system to store and manage the data.

**Literature Review****ECRS**

The ECRS cycle was developed by Ohno and later modified by TPS and Lean Advocates who wished to ensure that a disciplined, yet simple, effective set of process methodology and cognitive tools were established which could be easily communicated and passed along to others.

In generating practical ideas for improvement, a common and practical framework I've used in the past is called ECRS, which stands for Eliminate, Combine, and Rearrange, Simplify. Eliminate is the step that be important to identify the steps that could be quickly eliminated. Where

possible, eliminate the details of work. Combine work could not be eliminated, then seek to combine them. In this step, the Combine phase addresses the Who, Where, and When. Rearrange, work can also be rearranged. Simplify is a good rule of thumb regardless of the situation is to simplify anyway. Of course, we want to Eliminate first but, if not, then Combine, Rearrange, and Simplify will be helpful (Hof & Groothuis, 2011).

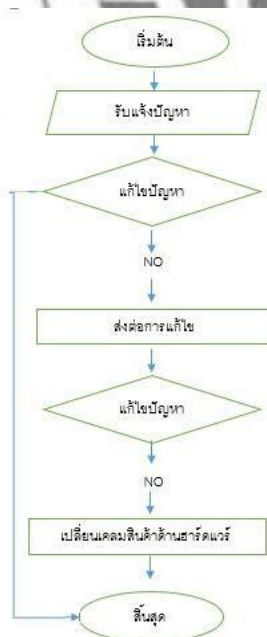
### Web-based Application

Web-based applications are the ultimate way to take advantage of today's technology to enhance your organizations productivity & efficiency. Web-based application will give you an opportunity to access your business information from anywhere in the world at anytime. It also facilitates you to save time & money and improve the interactivity with your customers and partners. It allows your administrativestaff to work from any location and sales staff to access information remotely 24 hours a day, 7 days a week. With a computer connected to the Internet, a web browser and the right user name and password you could access the systems from any location. Web-based applications are easy to use and could be implemented without interrupting your existing work process. Whether you need a content managed solution or an e-commerce system, we could develop a customized web application that fulfills your business requirements.

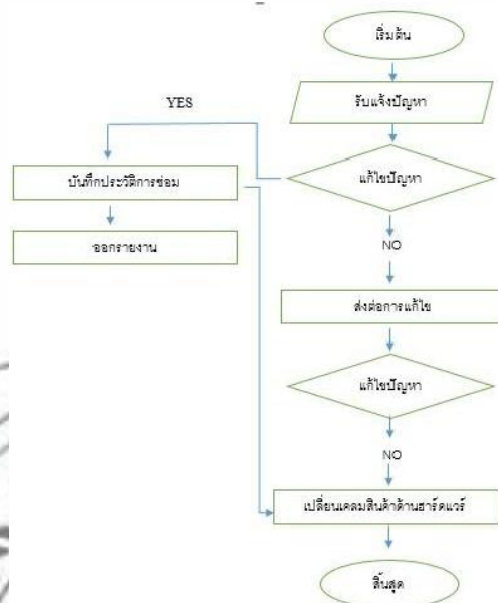
### Related Research

Leucha Choobunjong (2013) developed the development of notification system of computer repairing of PKG Journey line Company. The system was develop by using PHP, MySQL, Could Sever, Window Azure to be store data management system. The result found that this system could support staff to work effectively. It could edit work more correctly and fast.

### Result



**Figure 1** Flow chart of the original notification computer repairing system working



**Figure 2** Flow chart of the new notification computer repairing system working

From figure 1, there was not any report to show repairing computer solving that sending to repaired center shop or warranty or fixing. While figure 2 showed repairing computer solving that it was record in database. The new notification computer repairing system working could also see the operating history of repairing that IT department will repair the computer or peripherals faster.

**Operation**



**Figure 3** Site map of the notification computer repairing system





Figure 4 Home screen

The home screen showed other menus of the notification computer repairing system. User could fill information in the notification computer repairing system by logging into the system first. Next step will go to the login menu, and then to enter your username and password.



Figure 5 Screen for filling information to notify repairing

The program will display a fill information page that the user fill out the details of the repair. When the information is complete, press the Save menu. And when the information is saved, go back to the main page, as shown in Figure 5.

**evaluate satisfaction**

Web application of the notification computer repairing system was evaluated satisfaction by 20 participants. A questionnaire was a tool for gathering data concerning satisfaction on 3 aspects, as follows:

1. The processing of the system;
2. The communication between the system and the user; and
3. Security of the system.

The result found that satisfaction of the user was at very good level in term of security of the system, mean 4.53. The satisfaction of user was at good level in terms of The processing of the system and the communication between the system and the user, with average 4.36 and 4.33, respectively. Overall, satisfaction of the user was at good level. The participants indicated that the system could be used for their organization effectively.

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**HIGH-VOLTAGE Li-ION BATTERIES BASED ON  $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$  AS CATHODE AND  $\text{Li}_4\text{Ti}_5\text{O}_{12}$  AS ANODE**TRAN Van Man<sup>a,b,\*</sup>, HUYNH Le Thanh Nguyen<sup>a</sup> and LE My Loan Phung<sup>a,b</sup><sup>1</sup>Applied Physical Chemistry Laboratory (APCLAB), VNUHCM-University of Science<sup>2</sup>Department of Physical Chemistry, Faculty of Chemistry, VNUHCM-University of Science**Abstract**

Our work aims to develop the high-voltage lithium-ion battery based on two spinel electrodes:  $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$  (LNMO) as cathode and  $\text{Li}_4\text{Ti}_5\text{O}_{12}$  (LTO) as anode. LNMO was prepared by two-steps calcination at 600 °C (12 hours) and at 900 °C (36 hours); while LTO was prepared by sol-gel method with  $\text{Ti}(\text{BuO})_4$  as precursor. LNMO exhibited a cubic spinel structure (a unit-cell of 8.2256 Å) with a good distribution of polygonal particles in sub-micrometric scale. The charge-discharge performance took place with two continuous plateaux at 4.7 V, corresponding to the redox couple  $\text{Ni}^{4+}/\text{Ni}^{3+}$ . LNMO delivered a discharge capacity of 120 mAh/g and a retention of 100% initial capacity in 50 cycles was observed at rate C/10. In case of LTO, the sol-gel method promoted the spinel structure (a unit-cell of 8.3564 Å) in nanometric scale. The galvanostatic curve showed a single plateau at 1.5 V, corresponding to redox couple  $\text{Ti}^{4+}/\text{Ti}^{3+}$ . LTO showed an outstanding performance in high-rate test with a discharge capacity of 120 mAh/g at rate 1C.

**Keywords:** $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$ ,  $\text{Li}_4\text{Ti}_5\text{O}_{12}$ , spinel electrode, high-voltage batteries, cycling test**1. Introduction**

Lithium-ion batteries (LIBs) plays an essential role in the context of energy storage for large applications from electronic portable devices to zero-emission electronic vehicles or even static energy storage systems from renewable energy. LIBs possess the outstanding performance than other secondary batteries like high voltage operation (~ 4 V), high energy density and power density. The basic principle of lithium-ion battery is based on the “rocking-chair” mechanism. During the discharge process, the negative electrode material (e.g. lithiated carbon) releases  $\text{Li}^+$  ions and electrons,  $\text{Li}^+$  ions travel through the electrolyte, while electrons travel through the circuit or the load. They meet each other in the positive electrode material (e.g.  $\text{LiCoO}_2$ ), and the reduction of cation  $\text{Co}^{4+}$  occurs accompanies the intercalation of  $\text{Li}^+$  ions into the neighboring layers of  $\text{LiCoO}_2$ . During the charge process, the mechanism is opposite;  $\text{Li}^+$  ions come back directly through the electrolyte to the negative electrode material, while electron from generator charges the electrochemical cell. [1,2]

Until now, LIBs still face the challenge on high-cost per kWh (>\$180/kWh now) for large-scale applications. The high-cost of LIBs comes from many issues: material costs, technology maturity, production volume...; one of them is cost of Co-based electrode materials ( $\text{LiCoO}_2$ ). The solutions have been approached, for instance, reduction of Co-content in commercial cathode materials by other transition metallic (Ni, Mn, Fe...) or development of novel electrode materials without Co [3]. The spinel  $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$  is one of promising cathode candidates for next-generation LIBs due to high voltage operation (> 4.5 V), good cycling behavior, especially low-cost and non-toxic compound of Mn-based oxide [4]. On the anode side, spinel  $\text{Li}_4\text{Ti}_5\text{O}_{12}$  (LTO) is also considered as novel anodes for LIBs because of nontoxic, inexpensive, thermal stability and anticipation of SEI formation during Li insertion.[5] The interest of using LTO anode is the ability to charge – discharge at high rate which can be satisfied for “start-stop” condition of electric vehicles.

Our work aims to develop the high-voltage LIBs based on two spinel electrodes:  $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$  (LNMO) as cathode and  $\text{Li}_4\text{Ti}_5\text{O}_{12}$  (LTO) as anode. Then, the combination of LTO – LNMO battery configuration for high energy density application will be next step within the selection of compatible electrolyte.

**2. Experimental**

The spinel  $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$  was prepared by two-steps solid-state reaction. The precursors  $\text{Li}_2\text{CO}_3$  (99.9%, Sigma),  $\text{MnCO}_3$  (99.9%, Sigma) and  $\text{Ni}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$  (99.9%, Sigma) were mixed with appropriate stoichiometry ratio Li:Ni:Mn = 1:0.5:1.5. The initial mixture was calcined in air at



600 °C for 24 hours and then was re-grounded, pressed into pellets. The pellets were calcined in the air at 900 °C for 36 hours.

The spinel  $\text{Li}_4\text{Ti}_5\text{O}_{12}$  was prepared by sol-gel method. The 25 mL (0.082 mol)  $\text{Ti}(\text{OBU})_4$  (99.99% Aldrich) was added to a solution containing 6.75 g of  $\text{LiC}_2\text{H}_3\text{O}_2 \cdot 2\text{H}_2\text{O}$  (99.9%, Sigma) in 75 ml of distilled water: ethanol (volume ratio = 1:1). A yellow solution was firstly obtained and then became more viscous leading eventually to the formation of a white monolithic gel after 1 hour. This gel was dried in air at 60°C for one day. The powder was calcinate at 800 °C for 2 hours to obtain the final product.

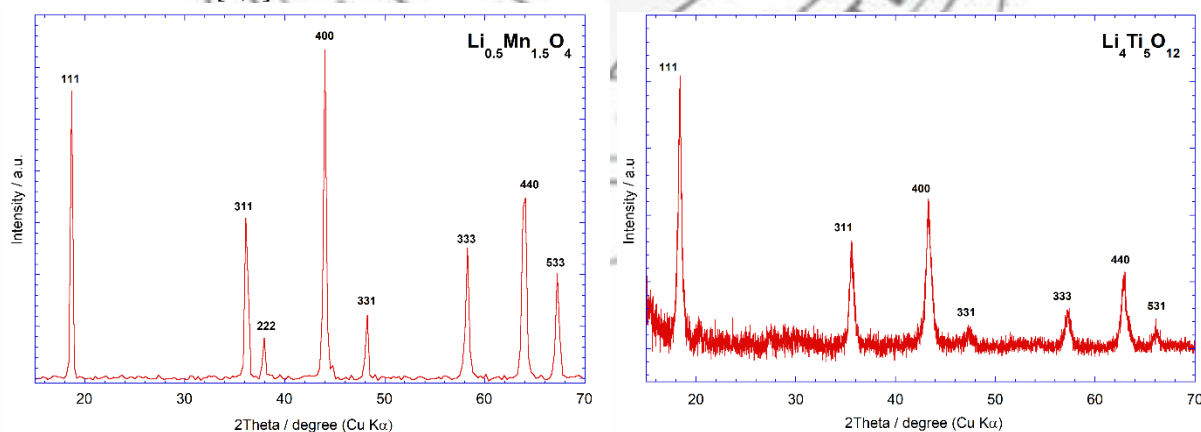
The structure was characterized by powder X-ray diffraction (XRD), using D8-ADVANCED (Bucker) diffractometer with Cu K $\alpha$  radiation ( $\lambda = 1.5406$ ), step of 0.02° and 20 s/step counting time. The diffraction pattern was collected in 2 $\theta$  between 15° and 70°. The morphology and the distribution of grain size were determined by Scanning Electron Microscopy (FE-SEM, ZEISS ULTRA 55).

The electrode composition including spinel powder, carbon black, and graphite and poly(vinylidene fluoride-co-hexafluoropropene) (PVdF-HFP) with the weight ratio 80:7.5:7.5:5–was dissolved in n-methyl pyrrolidinone (NMP), coated onto aluminum foil and dried in vacuum oven at 100 °C for 15 hours. After drying, the electrodes were cut into 10 mm diameter round shape with a mass active materials density of 0.4-0.5 mg/cm<sup>2</sup>. The half-cell configuration was assembled with lithium metal anode (Sigma Aldrich), positive electrode and 1 M  $\text{LiPF}_6$  in ethylene carbonate and dimethyl carbonate (EC:DMC = 1:1, v:v) (Sigma-Aldrich) as electrolyte solution under inert atmosphere (argon) in the glove box. The electrochemical properties of two spinel compounds were carried out in Swagelok cells by MPG2 electrochemical system (BioLogic, France) using the cyclic voltammetry (CV) and the galvanostatic cycling tests.

### 3. Results and discussion

#### 3.1. Structure and morphology

According to XRD patterns of  $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$  and  $\text{Li}_4\text{Ti}_5\text{O}_{12}$  in Figure 1, all diffraction peaks are indexed in spinel structure with cubic faced centered lattice without an impurity phase. The unit cell of two spinel compounds was calculated by Celref program. LMNO had  $a = 8.2256 \text{ \AA}$ , and LTO had  $a = 8.3564 \text{ \AA}$ . [4,5]



**Figure 1** XRD patterns of (a)  $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$ , (b)  $\text{Li}_4\text{Ti}_5\text{O}_{12}$

Figure 2 shows the morphology of LNMO and LTO. LNMO had a wide distribution of particle size due to the particle agglomeration during solid-state reaction at high temperature and the grains exhibited the well-faceted octahedral particles in the micrometric scale. SEM image of LTO pointed out the grain-size down to the nanometric scale around 100 nm.

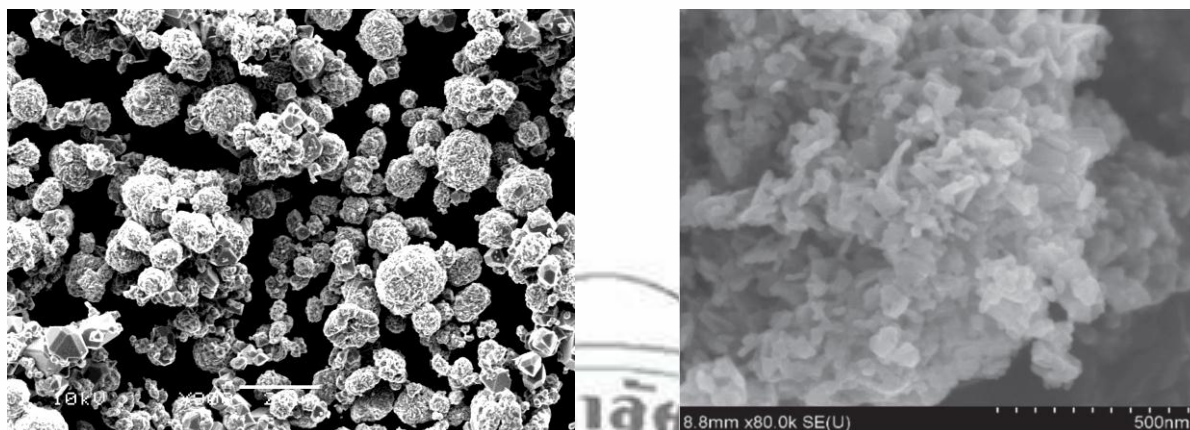


Figure 2 Morphology of  $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$  (left) and  $\text{Li}_4\text{Ti}_5\text{O}_{12}$  (right)

### 3.2. Electrochemical performance

The electrochemical properties of two spinel compounds were evaluated by cyclic voltammetry (CV) and galvanostatic cycling test. Figure 3 illustrates the CV curves of two spinel compounds, which were carried out at various scan-rate 10-100  $\mu\text{V/s}$  in the window voltage of 3.5-5.0 V (vs.  $\text{Li}^+/\text{Li}$ ) for LNMO and 1.0-2.5 V (vs.  $\text{Li}^+/\text{Li}$ ) for LTO. The spinel LNMO presented two redox peaks: strong double-peaks at 4.7 V and a small mono-peak at 4.0 V corresponding the redox couple  $\text{Ni}^{4+}/\text{Ni}^{3+}$  and  $\text{Mn}^{4+}/\text{Mn}^{3+}$ . The spinel LTO exhibited the redox mono-peak at 1.5 V corresponding to the redox couple  $\text{Ti}^{4+}/\text{Ti}^{3+}$  [4, 5] Moreover, we observed that the redox peaks in LTO are more broaden than those in LNMO, it can be explained by the effect of morphology. Based on the peak position of two spinel in CV curves, the full-cell configuration of LNMO - LTO may operate in the window voltage around 3 V.

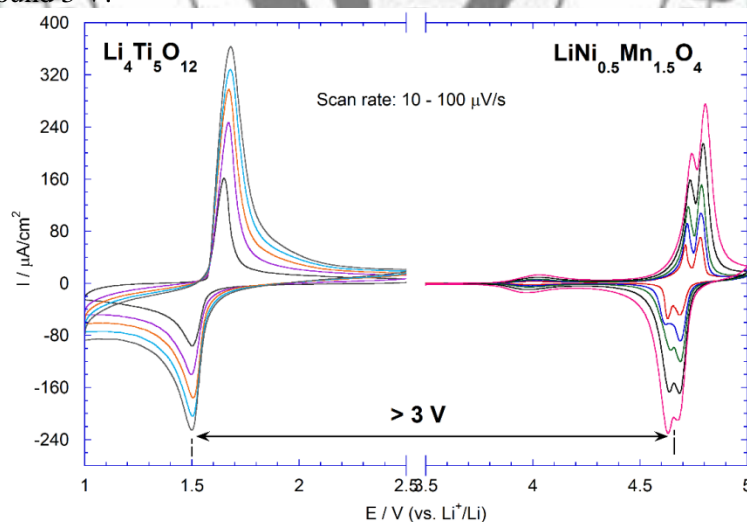


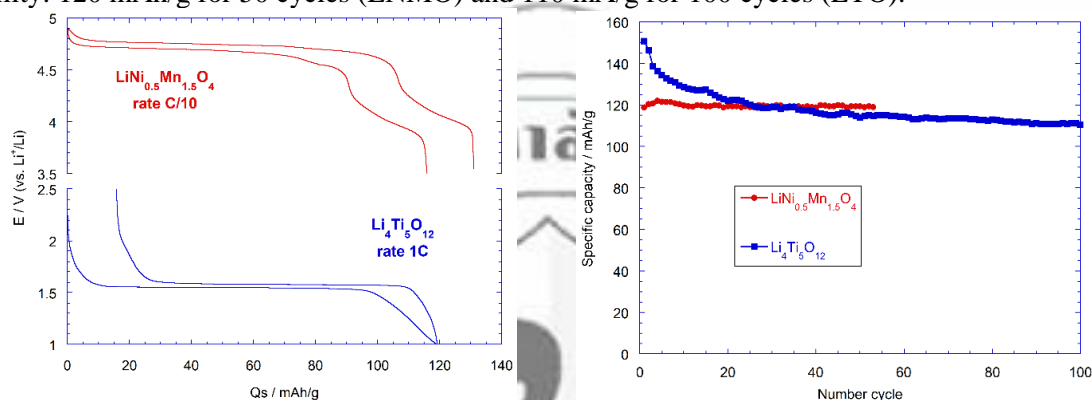
Figure 3 CV curves of  $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$  and  $\text{Li}_4\text{Ti}_5\text{O}_{12}$  at various scan-rate

From the CV curves in various scan-rate, the kinetic of lithium transportation through lithium diffusion coefficient ( $D_{\text{Li}}$ ) is able to determine by the slope in plot of peak currents ( $i_p$ ) in function of scan-rate ( $v^{1/2}$ ) following Randles-Sevcik equation below:

$$i_p = 0.4463nFAC \left( \frac{nFvD}{RT} \right)^{1/2}$$

where  $i_p$  (A) is the current maximum,  $n$  is the number of electrons transfer per mole ( $n = 1$ ),  $F$  (C/mol) is the Faraday constant,  $A$  is the electrode area ( $0.785 \text{ cm}^2$ ),  $C$  ( $\text{mol}/\text{cm}^3$ ) is the lithium concentration in the LNMO and LTO electrodes,  $v$  (V/s) is the scanning rate,  $D_{\text{Li}}$  ( $\text{cm}^2/\text{s}$ ) is the lithium diffusion coefficient,  $R$  (J/K.mol) is the gas constant, and  $T$  (K) is the temperature. The  $D_{\text{Li}}$  were found out  $4.7 \times 10^{-13} \text{ cm}^2/\text{s}$  for LNMO and  $3.8 \times 10^{-12} \text{ cm}^2/\text{s}$  for LTO, these are coherent with the previous reports.

The galvanostatic cycling test was carried out at C/10 for spinel LNMO and 1C for LTO. It is valuable noting that the testing rate for spinel LTO is larger one decade than spinel LTO because the anode materials must release more ions and electron than cathode materials in discharge process.[5] Figure 4a shows the typical charge-discharge curves of LNMO and LTO. The galvanostatic curve of LNMO illustrated a broaden plateau at 4.7 V and a short plateau at 4 V, while the galvanostatic curve of LTO illustrated only broaden plateau at 1.5 V. Results of charge-discharge curves are apparently coherent with the CV curves. For long-term cycling test, both spinel presented a good discharge stability: 120 mAh/g for 50 cycles (LNMO) and 110 mA/g for 100 cycles (LTO).



**Figure 4** Charge-discharge curve and cycling stability of  $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$  and  $\text{Li}_4\text{Ti}_5\text{O}_{12}$

#### 4. Conclusion

Finally, our works showed that spinel  $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$  was successfully prepared by solid-state reaction and spinel  $\text{Li}_4\text{Ti}_5\text{O}_{12}$  was prepared by sol-gel method. The CV curves illustrated a stable kinetic of lithium transportation into both spinel materials. The galvanostatic cycling results exhibited a discharge capacity of 120 mAh/g for  $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$  at rate C/10 and 120 mAh/g for  $\text{Li}_4\text{Ti}_5\text{O}_{12}$  at rate 1C. The excellent electrochemical performance of two spinel electrodes are promising for full-cell combination in the next stage.

#### Acknowledgment

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**SOLAR POWER AS FUTURE ENERGY****Khamphouth Phommasone,**The School for Gifted and Ethnic Students, National University of Laos, Xaythany District, Vientiane Capital, Lao PDR  
e-mail: khamphouthp@gmail.com**Abstract:**

Lao PDR is a country that has a lot of sunlight due to its location near the equator. So, it's appropriate to use solar energy to respond to our daily lives. The main and important problem for human is the resource such as our project that present about using Solar Water Heater instead of using the Electric Water Heater.

The main purpose is to use the natural energy that we have and useful such as in our project we present about using Solar Water Heater because Solar Water Heater helps us in saving electricity and it's an ecological friendly system.

Other purpose for our project is because of the Solar Water Heater has a lot of benefits. So, we would like to acquaint this project by doing an experiment to compare with the Electric Water Heater to make sure that it has higher qualities than Electric Water Heater.

Using the sunlight to heat water is not a new concept. Humans have been harnessing the thermal energy of the sun for centuries. In fact, people have been designing commercial solar water heaters since the 1800's.

Water heating uses more household energy than any activity except home heating and cooling. We use hot water all the time. With a solar water heater, you'll get the hot water your household needs while saving money and energy and reducing your environmental impact.

In most homes, water is heated using electricity, natural gas or oil. The burning of fossil fuels release a lot of pollution into the environment and contribute to global warming.

Since water heating is one of the biggest uses of energy, it can be a significant ratio of our energy bills. Therefore, replacing a traditional water heater with free energy from the sun is good for the environment and a good way to save money on your energy bill.

**Keywords:** renewable energy**Objectives**

To find out Solar Water heating efficiency, we need many factors but the main important factor is:

To measure the Solar Water Heating efficiency, we have two main objectives to experiment:

- Experiment in the soft sunlight
- Experiment when strong sunlight

**Project definition and Beneficiaries**

Our pilot project is about Solar Water Heating. A Solar water heating is a device that converts light radiation from the sun into heat to produce hot water. It is made up of a Solar Panel, a storage tank and a circulation system that transfers the heat from the solar collectors to the tank. By using renewable energy, this device helps to reduce carbon emissions into the atmosphere, energy saving, cost saving and ecological friendly.

The object of this pilot project is to show the positive result that the beneficiaries from the experimented Solar Water Heating are ourselves, households, schools and community.

**Equipments**

- 25 feet tubing
- Black plastic box with Plexiglas lid
- 2 containers for water
- Solar panel, 2 volt
- Electric water pump
- 2 thermometers
- Battery



## Methodology

### Step 1: Arrange Tubing in the Box

The first design choice will be a box to use. The plastic boxes have holes drilled in the side. These holes allow the tubing to enter the box from the water pump and exit the box to the storage container.

Push one end of the tubing out of the drilled hole from the inside of the box. Make sure of pushing enough tubing out of the box to reach the water pump in the water container.

Now you face a very important design choice-arranging the tubing. Remember, the more surface area you expose to the sun, the more efficient your system will be. Take your time to coil, wrap or loop the tubing to try to maximize the amount of tubing being hit by the sunlight. You may need to use some tape to hold the tubing in place. Clear tape will do the job and also allows light to pass through.

Next run the other end of the tubing out of another hole in the box. The water will go through this tubing and out to the external storage container. Leave enough tubing to get to the container, but remember that having more tubing exposed outside of the solar collector may reduce efficiency. You might try insulating this outer tubing.

You should cover the tubing in the box with a clear lid. If you used one of the smaller paper boxes, the plastic lids fit over them well. The clear Plexiglas sheet fits perfectly over the black plastic box. You can tape one edge of the Plexiglas onto the box to make a hinge, or tape all the edge for a tight seal.

### Step 2: Set up the Water Storage Container

This kit comes with two bins to use for water storage. The electric water pump will pump water out of the storage container, through the solar collector, and back into the container. This way, the entire system is a continued, circulating loop.

Connect one end of the tubing to the water pump and place it at the bottom of the storage container, making sure that the two wires from the pump are facing up. These wires will be connected to your photovoltaic panel.

Now you can pour some water into the container. Use cold or room temperature water so that you can measure a temperature change as the system operates. The water pump should be fully submersed, but **remember to keep the wires sticking up out of the water**. Insert the thermometer into the storage container and record the initial water temperature.

### Step 3: Connect the Photovoltaic Panel to the Water Pump

Use alligator clip wires to connect the solar electric panel to the water pump. You may need to strip the leads of the solar panel or the water pump to expose enough metal to clip the wires to. It should still work if the water pump wires are under water, but be sure you have a secure connection.

If the photovoltaic panel is in sunlight, the pump will begin pumping as soon as this circuit is connected. Since the pumping will start right away. Be sure that your tubing is all set up before you connect the pump. Double check that the tubing coming from the solar collector goes back into the storage container.

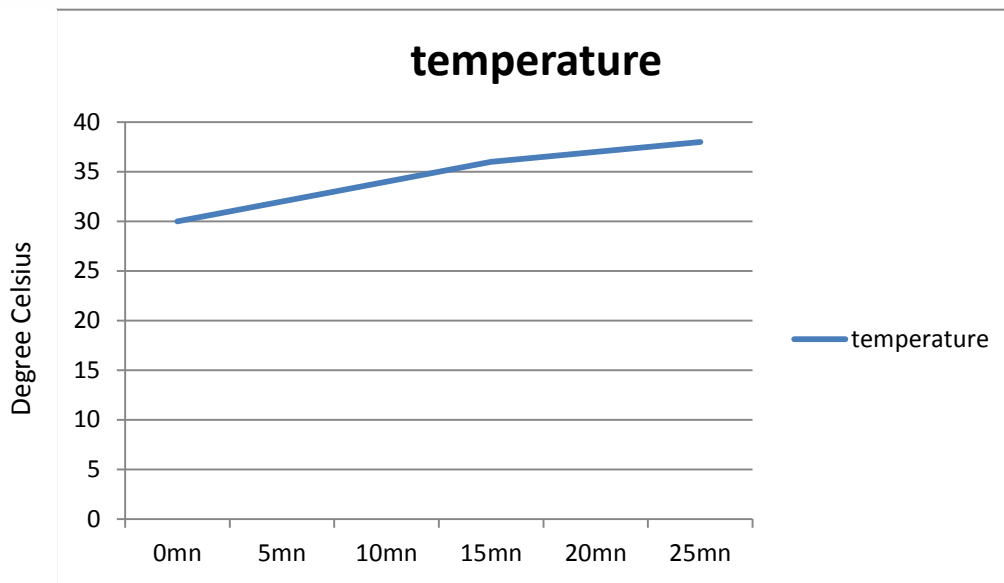
If you want to stop the pumping, all you have to do is shade the solar panel. The panel will stop producing electricity if sunlight is not hitting it, and the pump will stop.

### Step 4: record data

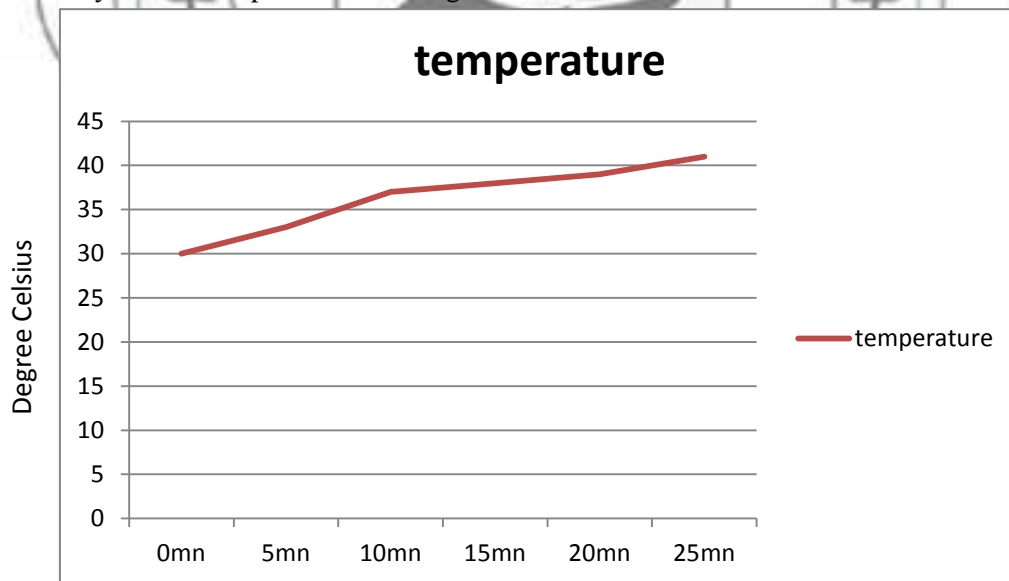
Make a note of the beginning water temperature and nearby air temperature as you begin filling the tubing by using the electric pump and solar electric panel. Use the data sheet provided to begin recording data.

## Result

- **Experiment in the soft sunlight**  
Experiment on 02/10/2017 at 9 A.M  
Laboratory room's temperature is 32 degree Celsius



- **Experiment when strong sunlight**  
Experiment on 05/10/2017 at 2 P.M  
Laboratory room's temperature is 35 degree Celsius



## Discussion

### Increasing temperature of water

- On 05/10/2017 at two o'clock an experiment in the strong sunlight we noticed that the water temperature has risen from 30 degree Celsius to 41 degree Celsius in 25 minutes. The strong sunlight makes the water temperature dramatically increase and this is the suitable time to heat water by solar energy.
- On 02/10/2017 at nine o'clock an experiment in the soft sunlight, the water temperature has increased from 30 degree Celsius to 37 degree Celsius in 25 minutes. From this experiment we noticed that the water temperature has increased slower than in the strong sunlight. So we can conclude that heating water in the strong sunlight has higher quality than heating water in the soft sunlight.



**Summary**

The results of the experiment we can conclude that Solar Water heating is very useful compared to Electric water heating:

- Solar Water heating:
  - energy saving.
  - ecological friendly.
  - no problem with increasing of energy price (stability of energy prices)
  - high investment costs, but long term profitability 10 to 30 years.
  - No problem with temperature used.
  - Only one piece can cover for whole house.
  - No Carbon emission.
- Electric Water Heating:
  - Energy consumption.
  - Ecological unfriendly.
  - Long term price increase.
  - Short life utility.
  - Low investment costs, but higher monthly electricity charge.
  - Temperature fluctuation.
  - Limited only to specific area.

As a results of the comparison, we will recommend that Solar Water Heating is more useful than Electric Water Heating, because we can use Solar Water Heating in the sustainable way and can be alternative choice of renewable energy because Solar energy is unlimited.

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**DEVELOPMENT AND FIELD TESTING OF A COST-EFFECTIVE 150W SINGLE-  
AXIS SOLAR TRACKING SYSTEM USING A REAL-TIME LABVIEW DAQ  
MONITORING MODULE**Lemthong Lathdavong<sup>1\*</sup> and Young Joo SONG<sup>1</sup><sup>1</sup> *Department of Physics, Faculty of Natural Science, National University of Laos.*

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**Abstract:** Both of a low-cost and high-efficient 150W single-axis solar panel tracking module and its real-time LabVIEW monitoring system have been developed at Faculty of Natural Science, National University of Laos. In order to produce the solar tracker with a low cost, a set of linear actuator of 18-inch length, DC 12V-operating actuator controller, and two-cell sensor switch are utilized and installed properly. Regarding the implementation of LabVIEW monitoring system, a sensor for voltage, current, and power detection, the combination of five resistors is used. In addition, a commercially available low-cost thermistor and a photodiode are employed to produce the sensors for real-time panel temperature and input sunlight power measurements, respectively. The evaluation result of developed LabVIEW monitoring system at 1Hz sampling rate shows that the produced data is more than 95% matched with the control data measured by a digital watt-meter as long as the panel's current range is between 2.0A and 9.0A, which matches with the normal operation range for a 12V/150W solar panel. The field testing of 150W solar tracking module using LabVIEW system shows that the tracker is able to produce minimum 50% more power than the exactly same solar module without tracker. The greatly increased charging current by more than 70% in the solar module with tracker is responsible for the enhanced power production, whereas its output voltage level is smaller (12.9V) than the solar module without tracker (13.4V). It is proposed that the solar tracking module with its LabVIEW monitoring system in this study can play an important role in improving the quality of solar photovoltaic energy research infra in Lao PDR, effectively.

**Keywords:** *photovoltaic energy, solar tracker, LabVIEW*

**I. INTRODUCTION**

The utilization of photovoltaic power source for both of rural and urban areas of Lao PDR is receiving a great attention due to many advantages. These include the long dry season from November to May, as well as the relatively inexpensive land price. In fact, small to large size (10kW – 3MW) of solar photovoltaic application projects are going on nationwide. Nevertheless, the cost of solar photovoltaic module installation is not still low enough to replace the conventional power sources such as hydro power or steam power, especially in Lao PDR. The alternative way to reduce the cost of solar photovoltaic module is to introduce a solar tracker to the photovoltaic module [1]. However, the utilization of solar tracker has not been reported yet in Lao PDR and its effectiveness should be examined in terms of power production capability and cost. For this, a 150W solar photovoltaic module has been fabricated with a single-axis tracker, and then its characteristics are investigated and compared with the same solar photovoltaic module without tracker. In addition, for the purpose of a real-time data acquisition and analysis, a low-cost USB DAQ connected with simple sensors of power, temperature, and light intensity is utilized and controlled by LabVIEW programs. In order to examine the accuracy of developed data acquisition tool, the control data obtained from commercially available digital watt-meter, IR temperature detector, and light intensity sensor are compared. Based on the acquired real-time LabVIEW data, the potential use of solar tracker in photovoltaic power module towards the rural and urban areas of Lao PDR is discussed and concluded.

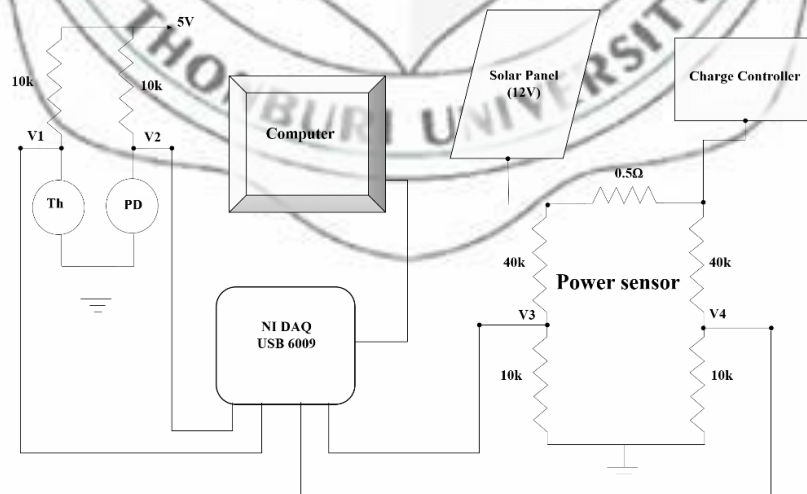
**II. EXPERIMENTS**

A single-axis solar tracking photovoltaic module (150W) has been designed and assembled at Faculty of Natural Science, National University of Laos. The tracking part in the module consists of an 18-inch motor-driven actuator, a DC 12V operating actuator controller, and a two-cell sensor switch. The power required to operate the tracking part is supplied from the identical battery that is used for solar panel's charge storage. Fig. 1 shows the picture of 150W solar photovoltaic module with a tracker developed in this study. The experimental setup of real-time solar panel monitoring is shown in Fig. 2. Since the data acquisition (DAQ) employed in this study (NI model USB-6009) only detects the voltages from 0 to 5 volts, a simple voltage divider circuit is composed to detect the values of voltage, current, and power, as illustrated in the figure. The equations for charging voltage ( $V_C$ ),

charging current ( $I_C$ ), and power ( $P$ ) are described as  $V_C [V] = 5V_4$ ,  $I_C [A] = 5(V_4 - V_3)/0.5$ , and  $P [W] = V_C \times I_C$ , respectively. As sensors for panel temperature and irradiation power detection, a low-cost thermistor (10K ohm, PN 207037) and a CdS cell photodiode (GL 5528) are selected and wired as shown in the figure. The variation in resistance of thermistor and photodiode depending on increment of temperature and irradiation, respectively, is precisely measured and then curve-fitted to be applied to LabVIEW programming. In order to examine the accuracy of a real-time monitoring system in this study, commercially available detectors including a digital watt-meter, a solar power meter, and a IR thermometer are used to provide the control data. Since both of irradiation and output power levels are detected, the real-time monitoring of conversion efficiency is possible. The field testing of 150W single-axis solar panel tracking module is done for six hours from 9:00 am to 3:00 pm in the campus of National University of Laos.



**Fig. 1.** 150W Solar photovoltaic module with a tracker developed in this study.

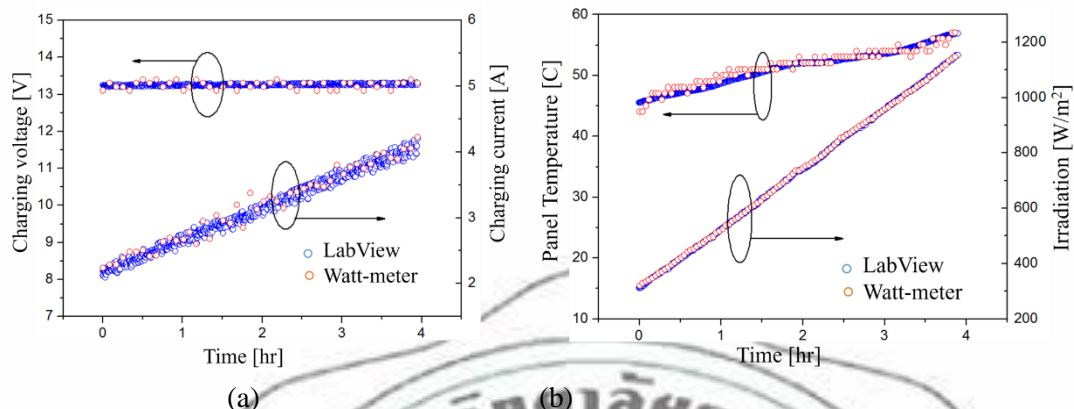


**Fig. 2.** Experimental setup for real-time solar panel monitoring using LabVIEW DAQ.

### III. RESULTS AND DISCUSSION

The voltage and current curves measured for LabVIEW data accuracy testing are shown in Fig. 3(a). It is seen that the voltage data is very reliable and repeatable with a minimum fluctuation ( $\pm 1\%$ ), whereas the current data in the figure reveals a wider fluctuation ( $\pm 2.5\%$ ). Both of solar panel temperature and irradiation power data extracted by LabVIEW DAQ are also sufficiently reliable as demonstrated in Fig. 3(b). Thus, it could be said that the employed LabVIEW low-cost sensors operate very well and almost perfectly match with the control data obtained from the commercial detectors in the given data range.





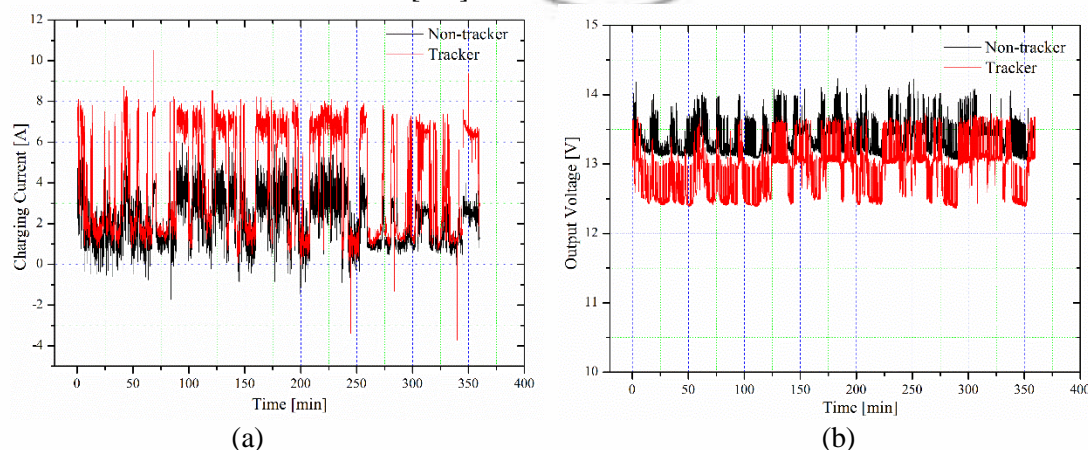
**Fig. 3.** LabVIEW data measured for accuracy testing; (a) voltage and current, (b) panel temperature and irradiation power.

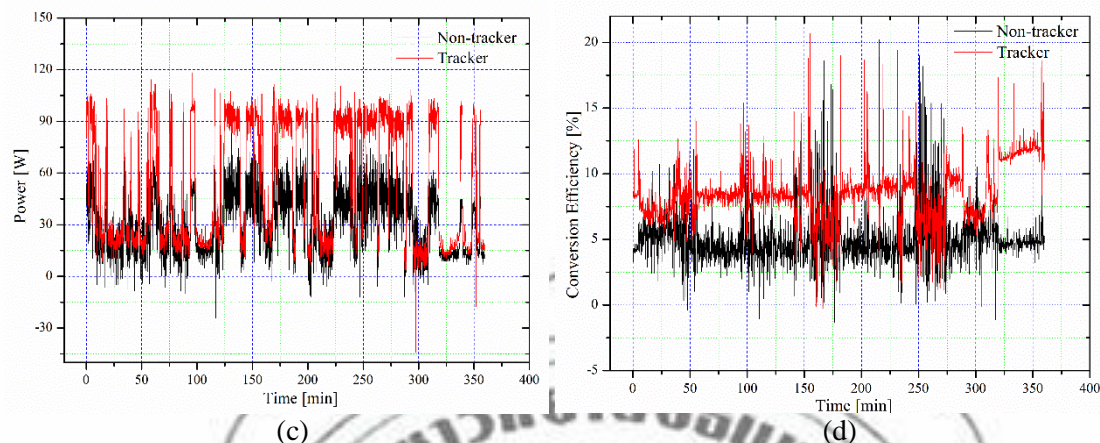
Table 1 summarizes the testing parameter's possible sensing range ( $\leq \pm 2.5\%$  errors) of the developed real-time solar panel monitoring LabVIEW DAQ module in this study. It could be said that the employed LabVIEW low-cost sensors operate very well and almost perfectly match with the control data obtained from the commercial detectors in the given data range.

**Table 1.** Data parameters with corresponding valid sensing ranges using LabVIEW DAQ developed in this study

Parameter	Sensing range ( $< \pm 2.5\%$ error)
Panel temperature	25 – 75 <sup>o</sup> C
Irradiation power	300 – 1200 W/m <sup>2</sup>
Charging voltage	12 – 25 V
Charging current	2.0 – 9.0 A
Output power	24 – 225 W

The field-testing data of 150W single-axis solar tracker in this experiment is illustrated in Fig. 4(a)-(d). The curves shown in Fig. 4(a) denote that the solar module with a tracker has a greatly increased current level by more than 50% in average. When the sunlight is not blocked by clouds, the improvement rate is increased up to 70%. The slightly lower voltages of the solar module with a tracker in Fig. 4(b) suggests that the tracker works well in following the sun's angle to absorb the maximum possible photons, which results in the increase of solar panel. The reduced output voltage of the solar module with a tracker (12.9V vs. 13.4V) comes from the narrowed bandgap of Si solar cells in the module with a tracker [2-3].





**Fig. 4.** Field-testing data of the solar tracker and non-tracker in this experiment.

According to the semiconductor physics, a narrower bandgap produces a lower voltage. In spite of the slightly reduced output voltage due to increased panel temperature, the power production of solar photovoltaic module with a tracker reveals an around 50% increase compared with that without a tracker, as seen in Fig. 4(c). It reflects that the increase in charging current dominates over the slight reduction of output voltage. Fig. 4(d) finally shows that in-situ conversion efficiency of two solar modules in this study. This measurement is thought to be especially useful when the sunlight intensity fluctuates due to sunlight blocking by clouds. As seen in the figure, the level of efficiency is quite uniform independent of sunlight input power fluctuation. Table 2 summarizes the output characteristics of two 150W solar modules with and without a tracker tested in this study.

**Table 2.** Comparison of two solar photovoltaic modules with and without tracker

Module	Ave. current [A]	Ave. voltage [V]	Ave. power [W]	Max. power [W]	Charging time (9 am-3 pm) [hour]	Cumulative energy [Wh]
Non-Tracker	2.16	13.40	28.94	71.43	6	173.64
Tracker	4.13	12.86	53.11	109.12	6	318.66

#### IV. CONCLUSION

In this study, the 150W solar photovoltaic module with a single-axis tracker has been designed, assembled, and characterized by a real-time LabVIEW monitoring system. It is proven that the developed LabVIEW DAQ module can be effectively utilized for real-time monitoring of solar power system parameters including charging voltage, current, power, panel temperature, and irradiation power with less than  $\pm 2.5\%$  errors. The field testing data comparison of solar modules with and without a tracker show that the power production can be more than 50% improved by adopting a single-axis tracker in the module. It is proposed that the great increase in charging current in the solar module with a tracker dominates over the slight reduction of output voltage which is resulted from the elevation of solar panel temperature. It is concluded that the utilization of low-cost and simple tracker can greatly improve the power production of solar photovoltaic module and it is proposed that this system can be effectively implemented in both of rural and urban areas of Lao PDR.

#### V. ACKNOWLEDGEMENTS

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**Television Program Viewing Behaviors and the Utilization for Educational Purposes of  
Communication Arts Lecturers.**

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**Abstract**

This research aims to investigate the television program viewing behaviors of communication arts lecturers and how they utilize the TV program viewing for in their teaching. It also aims to shed light on the relationship between the Communication Arts lecturers' TV program viewing behaviors and how those viewing those programs aid in their teaching. Research participants were lecturers teaching for different programs under Communication Arts faculties in 16 universities. 126 questionnaires were administered for the data collection. The data analysis of the participants' TV program viewing behaviors and how they make use of the content from those programs in their teaching consists of descriptive statistics, which including frequency, mean, and percentage. The data analysis also includes interference statistics to test the hypothesis and Pearson's Product Moment Correlation Coefficient. The results show that the lecturers watched TV programs every day for 1-2 hours. The most viewed programs were news programs, and they were used in their classroom the most, followed by TV advertisements and thought-provoking programs respectively. It was also found that the lecturers' TV program viewing behaviors had a positive correlation with how they made use of their viewing of TV programs in their classrooms.

The researcher has adopted theories and related research as framework and guide for the current research. These include, 1) mass communication theories, 2) concepts related to television, 3) theories of attitude and behavior change, and 4) related research

The current research is divided into two parts: First, survey research which measures the relationship of variants using one-shot descriptive study through data collected from the questionnaire; Second, in-depth-interviews which are tools for obtaining data qualitatively. The participants who took part in the interview were six Communication Arts lecturers who teaching at different programs. The interview focused on identifying their TV program viewing behaviors and the utilization of the viewed TV programs in their teaching.

**Keyword :** Television Program Viewing Behaviors , Utilization Purposes , Communication Arts Lecturers

**Research Results****1. Research participants' background**

There are 126 lecturers who have taken part in the current research. Majority of the respondents are aged 31-40 and master degrees holders. The salary ranges more than 30,001, and most of them have 3-5 years of teaching experience.

**2. TV program viewing behaviors**

Majority of the participants reported that they viewed television programs daily for one to two hours. The most viewed programs were news (46.6%), and they were used in their classroom the most, followed by TV advertisements (31.7%), and thought-provoking programs (28.6%).

**3. The utilization of the content in the viewing programs for educational purposes**

It was found that the participants utilized the content from the viewed TV programs in their teaching.

The majority of participants (40.5% ) utilized 70-100 % of the content of the news programs they viewed in their teaching. , 51- 75% of the news content were used by a number of them (39.7 %), and the minority (1.6%) never used the content from the news they viewed on TV in their teaching.

Most participants (46.8%) utilized 51-75 % of the content of viewed documentary programs. The second largest group (31.7%) made use of this kind of program for 76-100 %. None of participants (0%) never used content from documentary programs in their teaching.

The largest number of participants (46.8 %) utilized 51-75 % of the content from their viewed thought-provoking programs. A lot of them (31.7%) used 76- 100 % of the content. None of them (0%) never used the content of such programs in their teaching.



The highest number of participants (36.5%) made use of 51-75 % of the content from the entertaining programs in their teaching. The second largest group of participants (27.0 %) utilized 26 - 50 % of the content from such programs. None of them (0%) never used the content of such programs in their teaching.

Majority of the participants (31.7 %) utilized 51-75% of the content from advertisements in their teaching. A lot of them (24.6) made use of 76-100% of the content. The minority (5.6%) never applied the content of their viewed advertisements in their teaching.

### **The results of research hypothesis testing**

As for hypothesis 1: The TV program viewing behaviors of communication arts lecturers are correlated to the utilization of the content of their viewed programs in their teaching.

The results of the hypothesis testing shows that the correlation between the lecturers' TV program viewing behaviors is highly significant (0.01), which corresponds to hypothesis 1. In other words, the higher the percentage of the lecturers' viewing of TV programs is, the more utilization of the programs' content in their teaching exists.

The extent to which how much the lecturers make use of the content of the viewing TV programs depends on the level of their interest in those programs. If they have high interest in the content of their viewed TV programs, then they would greatly utilize it in their teaching.

### **Discussion of research result part I**

#### **1. Television Program Viewing Behaviors**

It can be analyzed by the research that most participants viewed news programs. It may be because they desired to stay updated, alert, and knowledgeable. Contrastingly, documentary programs were not viewed by many participants. However, the use of its content is second to news programs. This is maybe because the content from the documentary programs viewed by those lecturers were adequately interesting for them to use in the classroom. The aim of viewing this kind of program may be because they intended to increase their knowledge or access new knowledge and use it in their classrooms.

This corresponds to a concept of audience's media viewing behaviors initiated by Wilbur Schramm (1973), who discussed about the audience's media viewing that audience will choose to view and remember messages and evaluate its benefits. It can be seen that the audience seeks for information in order to fulfill their particular goals.

Regarding whether what kind of program the audience selects to view is related to the main factors that affect the viewing behaviors of audience. A concept proposed by Berlo (1960) can be applied. Those factors are: communication skills of audience, their attitudes which have to do with how they encode messages, their level of knowledge, the social system and culture which affect the program the audience chooses to view. The participants will select the content that they see useful and then present it to their students.

As it is shown that most participants viewed news programs, the researcher thinks that communication arts lecturers' behaviors are in agreement with research theories and concepts of many scholars. Firstly, Merrill and Lowenstein (1971) agreed that we watch news out of our curiosity which is a human instinct that finds out what they are curious to know. This idea correlates with the study of Charles' Atkin (1973) who claimed that individuals need news because they are curious about their surroundings in order to decrease their ignorance or uncertainty. News is a tool to make a decision, increase their knowledge, and solve problems in their daily life. Additionally, news can help to support the audience's existing attitudes or ideas which then can be useful in many ways; for example, the participants of this research use the news to teach in their classrooms at the Communication Arts Faculty of various universities.

Furthermore, the idea is consistent with McQuail, et al. (1972), who talked about audience with educational appeal and elaborated that audience watch TV news programs to increase their knowledge about themselves and the world. The news helps them improve themselves, remain updated, and become more capable. This corresponds to a research work done by Narisara Khunchan (2009), who concluded that Bangkok residents' Thai PBS TV program viewing behaviors were influenced by news.

The data gained from in-depth interviews can also be used to illustrate this point. It was found that all six lecturers who were interviewed in depth watched TV news (both international and national) the most, They also observed news program production procedures and the news content in order to apply them in their teaching and to fulfill their self-interest.

## **2. The utilization of the viewing of TV programs for educational purposes**

The research results indicate that Communication Arts lecturers used the content from news program for education purposes the most, followed by documentary and entertainment program.

The highest utilization of the content from news programs for educational purposes among the lecturers, is in agreement with research done by Pornchai Phaenchaiyaphum (2015) and Narisara Khunchan (2009) who reported that the audiences were highly satisfied with viewing news programs due to its interesting new presenters, content, and the programs themselves. They viewed the news to increase their knowledge and they paid attention to the news presenters the most.

This is consistent with the concept proposed by Yubon Bencharongkit (1985) and Peera Jivasophon (1987), who are senior lecturers. They concluded that the audience chooses to view news programs which are well-prepared and have highly capable and reliable news presenters. The audience chooses to receive the messages depending on the wide range of their experiences, needs, beliefs, and attitudes.

The result agrees with the result gained from the in-depth interviews done with six expert lecturers who teach different majors but still view TV news programs the most. The opinion of 6 lecturers are as following: 1) The lecturer who specializes in broadcasting and films mainly focuses on production process and the openings of the programs together with the content of the news. 2) The lecturers who specialize in speech communication, journalism, and information technology observes how news program hosts raise issues, ask questions, and answer questions. 3) As for advertisements which were used by lecturers for educational purposes the least. 4) Lecturers who specialize in advertising and public relations turned out to use a lot of advertisements in their teaching. They were used as case studies or examples for students in the program for analysis.

The results of the quantitative data collection and in-depth interviews, particularly on advertisements, do not agree. This is maybe because the quantitative research data collection was done with participants who were Communication Arts lecturers from every single program. Nevertheless, the in-depth interviews were done with lecturers grouped by the program they are teaching in.

Regarding the utilization of the content from their viewed TV programs for educational purposes, it was found that the research participants had moderate utilization. They mainly used the content from their viewed TV programs that were related to their teaching. Additionally, they sometimes brought useful content to their classroom regardless of its relevance to their teaching. Also, some lecturers assigned their students to watch TV programs and summarize the content. The last practice done the least by the participants is recording the programs and have students watched them in their classroom. This aspect of result is in agreement with Anathana Aungkinan's (1982) idea. He claims that the current education system has to allow learners to learn through hands-on experience more than in classroom setting. It should also allow learners to improve themselves to adapt to the fast-changing society. Clearly, news can be beneficial for this.

Regarding the consistent utilization of the content from their viewed TV programs for educational purposes, regardless of its relevance to the lecturers' teaching, it correlates with the idea of Ananthana Aungkinan (1982), who agreed that TV helps to improve education. It creates attitudes in the audience. It is a great education tool which encourages learners to have a desire to improve the society in many aspects. The idea is also consistent with Bumroong Sukphun (1982), who thinks that TV makes a teaching lesson more complete. It gives examples relevant to our surroundings that can't be found in a textbook. It also publicizes knowledge about many things. Suraphong Sothanasathian (1990) agrees with this idea. He claims that TV media can change learners' behaviors. It can create attitudes and encourages people to accept and pass on innovation, identify social agenda, enhance belief systems, values, and ideologies among learners as expected by educators.

The data gained from in-depth interviews reveals that all six lecturers teaching different majors made use of the content from their viewed TV programs in their classrooms. Their teaching

methods include telling students about the viewed programs, or playing the record of the viewed programs they think are interesting for students to watch and have them discuss or give comments on the program.

Particularly, the lecturer who specializes in broadcasting and films usually records the viewed TV programs and has students watch them to teach the students about TV program production methods, the opening of the programs, and vocal techniques. Students also had opportunities to produce their own TV program. Additionally, the lecturer also uses some viewed TV programs as bad examples.

However, in the questionnaire, some respondents stated that recording their viewed TV programs and having their students watch them is what they do the least. It is possible that they might employ other ways to have students watch TV programs they think are interesting for students, such as telling students about their viewed TV programs, or showing TV programs on the internet which is faster and more convenient. This is inconsistent with the data gained from in-depth interviews among six lecturers who view both national and international TV programs which publicize valuable and hard-to-access content. When they viewed interesting TV programs, they recorded them to teach relevant topics.

### **Discussion of research results part II**

This part presents the results gained from the in-depth interview among six lecturers teaching different Communication Arts programs at four public universities and two private universities. All interviewees viewed TV programs and utilize the content relevant for their field and educational purposes as follow:

1,2) The lecturer who specializes in broadcasting and films thought TV programs are useful when students practice in the film laboratory and learn about TV program production as the shows themselves can give illustrations of TV program production procedures (both in front and behind the scenes).

3) The lecturer who specializes in speech communication and performing arts agreed that speech communication is about speaking and listening. So, the lecturer focuses on learning about the content of the news and interviewing techniques. He also viewed entertainment programs to observe the interaction between characters, their thinking methods, and their intra and intercommunication styles. As for news programs, how news presenters answer questions and their thinking behind their news talk are observed.

4) The lecturer who specializes in public relations observed content, program content, sequencing, and the current social issues when viewing TV programs and later used them for educational purposes.

5) The lecturer who specializes in journalism and information technology is interested in program production methods, and content presentation, especially in content sequencing and presentation, the opening scene and the reliability of the news sources, as well as the verification of the news.

6) The lecturer who specializes in innovative communication management observes the outstanding points and content presentation of each viewed TV program that competes with other TV programs.

The TV program viewing behaviors of six lecturers are not much different. They viewed TV programs every day for at least two hours. The program they chose to watch depends on their interest such as news, news documentaries, and entertainment both national and international.

Nevertheless, how they utilize the content from their viewed TV programs for educational purposes is identical.

The lecturer who specializes in broadcasting and films views TV programs on Youtube depending on his interest and uses them in his classrooms. He downloads interesting TV programs and shows them to his students for class discussion and have them produce their own TV programs.

The lecturer who specializes in speech communication and performing arts downloads interesting TV programs and shows them to students as good and bad examples of TV program production.



The lecturer who specializes in public relations tells his students about content from TV programs in his classrooms, such as news in crisis situations and interesting advertisements especially international ones.

The lecturer who specializes in innovative communication management views TV programs together with students in the class and lets them discuss and criticize the programs.

The lecturer who specializes in journalism and information technology records parts of TV programs and have students discuss and criticize them in class.

### **Results of hypothesis testing**

Hypothesis 1 : TV program viewing behavior correlates with the utilization of the viewed TV programs for educational purposes.

The result of the hypothesis testing shows that the correlation between the lecturers' TV program viewing behavior is highly significant (0.01), which corresponds to hypothesis 1. In other words, the higher percentage of the lecturers' viewing of TV program, the more utilization of the programs' content in their teaching exists.

The extent to which how much the lecturers make use of the content of their viewed TV programs depends on the level of their interest in those programs. If they have high interest in the content of the viewing program, they will greatly utilize it in their teaching.

This corresponds to the concept of audience's media viewing behaviors initiated by Wilbur Schramm (1973), who discussed about the audience's media viewing-that the audience will choose to view and remember messages and evaluate its benefits. It can be seen that the audience seeks for information in order to fulfill their particular goals.

As it is shown that the participants viewed all kinds of TV programs and the utilization of the content from each program was similar depending on each individual's interest and curiosity to have access to news to fulfill their curiosity which might or might not affect them., the idea is consistent to Merrill and Lowenstein's notion (1971). The reason why participants chose to view different TV programs might be due to their different experiences, background, education, environment, and attitudes. This agrees with Wilbur Schramm who discussed the factors affecting media viewing behaviors amongst audience (Schramm, 1973 as cited in Peera Jirasophon, 1987).

### **Recommendations for further studies**

1. The current research, which investigates TV program viewing behaviors and the utilization of the viewed programs for educational purposes among a group of Communication Arts lecturers, is considered as a limited source of data. Therefore, the researcher thinks that further studies should focus on other groups of participants. Also, future research should adopt different research methods such as in-depth interview to gain in-depth information.

2. There should be further studies on various types of media- viewing behaviors and the utilization of the viewed programs.

3. There should be future research on how the content from various types of TV programs is used for educational purposes.

4. There should be separate analysis of TV program viewing behaviors of Communication Arts lecturers from each program and how they used the content from their viewed TV programs for educational purposes.

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**THE RELATIONSHIP BETWEEN TOTAL BUDGET MANAGEMENT AND KEY PERFORMANCE INDICATORS OF YONGNIAN HONGDA STANDARD PARTS MANUFACTURING COMPANY in HEBEI PROVINCE CHINA**

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**ABSTRACT**

The objectives of this research are three folds; as follows. First, it is to explore total budget management of the HONGDA standard parts manufacturing company. Second, it is to study key performance indicators of the HONGDA standard parts manufacturing company. Lastly, it is to study the relationship between total budget management and key performance indicators. A questionnaire was used to collect data from manufacturing employees using a simple random sampling method. The descriptive statistics was explored to analyze the data such as Frequency, Mean and Standard Deviation. Pearson correlation coefficient was also conducted to assess the strength of linear association between variables.

The purpose of this paper is to examine the role total budget management on key performance indicators. In this study, Data collected from 108 employees of HONGDA standard parts manufacturing company in Handan China. The present study employs a questionnaire survey approach to collect data for testing the research hypotheses. Relevant statistical analytical techniques including regression for analysis was used.

The results found that total budget management and key performance indicators of the HONGDA standard parts manufacturing company reported a strong relationship. Also, the total budget management had a positive relationship with Key performance indicators of the HONGDA standard parts manufacturing company with scientifically significant at .01 level. Besides, the significant positive correlation between total budget management and key performance indicators was also found. The main contribution of the paper is to provide empirical evidence about the impact of total budget management on key performance indicators. Also the findings of the study are important for both management staff and employee.

**Keywords:** total budget management, key performance indicators; HONGDA standard parts manufacturing

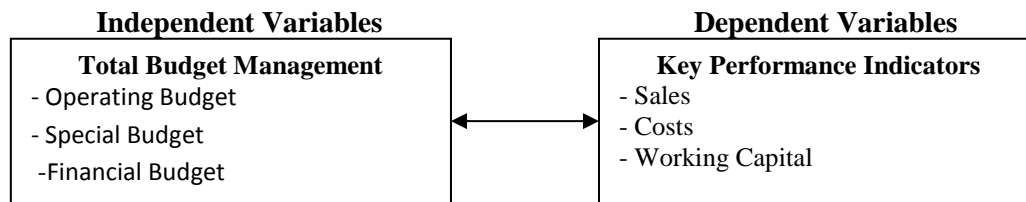
**INTRODUCTION**

The statistics of the fastener industry showed that: In 2017-2022, it is expected that the Chinese company with good industry market in depth research and investment strategy for the project analysis report showed: from 2014 January to October that the domestic market situation of the industry was good, increasing to 5.8%, of which the contribution of car and motorcycle parts field were the highest growth rate about 15%. In addition, Business development is important for Asian countries when it comes to happiness. Therefore, it was indicated that the growth rate increased to 10%, in 2017.

Driven by the acceleration in the rate of change and economic integration, manufacturing companies have spurred to consider changing their manufacturing footprints. There are gap among standard parts of Chinese enterprises in management concept, management mode, enterprise culture, respectively. As an important management tool, total budget management has been widely discussed and studied in the theoretical field, adopted by many enterprises in practical work. Total budget management plays an important role in improving the strategic management ability and competitiveness of enterprises and making efficient use of enterprise resources. Therefore, this managerial aspect has been so far overlooked by the previous study.

The total budget management has been investigated for a period of time in YONGNIAN HONGDA standard parts manufacturing company-in Handan area. At the present, there is a significant change. According to the study of HONGDA standard parts manufacturing company, the company's key performance indicators in the last few years are employed and the effects of total budget management are also explored in this study. Moreover, we can know the effect of total budget management on the standard industry parts.





**FIGURE 1.1 Conceptual Frameworks**

## LETTERATURE REVIEW

### 1 Total budget management

Min (1997) said the total budget of an enterprise, also known as a profit plan, is the sum of its budget for all aspects of its economic activities in the future.

Cao (2016) said total budget management refers to the currency as a business plan of action for the number of response reflects the carrier, including the budget of the investment, financial budget, and operating budget.

McKinsey (1922) mentioned that total budget management dimension refers to operating budget, special budget, and financial budget.

From the abovementioned definition, it could be concluded that the total budget management is the use of the budget to allocate, check and control various financial and non-financial resources of all departments and units within the enterprise, so as to effectively organize and coordinate the production and operation activities of enterprises and achieve business objectives.

Hongyu (2015) said the operating budget is to budget the company's business through analysis of various situations.

Yunxia (2016) said operating budget is according to business development needs, forecast business promotion, commission and other expenses, then prepare business development expense budget.

From the abovementioned definition, it could be concluded that the operating budget is based on the company's operating budget policy.

Yue Guo (2014) said special budget refers to the expenses that the enterprise does not have within the plan.

Nian (2017) said special budget is that company have no plans to spend.

From the abovementioned definition, it could be concluded that special budget is the budgetary period budgets involving long-term, non-recurrent, one-time business expenditure.

Keqin (2016) said the financial budget is the company's financial budget for a certain period of time.

Yan (2014) said financial budget is in a certain period of time, around the corporate strategic goals, enterprises raise funds, use and allocate plans.

In this paper, the independent variables are operating budget; special budget and financial budget. From the abovementioned definition, it could be concluded that financial budget is a series of budgets that specifically reflect the expected financial and operating results, as well as the value of cash receipts, in the future for a certain period of time.

### 2 Key performance indicators

Xiaofei (2012) said the word performance comes from public sector management, human resource management, social economic management and business administration.

Zonghu (2013) said key performance indicators are used to measure an employee's job performance within the enterprise quantitative indicators, it can directly measure the result of the work, as the enterprise's overall development strategic target decomposition. The reaction can effectively the key factors that affect enterprise value creation.

Bemar (2015) said key performance indicators conclude sales, costs and, working capital.

In this paper, the dependent variables are working capital; sales and costs. From abovementioned definition, it could be concluded that the key performance indicator is a measurable value that demonstrates how effectively a company is achieving key business objectives.

**METHODOLOGY****1 Population**

The target population in this study was the employees of HONGDA standard parts manufacturing company. The number of the employees was 148 in 2017. Subjects for the study consisted of 108 employees which constituted 73% of the total target population of 148 people.

**Sample Size**

The sample size for employee was calculated based on Yamane's formula (Yamane, 1967). By using formula of sample size with an error 5% and with a confidence coefficient of 95% (Yamane, 1967), the calculation from a population of 148 (previous population approximation) came up with 108 staffs from HONGDA standard parts manufacturing company.

**2 Instrument development**

A questionnaire was used as an instrument for this study. The questionnaire was used to survey employees' opinions of the HONGDA standard parts manufacturing company. The questionnaire was divided into three parts: (1) The personal data. (2) Total budget management. (3) Key performance indicators. The company had four departments: production department, sales department, finance department, human resources department. There were 113, 25, 5, 5 employees in four departments and I selected 82, 25, 5, 5 employees form four departments. The questionnaire was measured with a Likert scale-5 scales from 1 to 5, where 1 was strongly disagree, 2 was disagree, 3 was don't know, and 4 was agree. 5 was strongly agree. There were 1-5 point for strongly to strongly agree.

**3 Data collection**

Data collection was conducted after obtaining permission from the HONGDA standard parts manufacturing company, the procedures of data collection were divided into two phases: preparation phase and implementing phase.

**4 Research method**

The average score of my questionnaire was 1. The score is higher than 0.5. So, the questionnaire was congruent.

According to the pre-test, the Cronbach's Alpha of total was 0.721, so the questionnaire was acceptable; the Cronbach's Alpha of Key performance indicators was 0.80, so the questionnaire was good; the Cronbach's Alpha of key performance indicators was 0.77, so the questionnaire was acceptable.

**RESULT****1 Total budget management****Table 1 Mean and Std. Deviation of Total Budget Management**

	Mean	Std. Deviation
F1	4.05	.39
F2	4.18	.42
F3	4.02	.36
FTotal	4.06	.30

The questionnaire data about operating budget mean and SD is ( $\bar{X} = 4.05$ ,  $SD = 0.39$ ); The questionnaire data about special budget mean and SD is ( $\bar{X} = 4.18$ ,  $SD = 0.42$ ); The questionnaire data about financial budget mean and SD is ( $\bar{X} = 4.02$ ,  $SD = 0.36$ ); The questionnaire data about total budget management mean and SD is ( $\bar{X} = 4.06$ ,  $SD = 0.30$ ).

**2 Key performance indicators****Table 2 Mean and Std. Deviation of Key Performance Indicator**

	Mean	Std. Deviation
S1	4.05	.49
S2	3.80	.36
S3	4.26	.53
STotal	4.04	.29

The questionnaire data about sales mean and SD is ( $\bar{X} = 4.05$ ,  $SD = 0.49$ ); The questionnaire data about costs mean and SD is ( $\bar{X} = 3.80$ ,  $SD = 0.36$ ); The questionnaire data about working capital mean and SD is ( $\bar{X} = 4.26$ ,  $SD = 0.53$ ); The questionnaire data about key performance indicators mean and SD is ( $\bar{X} = 4.04$ ,  $SD = 0.29$ ).

### 3 Relationship of total budget management and key performance indicators

**Table 3 Pearson correlation for Total Budget Management and Key Performance Indicators**

Total Budget Management	key performance indicators		key performance indicators: Sales		key performance indicators: Cost		key performance indicators: Working Capital	
	Pearson Correlation	Sig. (2-tailed)	Pearson Correlation	Sig. (2-tailed)	Pearson Correlation	Sig. (2-tailed)	Pearson Correlation	Sig. (2-tailed)
Operating Budget	.53**	.000	.17**	.000	.39**	.000	.33**	.000
Special Budget	.48**	.000	.43**	.000	.45**	.000	.20**	.000
Financial Budget	.65**	.000	.37**	.000	.67**	.000	.05**	.000
Total	.74**	.000	.34**	.000	.54**	.000	.40*	.000

\*\* . Correlation is significant at the 0.01 level(2-tailed).

From table 3 shown that: 1. Total Budget Management had a positive relationship with key performance indicators in the overview of a strong level ( $r=.74$ ). The aspect of Financial Budget had a positive relationship with the Key performance indicators in the overview at a strong level ( $r=.65^{**}$ ); The other two aspects had a positive relationship with Key performance indicators at a moderate level which were Operating Budget ( $r=.53$ ) and Special Budget ( $r=.48$ ); 2. Total Budget Management had a positive relationship with Key performance indicators: Sales in the overview of a weak level ( $r=.34$ ). The aspect of Financial Budget had a positive relationship with the Key performance indicators: Sales in the overview at a weak level ( $r=.37$ ); The aspect of Operating Budget had a positive relationship with the Key performance indicators: Sales in the overview at a very weak level ( $r=.17$ ); The aspect of Special Budget had a positive relationship with the Key performance indicators: Sales in the overview at a moderate level ( $r=.43$ ); 3. Total Budget Management had a positive relationship with Key performance indicators: Costs in the overview of a moderate level ( $r=.54$ ). The aspect of Financial Budget had a positive relationship with the Key performance indicators: Cost in the overview at a strong level ( $r=.67$ ); The aspect of Operating Budget had a positive relationship with the Key performance indicators: Cost in the overview at a weak level ( $r=.39$ ); The aspect of Special Budget had a positive relationship with the Key performance indicators: Cost in the overview at a moderate level ( $r=.45$ ); 4. Total Budget Management had a positive relationship with Key performance indicators: Working capital in the overview of a weak level ( $r=.40$ ). The aspect of Financial Budget had a positive relationship with the Key performance indicators: Working Capital in the overview at a very weak level ( $r=.05$ ); The other two aspects had a positive relationship with Key performance indicators: Working Capital at a weak level which were Operating Budget ( $r=.33$ ) and Special Budget ( $r=.20$ ).



**CONCLUSION**

## 1 Pearson correlation

The total budget management had strong positive relationship with key performance indicators ( $r=.74$ ). The results found that employees who had more level of budget management in their views was more likely to have higher key performance indicators.

## 2 Limitations

Due to the limited conditions, the questionnaire survey time is only 15 days. The sample was mainly from Handan, Hebei, China. And this study mainly discusses the influence mechanism between the two variables of the company employees from a static point of view. Therefore, the data is not very good for reflect their relationship

## 3 Heuristic

Future research will be suggested to investigate several fields and base on this research: Study other studies and papers; Further analysis the level of total budget management and the level of key performance indicators.

## 4 Summary

The data analysis showed that total budget management related with key performance indicators and the total budget management had a positive relationship with key performance indicators of the HONGDA standard parts manufacturing company.

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**THE RELATIONSHIP BETWEEN MANAGEMENT LEADERSHIP AND PERFORMANCE  
OF EMPLOYEES: OF ZIGONG HUDONG CO. LTD.**Du Yilin<sup>1</sup>, Sasanant Vivadh anajat<sup>2</sup> and Chattayaporn Samerjai<sup>3</sup><sup>1-3</sup>Master of Business Administration Rajapruk University Nonthaburi 11300, Thailand**ABSTRACT**

The objectives of this research were three-fold; as follows. The first is to look at the performance of the company. The second is to determine the behavior and values of the company's leaders. Finally, it aims to show the relationship between leadership and employee performance. A structured questionnaire was used to collect sample data of 200 employees of zigong huidong co., LTD. Descriptive statistical methods were used to analyze the data of frequency, mean and standard deviation, and the Pearson correlation coefficient was evaluated to evaluate the linear correlation strength between variables.

The purpose of this paper is to study the impact of leadership on employee performance. This study collected data from 200 employees from China zigong huidong co., LTD. In this study, questionnaires were used to collect data to test hypotheses. Then use statistical analysis techniques including regression analysis.

The results showed that leadership and employee performance were reported at a high level ( $M=4.55$ ;  $34.36$ ,  $SD = 0.43$ ;  $0.54$ ). In addition, there is a significant positive correlation between leadership commitment and employee performance. The main contribution of this paper is to provide empirical evidence on the impact of leadership on employee performance. In addition, the results of this study are important to both managers and academics. The result found that:

**Key words:** Management leadership; Employee performance

**INTRODUCTION**

When it comes to mobilizing the masses, igniting passion in people towards a common goal and motivating people to act towards the said common goal, it isn't possible to unite the people and inspire action without leadership. Leadership behavior can subtly influence employee behavior, which can lead to the prosperity of the organization, and can also lead to the decline and recession of the organization. The performance of a leader can often spur and influence the promotion of employees' ability level in the organization. Moral leadership can gain the trust and loyalty of employees, motivate employees to inspire enthusiasm and improve leadership performance (Brown M E, Trevino L K, Harris, 2005; Mayer D M. et al., 2009); Destructive leadership can negatively impact employees, even infringe on employees' legitimate rights, interests, and reduce leadership performance (Robert H, Kaiser B., 2007; Einarsen S, Aasland M S, Skogstad A., 2007). The further study on the impact of different dimensions and leadership on employee performance to better adapt to the environment and promote organizational change. Therefore, the research on leadership has always been an important subject for academic and business circles.

This research is useful for leaderships' behavior. The qualification and characteristics of leader is important to the leadership's value. Thus, leadership values have an extremely important influence on the behavior of leaders (Michael W G, Christian J R, Marcus W D., 2004; Gita S., Allan A., 2008; Jacqueline N. H., 2003). Schwartz (1994) divides leadership values into four dimensions of self-transcendence, self-enhancement, conservatism, and openness, which reflects the needs of leaders at different levels. The leaderships and leaderships pay attention to the value in the organization and play an important role in the motivation. If they can help establishing new leaderships on shared values between leadership and subordinate staff relationship, it can be very effective in improving employee performance.

Existing researches present different views on how leadership values influence employee performance. Leadership values are sometimes seen as parts of leadership behaviors and, also, psychological factors influencing leadership behaviors. Bruno (2008) and his associates believed that leadership values had a positive impact on leadership performance. Wenquan (1987) and Jingli (2000) saw the leadership values as a kind of leadership behaviors. From the perspective of China's actual conditions they suggested that they had a positive influence on the leadership performance.

In the researches on leadership behaviors, previous researches focused on task and relationship. For example, Misumi (1975) was one of the first author to divide leadership behaviors into two types; characteristic and teamwork relationship. Dragoil (2005) put forward target-oriented leadership model and believed that a leader's different target orientations affecting the individual behaviors of employees. He divided target-oriented leadership behaviors into three dimensions: as followed, 1. develop employee behavior, which paid attention to the innovation of employees and emphasized the importance of learning; 2. the behaviors of displaying leadership which focused on the accomplishment of employees' goals and tasks and may develop employees' ability to be creative because of the excessive emphasis on short-term performance; 3. the behaviors of avoiding failures which paid attention to employees' mistakes and implemented punishment. In order to reveal the leadership values, leadership behavior, and the complex interactive relationship between the employee performance, this study based on the objective oriented leadership model, the leadership values and leadership behaviors as the regulation of employee performance variables, study the influence of the situational leadership behaviors and leadership values in China.

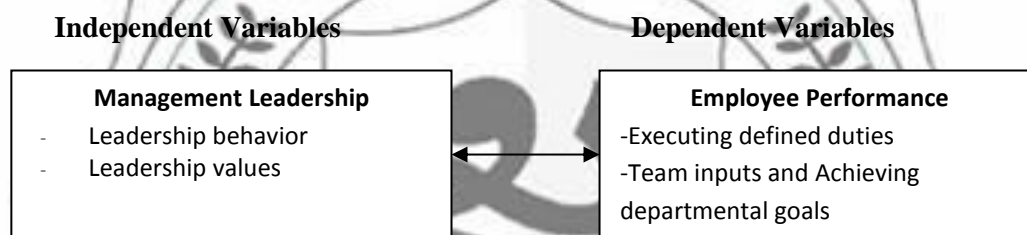


FIGURE 1.1 Conceptual Frameworks

## Literature review

### 1. Leadership

Leadership can be described as a combination of behaviors that will motivate employees to follow command. According to the definition of leadership, we'll see the existence all around us, in management, in classroom, in stadium, in government, in military, in multinational companies, in small companies even in a family. Leadership can be found in different areas at all levels.

Main article: management grid model

Early response to criticism of characteristics method, the theorists began to study the behavior of leadership, the behavior of the successful leader, and behavior classification, identifying of a wide range of leadership styles.

For example, David McClelland (1978), points out that a strong personality, a positive self of maturity, self-confidence and high self-esteem are useful, even necessary (Horton, Thomas, 1992).

In the late 1940 s and early 1950 s, a series of qualitative evaluation of these studies (birds, for example, Bird, C. (1940); Stodgily (1948); Mann, R. D. (1959) prompted the researchers to adopt different leadership styles. Review the existing literature, stodgily found that some of the features suggest that people in a particular case are not necessarily in other cases. Leadership is no longer a feature as a lasting personal trait, such as situational approach led alternative theory suggests (see below). It points out that individuals can be effective in some cases, instead of others. Leader's traits focus on a survey of effective leadership behavior. This method is mainly of leadership theory and research for the next few decades.

The so-called leadership, is a special kind of interpersonal influence, everyone in the organization to influence others, also want to accept the influence of others, so every employee has the potential and realistic leadership. In the organization, leaders and members jointly push the team towards the established goals, which constitute an organic system, within the system has the following several factors: the leader's personality traits and leadership, the staff's subjective initiative, the positive interaction between leaders and employees, the process of the making and implementation of organizational goals.



Leadership can be divided into two levels: organizational leadership, that is, organization as a whole, to other organizations and individuals. This level of leadership involves organizational culture, strategy and execution. Second, individual leadership, for enterprises, is the leadership of managers and leaders at all levels.

### 1.1 Leadership behavior

Leadership behavior refers to the behavior of leaders in the process of leadership. Leaders show different leadership behaviors in different stages of the leadership process because of situations and tasks. Construction and t-shirts, for example, are two common categories of leadership behavior.

Leadership behavior is the individual behavior in a group, and the purpose is to establish a following relationship between the individual and others.

A person can take a leadership position in a group and can adopt various methods, and the validity of these different methods is restricted by various other factors besides the method itself.

Any kind of leadership behavior cannot lead to other people's comprehensive pursuit of their behavior, and the following relationship can only exist in some aspects;

Leadership is not always effective. The leadership behavior is only individual behavior, and

### 1.2. leadership values

Through a series of empirical research, House (1997) and other scholars further found that values leadership has a significant positive effect on corporate performance, the practical values in the company leadership for three years profit margins increased by 15% ~ 25%. These studies are designed to control factors such as enterprise size, environmental change and profitability.

In the Chinese environment, the conclusions we have drawn for several years are also very positive. For example, in a large empirical study of CEOs and middle managers, we found that CEOs' values were more influential than their leadership behaviors. When the CEO's values are "transcendental ego" of time, even if he showed against subordinates transactional leadership behavior, organizational commitment and trust such as emphasis on task, dictatorial, still can obtain understanding and recognition. And when the CEO values is "self-centered", even if he carefully thinking show that transformational leadership behavior, such as outlook mission, vision, communication role to improve staff morale and trust is limited, even for "duplicity" and cause side effects.

In fact, values leadership is not a new leadership style. In China, it is a reflection of the values leadership style that the "people who want to go up and down together" in the ancient Chinese language to the familiar "ideological and political work". In the west, McKinsey provided from successful enterprises in the 7 s model, strategy, structure, system three hard elements, style, skills, three soft elements, are to be centered on corporate core values, form a system of match each other.

## 2. Performance

The word "performance" comes from management. Some people believe that performance refers to the efficiency of completing work. Some people recognize the performance refers to the kind of work behaviors, methods, and results.

Most people have been thought the performance refers to the employee's work performance. That means that an employee should make profit and contribute to company commitment. In the management of an enterprise, human resources is used to evaluate performance.

Performance is the effective output of an organization's activities to achieve its goals at different levels. To sum up, performance is a combination of achievement of its behavior manner, and success in the period of time.

At enterprise, the performance of employees is embodied in the quantity, quality, cost and other contributions of the enterprise.

Murphy (1990) believes that performance is a set of behaviors related to the goals of a person's organization or organizational unit in which they work.

Bernadine (1995) argued that "performance should be defined as the result of work, because these results are most closely related to the organization's strategic objectives, customer satisfaction and investment."

The definition of employee performance can be divided into two aspects: employee behavior and employee's work result.

Employee performance refers to the employee's efforts and contributions to the organization.

Paterson, M.G. et al. (1998) believe that there is no universal, all-embracing theory about the performance of employees. Organizational management, development and the effectiveness of employees are the cornerstone of the organization's operation. Therefore, people's management has a significant impact on performance.

### 2.1 Executing defined duties

It refers to the work content required by a position and the scope of responsibilities that should be assumed, whether concurrently or concurrently, between different functions. A post is an organization established for the completion of a task, consisting of a type of work, position, title, grade, etc., and must belong to one person. Responsibility is the unity of duty and responsibility, which consists of the scope of authorization and the corresponding responsibility.

How to perform your duties better?

1) Let employees understand the nature of the job. Working pressure is not from others, but to make the post of staff from the heart of the voluntary, thus transformed into active work motivation, and to promote the jobs employees involved in the setting of the goal, and try to motivate him to achieve that goal.

2) The enterprise when making responsibility, want to consider as a post contains a number of job content, in order to play to the positions of employees due to long-term work in the simple was buried and other personal skills.

3) In the case of enterprise human resources permit, it can be set in some of the responsibility for good finish task within the fixed period, can get into the rights of other jobs.

### 2.2 Team inputs and Achieving departmental goals

The teamwork will reward the devotees who are sincere and selfless. If teamwork is voluntary, it will produce a powerful and lasting force.

Teamwork is a kind of apparent to achieve established goals and objectives of resource sharing and collaborative spirit, it can transfer team members all the resources and talents, and can automatically remove all the discord and unfair phenomenon, at the same time to reward performance timely replaced, so that the team collaboration to produce a powerful and lasting power.

Teamwork is not achieved by referring to management methods in management. Before adopting these methods, the team should do the basic work of four aspects before they can effectively cooperate with the team.

- 1) Build trust
- 2) Establish a benign conflict.
- 3) Act unwaveringly.
- 4) Take responsibility for each other without complaint or regret.

The input–process–output (IPO) model of teams provides a framework for conceptualizing teams that suggests that many factors influenced a team's productivity and cohesiveness. It provides a way to understand how to perform teams, and how to maximize their performance". (Landy, Frank J.; Conte, Jeffrey M., 2009)

According to the requirements of leadership it contributes to the construction of the company

## METHODOLOGY

### 1. POPULATION AND SAMPLE

In this study, 200 employees of a company were surveyed as an initial sample. This company was well reflected in this paper, we studied the theme, so chose this company for investigation.

### 2. THE DEVELOPMENT OF INSTRUMENTS

The first part according to the results of questionnaire to carry on the preliminary assessment, the problems such as ambiguity and fuzzy of items carried on the corresponding, modification, and adjustment, and carries on preliminary questionnaire reliability validity test, did not meet the requirements of and finally poor questionnaire. This formal questionnaire, controlled eight items; age, sex, educational background.

The second part led to values, leadership developments, employee behaviors, leadership display orientation behavior, avoid the problem, employee satisfaction, organizational commitment, encouraged by the seven variables of measurement.

The third part respectively collected from employees Executing defined duties, Meeting deadlines, Team inputs, Achieving departmental goals the problems.

The fourth part was the several suggestion

### 3. DATA COLLECTION

3.1 The questionnaires researchers distributed to 200 employees. The period for data collection was from February to March 2017.

3.2 The data were studied in terms of related concepts, theories and research as well as articles from media, periodicals, textbooks and the internet.

### 4. RESEARCH METHOD

Cronbach's alpha showed the questionnaire to reach acceptable reliability. The Leadership subscale consisted of 2 items ( $\mu = 4.55$ ), the Performance subscale consisted of 3 items ( $\mu = 4.36$ ).

## Results

### 1. Leadership

Table1 Mean and Std. Deviation of Leadership

Leadership	$\mu$	$\sigma$	Level	Ranking
Leadership behavior	4.45	.32	High	2
Leadership values	4.69	.92	Highest	1
Total	4.55	.43	Highest	

### 2. Performance

Table2 Mean and Std. Deviation of Performance

Performance	$\mu$	$\sigma$	Level	Ranking
Executing defined duties	4.28	.37	High	4
Meeting deadlines	4.39	.43	High	1
Team inputs	4.33	.50	High	3
Achieving departmental goals	4.36	.54	High	2
P total	4.36	.54	High	

### 1. Relation

Table3 Leadership and performance

Leadership	Performance			
	Pearson Correlation	Sig. (2-tailed)	Level	Rank
Leadership behavior	.311**	0.000	weak	2
Leadership value	.166**	0.000	Very weak	1
<b>Total</b>	<b>.277**</b>	<b>.000</b>	<b>weak</b>	

\*\* Correlation is significant at the .01 level (2-tailed)

Form table 3 had shown

Pearson correlation of Intrinsic satisfaction and Total organization commitment = 0.311

P-Value = 0.000. In conclusion, the printouts indicate that the strength of association between the variables is weak ( $r = 0.311$ ), and that the correlation coefficient is very highly significantly different from zero ( $P < 0.001$ ).

Pearson correlation of External satisfaction and Total organization commitment = 0.166

P-Value = 0.000. In conclusion, the printouts indicate that the strength of association between the variables is very weak ( $r = 0.166$ ), and that the correlation coefficient is very highly significantly different from zero ( $P < 0.001$ ).



Pearson correlation of Total Job Satisfaction and Total organization commitment = 0.277  
P-Value = 0.000. In conclusion, the printouts indicate that the strength of association between the variables is very weak ( $r = 0.277$ ), and that the correlation coefficient is very highly significantly different from zero ( $P < 0.001$ ).

## RESEARCH CONCLUSION

### 1. SUMMARY

As can be seen from each table and data, leadership has a positive impact on employee performance.

The mechanism of action between two variables is that leadership directly affects employee performance.

### 2. SUGGESTIONS

1) I think a leader should lead by example, drive the staff enthusiasm, and enables the company to better development.

2) Leaders had to establish a good value, it could make the staff can do their jobs better.

3) Employees should have the team consciousness, and effective to finish their work.

4) Achieve department should serve as the primary goal of the employees.

### 3. LIMITATIONS OF RESEARCH

Three major limitations existed in the current study:

1) Data was collected via a convenience sample.

2) Data was collected at a single institution.

3) Data relied on self-reporting.

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**THE RELATIONSHIP BETWEEN ORGANIZATIONAL COMMITMENT AND  
EMPLOYEE SATISFACTION IN LOGISTIC INDUSTRIES: A CASE STUDY OF DEPPON  
COMPANY**GaoYi Ji<sup>1</sup> Sasanant Vivashanajat<sup>2</sup> and Chattayaporn Samerjai<sup>3</sup><sup>1-3</sup>Master of Business Administration, Rajapruk University, Nonthaburi, 11130, Thailand**ABSTRACT**

The objectives of this research were three-fold; as follows. First was to explore employee satisfaction of Deppon company. Second was to identify the level of organizational commitment of Deppon company's employees. Lastly, it intended to demonstrate the relationship between organizational commitment and employee satisfaction. A structured-questionnaire was used to collect data from the sample of 70 employees of seven sale departments in Sanya. The descriptive statistics were used to analyze the data such as Frequency, MEAN, and Standard Deviation, Pearson correlation coefficient was also conducted to assess the strength of linear association between variables.

The purpose of this paper is to examine the role organizational commitments on job satisfactions. In this study, Data collected from 70 employees of sales departments in SanYa China. The present study employs a questionnaire survey approach to collect data for testing the research hypotheses. Relevant statistical analytical techniques including regression for analysis was then used.

The results found that both employee satisfaction and organizational commitment reported at a high level respectively (M=3.65; 3.56, SD=.50; .47). Besides, the significant positive correlation between employees' organizational commitment and job satisfaction was also found. The main contribution of the paper is to provide empirical evidence about the impact of Organizational commitments on Job satisfactions. Also the findings of the study are important for both Management staff and academics.

**Keywords:** organizational commitment, job satisfaction

**BACKGROUND TO THE RESERCH**

In recent years, with the depth of global and regional economic integration, the extensive application of information technology (Internet) in many countries, and the development of the global logistics industry has undergone profound changed and paid more attention. According to the latest data from Armstrong & Associates company of China Logistics Industry Investment Promotion Report 2015-2016, the global logistic markets have exceeded 8.5 trillion U.S. dollars by the end of 2013, market growth rate at 29.58% more increasing than the 6.62 trillion U.S. dollars in 2009, at a Compound Annual Growth Rate (CAGR) of 6.69%. In terms of logistic industry between other country markets and Chinese markets, the Chinese logistic market's reached to 1.59 trillion U.S. dollars (18.6%) of the world's total in 2013. It was the first logistic of the world after 2012 compared to the logistic industries from 45 new economical countries. It is expected that next coming years, with the economic recovery in various countries, the global logistic industries will continue to develop rapidly and the market scale in 2015 will reach to 9.18 trillion U.S. dollars. According to other data company, as of 2015 logistic enterprises reached more than 3,000 companies in China and total social logistics value reached to 219.2 trillion RMB, an increase of 5.8% over the previous year.

As a result, logistic industries focusing the most on the top tier needed to gain competitive advantage over other competitors. It is important for the key to a company's success lies in how employees are treated.

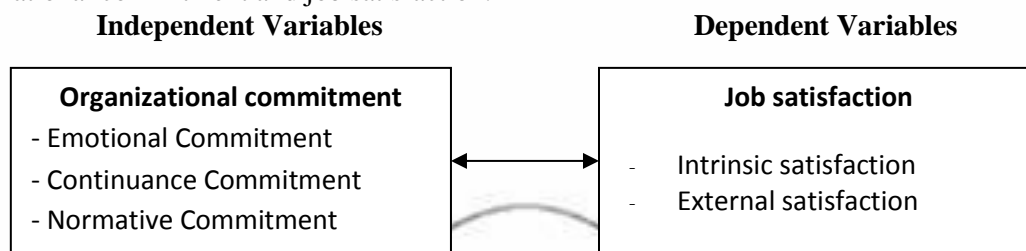
When we clarify the relationship between organization commitment, job satisfaction and logistic enterprises can build a good working environment for employees. This way, employees feel that the organization takes care of them with revenue, spirit, and substance which can them, they can promote better logistics work. Therefore, the management of logistic companies is the key to achieve the goals.

The problem that is being addressed in this paper is organization commitment Influenced on employees' Job satisfaction.

The approach is adopted to solve the problem is Minnesota Satisfaction Questionnaire(MSQ)and Allen and Meyer emotional commitment scale (ECS), sustained commitment scale (CCS) and normative commitment scale (NCS) three dimensions' scale as our primary scale for solve.

The results obtained in this research suggested that organizational commitment has an impact on employee job satisfaction.

The impacts of these results are there is a significant correlation between employees' organizational commitment and job satisfaction.



**FIGURE 1.1 Conceptual Frameworks**

## LITERATURE REVIEW

### 1. THEORY ABOUT ORGANIZATIONAL COMMITMENT

Scholars who studied organizational commitment at an early stage consider organizational commitment as a one-dimensional structure that expresses a staff's psychological aspiration and emotional commitment to the organization. Becker et al (1960) put forward the employee unilateral investment theory is precisely the single dimension of organizational commitment structure of discussion.

Kanter (1968) conducted a study of the commitments in the utopian society and proposed the three dimensions of dividing organizational commitments into continuous commitment, combination commitment and control commitment. Continuance commitment stems from measuring the benefits that continue to be gained from participating in the organization and the losses that will result from leaving the organization. Combination commitment refers to the individual's emotional accumulation of the organization. Control commitment is the loyalty shown by the organization's various codes of conduct.

Staw (1977) combined both the behavioral theory and attitude theory of, but organizational commitment divided into behavioral and attitudinal commitments. Behavioral commitment refers to the employee's dedication to the organization's efforts. Attitude commitment refers to the employee's to the degree of acceptance of the organization's goals and values.

Meyer and Allen (1984) on the basis of previous studies, conducted a comprehensive analysis of organizational commitment, provided the one-dimensional structure of its development to the two-dimensional structure. Organizational commitment composed of continuous commitment and emotional commitment. After that, Meyer and Allen conducted a comprehensive study again and proposed into three types: cost orientation, emotional orientation and moral obligation, and provided the universally accepted organizational commitment three-dimensional structure mode, they believe that organizational commitment included continuous commitment, emotional commitment and normative commitment.

Ling et al (2000), through the research of Chinese domestic employees, have normative commitment, emotional commitment, ideal commitment, opportunity commitment and economic commitment of the five dimensions. At present, higher recognition is the three-factor model for Meyer and Allen and the five-factor model for Ling et al in China.

The analysis sums up the above definitions. Based on the actual situation, this article defines the organizational commitment of the asset assessment agency as the employee's emotional loyalty to the organization, the company's values and goals, and willingness to contribute to it, as well as the benefits to be gained from leaving the organization while remaining in the organization. After the opportunity cost is weighed, it is willing to remain in the company's willingness to work for services.

### 2. THEORY ABOUT JOB SATISFACTION

Hoppock (1935) put forward that fatigues, management methods, working conditions, and tediousness may affect job satisfaction, mainly from the perspective of working conditions and content of the physical properties to define its structural dimension, and with the changes in the external environment, this view there are more defects.

The two-factor theory of Herzberg (1959) divides the influencing factors into two major categories: health care factors and motivating factors, and raises the issue of dissymmetry between "satisfaction" and "dissatisfaction". It also points out the personal developments that affect employee perception and growth are the most important factor that affects employee's satisfaction. Environment is the biggest factor that affects employee's dissatisfaction. This two-factor theory gives people a better understanding of job satisfaction.

Vroom (1964) found that the seven dimensions of promotion, job content, management, compensation, co-workers, leaderships, and working conditions constituted job satisfaction.

Smith, Kendall and Hulin (1969) suggested that job satisfaction can be measured in terms of work itself, leadership oversight, co-workers, remuneration and promotion, and promotion.

The deeper impact on the structural dimensions of job satisfaction is the Minnesota Job Satisfaction Scale (MSQ) compiled by Weiss et al. (1967), which is divided into short-type and long-type scales, of which short-type scales Job satisfaction is divided into internal satisfaction and external satisfaction two dimensions. Some foreign scholars also found two dimensions through factor analysis of the scale, which are respectively used to evaluate the internal and external aspects of job satisfaction. Domestic researcher Nie Lin (2014) divides work satisfaction into internal satisfaction and external satisfaction in the study of modern organizational behavior and verifies the rationality of the structure division through factor analysis of the collected data.

From the above definition, it can be found that the concept of job satisfaction can be divided into three categories: (1) comprehensive definition, which is considered to be a single and general explanation, which is the overall response of employees to their work; (2) disparity The definition, also known as the definition of demand deficiency, refers to the difference between the remuneration and benefits received and the desire to receive remuneration and benefits. The degree of dissimilarity develops in the opposite direction to job satisfaction, (3) Reference to the framework definition is also referred to as work. The definition of elements is the conclusion that personal analysis based on the analysis of work characteristics is the emotional response of employees.

Combining with actual needs, the job satisfaction of employees in this article mainly refers to the results obtained by employees of logistics companies after analyzing the characteristics of their work, and generally refers to the psychological state and overall situation of the work itself and other related aspects when working in the organization. Reaction and attitude.

### 3. RELATED THEORETICAL BASIS

3.1 Maslow's hierarchy of needs: American psychologist Maslow put forward the theory of need hierarchy in 1943. He thought that there is a certain level of human needs. According to the order of occurrence and the degree of importance, it showed like a ladder-like growth from low to high, followed by physiology, security, society and respect and self-fulfilling needs. The first three levels are low-level needs, while the second two levels are higher-level needs. Only low-level needs are satisfied, high-level needs become important. In real life, the difference between the objective environment and the individual situation, one of the needs in the hierarchy of needs often occupies the dominant position, affecting human behavior. Humanistic psychology is the basis of this theory. It is considered the inherent power of man is different from the instinct of animal. People want their intrinsic value to be able to develop. It is a kind of human nature's behavior is conscious dominated, purposeful, and creative. Contemporary psychology research shows that motivation will dominate the behavior. Individual behavior is often dominated by deep needs, type of needs, will meet the need and take the appropriate behavior.

As for job satisfaction is based on individual needs and employees work. To obtain job satisfaction, it depends on the satisfaction of the demand and degree of satisfaction. In other words, the reason of employees works to the incomplete job is to provide the organization with the performance in return for the satisfaction of the salary, welfare, promotion, and other desires, but the level of employee job satisfaction, depends on whether the organization to meet their needs and satisfaction degrees.

3.2 hygiene-motivational factors: The theory is also known as the "incentive-care" theory. In the 1950s, the U.S. behavioral scientist Frederick Herzberg and his assistants studied the relationship between work satisfaction and work efficiency. Of more than 200 engineers and accountants as a



sample are to investigate and interview. The interview revolved around two questions: first, type works can make most satisfied in your heart and the duration of the positive sentiment was maintained; second, type works can not make you feel pleasant or unsatisfactory, and the duration of the negative sentiment was maintained. As a result, they found that the existence of two different factors affected the respondents' job satisfaction and work efficiency. Then, the factors that made the employee feel satisfied were significantly different from the factors that made the employee unsatisfied. Herzberg will be part of the work content or the work itself, can bring positive emotions to employees called the "motivation factor", and will belong to the working relationship or work environment, known as the "health factor."

In fact, the two-factor theory is aimed at satisfying the goal. The motivating factor is essentially the employee's requirement for the job itself, and the health factor is essentially the employee's requirement for the job-related external conditions. To mobilize the enthusiasm of employees to produce higher performance, then you need to meet these requirements. Satisfaction can be divided into direct satisfaction and indirect satisfaction. Direct satisfaction refers to the staff to meet the requirements of the work itself, it can promote their internal incentives. Indirect satisfaction refers to satisfying employees' requirements for work-related external conditions and it can be motivated them by external incentives.

This theory can help the organization's managers get more clear motivation guidelines on the road to seek to enhance employee job satisfaction in order to better allocate resources. To enhance the enthusiasm of employees, we must first focus on health care factors to eliminate employee dissatisfaction and confrontation, and at the same time it uses incentives to motivate staff enthusiasm to improve work efficiency.

**3.3 Psychological Contract Theory:** As an important concept in organizational science, a contract is a descriptive method of organization and an expression of an organization's internal contingencies and inherent goals. In 1990s, the famous American management psychologist Professor E. H. Schein put forward the theory of psychological contract for the first time, pointed out that the psychological contract individuals will have their own dedication and organizational desire. The organization should maintain personal hope and have to pay for a cooperation. The organization and staff can still find the focus of the decision-making, it is like the contract has been its norms, such as one of the commission, collaboration, or agreement arising from the corresponding wishes, responsibilities, and commitments.

As an organization, a company should understand employees' work-related and job-related needs as well as career paths. For example, employees wanted to the need of remuneration, performance appraisal systems, training opportunities, etc., and meet employees' needs within a reasonable range. Similarly, employees will absurd this feeling of reaction to the organizational commitment, and further affect their job satisfaction. They work hard, more careful and serious use of professional knowledge to do business. In case, the company under alien the urgent time and important business, they will work overtime to complete the task and fulfill the company requirements. Psychological contract has a strong incentive effect. Once a good psychological contract established, it has a strong influence on improving the employee's job satisfaction.

**3.4 Hypothesis of Social Man:** In the 1920s, G.E. Mayo put forward the "theory of human relations" through Hawthorne experiment, which is the basis of social hypothesis theory. He believes that workers are "social people." They act not only for economic interests, but also it is to safe their own organizational status so as to obtain emotional satisfaction. It is an important behavioral goal. The means of choosing behavior is not based solely on the logic of economic rationality, in order to improve the interpersonal relationship, the corresponding emotional investment is also often used, meanwhile the social needs are the basic motivators of individual behavior. In the setting of "social man", economic interests are not the sole purpose of individual behavior. Economic rationality does not represent the full rationality of behavior, and economic relations are not all relations between individuals, and all kinds of economic relations. It also affects social relations Individual behavior. Social people assume that as a social animal, man can not exist in isolation, but they have basic social needs. He can get the corresponding satisfaction and sense of belonging from the interpersonal relationship, both of which are more motivating than the economic reward Human behavior.

According to the hypothesis of social workers, the purpose of the employee's work may not only obtain the corresponding salary or obtain the promotion in the position, but also the relationship with colleagues and superiors will also affect the motivation of the work and thus affect their work performance. In the process of logistics work, other employees in the same project are to participate in a happy cooperation, mutual assistance, department managers or their department heads to treat their own way better. Then, it will promote their work performance is improved.

## RESEARCH METHODOLOGY

### 1. POPULATIONS AND SAMPLE

The main target of this study was the employees of all sales departments in Sanya Deppon logistics, China. This referred to more who had direct contact with customers and participants in the logistics business front-line sales department staff, including the general staff (sales, tally clerks, couriers), junior managers (department manager, department director). A total of 70 people in seven sale departments participated in the research sample. A stratified random sampling procedure was used for selecting the participants in this study.

### 2. THE DEVELOPMENT OF INSTRUMENTS

The survey questionnaire is divided into three parts. The first part is to collect basic information; gender, age, working hours, job level and so on. The second and third part of instruments of this study were modified on Meyer et al. (1984) and Weiss et al. (1967). There were four instruments as follows: (1) Emotional commitment scale (ECS), (2) Continuance commitment scale (CCS), (3) Normative commitment scale (NCS), (4) Minnesota Satisfaction questionnaire (MSQ).

#### 2.1 Emotional Commitment Scale (ECS), Continuance Commitment Scale (CCS), Normative Commitment Scale (NCS)

Employees agreement with the company relied on the organization and the level of commitment to the organization will be satisfied to help company is emotional commitment. Refer to staff awareness of the consequences and costs of leaving from the organization, company will consider the loss of staff leaving from the organization is continuance commitment. Staff attitudes and behaviors towards the company are based on social norms and professional ethics. They have a sense of responsibility towards the organization and a loyal love to the organization. This commitment emphasizes loyalty and responsibility to the company as demonstrated by social norms and professional ethics is normative Commitment. Three scale uses Likin's five-point scoring method to measure the employees' accreditation of the items under evaluation, including five items: "Very dissatisfied", "Dissatisfied", "General", "Satisfied" and "Very satisfied". Respectively, given 1 to 5 points, the higher the score, representing employees on the company's higher recognition.

#### 2.4 Minnesota Satisfaction Questionnaire (MSQ)

This questionnaire can effectively collect employee satisfaction data in the company. Job satisfaction is divided into intrinsic satisfaction and external satisfaction.

Intrinsic satisfaction is logistics job content to bring satisfaction to employees, if they can maintain a full circumstance of the logistics business process can do various work experiences instead of doing the same job. They can make their own decisions on the important data in the logistics business.

External satisfaction is employees' emotion of the external situation related to various logistics work, such as salary treatment, promotion opportunities, ways to get along with superiors and colleagues, working conditions and so on.

This questionnaire also adopts the Likin's five-point scoring method to measure the employees' accreditation of the items under evaluation.

### 3. DATA COLLECTION

Data collection was conducted after obtaining permission from the Sanya Deppon sales department by submitting the proposal to the personnel department of Sanya Deppon. The procedures of data collection were divided into two phases: preparation phase and implementing phase.

### 4. RESEARCH METHOD

Cronbach's alpha showed the questionnaire to reach acceptable reliability. The Job satisfaction subscale consisted of 2 items ( $\mu = 3.65$ ), the Organization commitment subscale consisted of 3 items ( $\mu = 3.56$ ).

**RESULT****1. JOB SATISFACTION****Table 1 Mean, Std.Deviation and Level, Ranking of job satisfaction of the employee**

Job satisfaction	$\mu$	$\sigma$	Level	Rank
1. Intrinsic satisfaction	3.73	0.64	High	1
2. External satisfaction	3.56	0.49	High	2
<b>Total job satisfaction</b>	<b>3.65</b>	<b>0.50</b>	<b>High</b>	

**2. ORGANIZATION COMMITMENT****Table 2 Mean, Std.Deviation and Level, Ranking of organizational commitment of the employee**

Organization commitment	$\mu$	$\sigma$	Level	Rank
1. Emotional commitment	3.82	0.54	High	1
2. Continuance commitment	3.21	0.63	Neutral	3
3. Normative commitment	3.53	0.49	High	2
<b>Total organization commitment</b>	<b>3.56</b>	<b>0.47</b>	<b>High</b>	

**3. RELEVANCE OF ORGANIZATIONAL COMMITMENT AND JOB SATISFACTION****Table 3 T The Pearson Coefficient of job satisfaction and total organization commitment**

Job Satisfaction	Total organization commitment			
	Pearson Correlation	Sig. (2-tailed)	Level	Rank
Intrinsic satisfaction	.783**	.000	Strong	1
External satisfaction	.674**	.000	Strong	2
<b>Total job Satisfaction</b>	<b>.822**</b>	<b>.000</b>	<b>Very strong</b>	

\*\* . Correlation is significant at the .01 level (2-tailed).

Pearson correlation of Intrinsic satisfaction and Total organization commitment = 0.783

P-Value = 0.000. In conclusion, the printouts indicate that the strength of association between the variables is strong ( $r = 0.783$ ), and that the correlation coefficient is very highly significantly different from zero ( $P < 0.001$ ).

Pearson correlation of External satisfaction and Total organization commitment = 0.674

P-Value = 0.000. In conclusion, the printouts indicate that the strength of association between the variables is strong ( $r = 0.674$ ), and that the correlation coefficient is very highly significantly different from zero ( $P < 0.001$ ).

Pearson correlation of Total Job Satisfaction and Total organization commitment = 0.822

P-Value = 0.000. In conclusion, the printouts indicate that the strength of association between the variables is very strong ( $r = 0.822$ ), and that the correlation coefficient is very highly significantly different from zero ( $P < 0.001$ ).

**RESEARCH CONCLUSION****1. SUMMARY**

As can be seen from each tables and data, job satisfaction of employees has a significant positive impact on organizational commitment.

The mechanism of action between two variables of the company's employees is that the company's organizational commitment directly affects the employee's job satisfaction.

**2. SUGGESTIONS**

Improve employee job satisfaction. For employees who already have a certain foundation, they should be given different types of work, so as to improve their internal satisfaction and promote its



full development in all aspects of logistics. The company should establish a more complete assessment index, in addition to the traditional indicators such as the amount and quantity of the project, it also needs to combine the particularity of the logistics work to include the difficulty level of the project, overdraft of the body and the frequency of going out into the assessment index. Company training can be based on different levels of objects, targeted training programs designed. Leaders at higher levels should not only pay attention to performance and results, they should be more concerned about the grass-roots employees, communicate more, and integrate themselves into it. This will not only improve employees' external satisfaction, but also be a good implementation of the company's good organizational commitment and policy.

Improve the organizational commitment training and promotion mechanism. on the one hand, the company should strengthen the building of enterprise culture. On the other hand, the company should pay attention to the level of organizational commitment and focus on employee needs. Mastering the basic situation of understanding employees' organizational commitments can know their work attitudes and explain their work status, so as to inspire and enlighten employees.

### 3.LIMITATIONS OF RESEARCH

Due to the limited conditions, the questionnaire survey time is only 15 days. Only 70 copies of valid questionnaires were collected in this study, and the sample was mainly from Sanya, Hainan, China. And this study mainly discusses the influence mechanism between the two variables of the company employees from a static point of view. Therefore, the data is not very good for reflect their relationship.

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**Marketing Mix Factors, Attitude Factors and Purchasing Decision on 7 seat Car Insurance in Nontaburi Province**Anuwat Chanban<sup>1</sup>, Sasanant Vivadhajat<sup>2</sup>, and Chattayaporn Samerjai<sup>3</sup><sup>1</sup> Graduated Student in Master of Business Administration, Faculty of Business Administration, Rajapruk University<sup>1,3</sup> Lecturers, Master of Business Administration, Faculty of Business Administration, Rajapruk University**Abstract**

This research aim to study 1) the relationship between marketing mix factors and purchasing decision 2) relationship between attitude factors and purchasing decision on 7 seats Car Insurance in Nontaburi province. Researcher used a questionnaire to collect data from 400 7 seats car owners and analyzed data using frequency, mean, standard deviation and Pearson Correlation with a significant of statistic level at .05.

The results were: Marketing mix factors had a positive relationship at a moderate level with purchasing decision on 7 seats Car Insurance in Nontaburi province. Most aspect of marketing mix factors had a positive relationship at a moderate level with purchasing decision on 7 seats Car Insurance in Nontaburi province.

Attitude factors had a positive relationship at a moderate level with every aspect of purchasing decision on 7 seats Car Insurance in Nontaburi province. The emotion aspect of attitude factors had a high positive level with the perception aspect of purchasing decision and the behavior aspect of attitude factors had a positive relationship at a high level with the perception and evaluation aspects of purchasing decision on 7 seats Car Insurance in Nontaburi province.

**Keywords**

Marketing Mix Factors , Attitude Factors , Purchasing Decision , Car Insurance

**Introduction**

Nowadays vehicle that most of the people chose is private vehicle. It's an important facilities for traveling and it become necessities of life for Thai people especially Thai people in Bangkok and boundary who have potential to used for travel by personal car more than before. However, according to statistics of the number of registered new cars in 2014, which last year amounted to 7,284,259 units, up from the year 2013 amounted to 6,736,562 units, representing a 8.13 percent rate increase.

From the statistics, the number of cars that the registration of a new car each year, it can be seen that there are increasing quantities of personal car at the higher rate, continuously, and it includes the amount of cars each year, and cumulative doses of cars on the road increasing. That can cause problems with the surrounding society, including accidents on the road. The statistics show that the death rate from road accidents per population of the country, Thailand has the highest rate in the ASEAN. Which is more than 3.8 million people.

To prevent the accidents are important, but more importantly is if an accident happens. Car users need anything that prevents the damage caused by accidents, such as repair a car, medical expenses for damage to others. Thus, the automobile insurance is protection methods to alleviate the damage caused by an accident at best. The car insurance is play an important role in preventing this way is conducive to effective social benefits more and more. To prevent unexpected loss of car users, and for other. By doing insurance with non-life insurance companies are allowed. Which is under the supervision of the "Department of insurance." To protect the benefits of the people and the people who take care of the insured. (the office of the commission insurance business, 2007).

**Concepts and theories of the marketing mix.**

The study theory and research related to the marketing mix for business services included. (Siriwan Serirat et al, 2003).

1. The product is offered for sale by the business. In order to meet the needs of customers achieve necessity or satisfaction. From the research, it was found that the insurance product is the first factor affecting the decision of customers. (Benjamas Chainwichai 2010, Yuwaporn puengpipat 2018, Vinai lumpipawong, 2018; Jirasak Srirut, 2007; Rotsukhon Kamonwekhin, 2007; Watsana Chayakonkit, 2007)



2. Price is the amount of money or other thing is the cost of the customer by the customer to the comparison between the value of the products with prices from the research of Winai Kumporapawong (2008) found that consumers give priority to price first. In a decision to buy insurance.

3. Channel is an activity must consider the convenience for the customer. The research indicated that consumers focus on channel of distribution first in the convenience purchase and payment by bank or credit card. In deciding to buy car insurance (Prawit Rangsunwijit 1999).

4. Promotion. As a communication tool used to motivate the needs or to remind of the products. It is expected to influence the feelings, beliefs, and buying behavior, from the study of Wassana chaiyakornkit (2007) and Junthana Thongjun .(2007), it was found that the marketing promotion affecting decision making in choosing insurance first.

5. Staff are able to attract to satisfy the customer's different from the competition showed that employees, agents and brokers to advise clients. As part of the consumer decision to purchase insurance within a corporate discipline words Wong (2008) employees have completed health. Can provide fast The customer care Service With a Smile and be friendly to customers is impressed the customers.

6. Creation and presentation of physical appearance. Which will affect the decision of customers. Or build the trust with consumers. From the research of Wilai Sornwichai (2014) found that consumers focus on physical appearance more than the promote marketing of insurance products

7. Procession is designed to deliver the services covered by the policies and procedures used in the service. To keep the service have standards for customer satisfaction. Form The research of Wirai Sornwichai (2014) found that the factors that consumers focus first is procession before make a decision to purchase car insurance.

The concept of the marketing mix. Are important for business service, especially the insurance business, which is a business services to meet the needs of buyers insurance From the above it can be seen that the research findings in each consumer research to focus on marketing factors vary. The researcher consider the concept of marketing mix used in a study to find out "what suits marketing planning the next group.

#### **Concept and Theory of attitude factor**

Most theorists conclude that match. Attitude is a combination of consumer behavior. Consisting of (Santi Chai Wong: 2003).

1. Understanding is part of the belief that covers news, information and beliefs towards things or phenomena that comes from experience, that will be used To evaluate the product..

2. Feeling is caused by emotion and expression that occurs causes a sensation like or dislike.

3. Behavior is the expression or action which is in any way and become in learning what the various practices and store in memory through a part of the experience in the past.

#### **Concept and Theory of purchase decision**

Although consumers will have different needs and habits, but consumers will have to format the same buying decision which is aware of the problem, seeking information. Alternative assessment, decision-making and attitudes after the buy-out (Chudthayaporn Samerjai, 2007) which Kumnai Apiphutchayakul (2015). Describes the steps of the purchase decision process. As follows:

1. Problems or Needs Awareness which needs or problems that arise from the lower stimulation within a feeling hungry, thirsty, etc. 2) stimuli outside. May be due to stimulation of the marketing mix (4 Ps).

2. Search (Information Search) for use in deciding which is divided into 1) personal sources such as friends, family, or acquaintance with experience using the product. 2) commercial sources, such as advertising, employees, vendors, or packaging 3) public sources, such as the mass media or consumer protection organization. 4) from the experience of consumers who use products themselves.

3. Evaluation of Alternatives by making criteria or properties to be used in the evaluation.

4. Purchase Decision it depends on brand, store, quality, time and process of paying from a product.

5. Post Purchase Behavior By marketers will need to check the satisfaction after purchase. After comparing what you get with what you expect. If it meets expectations, or higher, it is

satisfaction and repeat purchases or tell. Conversely, if the value was below the expected customer dissatisfaction will occur, and switched to using the products of the competition and may continue on to consumers and other people.

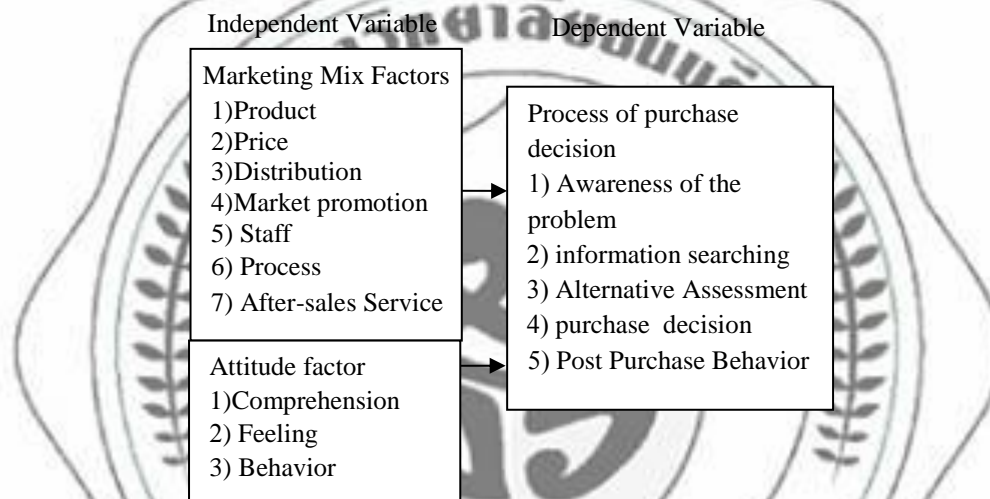
### Objectives

1. To study marketing mix factors related to decisions to buy car insurance voluntary
2. To study attitude factor have a relation with the decision to buy a voluntary motor insurance.

### Research hypothesis

1. Marketing mix related to decisions to buy car insurance voluntary
2. Attitude factor have a relation with the decision to buy a voluntary motor insurance.

### Conceptual Framework



**Format 1 Conceptual Framework**

### Procession

#### Populations and samples

1. The population used in the research are those who use personal car not more than 7 people in the Nonthaburi province that has voluntary motor insurance, which doesn't know the exact number.
2. The size of the sample was calculated from the formula (Tanin sincharu 2012) 385 example to prevent discrepancies, so we've added a sample of 4% is 400 preview.

#### The research tools

The research questionnaire was used to collect data. The process to develop the survey questionnaire was developed from the concept. The theory of related research 3 experts then have the knowledge and capability in marketing research and insurance. The guides are available to help improve the test questionnaire (Try Out) and for the confidence. (Reliability) by alpha coefficient. (A-Coefficient) (adopted lockout great deal of pure 2547: 266-267) has the confidence of the total. 87, which is acceptable confidence level. Thus leading to a questionnaire to collect data.

#### Data collection

Researcher chose the sample group by quota sampling by dividing the sample into groups according to the number of Group 6 district in Nonthaburi Province in a similar proportion. As follows:

1. Nonthaburi	amount 67 specimen
2. Bang Kuay	amount 67 specimen
3. Bang Yai	amount 67 specimen
4. Bang Bua Tong	amount 67 specimen
5. Sai Noi	amount 66 specimen
6. Pak ket	amount 66 specimen
	Total <u>400</u> specimen

And then we use convenience sampling the questionnaires were distributed to sample. The use of private cars less than 7 in Nonthaburi province. With the voluntary motor insurance.

## Results

The statistics used for data analysis were frequency (Frequencies), percentage (Percentage) mean score (Mean), standard deviation (Standard Deviation) and the correlation coefficient of Pearson (Pearson Correlation) with. Interpreted using the following criteria (Virat Wannarat 1996)

r = 1 mean	the most high relation
r = .90-.99	very high relation
r = .89-.70	high relation
r = .69-.30	medium relation
r = .29-.10	low relation
r = 0 mean	none relation

## Concluding

The majority of data users personal car up to 7 people in Nonthaburi province. The results are as follows: Users passenger cars up to 7 people in Nonthaburi province. With car insurance Voluntary were 400 people, mostly males aged 38-47 years, most married. Graduate studies in the bachelor's degree or equivalent. Career civil servants / state enterprise employees The average income 15,000-30,000 bath aged 3-7 years old used cars to insurance type 1.

Marketing mix factors of voluntary motor insurance of car users not over 7 people were at a high level. ( $\bar{x}$ = 3.95 S.D = .75) considering each aspect, the highest is the product ( $\bar{x}$ ,= 4.17 S.D = .76) while down. The employees ( $\bar{x}$ , = 4.12 S.D = .63) and the average minimum. Is the marketing promotion ( $\bar{x}$ = 3.61 S.D = .86).

Attitude factor to the decision to buy car insurance voluntary user of the personal car no more than 7 people were at a high level. ( $\bar{x}$ = 4.28 S.D = .65) considering each aspect, the highest is the feeling ( $\bar{x}$ =4.33 SD = 63), followed by the understanding. ( $\bar{x}$ , = 4.27 S.D = .68) and the average minimum is the behavior ( $\bar{x}$ , = 4.26 S.D = .66).

The decision to buy car insurance, voluntary user's personal car up to 7 people and has the highest is Awareness of the problem ( $\bar{x}$ = 4.37, SD = .64), followed by the Alternative Assessment ( $\bar{x}$ = 4.19, SD = .69) and with the lowest average is the information searching. ( $\bar{x}$ = 4.02, SD = .68).

**Table 1 Relation of Marketing Mix Factors and decision process to buy voluntary motor insurance**

Marketing Mix Factors	Purchase decision process									
	1. Awareness of the problem		2. information searching		3. Alternative Assessment		4. purchase decision		5. Post Purchase Behavior	
	r	Sig.	r	Sig.	r	Sig.	r	Sig.	r	Sig.
1. Products	.375*	.000	.497*	.000	.529*	.000	.469*	.000	.541*	.000
2. Price	.361*	.000	.528*	.000	.482*	.000	.433*	.000	.532*	.000
3. Distribution	-.078	.121	.349*	.000	.141*	.000	.224*	.000	.319*	.000
4. Market promotion	.033	.512	.417*	.000	.247*	.000	.332*	.000	.369*	.000
5. Staff	.455*	.000	.477*	.000	.556*	.000	.556*	.000	.500*	.000
6. Process	.501*	.000	.493*	.000	.529*	.000	.475*	.000	.501*	.000
7. After-sales Service	.457*	.000	.464*	.000	.483*	.000	.517*	.000	.505*	.000
Total	.300*	.090	.460*	.000	.423*	.000	.429*	.000	.466*	.000

\* Statistical significance.05



From the table 1 shows marketing mix factors in perspective it has relation with decision process to buy voluntary motor insurance In the same direction at medium level. And the marketing mix factors aspects mainly related the same direction in the middle with the decision making process. Except for the marketing mix factors in distribution and promotion related to the low rate. And the mix of marketing and promotion related to the purchase decision is low. Statistically significant at the 0.05 level of the mix of marketing, distribution and promotion, not associated with an awareness of the problem.

**Table 2 Relation of attitude factor and decision process to buy voluntary motor insurance**

Attitude factor	Purchase decision process									
	1. Awareness of the problem		2. information searching		3. Alternative Assessment		4. purchase decision		5. Post Purchase Behavior	
	r	Sig.	r	Sig.	r	Sig.	r	Sig.	r	Sig.
1. Comprehension	.639	.000	.392	.000	.551	.000	.492	.000	.299	.000
2. Emotion	.717	.000	.409	.000	.615	.000	.533	.000	.317	.000
3. Behavior	.724	.000	.633	.000	.711	.000	.724	.000	.510	.000
Total	.693	.000	.478	.000	.625	.000	.583	.000	.375	.000

\* Statistical significance .05

From table 2 shows that the overall attitude factor and the list of aspects associated with the process, the purchase decision the same direction, all sides in the middle tier. When considering side list, find that the majority attitude factor associated with the process of consumer buying decisions, the same direction in the middle-class exception safety feeling associated with awareness of the issue, the same direction on many levels and behavior that is associated with the levels of the same direction, awareness problem. Assessment choices and purchasing decisions statistically significant at the .05 level.

## Results

The results showed that the mix of marketing products. The overall level This is consistent with the findings of Jirasak Srirut (2007) found that market factors influencing the decision to make a voluntary car insurance. The overall priority level. Considering the Marketing Mix Factors that averages are higher. products And not consistent with the study's Anuwat Tonhong (2009) found that the factor that has the highest average factors including service personnel. See the difference Research samples are consistent with various insurance companies to buy car insurance. With the continuous renewal of the insurance company and the insurance company. The research sample that does not comply with the insurance company is focusing its persistence as well as renew the insurance on the same sample, thus providing an important service personnel.

The prices were at a high level, which is consistent with the research of Winai Kumpirapawong (2008) found that the prices are in high level with the highest mean. Is there are many price levels to pick which vary according to the protection, see to it that the samples also gave priority to price insurance as the main or even period era will change?

By distribution channel side included on many levels, which is consistent with the results of the study (2014) Sornchai Virai channel distribution is important on many levels. Illustrates a sample is convenient and can be trusted.

The promotion marketing is at high level, which is consistent of the research of Junthana Thongjun (2007) found that factors promoting marketing is high level from the results of the promotion of the market. Also show featured on promotional premium discounts, alert to the warranty.

The staff were at a high level. This is consistent with the results of the study Benjamas Chainwichai (2010) found that the marketing mix is important to the staff level. The results of the research staff The researchers concluded that the support staff. Consistent The sample also demonstrates the importance of the subject. The service of providing assistance from the staff is tremendous.

process The overall level This is consistent with the results of the study Winai Kumpirapawong (2008) found that the marketing mix is the process of providing the service. Priority level is the highest average secondly is quick contract to the employees, agents and brokerage services personnel. The results of the research process The researchers concluded that the support process. Consistent The sample also demonstrates the importance of the subject. working procedure Whether it is the insurance company or agent. Also like the convenience of both the documents and the staff left the service at the customer accidents quickly.

In after-sales service, the high level from the aspects of after-sales service. Illustrates the focus value of after-sales service, such as repair garage at the standard use of parts quality. Information about repair garage. Inquiry to the satisfaction of service insurance And inquire about satisfaction of service repair garage.

From the research result show that attitude factor has a relation with the decision to buy a voluntary car insurance from all of the private car users not more than 7 in Nonthaburi province overall is very important level.

Overall understanding at a high level, which is consistent with the results of the study Benjamas chaivichai (2010) found that the attitude of understanding to buy a car at a high level. Based on their understanding. The researchers concluded that the support and understanding is consistent. The sample also demonstrates the focus. Knowledge about car insurance. The benefits to be gained The need for insurance.

The overall feeling is very consistent with the results of the research of Benjamas chaivichai (2010) found that the attitude has relation with the decision to buy insurance at a high level. Based on the findings of the senses. The researchers concluded that support is consistent. The sample also demonstrates the focus. Car insurance to help offset the loss of life and property from accidents to themselves and others.

Behavior, were at a high level which is consistent with the research of Benjamas chanivichai (2010), it was found that the factors attitude is Behavior towards buying auto insurance was high. From the results of the research of behavior can Conclude that the support the research behavior is consistent. Shows were also given priority to buy car insurance with suggested the relatives and others. to buy car insurance to help prevent compensation for damage from accidents by themselves.

### **Suggestions for the research**

Suggestions for research use.

From this research suggestions for the relationship with the decision to buy car insurance voluntary sector as follows suggestion.

1. The demographic characteristics of different decisions, including sex, age, marital status, education, with different decision making voluntary motor insurance is no different. The demographic characteristics of different decision and spoiled, including occupation, income, age, use of the car with different decision making voluntary motor insurance is different. From the demographic characteristics, the researcher to look up the difference in buying car insurance. What is important in the decision to buy the majority of insurance is, occupation, income, life of the vehicle as the core. Because the purchase voluntary motor insurance each year must have a lot of money. To purchase coverage to the car. So the stable high income occupation And car life still not much. Car users to give more importance to the decision to buy car insurance than usual.

2. Factors of marketing. That are important in their decision to purchase car insurance, voluntary sector, including the products come first, followed by the staff and with the lowest average. Is the marketing promotion. The researchers found that in most of the marketing. It was obvious that those who decide to buy car insurance, voluntary sector. Will focus on product policy and the protection of policyholders first. That provide benefits and compensation for damage caused by accidents. A minor employee who provides information that can guide customers to the benefits of insurance claims accurately. This is the second market in helping customers decide to buy car insurance more easily as well.

3. Attitude factor that are important to the decision to buy car insurance voluntary the feeling is the highest, followed by the understanding and the average minimum is behavior were found on the part of the attitude. Can see clearly that the decision to buy car insurance voluntary to give more importance to the current sense because there is a car accident is rather high. Customers can feel like

something to prevent potential damage from accidents, followed by understanding, such as the importance of car insurance. The benefits of car insurance, compensation, etc.

In order to make customers have a positive attitude towards the decision to purchase auto insurance. To make customers aware of the problems that may arise in the future. Promoting the information to the insurance properly to reduce the risk of false representation that a customer may make sense to lose customers who want to buy insurance in the future.

Suggestions for further research

This research studies the factors that are associated with the decision to buy voluntary motor insurance of personal car users personal seat no more than 7 persons in the District of Nonthaburi Province has comparative significance in demographic characteristics. Marketing mix, a-side and the attitude to the decision to buy voluntary motor insurance, which in the next study should include a comparative study of their relationship with their decision to buy voluntary motor insurance of personal car user's personal seat no more than 7 people click. Subscriber who uses the car, cargo, personal with so that you can see the difference in your decision to purchase car insurance of cars 2 this category along with the population, and the audience wants to compare car users group in Bangkok to the provinces that would have cut the sat.

Car insurance has continued to differ much and learn how to purchase car insurance over the telephone or sales (tele shell) if customers decide to buy car insurance on the telephone because of factors such as the way in marketing mix, a belief. Commitment to the insurance agent-side attitude. Consumption behavior of side social decisions. Culture, traditions, etc to get the comprehensive information and useful in developing the insurance business to respond to the needs of our customers in the future more effectively.

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**Factors Affecting The Organization Commitment for Accountants in the Attitude of Chief Accountants in *Bang Kruay District, Nonthaburi Province's Industrial Factories***Chumpon Rodjam<sup>1</sup>, Thawischai Uratchat<sup>2</sup>

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Email<sup>1</sup>: chrodj@rpu.ac.th, Email<sup>2</sup>: thawischai2012@hotmail.co.th**Abstract**

This research has the objective in order to study factors according to the attitude of chief accountants in the organization commitment for keeping accountants in industrial factories in the area of Bang Kruay District, Nonthaburi Province by studying from the sample that are chief accountants of 111 industrial factories by determining the purposive sampling that is 1 chief accountant of 1 industrial factory. The research result is found that most of the sample are female for 87.40%, the working age more than 15 years for 32.40%, the highest education in Bachelor Degree level for 75.70% and most of them have worked in company limited for 91.90% and factors that the study will have an effect on the organization commitment by arranging orderly as follows; (1) In the side of the pride and the loyalty for the organization, (2) In the side of the maintaining of the membership and be the part of the organization, (3) In the side of the organizational policy, (4) In the side of the chief, (5) In the side of the dedication in working for attaining the objective of the organization, (6) In the side of strengthening of the motivation for the compensation and the welfare and (7) In the side of the place and the facility.

**Keywords:** The Organizational Commitment, The Attitude of Chief Accountants

**INTRODUCTION**

In 2015, Thailand had entered to the Asian Economic Community: AEC fully. The result was from the ASEAN Summit No. 9 at the Bali Island, Indonesia that had made the Mutual Recognition Arrangements: MRAs in the qualification in the main professional field in order to facilitate in moving the professional, the expertise labor or the person who has the special capacity of the ASEAN freely, the agreement in the movement of the skillful labor to work in the country in the ASEAN group for 10 countries freely. This had determined to cover 8 careers and might add the number of careers more in the next order. The movement of the free skillful labor in the group of 8 careers had the good effect on Thailand not less because in the overall picture of higher educational institutes in Thailand had the capacity in producing personnels in the career field for 8 careers with the high efficiency that will make persons who had graduated in the career field for 8 careers since Bachelor Degree level to Doctoral Degree level had the job market to open broader more than the past that the market had just rendered the service for 63 million peoples that were the market of the people for 600 million peoples in 10 countries of the ASEAN group. Besides, those all countries including Thailand had the direction that was growing in the economy. This might be slow or fast and by the overall picture of the quality of persons who had graduated in the career field of 8 careers in Thailand had the high quality in the front row level of ASEAN countries. This would make the opportunity to find the job to work to be high (the news center of the ASEAN, 2016) from the above message, the career of the accountant (Accountancy Services ) was 1 in 8 careers that could move the skillful labor freely in the ASEAN group. Moreover, every organization both in the public sector and the private sector would have the accountant to work in the organization. This meant that every organization wouldn't lack the qualitative and the experience accountant. For the experience of the accountant, all were come from the training of the practice that had quite rather used the time in order to create the experience and the specific proficiency.

From the above aforementioned reason is the guideline in the study of creating the organization commitment, the researcher would have done the research in the topic of, "Factors in creating the organization commitment for keeping accountants in industrial factories in the area of Bang Kruay District, Nonthaburi Province according to the attitude of chief accountants" for reasons that have selected the place in the area of Bang Kruay District, Nonthaburi Province are consist of; (1) Due to this is the area that has the promotion in the production in the local level and the community level. This will have an effect on adjusting the form of the industrial business in the household to be the business in the industrial manufacturing factory as the juristic entity more and (2) This is the area

according to the policy of the university in giving the help to develop and rendering the academic service for the community in the local area. Hence, the researcher will have determine to be the limit of the area of the research in this time in order to be the prototype in creating the benefit for giving other industrial factories in the nearby area or others to bring to be the example in developing the own organization further.

#### **OBJECTIVES and IMPORTANCE**

In order to study factors according to the attitude of chief accountants in creating the organization commitment for keeping accountants in the industrial factory in the area of Bang Kruiy District, Nonthaburi Province.

#### **HYPOTHESIS**

The gender, the age, the educational level and the category of the business of the industrial factory that the different chief accountant in the industrial factory will make to have the opinion for factors in creating the organization commitment for keeping accountants differently.

#### **LITERATURE REVIEW**

**The theory of the requirement of Cooper (1958: 31-33)** has said about the requirement of the personnel in working for many respects that is the cause of creating the organization commitment for the organization as follows; the working in the job that he is interested in, the good equipment for working, the wage and the salary that is fair, the progress opportunity in working, the good working condition, the good welfare and the working together with the chief that has understood in the government.

**The theory of 2 factors of Herzberg (1979: 60-70)** has said about hygiene factors with stimulus factors by giving the importance with hygiene factors to create the motivation in working of the staff all the time with stimulus factors that are factors related to the working directly that are motivating factors to let the person to like. Both 2 factors haven't given the importance with the educational level that will have an effect on the creation of the organization commitment.

**The idea of the model indicator of the organization commitment of the personnel of Hewitt Associates (2004)** that is the organization that has given the advice in the job in the human resource by having explained about factors that have the influence on the organization commitment of the personnel according to the idea of the model indicator of the organization commitment of the personnel that are consist of 6 components that are, the People, the Work, Opportunities, the Quality of Life, Procedures and Total Rewards.

**The idea of the Gallpu Organization (2003)** the personnel in every level in the every organization will create the growth of sales and the profit of the organization that has the aspect as the diagram of The Gallup Path by the environment that has facilitated to let the personnel to be able to work best. This must know how to persuade and keep the personnel that has the capacity in order to let the personnel to have the organization commitment that the personnel that has the organization commitment will help to increase and keep customers to create the profit for the organization including increasing the loyalty of customers. This will have an effect on the organization to create the growth of sales and the profit sustainably.

**The idea of factors that have determined the organization commitment by Richard M. Steers (1977: 46-121)** that has explained about the working age in the organization or the Work Experience that is the perception of the member for the environment in the working period, the obtaining experience is the benefit or the penalty. This has an effect on the organization commitment such as, the feeling that the personnel has the importance for the organization, the organization can rely on the personnel, the expectation that has received the response in the attitude for the colleague and the organization.

**The idea of the Employee Engagement Index (EEI) TM that has studied by Burke Institute (2003)** that is the institute that has given the advice in the development of the human resource and this has done the research in the organization commitment of the personnel. By from the research, this is found that the personnel that has the commitment will want to work in that organization and will sacrifice for the organization to create the productivity and render the service to customers including helping the organization to be successful by the commitment of this personnel will have an effect on creating the loyalty of customers and create the highest benefit for the organization.

## DATA PROCESSING and ANALYSIS

This research has studied from the industrial factory in the area of Bang Kruay District, Nonthaburi Province by determining the purposive sampling that is 1 chief accountant in 1 industrial factory that has registered in the aspect of the business of every category for the total of 111 factories (should to be use 111 companies) by gathering the information by post or E-mail that will use the time in answering the questionnaire for 1 week and send the questionnaire back by post, Fax or E-mail and has the analysis of the information as follows;

The 1<sup>st</sup> Part, the general information related to the organization and the respondent of the analysis questionnaire by using the percentage.

The 2<sup>nd</sup> Part, the information of the opinion related to factors of creating the organization commitment for keeping the accountant in the industrial factory in the area of Bang Kruay District, Nonthaburi Province according to the attitude of the chief accountant by analyzing the information with finding the average ( $\bar{X}$ ), the standard deviation and comparing the opinion of the chief accountant related to the creation of the organization commitment for keeping the accountant by (Thanin Silpjaru, 2009: 356-361).

1. Compares the difference between 2 variables that are independent for each other with Independent-Samples T-Test.

2. Compares the difference between more than 2 variables with the analysis of the one-way Anova and the comparison of the difference of the pair with the method of Least-Significant Difference (LSD).

3. The interpretation of the meaning of the average, the doing of the analysis by finding the average ( $\bar{X}$ ) and the standard deviation and the t-test from the computer program that is calculated to be each number and bringing the obtaining average to interpret the meaning of the opinion level (Suwimol Tirkanun, 2013: 183-191) according the criteria of evaluating the value according to the idea of Best W. John. (1997: 190) that has determined the criteria in interpreting the meaning of the average of the score as follows; The average from

4.50-5.00 means the attitude or the most opinion level.

3.50-4.49 means the attitude or the much opinion level.

2.50-3.49 means the attitude or the moderate opinion level.

1.50-2.49 means the attitude or the less opinion level.

1.00-1.49 means the attitude or the least opinion level.

The 3<sup>rd</sup> part, the additional suggestion by using the open-ended questionnaire to analyze by concluding the important issue according to the content for each number.

## METHODOLOGY

Tools that are used in this research such as, the close-ended questionnaire and the open-ended questionnaire that have operating procedures as follows; (Thanittha Cheewaphatthanapun, 2014: 25-27)

1. Studies the idea, the theory, related researches from documents, textbooks and other researches in order to be the guideline in determining the scope in designing the questionnaire.

2. Brings the questionnaire that has passed the checking from the research advisor to let 3 experts to check and consider and give the suggestion in order to find the Index of Item Objective Congruence: IOC by after the checking of the IOC value of 45 question numbers. This is found that 4 question numbers that have gotten the IOC value is equal to 0.67. For the another 41 question numbers have the IOC value equal to 1.

3. Brings the questionnaire from the checking of the IOC value to try out with the sample that are chief accountants that have worked in other industrial factories that are beyond 30 samples.

4. Brings the questionnaire that has received from this experiment to try out the Reliability value by using the formula of the Cronbach's Coefficient Alpha for trying out the Reliability value that the trying out of the Reliability has the value equal to 0.971.

## TESTING of HYPOTHESES

From the research, this is found that most of the sample are female for 87.40%, the working age more than 15 years for 32.40%, the highest educational level in Bachelor Degree for 75.70% and most of the sample will work in the company limited for 91.90%. From the research, this can



conclude that factors in the organizational policy that have an effect on the organization commitment in the much level ( $\bar{X} = 4.23$ , S.D. = 0.52) the sub issue that has an effect most is the organizational policy that has the clearness and easily to understand and the explanation issue of the working policy and the problem that is happened from working that is having an effect in the much level ( $\bar{X} = 4.27$ , S.D. = 0.99).

Factors in the side of the chief that has an effect on the organization commitment in the much level ( $\bar{X} = 4.25$ , S.D. = 0.59) For the sub issue that has an effect most that is the issue of the chief to give the equality for the staff within the organization to admit to listen the opinion and the suggestion ( $\bar{X} = 4.36$ , S.D. = 0.70).

Factors in the side of strengthening the motivation, the compensation and the welfare that have an effect on the organization commitment in the much level ( $\bar{X} = 4.01$ , S.D. = 0.73) In the part of the sub issue that has given an effect most is the issue of the revenue and the compensation that is obtained in the current situation that has the suitability with the quantity or the duty that has operate ( $\bar{X} = 4.14$ , S.D. = 0.76).

Factors in the place and the facility that has an effect on the organization commitment in the much level ( $\bar{X} = 4.06$ , S.D. = 0.69) In the part of the sub issue that has an effect most is the issue of materials and equipments in working that has the enough amount and has the convenience to bring to use ( $\bar{X} = 4.22$ , S.D. = 0.79).

Factors in the dedication in working in order to attain the objective of the organization that have an effect on the organization commitment in the much level ( $\bar{X} = 4.13$ , S.D. = 0.60) In the part of the sub issue that has an effect most is the issue when this has found the problem and the obstacle in working. There is the conclusion of the lesson and the planning to develop the working to be better ( $\bar{X} = 4.29$ , S.D. = 0.72).

Factors in the pride and the loyalty for the organization that have an effect on the organization commitment in the much level ( $\bar{X} = 4.36$ , S.D. = 0.54) In the part of the sub issue, this is found that every issue has given an effect on the organization commitment in the much level also by the sub issue that has given an effect most is the issue that has the behavior that is the good pattern to help to promote the image of the organization ( $\bar{X} = 4.45$ , S.D. = 0.57).

Factors in the maintaining of the membership and is the part of the organization that have an effect on the organization commitment for the organization in the much level ( $\bar{X} = 4.31$ , S.D. = 0.56) In the part of the sub issue that has an effect most is the issue in entering to join other activities of the organization regularly ( $\bar{X} = 4.42$ , S.D. = 0.64) for the comparison of the difference of the opinion related to factors that have an effect on creating the organization commitment that can explain as follows;

**The opinion of the chief accountant between the male and the female**, from the hypothesis of the research that has said that the different gender of the chief accountant will make to have the different opinion for factors to create the organization commitment for keeping accountants differently. From the study of the conclusion of the male chief accountant and the female chief accountant that has thought that factors for 7 sides will have an effect on creating the organization commitment that isn't different with the statistical significance and when this has considered in each side, this is found that the male has thought that in the side of the chief and in the side of the place and the facility that has an effect on the organization commitment more than the female with the statistical significance at the level of 0.05. For in other sides, this is found that the male chief accountant and the female chief accountant have seen that there is the result for the organization commitment that isn't different with the statistical significance.

**The opinion between the chief that has the different working age in the organization**, from the hypothesis, the research that has said that the different working age in the organization of the chief accountant in the industrial factory will make to have the opinion for factors to create the

organization commitment for keeping accountants differently. From the study, this can conclude that in the overall picture of factors for 7 sides in the chief that has the working age in the organization that is less than 5 years. This can think that factors for 7 sides will have an effect on the organization commitment less than the person who has the working age in the organization for 10-15 years at the statistical significance at 0.01 and less than the person who has the working age in the organization more than 15 years at the statistical significance level at 0.05. In the part of the person who has the working age in the organization for 5-10 years. This can think that factors for 7 sides will have an effect on the organization commitment less than the person who has the working age in the organization for 10-15 years at the statistical significance level at 0.05 by in the side of the organizational policy, this is found that the person who has the working age in the organization less than 5 years has thought that factors in the organizational policy will have an effect on the organization commitment less than the person who has the working age in the organization for 10-15 years at the statistical significance at 0.05 and less than the person who has the working age in the organization more than 15 years at the statistical significance level at 0.05.

In the side of strengthening the motivation, the compensation and the welfare, this is found that the person who has the working age in the organization less than 5 years has thought that factors in strengthening the motivation, the compensation and the welfare that will have an effect on the organization commitment less than the person who has the working age in the organization for 10-15 years at the statistical significance level at 0.01 and less than the person that has the working age in the organization more than 15 years at the statistical significance level at 0.01. The person who has the working age in the organization for 5-10 years that has thought that will have an effect on the organization commitment less than the person who has the working age in the organization for 10-15 years at the statistical significance level at 0.01 and less than the person that has the working age in organization more than 15 years at the statistical significance level at 0.05.

In the side of the dedication in working in order to attain the objective of the organization, this is found that the person who has the working age in the organization less than 5 years that has thought that factors in the dedication of working in order to attain the objective of the organization that will have an effect on the organization commitment less than the person who has the working age in the organization for 10-15 years at the statistical significance level at 0.01 and the person who has the working age in the organization for 5-10 years that has thought that this will have an effect on the organization commitment less than the person who has the working age in the organization for 10-15 years at the statistical significance level at 0.05.

In the pride and the loyalty for the organization, this is found that the person who has the working age in the organization less than 5 years that has thought that factors in the side of the pride and the loyalty for the organization will have an effect on the organization commitment less than the person who has the working age in the organization more than 15 years at the statistical significance level at 0.01 and the person who has the working age in the organization for 5-10 years that has thought that this will have an effect on the organization commitment less than the person who has the working age in the organization more than 15 years at the statistical significance level at 0.05. In the maintaining the membership and is one part of the organization, this is found that the person that has the working age in the organization less than 5 years that has thought that factors in the maintaining of the membership and is one part of the organization that has given an effect on the organization commitment less than the person who has the working age in the organization for 10-15 years at the statistical significance level at 0.01 and less than the person who has the working age in the organization more than 15 years at the statistical significance level at 0.05.

This can conclude that the chief that has more working age in the organization has the attitude for factors in creating the organization commitment in the level that is more than the person who has less working age.

**The opinion between the chief at the different educational level and The opinion between the chief at the different level of the business category** from the hypothesis of the research that has said that the educational and business category level of the chief accountant in the industrial factory that is different, will make to have the opinion for factors in creating the organization commitment for keeping accountants differently. From the study, this can conclude that in the overall picture of the opinion between the chief that has the different educational level that has thought that

factors for 7 sides will have an effect on the organization commitment that isn't different in the statistic and when this has compared in each side. This is found that every side of the chief has the educational level differently that has thought that this will have an effect on the relationship for the organization that isn't different with the statistical significance.

**Table 1**, the analysis of the difference of the average of the thinking score related to factors that have an effect on creating the organization commitment that are classified according to the working age in the organization.

Overall	$\bar{X}$	S.D.	t	P
The male	4.401	0.434	1.599	0.113
The female	4.164	0.531		
Less than 5 years	3.971	0.567	3.885	0.011*
5-10 years	4.057	0.450		
10-15 years	4.377	0.547		
More than 15 years	4.284	0.442		
Less than Bachelor Degree	4.278	0.738	1.243	0.293
Bachelor Degree	4.150	0.520		
Higher than Bachelor Degree	4.350	0.428		
Partnership Limited	3.993	0.447	-1.103	0.273
Company Limited	4.205	0.529		

\* This means that there is the significance at the level of 0.05.

**Table 2**, the table analyzing the difference of the average score of the opinion related to factors that have an effect on creating the organization commitment that are classified according to the working age in the organization for each pair.

Factors that have an effect on the organization commitment	(I) The age	(J) The age	Mean Difference (I-J)	P
In the organizational policy	Less than 5 years	10-15 years	-0.342	0.013*
		More than 15 years	-0.319	0.015*
In the side of strengthening the motivation, the compensation and the welfare	Less than 5 years	10-15 years	-0.707	0.000**
		More than 15 years	-0.551	0.002**
	5-10 years	10-15 years	-0.586	0.004**
		More than 15 years	-0.431	0.027*
In the side of the dedication of working to attain the objective of the organization	Less than 5 years	10-15 years	-0.448	0.005**
	5-10 years	10-15 years	-0.436	0.012*
In the side of the pride and the loyalty for the organization	Less than 5 years	More than 15 years	-0.393	0.004**
		More than 15 years	-0.377	0.013*
In the side of the maintaining of the membership and is one part of the organization	Less than 5 years	10-15 years	-0.466	0.002**
		More than 15 years	-0.322	0.021*
<b>Total factors for 5 sides</b>	<b>Less than 5 years</b>	<b>10-15 years</b>	<b>-0.406</b>	<b>0.003**</b>
		<b>More than 15 years</b>	<b>-0.313</b>	<b>0.016*</b>
		<b>5-10 years</b>	<b>-0.320</b>	<b>0.034*</b>

\*,\*\* This means that there is the significance at the level of 0.05 and 0.01.



**DISCUSSION**

From the research result, this has the interesting issue that can bring to discuss the result related to factors in creating the organization commitment for keeping accountants in industrial factories in the area of Bang Kruay District, Nonthaburi Province. Hence, other factors for 7 sides will have an effect on the organization commitment. Factors in creating the aforementioned relationship has the consistency with the explanation of Wilawan Rapeephisal (2007: 261-262) that has said about the factors that will have an effect on the overall picture of working such as, the creation of the faith and the confidence in the organization, the creation of the loyalty, the creation of the atmosphere and the good environment etc. The aforementioned studied result has still the consistency with the theory of the requirement of Cooper (1958: 31-33) the idea of the model indicator of the organization commitment of the personnel by Hewitt Associatis (2004) and the idea of The Gallpu Path and the hierarchy of the commitment by The Gallpu Organization (2003) that has said about the hierarchy of the creation of the organization commitment in the commitment of the personnel in working by specifying about the 1<sup>st</sup> important factor that is the way that the personnel will have the commitment, the loyalty for the organization, have worked with the willingness and have intent to work with the full capacity for one part of the organization. For other factors such as, the compensation, the welfare and other facilities that are supporting factors of creating the commitment. The idea and the aforementioned studied result has conformed with Chorsuda Sorada (2008), Thidawal Pluemkid (2008), Nureeman Dolor Aniwach Kaewchumnong Orachan Sirichot (2013: 119-120) and Sethasart Chaisang (2010: 58-60) that has studied about the research of creating the organization commitment that is found that factors in creating the pride and the loyalty for the organization, Being one part of the organization, the strengthening of the motivation, the compensation and the facility, all of those things will be factors that have an effect on the organization commitment.

For the working age of the chief in the organization that has the difference. There is the opinion for factors that have an effect on the organization commitment differently in the overall picture and the revenue such as, In the side of the organizational policy, in the side of the dedication of working for attaining the objective of the organization, in the side of the pride and the loyalty for the organization, in the side of the maintaining the membership and is one part of the organization and in the side of the strengthening of the motivation, the compensation and the welfare. This can be seen that the chief has more working age in the organization, will have the attitude for factors in creating the organization commitment in the more level.

There is the attitude for factors in creating the organization commitment in the level that is more than the person who has the less working age. Hence, there is the important part in creating the good attitude for the new staff in every side. The aforementioned studied result has conformed with Kulchaya Temchawala(2005) Surangthip Thawichai (2006) and Sattabongkoj Maneemarn (2005) that has said about the factor in the side of the time period in working for the staff who has much working age that has the organization commitment for the organization in the same direction. Moreover, the aforementioned studied result has conformed with the idea of factors that have determined the organization commitment by Richard M. Steers (1977: 46-121) that has explained about the working age in the organization or the experience in the work experience that is the perception of the member for the environment in the period of working such as, the feeling that the person has the importance for the organization, the organization can rely on that person, the expectation that has received the response of the good attitude for the colleague and the organization.

The factor in the educational level of the chief accountant in the industrial factory in the area of Bang Kruay District, Nonthaburi Province with the creation of the organization commitment for keeping accountants that have the difference. From the study, this can conclude that in the overall picture, the opinion between the chief that has the different educational level that has thought that factors for 7 sides that will have an effect on the organization commitment that isn't different in the statistic and when this has considered in each side. This is found that in every side, the chief that has the different educational level that has thought that will have an effect on the organization commitment that isn't different in the statistic that has conformed with Praditphong Sroipetch (2014) that has said about the educational level that has the relationship with factors in the organization commitment in the medium level that isn't in the beginning level and this has conformed with the theory of 2 factors of Herzberg (1979: 60-70) that has said about the hygiene factor with the stimulus

factor by giving the importance with the factor that has the hygiene factor to create the motivation in working of the staff all the time with the stimulus factor that is the factor that is related to the working directly that is the motivation factor that the people like. Both 2 factors haven't given the importance with the educational level that have an effect on the organization commitment.

For the part of the category of the business of the chief accountant in the industrial factory in the area of Bang Kruay District, Nonthaburi Province with the creation of the organization commitment for keeping accountants differently. From the study, this can conclude that in the overall picture, the opinion between the chief that has worked in the category of the business differently that has thought that factors for 7 sides will have an effect on the organization commitment not much different in the statistic and when this has considered in each side. This is found that every side, the chief has worked in the category of the business differently that has thought that this will have an effect on the organization commitment not much different in the statistic that has conformed with the idea of factors in determining the organization commitment of Richard M. Steers (1977: 46-121) and the idea of Employee Engagement Index (EEI) TM by Burke Institute (2003) that has explained about the category or the job aspect that has the indirect influence with the creation of the commitment. But the important thing that have an effect on creating the difference in each organization is the good job aspect that will make the personnel to feel to have the motivation to would like to work with the organization and the own goal.

## CONCLUSIONS

The creation of the organization commitment for keeping accountants in industrial factories, the organization will have to consider about the important issue as follows that are; the determination, the vision, the philosophy, the mission of the organization clearly. There is the explanation to let the staff to understand in the policy and the guideline in other working clearly. There is the exchange of the opinion between the staff with the chief to create the atmosphere that is friendly with the staff and when this has face the problem in working. The staff can consult with the chief. There is the strengthening of the motivation, the compensation and the welfare, the revenue or the compensation that has received in the current situation that is suitable with the quantity or the mission that has operated. In the environment and the general atmosphere in the office, this shall set to have the suitability for working including promoting the image of the organization, the honest and the loyalty for the organization by considering about the benefit of the organization to promote to let the staff to enter to join in other activities of the organization for creating the feeling to be one part of the organization.

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**The Strategic Motive behind Thai-Japanese International Joint Venture (IJVs) Formation: A Case of Thailand Industrial Sectors**Wanida Wadecharoen<sup>1</sup>Akio Nishisawa<sup>2</sup><sup>1</sup>Center of Business Research and Service, Thai-Nichi Institute of Technology, BKK Thailand<sup>2</sup>Faculty of Business Administration, Toyo University, Tokyo Japan**Abstract**

International Joint Venture (IJV) become a popular strategic enter mode used by Japanese firms to enter Thailand industrial sectors. This is because of IJV benefit used enable both Thai and Japanese partners to achieve their mutually business objectives. Thus, understanding of Thai-Japanese firm's motivation in the form of IJV can encouraging both partners congruent, creating organization synergy and finally contributing to successful IJVs. There are six factors with eighteen IJV motives were examine in this study. The sample of the study was based on cross sectional industries which included electronic device, manufacturing, automobile and its assemble, food and agriculture and transportation. The study applied on descriptive analysis and theoretical analysis approach to explore the attitude of Japanese investor via subjective measurement at the time to entry into Thailand. The research questionnaires were distributed by post and personal delivery to 800 IJV firms and 194 cases were returned for final analysis, approximately 24%. The result of the study show that nearly of research sample (42.2%) were motives by '*market development and power*' which majority refer to '*facilitate international expansion*' and '*increase market share*' across five industrial sectors. These motives was frequently answered by automobile assembly, metal/chemical manufacturing sector. The finding indicated that Japanese firms decided to enter Thailand via venturing with local partners was for '*costs sharing with fast present in local market*'. Partners venturing in IJVs could spread the risk of a large project over more than one firm. By using IJVs enable Japanese parent firms reduced the costs of production where cheap labor and natural resources were available, thus, enhance firm's competitiveness.

**Keywords:** Strategic Motive, Thai, Japan, Industrial, International Joint Venture: IJVs**1. Introduction**

Thailand economic sustainability could be enhance by the introduction of Japanese investment inflows to Thailand industrial sectors. Japanese investment enable to enhanced local government revenue, improved national gross domestic product (GDP), generated national employment and enhanced job opportunity (Wadecharoen, Worapongpat, Lertnaisat, Lertpiromsuk & Teekasap, 2015). Since, Japanese firms decide to go aboard such firms are concerned not only about '*what markets to enter but also about how to enter them*'. International joint venture (IJV) is one of equity modes used by Japanese manufacturing to enter Southeast Asia region in general (Julian, 2010:2008) and Thailand in particular (Wadecharoen, W., R., Lertpiromsuk, S. & Nishisawa, A. 2017; Wadecharoen, Worapongpat, Lertnaisat, Lertpiromsuk & Teekasap, 2015; Wadecharoen, Kanjanavanikul & Teekasap, 2014; Suwanarat, 2012; Suwanarat & Mumi, 2012; Suwanarat, 2010). As the evident reported by board of Thailand investment show the number of IJV has been improving by year after year (refer to Table 1). This indicated the popularity used of IJV as the strategic entry mode to enter Thailand manufacturing sector.

Table 1 The Number of JV Firms submitted to BOI (2013 to Jan-June 2017)

Description	2013	2014	2015	2016	2016 Jan-Jun	2017 Jan-Jun
No. of projects	2,014	1,662	983	1490	708	612
Total Investment	1,026.43	724.74	197.58	545.61	282.42	291.79
Total Registered Capital	136.54	99.00	65.42	81.49	43.07	30.49
- Thai (Billion Baht)	75.91	40.83	50.89	49.11	26.36	10.69
- Foreign (Billion Baht)	60.63	58.17	14.53	32.38	16.71	19.81
<b>Employment</b>	<b>240,599</b>	<b>128,606</b>	<b>52,289</b>	<b>101,793</b>	<b>43,146</b>	<b>44,827</b>
<b>Ownership</b>						
- 100% Thai (no. project)	683	704	434	578	262	191
Investment (Billion Baht)	339.16	216.83	96.22	172.08	69.06	49.22
- 100% Foreign (no. project)	803	585	367	590	292	229
Investment (Billion Baht)	234.22	262.14	55.68	161.99	69.20	47.60
<b>Joint Venture (no. project)</b>	<b>528</b>	<b>373</b>	<b>182</b>	<b>322</b>	<b>154</b>	<b>192</b>
Investment (Billion Baht)	453.05	245.77	45.68	211.54	144.16	194.97

Source: International Affairs Division, BOI, As of June 30 2017

Since, Japanese firm using Thailand as the location based for their offshore production whereby at least 80% of their productivities are export oriented; then IJV is becoming a popularity strategic entry mode used by Japanese firms approximately 34% in Thailand industrial sectors (Wadecharoen & Nik Mat, 2010). This is because of IJV was identified as the most appropriate strategy to acquire knowledge from foreign partner such as technology transfer, marketing know-how to move up quality ladder (Mohamad, Ramayah & Hathaivaseawong, 2010). Despite, Thai partner equity as the host country company could not enhance their competitive advantage and technology transfer as they expected before decided to engage in IJV (Wadecharoen, 2015). Based on this argument, such Japanese firms are willing to share their knowledge with Thai local partner firms is still inconclusive.

Consequently, understanding the motives of Thai-Japanese IJV formation is basically important for building IJV management process and work upon their motives to achieve mutual goals. As of this sense, by entering in to IJV, firms will create an organization synergy by pooling partner's resources dependency associated with IJV formation, gain access to technology and reduce the competitors (Miller & Folta, 2002; Doz & Hamel, 1998). Exploring the motives of IJV enables this research to go through the way of Japanese thought about doing successful business in Thailand. As of this idea, Thai partners can learn by doing advance technology and adopting Japanese management style. This will improve Thai local worker skills, productivity and enhance quality of life.

This study attempts to fill this gap by using a number of theoretical approaches to *link the individual motives to their theoretical explanations and provide a clear picture of 'what drives the motive of IJV in Thailand'*. Thus, the parallel mixed analysis method was used to investigate the research objective. The study was elaborate on questionnaires data obtained from Thai-Japanese IJVs senior/managing directors across several industries in Thailand. In additional, the study quantitative data will be confirm by personal interview with oversea manager in Tokyo Japan.

## 2. Literature Review

### 2.1 The Definition of International Joint Venture (IJVs)

IJV can be defined as the participation of two or more partners who join forces to establish a newly incorporated company in which each has an equity position; thereby each expects a proportional share of dividend as compensation and representation on the board of directors (Glaister & Buckley, 1998). The term 'IJV' has many different meaning but the most common definition is *"a separately legal business venture that involves two or more entities with different nationality working together to achieve mutually agreed on business objectives"* (Schuler & Tarique, 2005). Thus, defining IJV performance as the degree of accomplishment of IJV goals is the first step to capturing the motives theories behind IJV formation as given supported in Table 2.

## 2.2 The Strategic Motive Theories of IJV Formation

There are several theories behind the motive of IJV in global business as exhibited in Table 2. These theories have been recognized as the root theories of global business to explaining 'how foreign firms used IJV as the global strategy to compete aboard?' and 'why do IJV firm exist?' With all these structure enable to explain the motive theories of IJV formation in Thailand.

Table 2 the Strategic Motives Theories of IJV Formation

No.	Factors	Motives	Theories	Sources/Data
1	Market Power and Development	<ul style="list-style-type: none"> <li>▪ Speed of entry into foreign market</li> <li>▪ Increase market share</li> <li>▪ Reduce competition</li> <li>▪ Enable product diversification</li> <li>▪ Facilitate international expansion</li> </ul>	<ul style="list-style-type: none"> <li>▪ Organizational Learning</li> <li>▪ Transaction Cost</li> <li>▪ Resources Based View</li> <li>▪ Strategic Management Perspective</li> </ul>	Inkpen & Crossnan, (1995); Hennart, (1988); Kogut, (1988); Mjoen & Tallman, (1997);Harrigan, (1988)
2	Financial Synergy	<ul style="list-style-type: none"> <li>▪ Take advantage of tax difference between Thailand and Japan</li> <li>▪ Gain revenue/profit enhancement</li> <li>▪ Reduce risk of exchange rate</li> </ul>	<ul style="list-style-type: none"> <li>▪ Transaction Cost</li> </ul>	Hennart, (1988); Kogut, (1988)
3	Location Advantage	<ul style="list-style-type: none"> <li>▪ Culture similarity</li> <li>▪ Access to nature resources</li> <li>▪ Access to local suppliers and customers</li> </ul>	<ul style="list-style-type: none"> <li>▪ Transaction Cost</li> <li>▪ Organizational Learning</li> <li>▪ Agency</li> <li>▪ Political Economic</li> </ul>	Hennart, (1988); Kogut, (1988); Inkpen & Crossnan, (1995); Reuer & Miller,(1997)
4	Managerial Synergy	<ul style="list-style-type: none"> <li>▪ Level of management control</li> <li>▪ Access to management know-how</li> </ul>	<ul style="list-style-type: none"> <li>▪ Organizational Learning</li> <li>▪ Resources Based View</li> </ul>	Inkpen & Crossnan, (1995); Mjoen & Tallman, (1997)
5	Technology development	<ul style="list-style-type: none"> <li>▪ R&amp;D intensity</li> </ul>	<ul style="list-style-type: none"> <li>▪ Organizational Learning</li> </ul>	Inkpen & Crossnan, (1995)
6	Operational Synergy	<ul style="list-style-type: none"> <li>▪ Achieve economic of large scale</li> <li>▪ Reduce cost by globalizing supply chain</li> </ul>	<ul style="list-style-type: none"> <li>▪ Transaction Cost</li> <li>▪ Strategic Management Perspective</li> </ul>	Hennart, (1988); Kogut, (1988); Harrigan, (1988)

## 3. Research Methodology

To justify the study research objectives, theoretical content was applied on 'descriptive data analysis and theoretical analysis approach, not statistical testing analysis consideration'. The study research design is represents in the following diagram below;

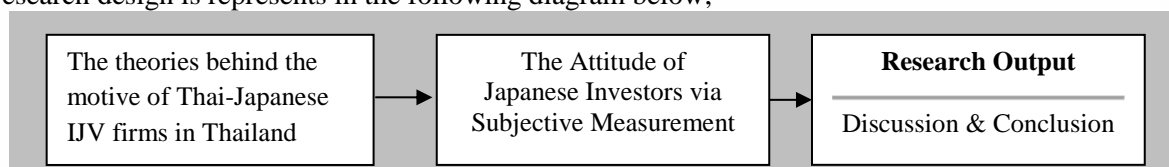


Figure 1 Conceptual Framework

### 3.1 The Sample Size and Data Collecting Processes

A list of 1,100 Thai-Japanese IJVs company name and address were listed from Factory Directory in Thailand 2016/2017. The sample size of this study was based on the cross sectional industries which includes electronic device, manufacturing (metal & chemical), automobile and its assemble, food/agriculture industry and transportation. The study using the subjective measurement to assessment of manager perception of the relative importance motivation behind the choice of entry



mode at the time to entry into Thailand (Lue & Park, 2004). An examination of key person position were president, vice president, vice chairman, managing director, general manager and supervisor. The questionnaire was distributed by post and personal delivery to 800 small-to-medium-large-size IJV firms in Thailand from March to August 2017 (quarter 2-3 of year 2017). After two weeks of distribution, phone call and email were follow up to recheck the questionnaire status. The survey of the study relies on data collected from top and upper middle level management of Thai-Japanese IJVs firms. The 194 questionnaires were returned for final analysis; approximately 43%. Based on the past study, the return of respondents was ensuring of about 20 to 30% (Julian, 2008).

*Table 3 Proportionate stratified random sample methods*

No.	Type of Industries	Listed Number	Percentage (%)	Sample Size	Respondent	Percentage (%)
1	Electronic Device	300	27.3	155	33	17
2	Manufacturing (Metal & Chemical)	300	27.3	245	64	33
3	Automobile & its Assemble	300	27.3	215	67	34.5
4	Food/ Agriculture Industry	100	9	40	12	6.2
5	Transportation	100	9	40	10	5.2
6	Other	-	-	-	8	4
	<b>Total</b>	<b>1,100</b>	<b>100</b>	<b>450</b>	<b>194</b>	<b>100</b>

#### *Assessment of Research Tools*

This study used questionnaire as the research instrument for collecting the primary data. There are six factors consists with eighteen motives of IJV formation were developed from Nisar, Boateng, Marry Leung, (2012). All questionnaire statements were test validity by using index of item objective congruence (IOC) with three professional experts (Anastasi, 1982). The reliability score of the scales are adequate minimum requirement value of 0.70 (Nunnally, 1978). Thus, all measurement are consistent and reliable for further data analysis.

#### *Data Analysis Techniques*

The quantitative data was analyzed through SPSS and evaluated in percentage. The interview data was coded by using theoretical content analysis approach (Lincoln & Guba, 1985; Taylor & Bogdan, 1984). As an initial step was to understand and summarize the data collected, some descriptive statistics were produced. This main reason for using descriptive statistics is to detect input error and also to show the distribution of the data and represent in the form of frequency and percentage. (Salkind, 2006).

#### **4. Result of the Study**

The result of the study will be representing for multiple data such methods below;

##### **4.1 The Research Survey Data**

The quantitative data showed the most important motive of Thai-Japanese IJVs cause by market development and power (42.2%); the second important was location advantage (22.5%); followed by financial synergy (15.9%), operational synergy (12.5%), technology development (6.1%) and managerial synergy (0.8%). The most important IJV firm objectives to enter Thailand could be explain by *'increase of market share', 'facilitation international expansion', 'speed enter into foreign market', 'reduce competitive' and 'product diversification'*. These are the major objective driven Thai-Japanese IJV firm's formation to engage in Thailand manufacturing sector. In other hand, managerial synergy seem not to be significant important factor to motive Thai-Japanese formation. Since the factors refer to easy management and control was selected 0.2% and 0.6% for access to management know-how (refer to Table 4).

Table 4 the Motive of Japanese –Thai IJVs Formation

IJV Motives	Industries						Other	Total	Percent (%)	Rank
	ED	MC	A/S	F/A	TP					
<b>Factor 1: Market Development and Power</b>									<b>42.2</b>	
1.1 Increase Market share	18	34	33	8	7	5	105	10	<b>2</b>	
1.2 Facilitate international expansion	28	38	50	5	10	3	134	12.5	<b>1</b>	
1.3 Speed enter into foreign market	12	10	38	3	4	1	68	6.3	<b>7</b>	
1.4 Reduce Competitive	13	21	31	3	4	-	72	6.7	<b>5</b>	
1.5 Product Diversification	16	6	33	8	7	2	72	6.7	<b>5</b>	
<b>Factor 2: Financial Synergy</b>									<b>15.9</b>	
2.1 Take advantage of tax differentials between Thai and Japan	1	-	14	-	-	1	16	1.5	<b>11</b>	
2.2 Gain revenue/profit enhancement	14	30	30	10	6	2	92	9	<b>3</b>	
2.3 Reduce risk of exchange rate	1	8	15	2	-	-	26	2.4	<b>10</b>	
2.4 Reduce transaction cost	3	2	23	-	-	2	31	3	<b>9</b>	
<b>Factor 3: Location Advantage</b>									<b>22.5</b>	
3.1 Culture similarity	16	10	22	7	8	2	65	6		
3.2 Access to natural resources	18	12	26	9	4	-	69	6.5	<b>6</b>	
3.3 Access to local suppliers and customer	29	15	43	10	10	5	112	10	<b>2</b>	
<b>Factor 4: Managerial Synergy</b>									<b>0.8</b>	
4.1 Easy management and control	-	2	-	-	-	-	2	0.2	<b>14</b>	
4.2 Access to management know-how	-	6	-	-	-	-	6	0.6	<b>13</b>	
<b>Factor 5: Technology Development</b>									<b>6.1</b>	
5.1 Research & development intensity	1	30	23	2	-	2	58	5.4	<b>8</b>	
5.2 Access to advantage technology	-	1	6	-	-	-	7	0.7	<b>12</b>	
<b>Factor 6: Operation Synergy</b>									<b>12.5</b>	
6.1 Achieve economic of large scale	11	4	30	3	-	-	48	4.5	<b>8</b>	
6.2 Reduce cost by globalizing supply chain	22	12	48	2	-	2	86	8	<b>4</b>	
<b>Total</b>	<b>204</b>	<b>241</b>	<b>465</b>	<b>72</b>	<b>60</b>	<b>27</b>	<b>1,069</b>	<b>100</b>		
<b>No. of firms</b>	<b>33</b>	<b>64</b>	<b>67</b>	<b>12</b>	<b>10</b>	<b>8</b>	<b>194</b>	<b>100</b>		

**\*\*Note:** ED=Electric Device; MC=Metal/Chemical; A&S=Automobile/Assemble; AF=Food/Agriculture; TP=Transportation

The majority of Thai-Japanese IJV firms are engaged in automobile and its assembly industry (34.5%), following by metal and chemical (33%) and electric device (17%), respectively (refer to Table 4). In automobile business, there are three major motivate of Japanese firm enter to Thailand via IJV strategy. These are such as *'facilitating international expansion'*, *'reduce cost by globalizing supply chain'* and *'access to local suppliers and customer'*. These motives are similar to electronic device industry, while in metal and chemical industry has driven IJV formation on research and development intensity. Based on the six major factors consists with eighteen motives of IJVs formation. Nearly half of the research sample (42.2%) were motive by *'market development and power'*, which majority refer to *'facilitate international expansion'* and *'increase market share'* across five industrial sectors. These motives were frequently answered by automobile assembly and metal/chemical manufacturing sectors. The second important factor is *'location advantage'* which frequently answered by *'access to local suppliers and customer'*, following by *'access to natural resources'* and *'culture similarity'*. This could be explain that established of IJV in Thailand manufacturing sectors were easily access to local suppliers and domestic customer, using of natural resources whereby raw material and labor intensive are available. The third important factor is

**'financial synergy'** which frequently answered by *'gain revenue/profit enhancement'* and *'reduce transaction cost'*. The fourth important factor is **'operational synergy'** which frequently answered by *'reduce cost by globalizing supply chain'* and *'achieve economic of scale'*. These factors are explain by several theories as exhibited in the Table 2. Despite, technology development and managerial factors has not much chooses by Japanese investors due to lack of organization level consideration. In other hand, these factors will be relate to the successful factors of Japanese subsidiary in Thailand. Thus, this can be conclude that after IJV is established then they will be concentrate on managerial know-how, technology transfer and R&D etc.

#### 4.2 The Research Interview Data

In order to confirm the result of research survey, Japanese headquarter in Tokyo was reviewing on company profile and determine the success predictor of Thailand subsidiaries. The largest headquarter in electronic, company main products digital camera, car camera, technology sensor and so on. The company global share market 60% produced from Thailand and 40% from China. The company sale offices are located worldwide such as in Asia Singapore, Hong-Kong, Taiwan, Indonesia and Malaysia and so on. In their perspectives view Thailand as the successful business location supported by the several reasons in such Table 5 below;

Table 5 Interview data of Japanese Headquarter (HQ) in Tokyo Japan

No.	Statement	Results	Motive Factors
1	Why do you selected Thailand?	<ul style="list-style-type: none"> <li>▪ In Japan domestic consumption is rather mutuality</li> <li>▪ The majority of Thai population is new aging generation which is our target customer.</li> <li>▪ To supply Thai domestic customers demand.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Facilitate international expansion</li> <li>▪ Access to local supply and customer</li> <li>▪ Gain revenue/profit enhancement</li> <li>▪ Reduce transaction cost</li> </ul>
2	What is your perception about Thailand market?	<ul style="list-style-type: none"> <li>▪ We established the company in 1996, Thailand market is challenging successful in some particular product such as mobile camera and lens.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Facilitate international expansion</li> <li>▪ Access to local supply and customer</li> </ul>
3	What is the successful criteria of your company?	<ul style="list-style-type: none"> <li>▪ Thai population with high purchasing power</li> <li>▪ Attractive product</li> <li>▪ Distribution channel and logistic system</li> <li>▪ Stability of production such as price competitiveness</li> <li>▪ Marketing division in sale office such as Singapore</li> </ul>	<ul style="list-style-type: none"> <li>▪ Achieve economic of scale</li> <li>▪ Reduce cost by globalising supply chain</li> </ul>
	Do you satisfy with Thailand market?	<ul style="list-style-type: none"> <li>▪ Thailand market is quite unite and attractive as compare to China and ASEAN countries.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Culture similarity</li> </ul>
	How do you perceived about Thailand performance during 2015-1 <sup>st</sup> of 2016?	<ul style="list-style-type: none"> <li>▪ The performance of subsidiary in Thailand during 2015 to 1<sup>st</sup> of 2016 is medium to low due to Thailand market growth is mutually in digital products.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Facilitate international expansion</li> <li>▪ Access to local supply and customer</li> </ul>
	What is the strategy for your business performance improvement?	<ul style="list-style-type: none"> <li>▪ Keeping move on Kaizen like Toyota way while most of the idea come from local staff who working closely with just-in-time system.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Access to management know-how</li> </ul>



## 5. Discussion and Conclusion

An understanding of Japanese firm's motives for IJV formation is basically important for IJVs management. When Thai partner understanding of the Japanese parent's motives at the time of IJV formation, thus, partners are able to manage the venture to achieve its goals and objectives based on their motivation. Thus, exploring of Japanese firms motives in the form of IJV can provide a synergistic links between Japanese parents with Thai local partners. This will benefit to both partners and also encouraging partner congruent, creating organization synergy and contribution to IJVs success.

As of the prior literature, a list of strategic motives was derived from transaction cost theory (Hennart, 1998; Kogut, 1998); agency theory (Reuer & Miller, 1997); resources-based view theory (Majoen & Tallman, 1997); organization learning theory (Lyles & Salk, 1996); political economic theory (Lecraw, 1984; Lee & Beamish, 1995); strategic management perspective theory (Harrigan, 1988); behavioral perspective theory (Inkpen & Curral, 1997). This study created research questionnaire instrument based on the explanation of these theories. There are six factor represented with eighteen IJV motivation adapted from Nirsar, Boateng and Leung, (2012). These factors are such following; **(1) market and development power:** refer to increase market share, *facilitate international expansion, spend entry into foreign market, reduce competitive and product diversification*; **(2) financial synergy:** refer to *tax advantage of tax differentials between Thai and Japan, gain revenue/profit enhancement, reduce risk of exchange rate and reduce transaction cost*; **(3) location advantage:** refer to *culture similarity, access to natural resources and access to local suppliers and customer*; **(4) managerial synergy:** refer to *easy management and control, access to management know-how*; **(5) technology development:** refer to *research and development intensity, access to advantage technology* and **(6) operational synergy:** *achieve economic of large scale, reduce cost by globalizing supply chain* (Nirsar, Boateng & Leung, 2012).

The result show that nearly half of IJV in our research sample (42.2%) were motives by '**market development and power**', which majority refer to '*facilitate international expansion*' and '*increase market share*' across five industrial sectors. These motives was frequently answered by automobile assembly, metal/chemical manufacturing sector. As of this finding indicated that Japanese firms decide to enter Thailand via venturing with local partners is for '*costs sharing with fast present in local market*'. Partners venturing in IJVs can spread the risk of a large project over more than one firm. By using IJVs enable Japanese parent firms reduce the costs of production where cheap labor and natural resources are available, thus, enhance firm's competitiveness (Suwannarat, 2012; Suwannarat & Mumi, 2012; Suwannarat, Williams, Smith & Ibrahim, 2010; Glaister, Husan & Buckley, 2005).

By the strategic behavior, Japanese firms are able to gain competitive advantages and increase productivity against competitors in a competitive market. IJV make facilitates international firms expansion, overcome host country regulatory restrictions and conform to local government policy. Thus, Japanese firm forming an IJV with existing or potential competitors in an international market is the best possible alternatives to sharing risk, fast return on investment and reduce competition in global market (Hennart, 1998; Kogut, 1998; Harrigan, 1988). When Japanese parent firms located in Thailand, they will transfer their production from parent (Japan) to the lowest cost location (Thailand). IJV enabling product diversification from developed countries to developing countries becomes easier. Japanese and Thai partners form IJV to joint operations to lower unit costs and achieve economy of scale in host country. IJV concentrate on higher margin business which in turn enable partners to get faster payback on their investment.

The next important motive of Japanese firm's formation via IJVs is '**location advantage**' with majority refer to '*access to local suppliers and customer*', '*access to natural resources*' and '*culture similarity*'. As this finding indicated that sharing of resources dependency is the important factor driven IJV firms in Thailand. When Japanese firm transfer their production to the lowest cost country, they will mainly obtain raw materials from local and used Thai cheaper labor to finish their manufacturing products. Patents were exchanged before re-exporting to global market. IJV facilitate the partners sharing investment, thus product research and development (R&D) costs were shared (Park, 2011; Nik, Osman & T, 2004). Selecting a potential partner is the important factor influencing

the overall performance of IJVs in Thailand. Such partners should possess skills and knowledge to access local supplier and customer, expertise, technology knows how and specific input resources which will be available to the venture linkage territories. These are the important parts contributing to IJV achieving its mutual goals and strategic objectives.

The collaboration between Japanese and Thai firms is to motivate IJV partner to gain of organization knowledge and so on. Lacking of local market knowledge, national culture and product channel of distribution may cause difficulty for Japanese firms to penetrate the targeted market by IJV. Based on this point, IJV allowed Japanese firms to go through local firm marketing distribution system and work depends on its partner. On the other hand, IJV also allowed local partners to use patents of Japanese parent firms, learning of parent's technical know-how, access to parent financial resources and experienced managerial personnel (Glaister, Husan & Buckley, 2005). Thus, acquiring local market knowledge through IJV enabling Japanese firms to overcome risk, increasing sale volume and make the business growing. Regarding the benefits of IJV formation, IJV partners are able to share resources reciprocally. Both partners requiring each partner's contribution a 'value creation' for contributing and complementary of IJV success (Hamel, 1991).

According to Japanese headquarter (HQ) in Tokyo Japan, the interview data come out with the similarity result of research survey data. The Japanese subsidiaries in Thailand and headquarter in Japan are satisfies with their overall profit performance (refer to Table 5 Interview data of Japanese Headquarter (HQ) in Tokyo Japan). Based on JETRO report enable to confirm that Thailand still an attractive location for Japanese investors (JETRO, 2017). Despite, the performance of subsidiary in Thailand during 2015 to 1<sup>st</sup> of 2016 is medium to low due to Thailand market growth is mutually in digital products. However, they still want to stay long-term in Thailand location as long as they can make profitable from Thailand domestic customer demand (refer to Table 5). Thus, based on the questionnaire and interview data indicates that '*Japanese firm is still confident with Thailand overall business climate and Thailand is a good profitable location for Japanese firms to do business in the long-term orientation*'.

## 6. Suggestion and Recommendation for Further Research Study

'Market development and power' is the majority of IJV formation in Thailand across five industrial sectors. The next factor is '*location advantage*' whereby access of local resources is the most important dynamics driven IJV firms in Thailand. Despite, a few of respondents were selected '*technology development*' as their motive factors. Thus, technology transfer from Japanese to Local IJV partner should be focus for further study whereby it's was limited in literature.

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**THE RELATIONSHIP BETWEEN CHARISMATIC LEADERSHIP AND EMPLOYEE PERFORMANCE : A CASE STUDY OF ENLIGHTENMENT EDUCATION & TECHNOLOGY GROUP.**Wang Nan Nan<sup>1</sup>, Prapatsorn Kittimanorom<sup>2</sup><sup>1-2</sup>Master of Business Administration Rajapruk University Nonthaburi 11130, Thailand**ABSTRACT**

The objectives of this research were three-fold; The first is to look at the performance of the charismatic leadership. The second is the values of employees performance in Enlightenment Education & Technology Group. Finally, it aims to show the relationship between charismatic leadership and employee performance. A structured questionnaire was used to collect sample data of 130 employees of Enlightenment Education & Technology Group. Descriptive statistical methods were used to analyze the data of frequency, mean and standard deviation, and the Pearson correlation coefficient was evaluated to evaluate the linear correlation strength between variables.

The purpose of this paper is to study the impact of leadership on employee performance. This study collected data from 130 employees from Enlightenment Education & Technology Group. In this study, questionnaires were used to collect data to test hypotheses. Then use statistical analysis techniques including regression analysis.

The results showed that charismatic leadership and employee performance were reported at a high level ( $M=4.55$ ;  $4.81$ ,  $SD = 0.11$ ;  $0.11$ ). In addition, there is a significant positive correlation between charismatic leadership and employee performance. The main contribution of this paper is to provide empirical evidence on the impact of charismatic leadership on employee performance. In addition, the results of this study are important to both managers and employees.

**Results and conclusion:** Based on factor analysis and data statistics, respondents rated the performance of charismatic leaders and employees highly, but through correlation analysis, the correlation between charismatic leaders and employees was moderate.

**Key words:** Charismatic leadership; Employee performance

**INTRODUCTION**

More and more companies set different rules and regulations to improve the efficiency of employees, but they neglect to encourage employees in the form of leadership charisma. Charismatic leadership encourages followers to achieve higher levels of performance, exert greater effort, and demonstrate more commitment than other types of leadership. (Bass & Avolio, Yammarino & Bass (1990)); The connection of charismatic leadership and team cohesion, members are inspired by leaders' inspiration and confidence, their psychological changes, and the realization of team goals shows more solidarity and cooperation and job satisfaction, causing changes in the team atmosphere, thereby enhancing team cohesion, team cohesion, and teamwork performance are positively related. (Pillai and Williams (2004)).

As a company of the Enlightenment Education & Technology Group as an example, they lead employees with charismatic leadership style and have their own unique management style. This company mainly focuses on the education industry. Enlightenment Education & Technology Group was established on 20 November 1990, by Li Hong (Michael Li) an English teacher. He is an outstanding charismatic leader at Ji Nan city, Shan dong province. There are 2 learning centers, vocational training centers, and offices in Shandong province which is focus on: (1) preparing students for the TOEFL, SAT, ACT GRE, GMAT, IELTS and LSAT. (2) Including preparing students for the National English Graduate Exam, Teenage English Courses, Pop English (Kindergarten and Primary School English).

**Literature review****2. Charismatic Leadership**

Charismatic Leadership is a trait often associated with leaders and the world is full of examples of people being described as charismatic leaders. The term charismatic comes from the ancient Greek word Charisma, which means grace, kindness, and life. Charismatic people are considered as graceful and virtuous.

1) Self-confidence is considered one of the most influential motivators and regulators of behavior in people's everyday lives (Bandura, 1986).

2) Kohut's point of view (1984) is the lofty ideal and goal that he believes lofty aspirations are the goal of transcendence.

3) Clear expression of abilities of Bentham's Theory is someone clearly express their own ideas, and have a strong ability to understand

4) Firm belief in goals of McKelvey (1997) in "organizational realism" about a firm belief that there is a reality out there external to the observer within which this truth exists. The quest to know this truth based on reality is plagued with uncertainty. someone's beliefs as unshakable, emphasizing that so strong that they cannot be destroyed or altered.

5) Unconventional behavior, the main purpose of Fischer's revisionist theory is to account for the unique character of large urban areas, specifically in terms of their capacity to generate forms of unconventional behavior - deviance, innovation, political dissidence, and so forth. While unconventional behavior represents the central focus of his overall argument, its relevance to urban ethnicity is both direct and compelling.

### **Structure and Measurement of Charismatic Leadership**

Existing research on charismatic leadership measures mainly through qualitative and quantitative methods. One is to directly measure charismatic leadership perceived by the department, and the other is to represent charismatic leadership by measuring the charismatic behavior of the leader. Bass (1985) and Avolio et al. (1999) in the study of transformational leadership behaviors developed the Multifarious Leadership Questionnaire and named one of these dimensions as "leadership charm." This leadership charisma scale includes "proud", "More than 12 issues, such as "respecting self-interest," "respecting subordinates," "expressing power and confidence," and "talking about values." Li Chaoping and Shi Kan (2015) are also leaders in transformational leadership.

In the study of behavior, eight problem items were used to measure the charisma of the leader. The main contents included excellent business abilities, cheerful minds, a strong sense of innovation, and strong careers. The above charismatic leadership scales based on the research of transformational leadership behaviors have two defects: First, leadership charisma is regarded as a sub-dimension of "transformation leadership", and it cannot accurately measure charisma collars (Conger et al., 1997). The second is that this scale only focuses on the behavioral characteristics of the leader, but does not reflect the perception of the subordinates. Kirkpatrick and Locke (1996) selected three core factors to replace the charismatic leader through a literature review. Measurements of behavior, including vision, vision implementation, and communication style, have some implications for this measurement method, but at the same time they also pointed out that a standardized approach should be used to examine the structural dimensions of charismatic leadership behavior.

Conger and Kanungo (1988, 1998) proposed that charismatic leaders are attributed to followers' perceptions of leader behavior, and developed a set of questionnaires for measuring leadership charisma called the C-K scale. The scale includes sensitivity to the environment, sensitivity to subordinate needs, strategic vision and expression,

Five subscales of human risk-taking and unconventional behavior, with a total of 20 questions. The scale developed by Conger and Kanungo further captures the specific behavior of the charismatic leader but also ignores the perception of subordinate perception in the scale. Waldman et al. (2001) used seven problem items to measure the charisma of leadership, measured the perceived charisma of the subordinates and the charismatic behavior of the leaders respectively. They adopted the "demonstration in achieving the goal" and "transmitting high performance." Looking forward to the four missions of "transmitting a sense of mission" and "providing an advanced vision" to measure charismatic behavior, adopting "has great confidence in my leadership", "making people feel comfortable around him/her," "making People respected the results of the 3 items of measurement behavior, and the reliability of the scale was 0.90. Waldman's scale has a certain reference for taking separate measurement methods, but its scale is simply established based on the theoretical description, and the structural validity is low. It needs further inspection.

The research of Pillai and Williams (2004) found that after the connection of charismatic leadership and team cohesion, members are inspired by leaders' inspiration and confidence, their psychological changes, and the realization of team goals shows more solidarity and cooperation and job satisfaction, causing Changes in the team atmosphere, thereby enhancing team cohesion, team cohesion, and teamwork performance are positively related. After linking charismatic leadership with



organizational citizenship behavior, team members, led by charismatic leadership, entice more employees to perform more coloristic behaviors, thereby continuously improving team performance.

Bass & Avolio, Yammarino & Bass (1990) found that charismatic leadership encourages followers to achieve higher levels of performance, exert greater effort, and demonstrate more commitment than other types of leadership. The study found that charismatic leadership behavior has a positive impact on the subordinate's organizational citizenship behavior. Charismatic leaders encourage subordinates to surpass their own interests for the benefit of the organization and have a profound and unusual influence on their subordinates. They can inspire, awaken, and inspire subordinates to make greater efforts to achieve organizational goals. The charismatic leader, through the care of each employee, cares about the daily life and development needs of each subordinate and provides training, guidance, and advice for each person's different situations. These characteristics help to make followers perceive the team or organization. Members' personal concern, according to the psychological contract theory, employees will show more extra-role behavior.

Robinson and Morrison (1995) found that charismatic leaders can guide individual members to eliminate personal beliefs, promote mutual trust among members, and increase members' loyalty and sense of belonging, thus improving employee's organizational citizenship behavior, psychological contract, and organization. The relationship between citizenship behaviors can be affected by trust. When employees feel that the organization has undermined the psychological contract, it will reduce the trust of the organization, and the erosion of trust for loyalty will reduce the willingness of employees to participate in the organization-oriented citizen behavior.

Taiwan scholars Wang Zhou and Jiang (2005) conducted empirical research on 300 ERP companies in the former top 500 companies in Taiwan and found that charismatic leadership behaviors are more relevant for enhancing team cohesion and improving organizational performance.

Zhang Zhijie(2011) also studied the impact of charismatic leadership on team performance. The research will be charm power leadership theory and team theory to explore the impact of charismatic leadership at the team level. From both in theory, it analyzes the impact of team cohesion and organizational citizenship on team performance in China's public organizations .It also proves through empirical research that there is a positive correlation between charismatic leadership style and team performance.

## **2. Employee Performance**

Employee performance is defined as whether a person executes their job duties and responsibilities well. Many companies assess their employee performance on an annual or quarterly basis in order to define certain areas that need improvement. Performance is a critical factor in organizational success. Frederick Herzberg (1968) “Two Factor Theory” and measurement of the effectiveness of the company's performance.1) Quality of Work 2) workload 3) Time in work.

### **Factors of Employee performance**

#### **(1) personality**

There is a close relationship between personality traits and innovation ability. Individuals with innovative personality become the new talent based on the internal. Good creative personality is generally composed of individual autonomy, innovative intention and innovative spirit (Gao Dao Cai, 2007). Christina (2004) argues that the more personality traits individuals have, such as autonomy, independent judgment, widespread interest, and a firm sense of their own innovation, the more innovative they are. Dudeck et al. (1991) found that interest, self-discipline, and persistence are key enablers of innovation. Research by Seibert et al. (2001) shows that proactive personality promotes the improvement of innovation.

#### **(2) motivation**

Internal motivation is one of the important influencing factors of innovation performance. Employees with more internal motivation are less likely to be externally disturbed and tend to think many new ways to try and explore. Amabile (2004) research shows that internal motivation can promote the emergence of innovative ideas, supportive external motivation is conducive to the implementation of innovative ideas, and controlled external motivation can hinder the development of innovative activities. The study by Lu Xiaojun and Zhang Guoliang (2007) found that internal motivation played an important role in promoting the innovation behavior of individuals and played an advantageous role in the production phase and implementation phase of the innovation concept.

However, external motivation only had obvious effects on the implementation of innovative ideas. Predictors have no significant effect on activities in other phases.

### **(3) Values**

The staff's value factors mentioned here refer to the employees' opinions on the value of innovative behavior, which to a certain extent affect the execution and promotion of employee's creativity. Rice (2006) Schwartz the Value Survey, an empirical study of nine Egyptian organizations, shows that the more employees value the value of self-reliance, the higher their level of innovation, and those who value subordination or authority as the dominant the value of the type of staff, its innovative level is relatively low.

### **(4) leadership style**

Organizational leadership can also play a key role in employee innovation. Studies by Tierney and Farmer (1999) show that management style factors have a very significant impact on employee innovation behavior. Oldham et al. (1996) empirically examined the impact of supportive and managerial management on employee innovation behavior. The former refers to the leaders' concerns about the feelings and perceptions of employees, the willingness to listen to and willingness to adopt and support employee suggestions, and the latter Refers to the higher authorities tend to arbitrariness, hoping to take some means to manipulate the staff's thinking and behavior. The results show that there is a positive correlation between supportive management and employee innovation performance, whereas the control management is the opposite. Managers' incentives to employees will prompt them to submit more innovative ideas and demonstrate more innovative behaviors. Amabile, Baiyun Tao and other scholars (1996,2007) respectively, studies have shown that the quality of leadership - the relationship between members of the supportive leadership of the staff are innovative behavior has a positive predictive effect; and organizational management control of staff innovation Behavior has a negative predictive effect.

Internal and external system factors of employees affect employee performance to varying degrees, while employee innovation self-efficacy belongs to internal system factors of employees.

Masterson & Stamper's research(2003), the perception of employee performance on the relationship between individuals and organizations includes many dimensions, and the perception of insider identity is mainly to measure employee's sense of belonging in the organization. Within a team, whether an individual can be recognized and whether his personal expectations can be achieved depends not only on the individual's level of effort, but also on whether or not to obtain insider identity, whether it is supported by the organization, and depends on personal expectations and teamwork. The degree of expectation of match and the degree of experience between the member and the team.

A comparative study by Derek et al. (2003) on the banking industry in the United States and Hong Kong shows that cohesion enhances the team members' teamwork and efficiency, thereby promoting group performance improvement.

Moorman and Blakely (1995) study that organizational beliefs, values, and norms affect organizational citizenship behavior, and organizational beliefs and values are organizational cultures. Employees achieve a certain degree of socialization of values and goals as well as history and language. Values and goals will be internalized into employees' personal values and personal goals, thereby motivating employees to demonstrate more positive behaviors in order to achieve personal goals.

Zeng Shengwei (2010) used 101 teams as the object to explore the mechanism of team cohesion affecting team performance. The study found that team cohesion is related to organizational citizenship behavior and team performance, and organizational citizenship behavior plays an intermediary role in team cohesion and team performance.

Festinger, Schacter & Back (1950) research shows that highly cohesive teams can establish good work rules and put pressure on members to comply with these rules. Extensive empirical evidence shows that highly cohesive teams have a positive effect on team performance.

The Relationships Between Charismatic Leadership & employee Performance

#### **1. Cyclical Inspiration**

Leaders who are charismatic by nature create a tremendous first impression upon employees. The Business Perspectives website states that charisma is associated with something new and exciting,

especially for struggling organizations. Staff members respond to the charm, persuasion and extroverted manner of this type of manager by becoming energized workers. In turn, the leader is lauded by the business world in which he works, and this can feed his desire to increase productivity. He will use his magnetism in speeches to subordinates to inspire their work toward his vision. The relationship between leaders and employees is thus cyclical as each entity works to impress the other.

### 2. Emotional Bond

Bonding between charismatic managers and their staff members occurs quickly. Employees naturally follow a leader they believe is emotionally invested in them and the business. According to the University of Houston, Victoria, charismatic leaders and their followers have strong emotional connections. Charismatic leaders easily express their empathy and concern for the individuals they work with. These managers convince employees in group settings as well as in one-on-one meetings that they are important to her personally, whether that's true or not. Workers perform better for leaders with whom they form a personal connection. If the leader proves to be insincere, employee backlash can result in poor performance as these workers express resentment and disappointment.

### 3. Spiritual Experience

Even though the relationship between managers and employees is a business one, a charismatic leader can wield an almost spiritual power over subordinates. "Psychology Today" calls the charismatic leader's ability to inspire followers a primary attribute of this management style. Those who work for this type of manager often report their relationship as one of "serving" a visionary leader. Faith in such a leader has a positive impact on employee performance, but employees can lose faith in the entire organization if a charismatic leader lets them down.

### 4. Combination of Styles

Charismatic leadership is often more akin to traditional authoritarian management than participatory management approaches that allow employees to share in decision-making responsibilities and learn to become leaders themselves. If the naturally charismatic leader combines her natural attributes of enthusiasm and magnetism with empowering methods that guide employee growth and professionalism, the business is likely to flourish more than under a singular management approach. This combining of styles does require the leader to put aside her tendency toward egotistic recognition in favor of a role that serves her indirectly, as the business is seen as more of a group effort.

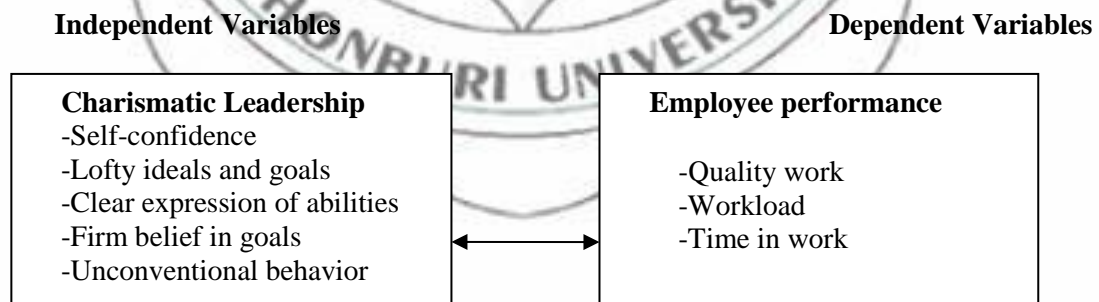


FIGURE 1.1 Conceptual Frameworks

## METHODOLOGY

### 1. POPULATION AND SAMPLE

1.1 The personnel used in the study were staff of the Enlightenment Education & Technology Group with a population of 210.

1.2 The size of the population sample used in the study is taken into account by the number of employees. Stratified random sampling is divided into the following two categories: teacher groups and department managers

### 2. THE DEVELOPMENT OF INSTRUMENTS

Closed questionnaires are questionnaires developed by researchers based on conceptual frameworks derived from theoretical and applied research. These questions are divided into 4 parts.

**part1** : :The questionnaire on gender, age, education, personal factors of the title questionnaire. Closed, there is only one answer.



**Part 2:** 1. Self-confidence 2. Lofty ideals and goals 3. Clear expression of abilities 4. Firm belief in goals 5. Unconventional behavior. This is a closed issue. Only one answer. Using the Likert scale, there are 5 levels to choose from.

**Part 3 :** 1. Quality work 2. Workload 3. Time in work in work is the last question. Only one answer. Using the Likert scale, there are 5 levels to choose from.

**Part 4:** Feedback and Suggestions Solved

### 3. DATA COLLECTION

3.1 The questionnaires researchers distributed to 130 employees. The period for data collection was from February to March 2017.

3.2 The data were studied in terms of related concepts, theories and research as well as articles from media, periodicals, textbooks and the internet.

### 4. RESEARCH METHOD

Cronbach's alpha showed the questionnaire to reach acceptable reliability. The Leadership sub scale consisted of 5 items ( $\bar{X}$  = 4.55), the Performance sub scale consisted of 3 items ( $\bar{X}$  = 4.81).

#### Results

#### 1. Charismatic Leadership

Table1 Mean and Std. Deviation of Leadership

Charismatic leadership	$\bar{X}$	SD	level	Ranking
1. Self-confidence	4.88	.18	High	2
2. Lofty ideals and goals	4.73	.25	High	4
3. Clear expression of abilities	4.90	.15	High	1
4. Firm belief in goals	4.72	.24	High	5
5. Unconventional behavior	4.78	.20	High	3
<b>Total</b>	4.55	.11	High	

#### 2. Performance

Table2 Mean and Std. Deviation of employee Performance

Employee performance	$\bar{X}$	SD	Level	Ranking
1. Quality of work	4.90	.14	High	1
2. workload	4.70	.21	High	3
3. Time in work	4.81	.21	High	2
<b>Total</b>	4.81	.11	High	

#### 3. Relation

Table3 Charismatic Leadership and performance

Charismatic leadership	Employee performance		
	(r)	Sig	Level
Charismatic leadership	.752**	.000*	Strong

\*\* . Correlation is significant at the .01 level (2-tailed)

Form table 3 had shown

Pearson correlation of Charismatic leadership and employee = .752\*\*

P-Value = .000\*. In conclusion, the printouts indicate that the strength of association between the variables is weak ( $r = .752^{**}$ ), and that the correlation coefficient is very highly significantly different from zero ( $P < 0.005$ ). It shows that charismatic leadership and employee performance have an strong correlation.

### RESEARCH CONCLUSION

#### 2. SUMMARY

As can be seen from each table and data, leadership has a positive impact on employee performance.

The mechanism of action between two variables is that leadership directly affects employee performance.

### 3. SUGGESTIONS

1. Strengthen cross-level research. Previous studies have mostly analyzed the relationship between charismatic leadership and leadership effectiveness from an individual level.

2. Charismatic leaders should focus on communication between different departments within the organization to understand roles and responsibilities. We must concentrate on integrating these efforts so as to maximize the benefits for the organization.

### 3. LIMITATIONS OF RESEARCH

#### (1) Limitations of data

This study that the data was a cross-sectional study design. In principle, the impact of charismatic leadership on employee performance should be. The surveys were conducted at different time periods, and our current research survey was not dynamic. This method failed to take into account the dynamic changes in time and the transformation into cohesion.

#### (2) Limitations of Samples and Procedures

This study is aimed at the education industry in the country. In the beginning I hope that the structure of the sample is representative. However, because of the limitations of the actual conditions, the sample obtained mainly concentrates in Jinan City, Shandong Province, and because the scale of the company is not large enough, the sample size is limited.

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**Barriers to enter into a Foreign Market: A study on Ceramic Industry in Lampang, Thailand**

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**Abstract**

Global Markets are opening more and more, and the forces of liberalization as well as globalization are underway. Globalization is like a double edged sword, it offers both opportunities as well as challenges for related businesses. It has become seemingly more important and critical for SMEs to enter into foreign markets for their survival, growth opportunities and job creation. It is not easy to enter or target a foreign market for SMEs as they have certain limitation like capital, human resource, and knowledge of the foreign market. SMEs need to do study and understand the underlying barriers which can hinder its potential to enter into a foreign market and be ready to face any barrier which may exist.

The study research attempts to identify the barriers to enter into a foreign market faced by SMEs of the ceramic cluster in Lampang. This research paper investigates export barriers as exporting is a common way of entering into a foreign market and how it effects the competitiveness in a region dominated by SMEs. This study employed mixed method research strategy, by combining qualitative and quantitative methods. Data were obtained by two mediums: (a) quantitative data collection through questionnaire survey from 75 respondents, (b) qualitative data by conducting face-to-face interview with principals in ten manufacturing firms, and five representatives of supporting institution.

Conceptual framework was drawn on the Porter's diamond and Uppsala model and correlation analysis was used which is common for Cluster initiatives. The study shows the key economic and social barriers which are faced by SMEs in Lampang to enter into the foreign market. The main recommendation of this study is changing attitudes of entrepreneurs towards the understandings of the importance of collaboration of different institutions with in the region and encouraging positive cooperation between them.

**Keywords: SMEs, export barriers, competitiveness**

**Introduction**

Small and medium-sized enterprises (SMEs) play an important role in the world economy and contribute substantially to income, output and employment. Their role is more vital in developing economies and economies in transition as they help to transform the region into a high-income group. SMEs have been cited as a major driver and the foundation of Thailand's economy. As per data from The Government Public Relations Department (2017), SMEs account for 99 percent of Thailand's enterprises and 78 percent of the total employment in the country, more than 90 percent of Thai exports come from SMEs. SMEs are the backbone of the Thai economy, and contribute significantly to the country's social and economic development (Sahakij Picharn, 2007; OECD, 2011). SMEs are important to economic growth and significantly essential to generate employment (Harvie and Lee, 2005; World Bank, 2009).

Exporting to another country has many benefits for SMEs which assist them to become more competitive and make a goodwill for their respective Countries. However, despite the need for SMEs to internationalize, little is known about the barriers that hinder or slow down the process (see Laufs and Schwens, 2014). This, despite an increasing number of international SMEs failing to thrive, is regardless of the size of the economy (Hulbert et al., 2013). The failure rates are extremely high for emerging countries as mentioned by Khalique et al. (2011).

**Statement of Problem and Objectives of the study**

Almost all the firms in the Lampang Ceramic cluster are SME's and they play a very important role in the region economy. Fabio Russo (UNIDO, A tool to increase SME exports 2005) "Small and medium enterprises (SMEs) usually have difficulty exporting to foreign markets: they may lack the necessary knowledge and financing, may not meet foreign regulatory requirements, or may produce products in quantities or quality that are not adequate for foreign buyers, among many other potential problems. However, these problem can often be overcome by SMEs if they have proper knowledge of the barriers and are well prepared in conjunction with other related industries, by combining their knowledge, financial resources and contacts within an export consortium, SMEs can



significantly improve their export potential and reduce the costs and risks involved in penetrating foreign markets.

The researcher is curious in understanding the ceramic cluster in Lampang, barriers faced by them while exporting and the effects to the overall competitiveness of the cluster. Research questions of this study are as follows:

- a. Would language difference and social approaches would work as a barrier for Lampang SMEs to enter into foreign markets?
- b. Would insufficient R&D investments work as a barrier for Lampang SMEs to enter into foreign markets?
- c. Would legal procedural complexity and lack of express service would work as a barrier for Lampang SMEs to enter into foreign countries?
- d. What can assist the cluster to be competitive?

Entering foreign markets has been a topic of extensive debate for the past decades, yet researchers agree that more research needs to be done, moreover current research are more focused on MNCs (Hennart and Slangen, 2014; Arslan et al., 2015). Mostly research in regards to entering into a foreign market has been centered on MNCs, hence SMEs were left behind as MNC have generated a lot of interest in business diaspora (Brouthers and Hennart, 2007). There are very few existing international research on SMEs in Lampang and the barriers to export, this paper tends to explore to give an overview on what problems they face which can be helpful. Some of the objectives of the study are below:

- a. To gain an overview of Lampang Small and medium Enterprise Industry.
- b. To explore current problems in the Lampang Small and medium Enterprise Industry and find the possible way to solve the problem.
- c. To understand the barriers faced by Lampang Small and medium Enterprise while exporting their products.
- d. To conclude the impact of barriers to internationalization on SME cluster and to the competitiveness of the region.

### **Scope of the study**

This research has limited its scope to only study the SMEs in the Lampang region in the North Thailand and the sampling is narrowed down to Ceramic companies doing business on tableware product. The study is focused on the tableware industry, one of the main collaborators of the ceramic cluster.

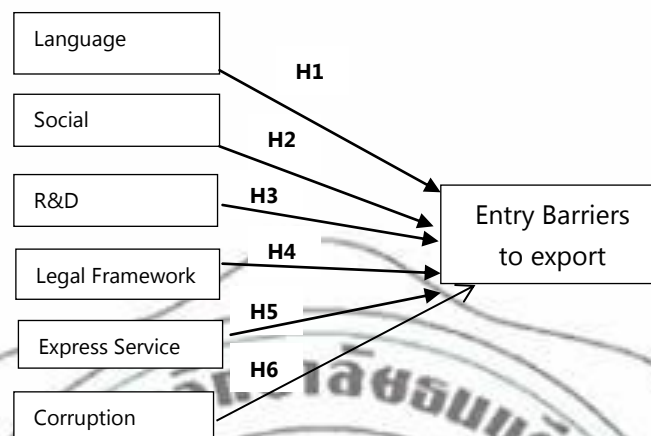
The study can be done deeply, understanding the whole relevant environment from a common man, to white collar and blue collar employees, and also the policy makers as the researcher stay in Lampang and have been teaching in a college in Lampang. There are many areas of concern on which light can be thrown, highlight important issues, so that necessary changes can be made in functioning of the ceramic cluster and ceramic firms to improve their overall performance and be more competitive.

### **Conceptual framework and Hypotheses**

Many theories were studied and analyzed to find the factors which might affect the SMEs going international, Michael Porter's Diamond Model along with Uppsala model was thoroughly studied but there were some limitation as they are developed for developed economy and might not be relevant for Lampang Region.

The following variables were found from different papers, research and articles which are language barrier, social approaches, research and development, legal framework, express service and corruption in home country.

Based on the extant literature review on socio-economic barriers to entering foreign, this paper proposes the following research model.



**Fig 1.1: Conceptual Framework**

Hypothesis illustrates that all the independent variables has effect on the dependent variables to certain degree which can differ depending upon the type of industry.

H1: Language difference between home and host country would work as a barrier for Lampang SMEs to enter into foreign markets.

H2: Difference in social approaches between home and host country would work as a barrier for Lampang SMEs to enter into foreign markets.

H3: Insufficient R&D investments would work as a barrier for Lampang SMEs to enter into foreign markets.

H4: Legal procedural complexity in the home country would work as a barrier for Lampang SMEs to enter into foreign countries.

H5: Lack of express service within Lampang would work as a barrier for Lampang SMEs to enter into foreign markets

H6: Corruption in the home economy would work as a barrier for Lampang SMEs to enter into foreign markets.

### Literature Review

Recent economic slowdown of Thai economy along with major demographic changes have become a thorn to Thai companies. Although SMEs provide a large chunk of employment to local people, the whole focus has been on Multinational companies. Whereas the SMEs are hit hard by the challenges posed by the aforesaid changes in economy and demography. One of the best way to overcome this hurdle is to look at other economies and going beyond boundaries. Internationalization among small and medium-sized enterprises (SMEs) is a topic of a grown importance, owing to the observed growth effects of globalization, and the demonstrated capacity of SMEs to drive economic development at national, regional, and global levels.

Slangen (2014) had noted that research on SMEs internationalization and relevant strategies are still inconclusive, and a need for further research. Pan and Tse (2000) have emphasized that there are a number of entry mode choices available to firms to enter foreign markets. Prominent among those are export (both direct and indirect), contractual agreements, such a licensing and franchising, joint ventures, acquisitions and wholly owned greenfield investment. The choice of entry is an important strategic decision with substantial bearing on a firm's commitment to resources, risks faced from the host market (Hill et al., 1990), and level of control (Anderson and Gatington, 1986).

Lu and Beamish (2001) explained that entering into foreign markets is one of the most important decisions for any SME in order to increase customer base and maintain organizational growth. Firms enter foreign markets in a number of ways including exporting, licensing, joint venture, acquisitions or greenfield investment (Pan and Tse, 2000). However, exports have been identified as the most dominant and popular entry mode choice for SMEs because of the lower cost commitment and degree of risk involved (Katsikeas et al., 2000; Leonidou et al., 2002; Wheeler et al., 2008). Similarly,

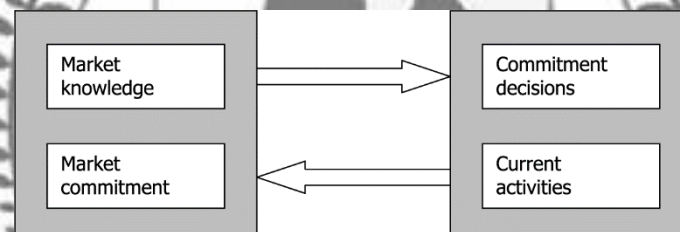
Leonidou et al. (2010) pointed out that SMEs tended to move into foreign markets mainly as exporters because it was the cheapest, simplest and quickest way to achieve internationalization.

A number of scholars have attempted to explore the prominent export barriers including Cavusgil and Nevin (1981), Cavusgil (1984), Gripsrud (1990), Cavusgil and Zou (1994), Cavusgil and Yeoh (1994) and Tesfom and Lutz (2006). However, Uner et al. (2013) pointed out that despite the plethora of studies, little consensus exists due to differences in method and content. They also pointed out, rightly, about the dearth of theoretical framework in explaining export barriers. Although there is scant evidence, suggested by Laufs and Schwens (2014), institutional assessment in expounding export barriers is rare.

Due to differences in institutional settings, export barriers for developed countries could be very different from export barriers in emerging countries.

### Uppsala Model

Swedish Researchers from Uppsala University (Sweden) had criticisms regarding the existing theories on international movement of firms during the period of 1970 to 1980. They believed that most of the theories overlooked cultural differences along with international foundation of firms required to overcome the hurdle of going international. Therefore, Swedish researchers developed their own model as a more independent model to explain the sequential steps in the direction of increased foreign dedication (Johanson & Vahlne, 1977; 1990).



Source: Johanson and Vahlne (1977)

Uppsala model predicts and describe the internationalization process of firms. It depicts four core concepts: market commitment, market knowledge, current activities and commitment decisions. These four concepts are then divided into state aspect and change aspects. The link with each other and effect each other simultaneously. The internationalization model gives an overview on two parts of internationalization process, a) the commitment to engage in operations in a specific foreign market develops according to the so-called establishment chain b) firms tend to enter new markets with successively greater psychic distance.

### Economic Barriers

Economic Barriers North (1990) defined 'institution' as humanly devised constraints that structure political, economic and social interactions. There are formal institutions that include government system, legal procedures etc. and informal institutions that include social and cultural components. Political and legal institutional constraints are part of formal institutions and work as economic barriers for SME internationalization. Politics is the combination of efforts by government, and other bodies and groups, to give future direction to the country - considering the value and interest that people hold - in addition to maintaining governmental and state affairs (Daunton, 2011).

### Social Barriers

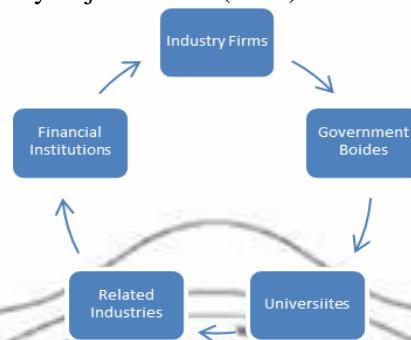
The social and cultural environment, which form part of informal institutional dimensions as suggested by North (1990), include the attitudes, tastes, beliefs, behaviours, lifestyle and relationships among the population. Business activities objectively meet the demands of the people, whereas, the demands of the people are based on social needs, functional requirements and cultural aspects. In cases of international business activities, the role of the social and cultural environment is more predominant. By crossing the national boundary through the internationalization process, firms involve themselves with a different culture and society (Gomes et al., 2011, p.238).

### SME Cluster and its actors

"A cluster is a geographically proximate group of interconnected companies and associated institutions in a specific field based on commonalities and complementarities," Porter. There are many different companies as well as associated institution in the cluster as defined by Porter (2008). Orjan



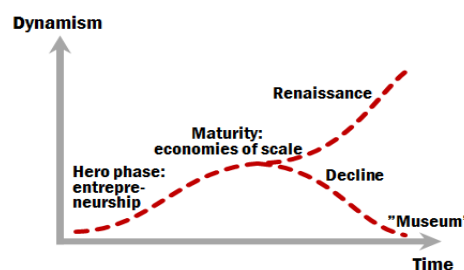
Solvell (2008) states that, “Many types of firms and organizations constitute the set of actors on the cluster stage. Six actors identified by Orjan Solvell (2008) are detailed below:



**Fig 1.2: Actors of Cluster (Source: The Red Book, Orjan Solvell-2009)**

**Cluster life cycle**

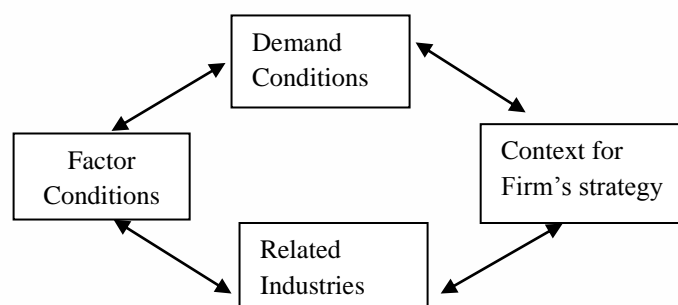
Every business they start small and then they grow, and cluster follows the same trend. Cluster life cycle is similar to the development of the industry life cycle in many aspects. As a rule, the stage is described by the age and the growth of the cluster in analogy to the industry life cycle (Enright 2003, Dalum et al. 2005).



**Figure 1.3: Cluster Life Cycle (Source: The Green Book, Solvell-2003)**

**Porter’s Diamond Model**

Porter did a four-year research on competitiveness in focusing on 10 nations during early 90’s, the studies had shown many remarkable examples of the niche industries with the right valuable proposition to specific target market demands from the aggregation of a large number of firms where by their own individual, they would not be able to stand up for the competition. The condition explained by Porter’s Diamond model in which represents a relationship and the interaction of the strategy at the national level and the firm level into four driving factors as the “cluster”.



**Fig 1.4: Diamond Model (Source: Clusters and Competition, Porter-2008)**

Porter's diamond assists business leaders to analyze which competitive factors may reside in their company's home country, and which of these factors may be exploited to gain global competitive advantages. Business leaders can also use the Porter's diamond model during a phase of internationalization, in which leaders may use the model to analyze whether or not the home market factors support the process of internationalization, and whether or not the conditions found in the home country are able to create competitive advantages on a global scale.

### 1. Research Methodology

This research study employs quantitative and qualitative approaches for the research. The quantitative method consists of the systematic empirical studies which involves quantifying through the assistance of mathematics and statistics. Whereas qualitative method is studying things in their natural settings, attempting to make sense of, or to interpret, phenomena in terms of the meanings people bring to them. Researcher uses the mix method approach to shed lights on the barriers faced by SMEs when or while they would like to export. Two types of data have been used in the assessment:

1. Interviews with players selected from all sectors of the cluster. (Companies, Education, Government as well as NGO's)
2. Questionnaire distributed to the member companies in the cluster.

#### Population and study sample

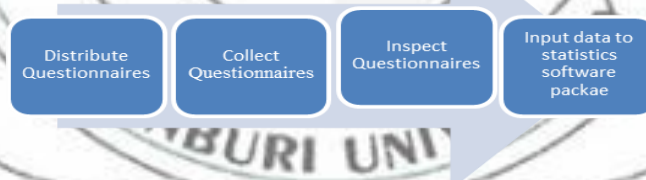
There are more than 200 Ceramic firms in the Ceramic Industry in Lampang, being comprised of medium, small and very small enterprises. Most of exporting firms in Lampang were engaged in tableware business (Source: Lampang Ceramic Association, 2013). Researcher concentrates on the tableware firms in the ceramic industry, so as the data collection will be easier and viable.

Lampang ceramic industry is comprised of numerous and different types of SMEs, hence quantitative or qualitative analysis alone will not give a clear view and proper understanding of the data and come to a proper conclusion. In order to understand the export barriers faced by SMEs and its effects to competitiveness of a region, this research employed a combined method, which includes both quantitative and qualitative, which is also known as mix method approach.

The sample size for the above paper was the 104 tableware firms.

#### Method of Data collection

Quantitative data were collected through questionnaires with Likert rating scale, based on 5 scales of (1) strongly disagree, (2) disagree, neutral, agree and strongly agree. Questionnaires were distributed through email to 104 tableware firms. There was lack of communication as most of the firms spoke Thai Language and hence, the researcher took assistance of the local Thai teacher.



**Fig 1.4: Quantitative analysis Process design**

Sample size for the qualitative research interviews were chosen by snowball technique in total 15 interviews were conducted to find variable framework with different groups of interviewees ranging from firms, related industries and government bodies. Sample size for the quantitative analysis were all the 104 table ware firms given by the Lampang Ceramic Association and confirmed with Department of Industrial Promotion, Thailand.

Table 1.1 *Summary of respondents in interviews*

Groups	Occupation/ Industry	No.
Related Industries	High ranking officials	3
SMEs	Entrepreneur and senior officials	10
Education Institutes	Presidents and Deans	2

Two types of data have been used in the assessment:

1. Interviews with players selected from all sectors of the cluster. (Companies, Education, Government as well as NGO's)
2. Questionnaire distributed to the member companies in the cluster.

All the questionnaires were inspected for their correctness and that all categories were answered, and the Thai translated questionnaires were aligned with the English questionnaires.

2. Result

## Data Findings using Research tools

Relationship between export barriers, language, social approach and R& D in context to the Lampang Ceramic Cluster.

	Export barriers (DE)	Language	Social	R&D
Export barriers (DE)	1	.050	.164	.303**
Language	.342	1	.088	.169
Social	.088	.110	1	.238*
R&D	.303**	.169	.238*	1
	70	70	70	70

\*\* . Correlation is significant at the 0.01 level (1-tailed).

Fig 1.5: Statistical data of Research Variables.

## Correlation Analysis

- Research and Development is significantly related to export barrier with a relation of 0.303 at the level of significance of 0.01.
- Social factors effects and acts as an export barriers with a weak positive relation of .164 at the level of significance of 0.01.
- Language is seen as a major export barrier with a positive relation of .303 at the level of significance of 0.01.

Relationship between export barrier, legal framework, express service and corruption in context to the Lampang Ceramic Cluster.

	Export barriers.(DE)	Legal Framework	Express Service	Corruption
Export barriers. (DE)	1	.193	.092	.027
Legal Framework	.193	1	.121	.117
Express Service	.092	.121	1	.281**
Corruption	.027	.117	.281**	1
	70	70	70	70

\*\* . Correlation is significant at the 0.01 level (1-tailed).

Fig 4.2: Statistical data of Research Variables.

- Corruption is a vital export barrier in Lampang with a positive relation of .027 at the level of significance of 0.01.
- Express Services is a weak export barrier with a weak relation of .117 at the level of significance of 0.01
- Legal framework is significant export barrier related to Competitiveness with a positive relation of 0.281 at the level of significance of 0.01.



**Qualitative Analysis**

- a. Would language difference and social approaches would work as a barrier for Lampang SMEs to enter into foreign markets?

Most of the respondent agreed that language difference and social approaches works a barrier for SMEs who wants to enter into foreign markets through export. As one of the respondent who owns a large manufacturing firm,

*“Thai is our National Language, and the large population are not good in communicating in English Language. Moreover, it’s not easy to find or hire employees who are good in English or Chinese Language. Fresh graduates and young people who are efficient in English Language prefer to work at Bangkok or Chiangmai”*

During the research it was found that Social approaches to business is one of the main reason which works as a barrier to export. It was found that the firms had lack of cooperation, trust and faith is that most of the firms are owned by family members and they had rivalry between each other for many decades, they prefer to keep their business dealings secret in fear of losing clients to their competitors. *“Ceramic firms work in closed group and share very little knowledge, sometimes it is not easy to get information from them as they fear to lose data on sales, production and labour to their competitors”*, confirmed by one of the government officials in the Lampang region”.

During the research it was found that there were some small grouping between some firms and one of the main reason was to have competitive advantage over their competitor. One of the respondent informed, *“I share some information with my close friends in the industry, three of four people. But I generally do not share secrets and it just shared with in our family members”*.

They informed that the ceramic industries attracts mostly casual workers who work on daily wage basis and have little motivation to work or acquire traits of the job. Most of the highly qualified labour prefer in other industry as ceramic firms did not enjoy the goodwill of the population.

- b. Would insufficient R&D investments work as a barrier for Lampang SMEs to enter into foreign markets?

All of the respondent agreed that the economic slowdown has had a big impact on the ceramic firms in the cluster and they have been hit hard, therefore they don’t invest much into R&D. Lack of long term strategy and capital is one of the main reason for not focusing on research and development. *“Every business has cycle, and I think our industry is going on the path to extinct in a period of 10 or 20 years, Lampang will no longer be known for the ceramic industries. It is just a matter how long we can survive, as we cannot compete and we do not have capability to similar to China and our cost are going up comparably”*, respondent answered.

- c. Would legal procedural complexity and lack of express service would work as a barrier for Lampang SMEs to enter into foreign countries?

During research it was found that the support system and related service providers were not proficient enough to provide assistance to the SMEs. One of the respondent who owned a Micro Enterprise said that, *“export is admirable as it will generate good income for us and more important for firm like us as we employ underprivileged population. But it’s too complex and required lots of paper work to export and send to other countries”*.

One of the respondent who owned a medium firm informed us that, *“Although the international market is lucrative but there are lots of risk involved. Due to technology things have become a bit easier, but still Lampang lacks support systems to help small firms like us to be able to export and find relevant market”*.

- d. What can assist the cluster to be competitive?

Most of the respondents informed that research and development, and assistance from the government can assist the cluster to be competitive. Research and development in design is seen as a key factor which can ensure the ceramic industry can survive. Most of the respondent viewed that the cost of production was high as due to usage of old technology and the firms lack capital to be invested in acquiring new technology.

*“Ceramic firms use outdated technology which is not only harmful for the employees creating bad work environment, but it also ensures that the productivity remains less. Innovation should not only be limited to design or product but also to the process which would create a better working*

*environment and hence attract skilled labour”*, as viewed by the dean of Business Faculty in a college in Lampang.

## **5. Conclusion**

### **Quantitative Analysis**

SMEs faces many barriers while going international which can be attributed to the fact that social approaches varies in different regions and in Lampang it was found that SMEs have low level of trust and faith between them. General population have low level of English language skills and this acts as an important export barrier. SMEs lack capital and due to lack of cooperation they don't have much say and hence Research and Development takes a back seat and the focus is on survival. Related industries which provides legal support and logistics services are scattered with very few involvement and engagement with SMES. This act as barrier as the small firms lack the skill and knowledge to export. Corruption is also a barrier to export which effects the smaller firms and they perceive to get export license is not easy..

Hence, through our quantitative analysis we found that all our hypothesis were accepted and the variables had weak or moderate positive relationship when statistically tested on Descriptive and Correlation statistics.

### **Qualitative Analysis: Respondents viewpoint**

Most of the respondent informed that researcher that the ceramic cluster and the firms in the cluster are going through a hard phase due to many factors, which has lack of competitiveness and it is effecting the region, whereby people losing their jobs.

Below are the research questions which were analyzed along with their qualitative finding:

1.From the view point of the respondent on the firms' cooperation in the cluster we can conclude that Language and social approaches are a major barrier to export for SMEs in Lampang. It was found that the firms lack trust and faith, they don't have positive vibes. SME's firms in Lampang in Ceramic cluster are owned by family members and they look at each other as competitor.

2.Firms do not invest in Research and Development. Most of the SME firms don't provide competitive salary when compared to other industries. Hence, these firms attract low cost labour who are unskilled and less productive. Newly graduated students from college and institutes do not chose to work in the ceramic firms as due to the work environment and less pay.

3.Most of the respondent agreed that relative industries which provide legal service as well as logistics need to play a major role in supporting SMEs. Respondents agreed that government has to work as a catalyst and form better policies to support the ceramic cluster.

4.From the respondent point of view ceramic firms have to know the importance of educational institutions and have better cooperation with them, to hire skilled staff passing out as well as make specialized courses in ceramic industry.

5.Ceramic cluster have to generate goodwill in the society was well talked by the respondent and they felt that ceramic firms have lost the touch with the local population.

### **Recommendations of this study**

The following recommendations are advised by the researches based on various literature review and understanding of Lampang SMEs approach to business.

1.Create shared value: Porter (2011), Solution lies in the principle of shared value, which involves creating economic value in a way that also created value for society by addressing its needs and challenges

2.Encourage Cooperation between firms (Large and Small): All SME entrepreneur should take trip or workshop together to other export led SME cluster which will enable them to understand cluster development.

3.Education Program run by the SMEs association: Ceramic SMEs should encourage students to take up some projects in the ceramic industry. Ceramic cluster should provide some scholarship programs and encourage institution to have some vocational courses tailor made for the ceramic industry similar to the automotive industry.

4.Container freight station: In collaboration with related industries and related industries SMEs should initiate a container freight station similar to one stop service. It should have a customer office along with a customer officer handling export related documents.



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**A Study of Motivation for Learning English: The Case of Chinese Non-English Major Students at Rangsit University, Thailand**Weifeng Li<sup>1</sup>, Rebecca K. Webb, Ph.D.<sup>2</sup><sup>1</sup> Student, Master of Arts, English for Professions, Rangsit University<sup>2</sup> Lecturer, Master of Arts, English for Professions, Rangsit University**Abstract**

This study is aimed to identify and analyze which type of motivation plays a more important role among Chinese students in learning English in an EFL environment: instrumental motivation or integrative motivation; Moreover, what were the motivation factors of choosing Thailand, an EFL environment, as a study abroad destination. In this study, the sample group is the Chinese students who take English courses at Rangsit University. The 100 respondents were chosen randomly from different academic majors. A questionnaire, which was adjusted from Gardner's AMTB, was developed to collect the data. The data were analyzed using a statistical software program. The results of the study indicate that Chinese students had a high motivation and instrumental motivation had a greater influence compared with integrative motivation in the process of learning English. Moreover, most students chose Thailand as their study abroad destination because of personal preference to Thailand, low cost in education, exchange programs and easy to enroll and graduate. These findings indicate a clear understanding of the motivation among Chinese exchange students in English learning and can contribute to improved teaching and curriculum design for English educators and educational institutions. Furthermore, it can serve as reference source for related studies in the future.

**Key words: Chinese students, English learning, Instrumental Motivation, Integrative Motivation**

**1. Introduction****1.1. Background and research question statement.**

There is no doubt that motivation plays a vital role in the language acquisition, especially in long-term language learning (Reeves, S. 2017). In the past decades, the study of language learning motivation has been popular, and English is the most studied subject trending in the world today (Lai, H. T. 2013). Many researchers have done related research on English learning motivation among Chinese students in different context (China or English-speaking countries) and have shown the students who have strong motivation in learning always make good achievement, but the study in the context of EFL environment is still inconclusive. Moreover, more and more Chinese students chose Thailand as their study abroad destination with the development of APEC and Thailand tourism industry in recent years. However, most of them were not Thai language major and some of them came to Thailand as soon as they graduated from high schools. Therefore, it is very significant to find out the reasons and interesting to get a comparison with other related research. The research was carried out in Rangsit University as a sample of a Thailand context.

**2. Literature Review****2.1 Definition and types of motivation.**

Motivation is complicated, and it has been defined in many ways by different researchers in psychology and other scientific disciplines. For example, Keller (1983) indicates that motivation refers to the choices people make as to what experiences or goals they will approach or avoid, and the degree of effort they will exert in this respect. Gömleksiz (2001) refers that there are lots of factors affecting the motivation on language learning. Such as, age, parents, cognitive level, socio-economic and cultural background. Basically, all the factors could be divided into 4 types. This is namely, intrinsic motivation, extrinsic motivation, instrumental motivation and integrative motivation. While Gardner & Lambert, (1972) proposed that there are two major types of motivation, instrumental and integrative in the classical social psychological theory of language learning, which is the topical focus of this research.

**2.2 Integrative motivation and instrumental motivation**

Integrative motivation is considered as positive attitudes toward learning language for integrating into that group, or at least an interest in meeting and interacting with group members. Instrumental motivation refers to more practical reasons for learning a language, such as examination requirement or to have a better job opportunity in the future (Gardner,1982).

**2.3 Relative research on Chinese students' motivation in English learning**

Research on L2 motivation has been conducted for more than three decades in China (Boo et al., 2015). China has attracted a large amount of research on motivation and L2 learning because of having one of the largest English learner populations in the world. For example, Wong Yinmun (2001) employed Gardner's model to investigate L2 motivation among third-year Chinese undergraduates in learning ESL at the University Tunku Abdul Rahman, Malaysia. The results showed that instrumental motivation appears to be more important among these students in learning a second language. Y. Wang (2010) also used this model to explore L2 motivation among first-year polytechnic university students. This study suggests that positive English learning or using experience of other family members increases students' motivation, and students with higher entry exam scores demonstrated higher motivation, which indicates a mostly instrumental motivation. Furthermore, Gardner's Attitude/Motivation Test Battery (AMTB) was carried out in Croatia, Poland, Romania, and Spain. The results obtained indicate that the AMTB is clearly appropriate to these four countries. So, Gardner's ATMB model has been validated by several large-scale empirical studies in various L2 learning environments.

### 3. Methodology

#### 3.1. Respondents

The respondents were 100 Chinese Students (52 males and 48 females) who study in different academic majors at Rangsit University, Thailand. However, none are English majors. They were chosen from undergraduate and graduate students by using a simple random sampling method, and the age range is from 18 to 26 years old.

#### 3.2 Instrumentation

Questionnaire was used for the research and was made up of two parts. Part A identified personal details and background, for example their age, major and main instruction language. Part B was designed according to Gardner's Attitude/Motivation Test Battery (AMTB) to examine students' English Learning Motivation, which is reported to have a good reliability and validity and has been applied to the research on L2 motivation. The first 10 items assessed student's instrumental motivation, and the last 10 assessed the student's integrative motivation. Finally, the AMTB 7-point Likert Scale format was adjusted to 5-point Likert Scale, ranging from "Strongly Disagree" to "Strongly Agree," and the question items were selected and adapted to the research context in Part B.

In the context of this study, the adaptations to the AMTB included the following:

- 1) The items on the parental motivation is eliminated because all the respondents were older than 17 compared to the original version of AMTB which was designed for grade 11 Canadian students (Gardner, 1985)
- 2) The negative items are avoided so that students can understand questions clearly.
- 3) The scale about anxiety and performance of teachers is eliminated as well because that is out of research range.

#### 3.3 Procedure

The questionnaire took about one month, and It was distributed to Chinese students at Rangsit University. Firstly, I designed the questionnaire and requested my adviser to check its validity. After that, the questionnaire was submitted to the English Department for approval for distribution, and then selected teachers were requested to hand out the questionnaires to relevant Chinese students in their class. Before doing that, the teachers gave a simple explanation. Each questionnaire was collected by the teachers after the respondents finished and the researcher checked for incompleteness or missing answers. Finally, the data was organized, calculated and analyzed with a statistical software program.

### Findings

This study focused on examining Chinese students' motivation for studying English, with an emphasis on a comparison and contrast of instrumental and integrative motivation. In addition, the study also will determine the reasons for Chinese students' choosing Thailand as their study abroad destination. The results show that instrumental motivation was more influential on students in learning English. In other words, students were more motivated instrumentally in learning English (see figure 1).

Types of motivation	Mean	N	Std. Deviation
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Instrumental motivation	3.50	100	.532
Integrative motivation	3.35	100	.542
Total	3.424	200	.541

**Figure 1. Results of motivation for studying English**

As the above figure shows, the instrumental motivation was higher than integrative motivation in mean. Most students did not come to Thailand to learn English and were not English majors (see figure 4). So, students were inclined to simply pass exams or prepare for future work. The total mean is 3.424, which reveals that students had a high motivation or demand for studying English in general.

To give more detailed analysis, two other tables were made to demonstrate the relationship between major and motivation (see figures 2 and 3).

Figure 2 shows the relationship between major and instrumental motivation, the result shows that the students' mean, and SD are 3.499 and 0.532. Furthermore, the data also shows the mean, SD in every major and each question (Q13-Q22). In descending order, the ranking of majors is CA, IB, MBA, BA, ICB, FM, and respondents from CA, IB and MBA were more motivated instrumentally. The figure also shows that the answers to Q13, Q16, Q17, Q18 and Q21 earned high mean. Q13 was designed on future job, Q16 and Q17 were about academic requirements, and Q18 and Q21 were for pursuing higher education. So, it suggests that students learning English were likely to get a good job in the future, graduate, and pursue further study.

Figure 3 below shows the relationship between major and integrative motivation, the data indicates that the students' mean, and SD are 3.35 and 0.542, and the students from IB, CA, BA majors had higher mean than other majors, relatively. This implies that the students from those three majors were more motivated integratively in learning English. Moreover, the data also shows that Q23, Q28 and Q30 earned high average mean. It suggests that students tended to acquire good friends more easily among English-speaking people, understand English movies or songs and help them on overseas trips.

Major and items	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Mean and SD of Instrumental motivation	
IB	Mean	3.81	3.23	3.27	3.85	3.63	3.88	3.44	3.42	4.02	3.42	3.60
	N	52	52	52	52	52	52	52	52	52	52	52
	Std. Deviation	.971	.899	1.069	.916	.991	.808	.895	.977	.828	1.126	.510
ICB	Mean	2.90	3.45	3.80	2.90	3.40	2.90	3.30	3.40	3.05	3.55	3.27
	N	20	20	20	20	20	20	20	20	20	20	20
	Std. Deviation	1.119	.945	.616	.553	1.142	.788	1.081	.995	1.234	.945	.456
MBA	Mean	3.73	3.55	3.82	3.27	4.00	4.00	3.27	3.45	2.91	3.64	3.56
	N	11	11	11	11	11	11	11	11	11	11	11
	Std. Deviation	1.104	1.128	.874	1.009	1.000	.894	.905	.934	1.044	.674	.5163
BA	Mean	4.00	3.20	3.20	3.80	3.60	3.40	3.80	3.20	3.80	3.40	3.54
	N	5	5	5	5	5	5	5	5	5	5	5
	Std. Deviation	.707	1.483	1.095	1.304	1.140	.548	1.304	1.304	.837	1.140	.677
CA	Mean	4.33	3.67	3.67	3.33	4.00	4.33	3.67	4.33	2.67	4.00	3.80
	N	3	3	3	3	3	3	3	3	3	3	3
	Std. Deviation	.577	.577	1.155	.577	1.000	.577	.577	1.155	.577	.000	.361
FM	Mean	3.22	2.78	3.11	3.67	3.33	3.44	3.33	3.11	3.33	3.11	3.24
	N	9	9	9	9	9	9	9	9	9	9	9
	Std. Deviation	1.202	1.394	.928	1.000	1.225	.882	1.225	.782	1.500	.782	.660
Total	Mean	3.59	3.28	3.43	3.56	3.61	3.65	3.41	3.41	3.59	3.46	3.50
	N	100	100	100	100	100	100	100	100	100	100	100
	Std. Deviation	1.074	1.006	.977	.946	1.043	.892	.965	.975	1.102	.999	.532

Figure 2. The relationship between major and instrumental motivation

Reasons	Frequency
Personal preference to Thailand	33
Low cost	19
Exchange programs	18
Easy to enroll and graduate	12
Short distance	5
Other factors	13
Total	100

Figure 4. Results of reasons for choosing Thailand as study abroad destination

The above table shows the reasons for studying at Rangsit University. The dominant factor was personal preference for Thailand with 33 (33%) of the respondents. For example, some students like Thai people and culture or Thailand's beautiful tropical views, and its lifestyle. Following up with low education cost and exchange program accounted for 19% and 18% among respondents, and easy to enroll and graduate was also another important factor, which accounted for 12% of the respondents. On the contrary, only a few of students took short distance into account. Last but not least, other factors, for example, like Thai language has 13 or 13% of all respondents. So, the main reasons or motivation for Chinese students studying in Thailand could be personal preference, low cost, exchange programs and easy to enroll and graduate.

#### **4. Discussion and Conclusion.**

##### **5.1 Discussion**

The study suggests that Chinese students were more instrumentally motivated in learning English, which is comparable with the findings in many other studies (Wong Yinmun, 2001; Wang, 2010). The result is aligned with some other researchers who believe that in foreign language settings students are more instrumentally oriented. According to Dornyei, because of a lack of contact, FL students do not have experience with the L2 community and cannot form attitudes about such groups, thus causing a lack of desire to integrate into that society. This can be seen in learners of English in relatively insular countries like China (Liu, 2007) and Korea (Pae, 2008). These students have limited exposure to native English speakers, therefore they may not want to integrate or identify themselves with an English-speaking society. Besides, the respondents also had a high integrative motivation, because English has become a global language for most EFL learners, the motivation to study English is the desire to communicate with other nonnative speakers, not just a set community. Kormos and Csizer argue that when it comes to learning English, there is no specific community to associate with. Due to the change in global languages, there is no model community to identify with, consequently leading to a broader classification of integrative motivation.

In addition, the main reasons or motivation for choosing Thailand as study abroad destination was personal preference to Thailand, low cost and easy to enroll and graduate. It also implies that Chinese students were more focus on practical purpose in learning English.

Moreover, as the respondents of the study was composed of students in Rangsit University, so its findings may be limited to other populations or contexts. In other words, the questionnaire is not comprehensive enough. But it would be worth conducting further studies by a larger scope of samples.

##### **5.2 Conclusion**

The research provided a picture on the English learning motivation among Chinese students and the motivation or reasons for studying in Thailand.

Firstly, instrumental motivation does play a more important role among Chinese Students in learning English at Rangsit University. The study also reveals that students' integrative motivation was also high, because students need to speak English to associate with others in or out of the school. In addition, the research offered a rough concept of L2 motivation in Thailand context.

Secondly, the dominant reasons for Chinese students choosing Thailand as a study abroad destination are for personal preference for the country, low education cost, academic requirement and to enroll and graduate easily. It suggests that the maximum attraction for Chinese students was study environment, not for pursuing high quality education or learning the English language. So, these findings may be beneficial to educational institutions in Thailand for improving study abroad policies to attract more foreign students in the future.

#### **5. Acknowledgement**

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**Writing Problems in English Paragraph Writing: A Case Study of Thai EFL Students Majoring in Business English**

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Email: [walaipornchaya@hotmail.com](mailto:walaipornchaya@hotmail.com)**Abstract**

Of all the four English skills, writing is perceived as the most difficult skill among EFL students. In Thailand, English is a compulsory course and it is taught as a foreign language, so Thai EFL students have had many problems writing in English. Many studies revealed different types of writing problems in Thai EFL students, especially at the sentence and paragraph levels. This study therefore aimed to examine writing problems in terms of errors committed in English paragraph writing in Thai students majoring in Business Writing. The study mainly focused on the four main types of errors. 84 pieces of English paragraphs written by 14 second year Business English major students who enrolled in the Writing Skills course were used as the sources of data for analysis. The findings indicated that the students committed errors in four main types: grammatical, syntactic, lexical errors as well as non-idiom. The total number of errors occurred in the first drafts was 358; whereas, 164 errors were found in the second drafts. The findings also showed that in their first drafts, grammatical error was the most frequent type of errors committed by the students, (51.68%), followed by syntactic errors (24.30%), lexical errors (15.92%) and non-idiom expression (8.10%) respectively. The students tended to make fewer errors in the second drafts, and they also had the problems in using the grammar the most in their second drafts. The findings implied that the process-based approach of writing instruction helped to improve the students' writing quality.

**Key Words:** Writing problems in English paragraph writing, Types of errors, Writing skills, Grammatical error

**Background of the Study**

Writing is one of the most important skills for students learning English as a foreign language. It reflects the power of students in mastering writing techniques, therefore the students need to be aware of writing as a process and as well as a product. Hyland (2003) stated that writing is an important productive skill and it is considered as the most important skill that second and foreign language students should enhance. According to White and Arndt (1991) writing is a means of communication in that it helps people share ideas, arouse emotions, and defend opinions. Learning writing also includes the learning of writing skills, rules and conventions (Okasha & Hamdi, 2014). However, when writing is considered, many writing scholars and researchers agreed that it is the most difficult of all the four skills of English and most English learners pay less attention to writing than listening, speaking or reading (White & Arndt, 1991; Ahmadian, Rahimi & Asefi, 2016). In addition, writing appears the most problematic of EFL students, according to the evaluation of students' ability to command English language as a communicative tool (Ahmadian, Rahimi & Asefi, 2016) and writing tended to be neglected among second and foreign language learners (White & Arndt, 1991). In Thai context, it is similar to other EFL learners, Rodsawang (2017) pointed that it appeared that EFL learners face some problems, of which native speakers could easily overcome, and they have been overlooked because not so much research has raised such issues to the public, especially in EFL Thai learners. Some writing problems of Thai students are the agreement of subject and verb, grammatical errors, noun uses, variation of the form of verb, noun and pronoun, prepositions, collocations, or syntactical errors (Watcharapunyawong & Usaha, 2013; Ferris & Roberts, 2001; Ferris, 2006; Darus & Subramaniam, 2009; Nayan & Jusoff, 2009 as cited in Rodsawang, 2017).

In White and Arndt's conceptualization (1991) writing is a complex cognitive process that needs the continuation of intellectual efforts on a considerable period. As the concept of writing has changed from that of a product to a process, the emphasis of the writing teachers also changed to provide more assistance during the prewriting, writing and post writing phases of assigned writing tasks. Since writing is a continuous complex process of expressions, it is not a simple process with its native language and rather even more a complicated process for foreign language learners. Bereiter and Scardamalia (1982) point out that writing is a highly complex process involving in many important aspects such as organization, form and features, purposes and goals, audience expectation, evaluation of the communication. Many researchers agreeably asserted writing in ESL/EFL context is

a complex, difficult and demanding task (Al-Khairy, 2013). English writing cannot be acquired easily because EFL students need appropriate period of time to practice and train themselves. Also, they need to learn some crucial methods and principles of English writing in order to compose a piece of writing well and successfully (Hyland, 2003). For teachers, writing is considered a difficult skill to teach because it includes several components: a) a comprehensive command of grammar, b) grasp on spellings and punctuation, c) use of appropriate vocabulary, d) suitable style to meet the expected readers' expectations and e) organizational skills (Musa, 2010). It is time-consuming to read their papers and giving feedback and assign them to revise it again. Therefore, writing in English seems to be neglected in English classes both in the first and second language program (White & Ardnt, 1991). Based on the importance of writing and its difficulties, it is therefore necessary for writing teachers to put effort to help students, particularly in EFL context to master writing skills.

As writing in English is essential and it is globally used as international tool to communicate in business area, academic purposes, politics and so on whether through the traditional way of correspondence or through email writing. The ability in writing the English paragraph plays an important role in both contemporary academic and future careers. Hence, the key role of English language ability in writing has an important and encouraging impact on the academic achievement of students. This is because the ability to write various genres of writing effectively through English is becoming increasingly important in our global community (Weigle, 2007). Therefore, it is necessary for Thai English instructors to develop their students to compete in the global economic world. Also, Thai EFL students need to pay more attention to writing skills to attend the labor market that is very competitive among the people in the ASEAN countries members. In the current situation of my institute, as an English instructor who has some experience teaching writing to business English major students, there is an urgent need to improve those students. The results of the students' evaluation in each semester during the past five years were discussed in the Business English Department meeting, Faculty of Liberal Arts at Southeast Bangkok College (SBC). It was reported that the students had a lot of problems writing in English. The students majoring in business English program are required to take three writing courses for graduation. Writing skills are the basic course and the pre-requisite course for the other two writing related to business English: business writing and writing business report. This is clear that writing skills are very important and they need to develop their writing ability, not only for the requirement of the curriculum but also for their future career. If they communicate with their customers or other businesspeople through writing whether emails or any channels of communication ineffectively, the misunderstanding among business occurs. It may cause huge damages in business and losses to their organization. Thus, it is interesting to investigate students' writing problems; the results of the study may help to develop the writing ability of English major students at SBC.

### **Errors in English writing.**

For EFL/ESL writers writing is usually a difficult task and they easily make errors because of the different in the linguistic features, syntactic features, as well as the rhetorical patterns of various types of written genres different from their native language. Therefore, writing appears to be the most difficult for ESL/EFL learners to master since writing in English requires linguistic, syntactic and semantic knowledge. Byrne (1988) discusses that writing is problematic for both native and foreign language learners. The main problems in writing of both L1 and EFL learners concerns psychological problems, linguistic problems and cognitive problems. Olsen (1999) points out that some EFL writers cannot produce an effective writing product because of the inadequacy of syntactic and lexical competence, which causes them confused with the systems of the target language they are learning resulting committing errors in writing in English. Furthermore, in writing, writers are required to write effectively to meet certain standards of English rhetorical devices, using accurate grammar and correct sentence structure, and developing a well-organized paragraph in a way that meets their audience's expectations (Brown, 2001). Therefore, EFL/ESL writers usually committing errors and they cannot fulfill their writing goal; they cannot find a way to effectively and successfully communicate their thoughts in writing, and cannot organize their ideas into paragraphs that fulfill their readers' expectation (Reid & Lindstrom, 1985). The failure in writing has stemmed from the limit of their linguistic knowledge, which is the ability in searching for appropriate lexical or syntactic choice, is another problem for EFL/ESL writers (Weigle, 2007). Hedge (1988) also mentions that



EFL/ESL writers need help with linguistic forms such as grammar, sentence structure, and organization of texts.

Recently, many previous studies on analyzing ESL/EFL students' errors have been examined attempting to help improve the students' writing ability hoping that the revelation of students' errors would be beneficial to writing instructors and learners. Ferris et al's study (2000, cited in Ferris, 2003, p. 148) revealed that the common errors found in EFL/ESL students writing can be categorized into 16 types. The researcher summarized the most frequent types of errors consisting of (1) errors in sentence structure, 2) errors in word choice, 3) errors in verb tense, 4) errors in noun ending (singular/plural) and 5) errors in verb form. Sattayatham and Honsa (2007) focused on error analysis of 237 first year medical students from the four medical schools at Mahidol University. The data were collected through students' sentences and paragraph translation, from Thai into English, and opinion paragraph writing. The top-ten errors of each medical school and of all medical schools were identified. The findings show that there is dependency between sentence level translation and paragraph level translation, and between paragraph level translation and opinion paragraph writing. Darus and Subramaniam's investigation (2009) conducted with Malaysian students aiming at analyzing on errors in their essays. The results of the study revealed that six most common errors committed by the participants were singular/plural form, verb tense, word choice, preposition, subject-verb agreement and word order. Watcharapunyawong and Usaha (2013) analyzed writing errors caused by the interference of the Thai language, regarded as the first language (L1), in three writing genres: narration, description, and comparison/contrast. The results revealed that the first language interference errors fell into 16 categories: verb tense, word choice, sentence structure, article, preposition, modal/auxiliary, singular/plural form, fragment, verb form, pronoun, run-on sentence, infinitive/gerund, transition, subject-verb agreement, parallel structure, and comparison structure, respectively, and the number of frequent errors made in each type of written tasks was apparently different. In narration, the most frequent errors found were verb tenses while the most frequent errors in description and comparison/contrast were article, sentence structure, word choice, singular/plural form, and subject-verb agreement, respectively.

### **Research Questions**

The study aimed to find out the answer for three research questions as in the following.

1. What are the major problems, in terms of errors students encountered in paragraph writing in English?
2. What are the differences in the error types in English paragraph writing in the first and second drafts of students?

### **Methodology**

This study was a classroom research designed as a qualitative study using the content of English paragraph writing written by the second year students majoring in Business English in the Faculty of Liberal Arts, in a private Thai university. It was mainly aimed to examine the errors in English paragraph writing in three type of paragraph writing: narrative, descriptive, and opinion committed by the students.

### **Participants.**

The participants were purposively selected from the 2<sup>nd</sup> year students enrolled in 201204-Writing Skills, a compulsory course for Business English major students. This course aims to develop students' writing skills in various aspects particularly writing complex sentence structure, different genres of paragraph writing including narrative, descriptive, comparison and contrast and opinion.

### **Data Collection Procedures**

The data obtained were three type of students' English paragraph writing: narrative, descriptive, and opinion paragraphs written by the students enrolled in 201204-Writing Skills. The students were taught to learn and practice writing skills based on the process-based approach of writing instruction. The students were assigned to write a paragraph on their selected topic beginning with the pre-writing stage, writing the first draft, and revising the second draft. In the pre-writing stage, they brainstormed for the ideas and plan for writing the first draft (making an outline, or using the organizing think sheet), after receiving the teacher's feedback, they wrote the first draft of at least 100-150 words of a paragraph. Teacher gave the feedback and made comment on their 1<sup>st</sup> draft, returned the first drafts. Finally, they revised the first drafts of their paragraphs. The teacher collected

students' first drafts and second drafts for data analysis. Therefore, there were totally 84 pieces of paragraphs with three types of paragraph writing as the main source of data used for data analysis.

### Findings and Discussion

#### Types of errors committed by the students in their 1<sup>st</sup> drafts and second drafts.

The first research question of the study aimed to find out students' problems in English paragraphs writing in terms of errors they committed.

The results revealed that the students made totally 358 errors of all four types of errors in the first drafts whereas there were 164 errors in the second drafts. This showed that the students made fewer errors in the second drafts of their paragraphs. They had the problems in the use of grammar the most when writing a paragraph while the problem of using transition was ranked in the last type of order among sub-categories of grammatical errors. Table 1 presented a summary and types, frequency and percentage of errors.

Table 1

*A Summary of Types and Frequency of Errors in the First and Second of Students' English Paragraphs*

Error Types	1 <sup>st</sup> drafts (N=14)			2 <sup>nd</sup> drafts (N=14)		
	Number of errors	Percentage (%)	Rank	Number of errors	Percentage (%)	Rank
<b>Grammatical errors</b>						
wrong tenses & verb tense	74	20.67	1	31	18.90	1
errors in the use of articles	35	9.78	2	12	7.32	4
errors in the use agreement of verb and subjects	23	6.42	4	11	6.70	5
errors in singular and plural nouns	21	5.87	5	13	7.93	3
wrong use of prepositions	32	8.94	3	22	13.41	2
<b>Total</b>	<b>185</b>	<b>51.68</b>	<b>1</b>	<b>89</b>	<b>54.27</b>	<b>1</b>
<b>Syntactic errors</b>						
wrong transitions or missing transitions	14	3.92	3	7	4.26	3
errors of word order	33	9.22	2	17	10.37	2
- incorrect sentence structure	40	11.17	1	21	12.80	1
<b>Total</b>	<b>87</b>	<b>24.30</b>	<b>2</b>	<b>45</b>	<b>27.43</b>	<b>2</b>
<b>Lexical errors</b>						
errors in word choice	36	10.05	1	13	7.93	1
errors in the use of adjective & adverbs	21	5.87	2	8	4.88	2
<b>Total</b>	<b>57</b>	<b>15.92</b>	<b>3</b>	<b>21</b>	<b>12.81</b>	<b>3</b>
<b>Non-idiom</b> (not expressed in the correct way in English)	29	8.10	4	9	5.49	4
<b>Total Number of Errors</b>	<b>358</b>	<b>100</b>		<b>164</b>	<b>100</b>	

The results presented Table 1 demonstrate that the students committed errors in four categories: grammatical, syntactic, lexical errors as well as non-idiom. The total number of errors occurred in the first drafts was 358; whereas, the number of errors committed in the second drafts was 164 errors altogether. To be more specific, in the first type of errors, it can be clearly seen that grammatical error was the most frequent type of errors committed by the students, (51.68%), followed by syntactic errors (24.30%), lexical errors (15.92%) and non-idiom expression (8.10%) respectively. It can be concluded here that the students had the problem in using the grammar the most in writing a paragraph in English.

**Grammatical errors.**

For grammatical errors, verb tense is the most frequent error type made by the participants (20.67%); it was ranked in the first order followed by errors in the use of articles (9.87%), and the wrong use of preposition (8.94%). The errors in singular and plural nouns were in the last order with 5.87% of all five sub-categories types of grammatical errors. When the students wrote their paragraph describing a person, a given topic “*The Most Important Person in Your Life*,” they had to use both present and past tense. They were confused with the verb tenses because there are no inflected past tense verbs in the Thai language. Thus, they tended to mix the present verbs and past verbs in their paragraphs.

**Syntactic errors.**

According to the syntactic errors, it was ranked in the second order (the number of frequencies was 87 and the percentage of 24.30%) in the first drafts, but in the second drafts the number of syntactic errors decreased (the total number of frequencies was 45 with and 27.30%). When looking at the sub-categories of syntactic errors, it was revealed that incorrect sentence structures were used the most by the student (40 errors with 11.17% of all 87 syntactic errors). The use of incorrect sentence structures was the big problem for most of the students. However, they used the correct transitions in their paragraphs. This was shown in their paragraphs when they were assigned to write a simple listing paragraph by giving the reasons to discuss their idol, on the topic like “*My Inspiration*,” “*My Important Relative*,” “*My Best Friend*” or “*Good Photographers*,” “*My Best Sister*,” “*My Boyfriend*,” etc. (The students selected their own topic).

**Lexical errors.**

For lexical errors, 57 errors (15.92 %) of total errors were found in the first drafts while 21 errors of total errors (164) were produced in the second drafts. The analysis of lexical errors showed that the students had the problems in the appropriateness of word choice; 36 errors of all lexical errors were found in the students’ first drafts while the errors decreased in their second drafts with 13 errors.

**Non-idiom errors**

For non-idiom English, the results showed that the students also produced less errors of this type (9 errors with 6.91%) in the second drafts than those of the first draft (29 errors with 5.42%)

In summary, the results of error identifications from the analysis of the first drafts and the second drafts of three types of paragraph writing showed that the students committed various types of errors. However, in the second drafts after they received the feedback from the teacher, they revised their paragraphs so the number of errors of each type decreased dramatically. Some students committed the same errors in the second drafts, specifically the use of sentence structure. They wrote sentences using the wrong word order since they were confused by the Thai language order and the sentence pattern of the English language. They also used non-idiom English by translating from Thai into English. They still wrote some sentences without verbs or subjects.

**The difference between the first draft and second draft.**

To compare the differences in the errors in the samples of the students’ first drafts and second drafts of descriptive, simple listing and opinion paragraphs are illustrated below.

**Sample of a descriptive paragraph – Describing a person**

My Best Sister (The first draft)

Nawal, my best sister, she is very gentle to me. She make me happy and fun when together. I like her so much because, first of all, she like help me a lot of thing. She lends me her dress and books. And also help me pick-up to school and see you off me at school. Second, she make me smile and laugh every time when I am tense she tries to make me relax. She like to invited me watching cartoon movies and we’re go out to exercise in evening. I like to practice conversation about English language with her. because she speak English very well. She like about language and I like too. A third, she is caring and understands my moods. When I’m sad and discouraged, she tries to comfort me. So I feel happy when I to consulted her. To sum up, my best sister is very good-natured. She like to help multifarious. I like to spending time to her. Even if she is my cousin. (Words counted = 171 words)

My Best Sister (The second draft)

Nawal, my best sister, is very gentle to me. She makes me happy and fun when we are together. I like her so much. First of all, she always helps me do a lot of things. She helps me do



homework. She lends me her dress and books. She also picks me up to school and takes me back home. Secondly, she always makes me smile and laughs every time. When I am tense she tries to make me relaxed. She often invites me to watch cartoons and movies. And also we go to work out in the evening together. I like to practice English with her because she speaks English very well. She likes to practice English skills and I like it too. Thirdly, she always understands my feelings. When I am sad and discouraged, she tries to comfort me, so I feel happy. To sum up, my best sister is kind-hearted. She usually helps me. I like to spend time with her, even if she is my cousin. (Words counted = 170 words)

As shown above the first draft and second draft of a descriptive paragraph in which the students were assigned to describe an important person in their life and they selected their own topic. The highlighted parts in the first draft were the errors they made and in second drafts illustrated the correct use of each error. Obviously, there are more errors in the first draft than in the second draft. The students made errors in the use of agreement of verb and subject; he did not put an “s” when writing sentences. This students made 7 errors in this type of errors (e.g. *like, make, speak laugh* etc.), and three sentence without a verb and incorrect verbs (*I like to spending* → *I like to spend*) However, this student did not have a problem in the use of transitions, and she improves her second draft after revision. – Also see the highlighted parts for all the types of errors.

#### **Sample of a simple listing paragraph**

##### Good Photographers (The first draft)

Good photographers have four important quality. Firstly, they are very friendly. They are not arrogant with customers and make customers happy in his image to be. When they take picture, they always smiling and humble to customers. Second, good photographers are very polite. They usually speak soft and good words. For example, when they tell the model pose, they will say with sweet words and introduce better posture. Third, they have patience. Because they can be with take a photo for a long time. When they take pictures, they have to arrange elements in the photograph all the time and have to hold heavy cameras. Fourth, they have good ability of photograph. For example, they take picture pretty much, have a fluent photo and can send jobs quickly. Lastly, photographers usually looks like this. Have friendly, polite, patience and have ability of photograph. (Words counted = 143 words) non sentence

##### Good Photographers (The second draft)

Good photographers have four important qualities. Firstly, they are very friendly. They are not arrogant with customers, and they also have to make customers happy in his service. When they take pictures, they should always smile and be humble to customers. Secondly, good photographers are very polite. They usually speak softly with polite words. For example, if they want the model to pose, they will say with sweet words and show him/her to act or perform appropriately. Thirdly, good photographers need patience. Since they have to spend a long time when taking photos, they have to be patient to wait for hours. When they take pictures, they have to arrange elements in the photograph all the time and have to hold heavy cameras. Fourthly, they have good skills of taking photographs. For example, they take picture pretty much, have a fluent photo and can send jobs quickly. Lastly, photographers usually look like this. They are friendly, polite, patient and have good skills of photograph. (Words counted = 164 words)

The sample paragraphs above showed that the students committed errors in different types of errors in the first draft including grammatical errors including a singular and plural noun, (*quality qualities*), → sentences with no subject, (*Have friendly, polite, patience and have ability of photograph.*- non sentence), wrong form of verb and noun (*they always smiling* → *they always smile.*, *patience* → *patient*). When comparing the first draft to the second draft, it is clear that there are fewer errors in the second draft in the first draft, and the students wrote more words and sentences. – Also see the highlighted words and sentences in the first draft.

#### **Sample of a opinion paragraph**

##### Speaking More Than One Language (The first draft)

In my opinion, speaking more than one language is better. First, it open up the world of job opportunities. We can understand and communicate with them. The second reason is you can original language of music, enjoy reading original language of books and original language movies. The last

reason, you stay smart in touristed areas. You speak their language when bargaining and speak to them that is over-charged. So to speak more than one language is better. Language can open your mind. (words counted = 82 words)

#### Speaking More Than One Language (The second draft)

In my opinion, it is better to speak more than one language. Firstly, it opens up the world of job opportunities. As companies are becoming international, there is an important need for employees to speak more than one language. Employees will be getting paid more and can get to travel to foreign business trips for the company. Secondly, you can enjoy works of arts in their original language. There are many amazing foreign movies which are difficult to understand. If you do not speak English, you will not enjoy watching the movies. Also, there are so many good songs in different languages which are difficult to enjoy without that language. Moreover, reading books in different languages will help you understand about their culture and give you new ideas. Thirdly, you can be smarter in the tourism career. When you travel to a foreign country and know their language, the local people can't really take advantage of you. When you go shopping there are less chances of being over-charged. Bargaining with the sellers is easier. Sometimes people are happy to know you can speak their language and give you better deals. Therefore, I believe that speaking more than one language can help you communicate with people from all around the world. (Words counted = 210 words)

As illustrated in the first and second drafts of an opinion paragraph, this student wrote a short first draft (82 words), and they made some errors and only 8 sentences. The sentences used in the first draft are quite long and incorrect. Those sentences used in the first draft can be divided into short ones with clear ideas. Also, the student repeated words such as "original language" for three times instead combing them into one sentence. Pronouns are used incorrectly and inconsistently in sentences like "We" and "You" *them*" so that they made unclear ideas to readers. Interestingly, the writer used correct transitions to link the ideas from one sentence to another sentence both in the first draft and second draft clearly. This confirmed the findings of error analysis which revealed that the use of transitions was not problematic for most students in the present study.

#### Conclusion

This study investigated the errors in paragraph writing committed by Thai EFL learners and its contribution to English language teaching in Southeast Bangkok College, Bangkok. The results showed that Thai EFL students majoring in Business English have several problems in paragraph writing. The findings showed that the students made four main types of errors with 10 sub-categories of errors. The students made errors in grammatical errors the most frequently in the first drafts of their English paragraphs whereas they made the errors in using the wrong transition or missing transition the least. Similarly, in the second drafts they also committed the errors in grammar, particularly using the wrong verb tenses, but with the decrease in the number of errors. Interestingly, the reason for errors have stemmed from a lack of grammar knowledge and the use of Thai words and the structures of Thai language.

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**The Analysis of Guests' Dissatisfaction on Reviews on TripAdvisor: A Case Study of Boutique Hotels in Thailand.**

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**Abstract**

Travellers are becoming reliant on online comments and e-reviews when they plan their holiday. Many studies have published on the influence of e-review towards travellers' decision making. However, not many study analyzed e-review posted by dissatisfied guests. This paper is part of research with the purpose to retrieve 50 reviews on TripAdvisor made by guests who had negative experience in using boutique hotels in Thailand. Five dimensions of service quality, RATER, are used to categorize and analyze the data of the study. The results indicate that guests mostly comment on the tangibility of the hotels. 40 percent of guests' complains are the reliability of the hotel and staff. Staff ability to convey trust and confidence to customers are complained by 36 percent. The findings provide owners of boutique hotels with the other side of customer feedbacks in order to improve their service quality.

**Keywords**

Guests' dissatisfaction, Consumer behavior, E-review, Boutique hotel, TripAdvisor

**Introduction**

There are factors affecting the accomplishment of tourism industry such as world's economic, national security, environmental or climate change, country's reputation, and importantly tourists. In order to achieve success of tourism industry development, it is important to understand the behavior of visitors to the tourism industry. Tourists played significant role in determining the characteristics of tourism at present and in the future. One of the touristic products which affect the satisfaction of visitors visiting the destination is the accommodation. Anyone who travels to different places needs a place to stay such as hotels, guest houses, hostels, motel, etc. Accommodation can be categorized into two parts; serviced and non-serviced which work differently. Serviced accommodation offers staff to handle all the circumstances and requirements while non-serviced one does not.

According to the report of occupancy rate of accommodation business in 2017, the average of occupancy rate in Thailand was 67.49 percent which increased by 2.85 percent from the previous year. There were many factors of the positive change such as, the exemption of visa for 21 countries, new investment in MICE business, government policy to support the minor touristic provinces, etc. [1]

Apart from the regular accommodation like hotels or resorts, boutique hotels seem to be another alternative for travellers who are seeking the authentic atmosphere of the region they are visiting. Many boutique hotels in Thailand offer the sense of uniqueness and extraordinary experience to their guests. Hence, the competition of boutique hotels is significantly increasing. Awards winning, national and international certificates, and especially guests' satisfactions allow the solidier competition. Notably, the guests' positive reviews can also contribute to business to attract the potential customers. Therefore, the investigation of word of mouth is necessary particularly in hospitality. [2]

Presently, travellers rely mostly on applications or webpages for their journeys. Internet is used by businesses as the channel to communicate with their customers. Although internet is a modern way of communication used by travellers and travel agency, it has a vital importance for the tourism sector. [3] Law stated that it can be seen widely that travellers usually research and plan their itineraries using the reviews or suggestions of those who visited the same destinations. Tourism businesses, therefore, focus and keep the track on how theirs businesses are posted online. Hotel businesses, then, keep an eye on the complaints of the unsatisfied guests especially on famous travel assistant webpages and applications.

The power of technologies has had a massive impact on the way tourism businesses are promoting themselves. The development of new social media and websites is continuously developed. Tourism business should, therefore, monitor new trends and identify how they can impact their

marketing efforts. Websites and social media are important source of information and feedbacks which affect the future customers.

TripAdvisor is one of the leading websites and applications assisting travellers to have better experience in their desired destinations. Tons of travel reviews, suggestions, tips and tricks are published on TripAdvisor to help over 60 million users plan their trips and holidays. Accommodation businesses do not desire the negative e-reviews on TripAdvisor, but the 'Travelers' Choice Awards'. Consequently, word of mouth online affects the future of tourism business and hospitality.

To explore the phenomenon, this study investigates guests' dissatisfaction on reviews on TripAdvisor. To add knowledge on the hospitality, the current research identifies negative reviews of boutique hotels in Thailand and categorizes complaints into groups related to service quality standard. Accommodation businesses, then, imply the results of this study into action plan in order to create greater service and the revisit of the guests.

### **Objectives**

1. To study guests' dissatisfaction on reviews on TripAdvisor: a case study of boutique hotels in Thailand
2. To examine guests' problems experienced from the services of boutique hotels in Thailand
3. To analyze services of boutique hotels in Thailand in accordance with the quality service standard of hotel businesses.

### **Literature Review**

Administrators of service businesses like travel agencies, restaurants, or hotels always have been working hard to maintain reputation of their firms. Paying attention to dissatisfied-customers has come to the first priority of service businesses. [4] Heung and Lam suggested on their research on customer complaint behavior that most customers are likely to engage in private complaint behaviors such as word-of-mouth communication and ceasing to patronize the restaurant. It highlights that the complaint intentions of Chinese diners were quite low and they were passive about communicating dissatisfaction to restaurateurs.

### **The definition of boutique hotels**

Boutique hotels are described as personalized, customized, unique, and individual. The most important defining features of boutique hotels are cultural, historical, authenticity; the boutique hotel is not part of a chain and that it provides interesting, unique services. Kiradjian mentioned that the important defining descriptors of boutique hotels include, "social spaces such as living rooms, libraries with social rooms" and "many, high-quality in-room features". [5]

### **Service quality and satisfaction theories**

Parasuraman [6] defined that customer service expectations can be categorized into five overall dimensions (RATER): reliability, assurance, tangibles, empathy, and responsiveness. This model is also known as the "Five Dimensions of Service Quality" or SERVQUAL model.

Service failures are critical incidents in guest experiences [7] Consumer reactions to their negative experiences due to service failure can be categorized as attitudinal and behavioral. Attitudinal reactions refer to disappointment, anger, satisfaction/dissatisfaction etc., and behavioral reactions refer to complaining, leaving, switching, loyalty/disloyalty and other responses. Service failure has been a great concern to researchers and practitioners because it can damage future patronage and generate negative word of mouth. In the tourism/hospitality context, some of the studies related to service failure compared the effects of service failure and/or recovery strategies in tourism sectors between the U.S. and other countries while others focused on specific complaint behaviors of the consumers.

Dissatisfaction is one of the reactions to service failure. It is an attitudinal consequence of service failure that can influence behavior. For example, guests often complain about service failure to express their dissatisfaction with service providers and might subsequently switch to other service providers. Guests' dissatisfaction is likely to be intensified when they encounter service failures repeatedly and do not witness the service providers making sufficient recovery efforts.

### **Online complaints**

Researches that state customers' complaints in tourism and hospitality industry are often content analysis-based. Initially, researchers analyzed complaints from guest book (Manickas & Shea, 1997)[8], and specialized complaint forum (Lee & Hu, 2008)[9]. But with the increasing use of

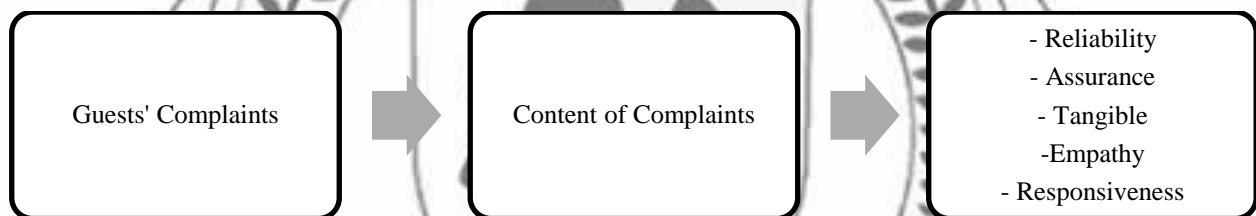
TripAdvisor, more researchers perform content analysis on TripAdvisor to examine complaints and service quality of hotels.

Negative electronic word of mouth (eWOM) is a type of consumer complaint behavior that involves communication regarding an unpleasant purchase episode and is triggered by perceived dissatisfaction with that experience (Singh & Howell, 1984)[10].

### TripAdvisor

TripAdvisor was founded in February 2000 and is now the world's largest travel site. It currently operates in 47 countries worldwide and manages 23 other travel media brands. By July 2015, it has more than 250 million reviews and 84 million members. It was first built on the idea that travelers rely on other travelers' experiences to plan or make decision for their trips. It is a user-generated content website where the users can easily post reviews, recommendations, and give ratings on accommodations, tourist attractions and any other tourism destinations (Miguéns et al., 2008)[11]. Sharing travel experience and giving suggestions to each other create a linkage between people with similar travel tastes. This concept has been accepted well in the market. According to TripAdvisor 2015, more than 160 new contributions are posted every minute. This statistic shows how impactful TripAdvisor in today's tourism and hospitality industry.

### Conceptual Framework



**Figure 1 Conceptual framework**

The conceptual framework was derived from the RATER model of SERVQUAL (Parasuraman, 1988). According to this concept, there are five elements of service in hotels that typically complained about; reliability, assurance, tangible, empathy and responsiveness.

### Research Methodology

In this research, qualitative approach was used and individual experiences that are shared on TripAdvisor were content analyzed (Lincoln & Guba, 1985) [12]. The data of this study consists of a purposeful sample of 50 negative reviews (rating poor – terrible) from TripAdvisor's list of boutique hotels in famous touristic cities of Thailand. E-reviews, then, categorized according to five aspects of service quality.

The reviews were extracted on February 4 – 14, 2018. Only negative reviews were included to avoid misinterpretation of comments written in other languages. Each comment was read word by word to ensure correctness of coding work. The data had been repeatedly analyzed and categorized using five dimensions of service quality, RATER.

**Table 1 Numbers of complaints on TripAdvisor towards boutique hotels in Thailand**

Title	No. of samples	Regions and Cities
N1 – N10	10	Northern region: Chiang Mai, Chiang Rai, Mae Hongson
NE1 – NE18	10	North-eastern region: Nakornrajasima, Buriram, Khonkaen
C1 – C10	10	Central region: Bangkok, Ayutthaya, Kanchanabury
E1 – E10	10	Eastern region: Rayong, Chantaburi, Trat
S1 – S10	10	Southern region: Phuket, Krabi, Pang-gna



**Findings**

In accordance with the first objective, table 2 identifies guests' dissatisfaction on e-reviews. The details of complains in the table were extracted from the reviews that the samples made on TripAdvisor website.

**Table 2 Guests' dissatisfaction comments on TripAdvisor**

<b>Samples</b>	<b>Details of Complaints</b>
Northern region	<ul style="list-style-type: none"> <li>- "waiter and waitress are misunderstanding about taking food and drink order..."</li> <li>- "Hotel is in bad location and too noisy even late at night..."</li> <li>- "room was too cold and dark even we tried to open all the curtains..."</li> <li>- "front desk staff was not able to communicate in English properly..."</li> <li>- "all four days staying with your hotel, I could not access to your wifi..."</li> </ul>
North-eastern region	<ul style="list-style-type: none"> <li>- "the air condition did not work and the weather outside was rather hot..."</li> <li>- "we kept waiting nearly an hour for our dinner, then it came out quite cold..."</li> <li>- "we booked through our agency in USA but when we came the staff could not find the room for us..."</li> <li>- "the wedding party was too noisy, we could not sleep..."</li> </ul>
Central region	<ul style="list-style-type: none"> <li>- "hotel's driver didn't know the shortcut; we almost missed our flight back home..."</li> <li>- "we were waiting for 2 hours for the hotel transfer from the airport, when driver came he did not apologize for the matter..."</li> <li>- "staff was not polite and sometimes used rude words to us (WTF)..."</li> <li>- "no local information leaflet or free copy Bangkok map in the hotel"</li> <li>- "spa service was not in the right standard of boutique hotel..."</li> <li>- "our minibar was not refilled on the 2<sup>nd</sup> day..."</li> <li>- "noisy next door, I think the room isn't sound-proof..."</li> </ul>
Eastern region	<ul style="list-style-type: none"> <li>- "we understand that the hotel is on the island, but food was too expensive comparing to the 5 star hotels..."</li> <li>- "hotel forgot our special requirement for our wedding anniversary..."</li> <li>- "staff cannot speak English properly..."</li> <li>- "hot shower did not work and there was no alternative from the staff..."</li> <li>- "I could smell the sea all the time in my room. We love the sea but not 24 hours..."</li> </ul>
Southern region	<ul style="list-style-type: none"> <li>- "Staff fixed the wrong problem. I requested that the air-con didn't work, but they fix the hot shower???"</li> <li>- "We waited for 30 minutes for the check-in process. We were tired from our long flight and wanted to rest..."</li> <li>- "Staff was not polite and looked aggressive when we ask for help"</li> <li>- "Seafood was not fresh as we are staying in the boutique resort by the sea. I thought it was the frozen one..."</li> <li>- "We came here for the third times; we remember all the staff here. But they could not remember us...funny?"</li> </ul>

This study identifies guests' dissatisfaction in five dimensions of service quality, RATER. According to table 3, guests mostly comment on the tangibility of the hotels. 40 percent of guests' complains are the reliability of the hotel and staff. Staff ability to convey trust and confidence to customers are complained by 36 percent.

**Table 3 Guests' comments in five dimensions of service quality, RATER.**

Service Dimension	Frequency	Percent	Guests' Comments
Reliability	20	40%	<ul style="list-style-type: none"> <li>- misunderstanding about taking food and drink orders</li> <li>- cannot provide general travel information</li> <li>- fix the wrong problem</li> <li>- forget guest's special requirement</li> </ul>
Tangible	36	72%	<ul style="list-style-type: none"> <li>- hotels are in bad location</li> <li>- condition of the room: noisy, smelly, dirty</li> <li>- hotel amenities: broken equipment, out-of-service pool</li> </ul>
Responsiveness	9	18%	<ul style="list-style-type: none"> <li>- keep waiting long time for food service</li> <li>- not promptly respond to guest's requirement</li> </ul>
Assurance	18	36%	<ul style="list-style-type: none"> <li>- staff cannot connect guest's phone to the wifi</li> <li>- impolite staff (housekeeping, porters, drivers)</li> <li>- staff cannot speak English properly</li> </ul>
Empathy	6	12%	<ul style="list-style-type: none"> <li>- no alternatives from staff to the out-of-service amenities</li> <li>- staff do not listen carefully</li> </ul>
n = 50 negative reviews on TripAdvisor (poor-terrible)			

Table 3 highlights hotel's attributes that receive complaints, along with the examples of customers' comments. Tangible factors were reported to be the most complained about attribute. Rooms are perceived to be small, outdated, sometimes smelly, and dark. Additionally, food and beverage were criticized with references to the delay of service, cold food, and not worth the money. This result supports previous studies on how the core attribute of service providers often receives the most complaints. Rooms are the most complained about attribute in the hotel, and therefore this revelation comes as unsurprising. However, it also means the management needs to improve the rooms and food and beverage quality of the hotel. To overhaul the tangible factors of hotel means to build a positive image and healthy reputation of Boutique hotels in Thailand.

## Conclusion

This study fills the research gap on the lack of analysis of guests' dissatisfaction on e-reviews towards accommodation services in Thailand. Namely boutique hotels, high standard of service should be maintained as Kiradjian (2012) mentioned that boutique hotels should provide, "social spaces such as living rooms, libraries with social rooms" and "many, high-quality in-room features". According to the figure in table 3, condition of hotels amenities and rooms are mentioned the most. This leads to the attention of the hotels administrators and management team to improve and maintain all items in good condition and ready to serve customers. The findings provide owners of boutique hotels with the other side of customer feedbacks in order to improve their service quality which. This

supports Heung and Lam work which mentions that restaurant owner should be aware of negative feedback from customers and handle the responsive strategies. Presently, TripAdvisor has power to influence on customer decisions. Only one negative comment about service quality is able to wipe away the positive ones. Promptly reply to negative reviews is suggested to show empathy and create reliability to the business. Complementary should be offered to the unsatisfied guests in order to express hotel's responsibility. To extend the current study, future research may focus on the responsiveness of the accommodation businesses to guests' dissatisfaction and reaction of the guests after receiving responses.

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**FACTORS AFFECTING TO THE SELECTION OF LOGISTICS SERVICE PROVIDERS IN THE AUTOMOTIVE PARTS INDUSTRY**

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<sup>1-4</sup> คณะบริหารธุรกิจ มหาวิทยาลัยกรุงเทพธนบุรี**ABSTRACT**

The purposes of the research were 1) to study the decision to use the Automotive Parts industrial transportation service in Amata Nakorn Industrial Estate, Chonburi province, 2) to learn factors that influence the decision to choose a service. In Amata Nakorn Industrial Estate, Chonburi Province, and 3) to compare the decision making use of the automotive parts industry in Amata Nakorn Industrial Estate, Chonburi province, according to the operator's factors. The sample of the study comprised of 210 staffs from seven manufacturers of automotive parts in Chonburi province. Research tool using in the study was questionnaire, and descriptive statistics and inferential statistics as One-way ANOVA was used in analyzing data.

The research found that:

1. The overall of relationship of service providers and customers supply chain factor was very high.
2. The overall of marketing mix factor was very high. The ranking order (from high to low) of the average scores was as follows: marketing promotion, price and product, and service.
3. The overall of transportation service decision factor was very high. The highest of the average scores was the reputation of the shipping company. The lowest of the average scores was reliance and trust in transportation of the company.
4. The different entrepreneurship factor did not show difference in transportation service decision.

**Keywords:** Logistics service Provider, Potentiality

**Introduction**

Today's trade is a world-class tournament. The trend of complexity towards goods delivering under transportation geography, which offers a longer distance, a minimum cost, making the role of logistics providers to be complex. The logistics providers can provide services to diversity area effectively.

Most business may not decide to invest in the transport operations, but decide to use a service provider from logistics providers. Because, the readiness of instruments, equipment's, vehicles, routing expertise, reducing risks in non-skilled, and saving cost. Although, the use of transport services from third-enterprise providers will cost savings, increasing the return on investment and increasing productivity per unit of investment but the factors to bring the value must be taken from the selection of the top-quality transportation system to maximize customer service response. The consideration of logistics providers is the efficiency and effectiveness of the operation. Such as, the suitability of logistics providers, the easy accessibility of transportation service, the safety of product, just-in-time delivery, the reliability of service, and the flexibility of customers' requirement response

The logistics service is subject to a contractual agreement or a de facto agreement. The carrier is responsible for being a responsibility, called contractors, to deliver the goods to the recipient at the time and place of agreement. As well as the obligation to compensate for damages or losses during the self or the external service provider, which is employed as a carrier, this responsibility also includes third party third parties.

The entrepreneurs, who need to employ the cargo carrier for delivery of goods, have the appropriate criteria and term of reference to determine the appropriate carrier. Service quality is a key factor for the selection of freight services, when selected, to serve the delivery of goods. During the work, an evaluation is required based on the guidelines on the time of delivery of the goods. Is there a loss of bus or damage to the goods? The speed control of the shipping vehicle to the standard level and

the ability to improve the job, each year requires training of drivers and cargo staff, including meeting with every quarter in order to make the job even more efficient. The reason that the business should decide to use logistics service providers due to the use of third-parties to provide specialized service specialists in providing services to the organization and be the best-in-class specialists, and provide better service and functionality. It is flexible to make better service changes and the importance of responding to the customers ' diverse needs, better than the organization or company.

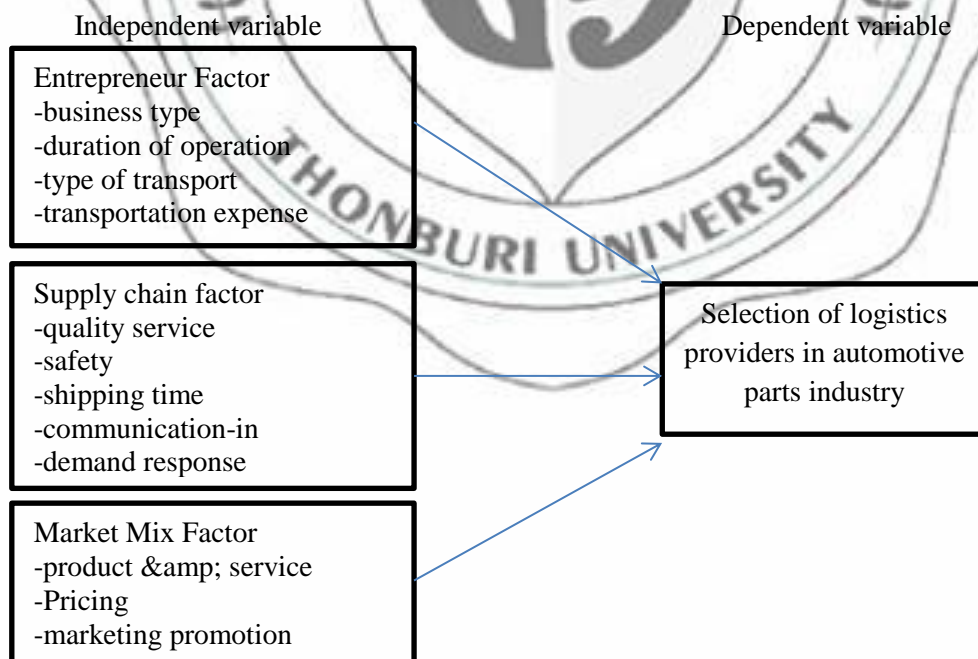
However, the foundation of the development of the logistics supply chain management system must be brought to the logistics service provider as a strategy to improve performance and competitiveness. The key to success is the management in choosing an external service provider in a LSP logistics job: Logistics Service Provider is required to rely on both excellent skills and management system. Managers must have the ability to distinguish logistics service provider that is suitable for their business. (Thanit Sorat),

Therefore, the aim of the present study is to explore the factors that influence our logistics providers in automotive parts industry, to guideline how to choose effective transportation provider criteria correspond with objectives and costs of the organization, and to guideline the selection of transport services.

#### **Research objectives**

1. To study the decision to use the Automotive Parts industrial transport service in AmataNakorn Industrial Estate, Chonburi province
2. To learn factors that influence the decision to choose a service. In AmataNakorn Industrial Estate, Chonburi Province
3. To compare the decision making use of the automotive parts industry in AmataNakorn Industrial Estate, Chonburi province, according to the operator's factors.

#### **Concept frame used in research**



### Literature Review

Sanjay Jharkharia (2007) The selection of logistics providers: An analysis of the network process (ANP) proposed consists of two parts: (1) initial screening of existing service providers and (2) final selection. After that, the ANP program was used to select the final carrier. Interoperability between users and service providers is the most important factor influencing the final selection process to help decision makers understand the complex relationships of attributes involved in decision making, which may increase Trustworthy later.

Omer Faruk Gurcan (2016) Study of selection of third party logistics providers (3PLs) with AHP applications revealed that the decision-making process was more complex due to improvements in targeting options and environments that were parallel to the technology. Even in the information technology sector, there is a great increase in options, so the dependence of one company on one company is becoming more and more important. Piling up The second alternative (B) is supported by alternatives (A and C) with the highest score of 0.444. And the third company can be explained by the company's experience in financial performance and the fact that the company has a strong infrastructure of information technology. The most important factor in choosing the company is compatibility (47.15%), followed by financial performance (25.49%), reputation (16.52%) and long term relationship (10.82%), respectively.

### Population and sample groups

The population used in this study is the automotive parts manufacturer. In Chonburi province. The sample of the study comprised of 21 staffs from seven manufacturers of automotive parts in Chonburi province. The company has made a unique selection of 7 companies, to explore the information from the warehouse department, such as the receiving department, the cargo department, the warehouse and the payment department.

1. Hino Motors Manufacturing (Thailand) Co., Ltd.
2. The Toyota Motors Thailand
3. Thonburi Automotive Assembly Co., Ltd.
4. Thai-Swedish company Panus Asset Co., Ltd.
5. Thai Auto Co., Ltd.
6. Volvo Trucks & Buses (Thailand) Co., Ltd.
7. A.P. Honda Co., Ltd.

### Data collection

Data is collected by using the primary data source and secondary data sources as follows:

1. The primary data (Primary data) is based on the gathering of a given population.
2. The secondary data (secondary data) is the information that comes from the study of the Research, Journal, Publication and publication of various agencies in both domestic and foreign countries and related research and collected in Chapter 2.

### Scoring criteria

For a query that is rating Scale to analyze the score of a query by using a 5-level evaluation question of Likert as follows: (Boon Chom Sri, 2010:121) Average between 1.00-1.50 and at least the average level between 1.51-2.50 is at least the average level between 2.51-3.50. The average value between the 3.51-3.5 is in moderate-4.50 levels. The average value between 4.51-5.00 is the largest level.

### Data analysis

1. Researchers examine the number of questionnaires and are coded in a given demographic query. More than 90 percent in order to arrange for quick and easy arrangement. It is not confusing to fill out the number and integrity of the recovered query and enter the code by using the finished PC program used for statistical analysis. 2. Data preparing with a statistical method analyzed by a computer using the finished application, which performs the 2.1 analysis. Descriptive statistics (descriptive statistics) analyze the data of each frame. With a frequency of percent and average 2.2 Inferential (statistics) statistics contain-a-one-way ANOVA It is used to test the average deviation of more than 2 groups-least significant differences (LSD). Used for comparing differences in pairs of average values.



**Research Result**

1. Most of the merchant's traders are sold in the 44.3 percent area, with the duration of business operations of 6-10 years. Semi-trailer percentage the average cost for each transport trip 1,001 – 2,000 baht 51.4 per cent

2. The relationship factors in the supply chain between service providers and customers in total ( $\bar{x} = 3.81$ ) are both included and in the considering that the highest average is the shipping time ( $\bar{x} = 3.94$ ), the secondary means of communication ( $\bar{x} = 3.83$ ), quality of service. The ( $\bar{x} = 3.82$ ) Security ( $\bar{x} = 3.75$ ) and the lowest average is the side response to the demand ( $\bar{x} = 3.69$ ) respectively

3. The overall Common Market mix factor ( $\bar{x} = 3.77$ ), in the above consideration, is considered to be the highest average to send. Marketing Supplement ( $\bar{x} = 3.93$ ) Secondary is the price side ( $\bar{x} = 3.70$ ) and the products and services ( $\bar{x} = 3.67$ ) respectively.

4. The decision to use the overall transport service is very large ( $\bar{x} = 3.85$ ), when considering the sub-factor, the highest average is the reputation of the company's internal carrier. Our customers have the potential to pay attention to our customers' transportation services. Not intended but the company's profit. Reliable Treatment Quotes and performance in transportation services we are dealing with customer after service to maintain long-term relationship between service providers and customers and users are confident and trusted in the company's transportation, respectively.

5. Different operator factors there is a choice of transportation services. There is not difference.

**The results discussion**

Studies have found that the relationship factors in the supply chain between the service providers and customers. The market mix factor and the choice of transport services is very high. When comparing different entrepreneur factors. Find the choice of transportation services. There is no difference. The results are as follows, due to considering that moving goods and services will use the customer's requirement as the machine's production capacity and the use of raw materials and freight-related goods, from the outcome of the study, also found that the decision to use the transport service. The highest average is the reputation of the carrier in the eyes of the customer by the tracking system as a part that contributes to the reputation. And, reliance and trust customers now have a modern track system to realize the location of the provider at the current time. Therefore, an alternative comparison is required to rely on the guidelines. (Criteria) The decision must be agreed to be the same as what it means to identify the right choice. Each guideline is required. It is possible to measure a quantitative value or evaluate a qualitative value that each choice will result in any level of purpose. Alternative analysis may not use economic results, but alone is a self-judging process, particularly in decision-making processes consisting of many stakeholders, but often gives stakeholders a part participation in the importance of the criteria and choice as a result of a score or a significant weight value in accordance with the research of Thanapon Xxspirit. The hypothesis test results found that the company is using a service with a type of business, registered capital, and the size of different organizations. The opinions about factors that affect the use of freight services are different and the research of the Cholchan. Ginkgo (2015) found that the knowledge of the route and the area of delivery has found that the user has a high level of service quality feedback, which is much higher in its class, with the most average service confidence.

**Suggestions**

There should be an understanding of the reputation of the carrier providers, customers, and the importance level of different selections under different business contexts to know the importance and significance of the decision carrier. In addition, there should be study in the nature of a combined research to gain reliable information and in-depth information for effective use in the company's policy.

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**A Qualitative Study on the Successful Predictors of Japanese Subsidiary in Thailand What are they via the Parent Firms Perspective?**Wanida Wadecharoen<sup>1</sup>, Akio Nishisawa<sup>2</sup><sup>1</sup>Center of Business Research and Service, Thai-Nichi Institute of Technology, BKK Thailand<sup>2</sup>Faculty of Business Administration, Toyo University, Tokyo Japan**Abstract**

Thailand economic is very open and highly depend on Japanese capital investment whereby most of Japanese firms are engaged in Thailand manufacturing. This study aim to exploring the successful predictor of Japanese subsidiaries in Thailand manufacturing via qualitative method. The research sample of this study refer to twelve Japanese subsidiaries across several manufacturing such as food, electronic, automobile, chemical, metal, mold and machinery tools and logistic. The results indicated that 75% of Japanese subsidiaries (11 firms) are satisfied with their performance, only 25% (1 firm) not achieve the target due to less profitable. These research samples trend to expanding in horizontal business such as aerospace, medical robot and service sectors. The most important successful factors are logistic system, infrastructure, staff contribution and training center, human resources skill, culture similarity and social system etc. Thus, Thailand location advantages and environments are beneficial to Japanese automotive industries and related sectors.

**Keywords:** Japanese Subsidiary, Success Factor, Japan, Thailand, IJV**1. Introduction**

Japanese firms have been recognized as the major investors located their oversea subsidiaries in Thailand over several decades, thus the over half of international firms in Thailand mainly are from Japan (Wadecharoen, Kanjanavanikul, Lertnaisat, Teekasap, 2013). International Joint Venture (IJV) represents one of the most popular strategies for Japanese firms to share risk and resources, to gain knowledges and obtain access to new markets. IJVs enable Japanese firms to bring their expertise and then upgrade local firms operating competencies (Glaister, Husan & Buckley, 2005). Therefore, the trend of Japanese direct investment to Thailand as a recipient country has no sign to decline and it tends to be closely associated with Thailand economic performance (Suwanarat, 2012). This is because the large amounts of Japanese investment inflows contributing to national GDP, generate employment and sustainable Thailand economic performance as a whole. As of the data provided by Bank of Thailand it shows that Japan is the largest major country brought about 158,968 million baht in 2011 and 102,085 million baht in the first four months of year 2012 (January-April), after flooding crisis (BOT: 2013). This large amounts of Japanese investment inflows are engaged in equity investment which represented in the form of IJVs. This phenomenon has showed that IJV is the appropriate mode of internationalization strategy used for penetrating and entry in Thailand (Julian, 2010). Thus, IJV represents one of the most popular strategies for Japanese firms to share risk and resources, to gain knowledges and obtain access to new markets. IJVs enable Japanese firms to bring their expertise and then upgrade local firms operating competencies (Glaister, Husan & Buckley, 2005). As of these previous point, Japanese business decide engaged in Thailand for maximize profit in oversea countries. The majority of Japanese firms were engaged in automobile and electronic parts by using IJV as the popular equity strategic entry mode to enter Thailand manufacturing sector (Suwanarat & Mumi, 2012).

Japanese executive directors and managers well know how to cover operating expenses and achieve a stable profit. This is because they can determined the success factors for making their subsidiary successfully. This study aim to exploring the successful predictors of Japanese subsidiaries in Thailand manufacturing via parent firm's perspective by using depth-interview and content analysis methods. By using qualitative analysis methods enable the study to go through the way of Japanese thought about doing successful business in Thailand (Wadecharoen, Lertnaisat & Klankaew, 2018). As of this idea, Thai partners can learn by doing advance technology and adopting Japanese management style. This will improve Thai local worker skills, productivity and enhance quality of life.



## 2. Literature Review

There are the significant literature related in the study are as following;

### 2.1 Internationalization

Buckley, (1979) applies the internalization concept and its advantage in explaining foreign direct investment (FDI) motive behavior. FDI will be motivated if the cost of resource allocation with internalization is less than the cost of international transaction through the market mechanism. In other words, the existing of FDI is the consequences of market imperfection. Moreover, the internalization of markets across nation boundaries will depend on location-specific factor. When host country location-specific advantages are not available, a firm will internalize the market within the national boundary and exploit its advantages on exporting. On the other hand, when host country location specific advantages are present, internalization of the market will take place across national boundaries as the result of motivate FDI. The theory of internationalization describes the market expansion of multinational enterprise through equity and non-equity forms of international involvement (Rugman, 1979; Johanson & Wiedersheim-Paul, 1975). The different stages of internationalization can be summarized as follows;

- (1) No regular export activities;
- (2) Export via independent representatives (agents);
- (3) Licensing;
- (4) Direct and active exporting;
- (5) Establishment of local warehouses and direct local sales;
- (6) Local assembly and packaging;
- (7) Formation of a joint venture;
- (8) Foreign direct investment (that is, full scale local productions and marketing by a wholly owned subsidiary);

Rugman (1982) argues that licensing may become an inferior alternative due to parent firm may loss control of its firm-specific advantage one it sells a license. Hymer (1976) suggest that foreign firms must possess an equity advantage to control over local subsidiary and make such investment visible. The host receipt FDI country must be imperfect such as advantage of scale economic, managerial expertise, technology advantage, product differentiation and firm specific advantage. The firm specific advantage generally refer to production technology, marketing knowledge, R&D, staff training and other sofeward development. Thus, according to Hymer, (1976) the most appropriate internationalization mode in developing countries are in the forms of licensing and joint venture. International Joint Venture (IJV) is the popular strategic mode use by Japanese FDI to enter Thailand manufacturing (Julian, 2005), will be discuses in the following section.

### 2.2 Type of Japanese Subsidiaries in Thailand

#### 2.1.2 Multinational Enterprise (MNE)

Multinational Enterprise (MNE) is a firm that owns and control activities in two or more different countries (Buckley & Casson, 1976).

#### 2.1.2 International Joint Venture (IJV)

Generally, an agreed-upon definition of IJV performance is missing in the literature. That is because IJVs have been defined from several perspectives based upon the purposes of its formulation. Nonetheless, the view of goal accomplishment underlies most interpretations (Beamish & Lupton, 2009; Beamish & Delios, 1997; Anderson, 1990). Thus, defining IJV performance as the degree of accomplishment of JV goals is the first step in capturing the meaning given to this concept by previous researchers. For instant Schuler & Tarique (2005) stated that

*“International joint ventures are legally and economically separate organizational entities created by two or more parent organizations that collectively invest financial as well as other resources to pursue certain objectives”* (Schuler & Tarique 2005: p.4)

### 2.2 Successful Predictors of Japanese Subsidiaries Performance

Generally, the most important successful predictor for Japanese subsidiary performance is ‘mechanism control’ by Japanese headquarter. ‘What are the type of control mechanism use by Japanese headquarters to evaluate their subsidiaries?’ Bases on the relevant literature, there are several past research studies pay attention to both human factor, financial and non-financial evaluation in the following below;

### 2.2.1 Conceptual and Qualitative Research Models of IJV Performance

Robson, (2002) presented the most comprehensive holistic framework to explain the antecedents of International Joint Venture (IJV) performance. However, as illustrated in the below figure, the author looked at the antecedents of International Joint Venture (IJV) performance from the conceptual perspective. Robson classified the antecedents of IJV performance into three categories; firstly, *structure factors*: venture demographics; contracture elements; and managerial characteristic. Secondly, *strategic factors*: R&D and technology; production management; human resources, marketing. Thirdly, *processual factors*: control & supervision; project-specific relational aspects consist of communication with venture; trust with venture; conflict with venture; satisfaction with agreement; forbearance within venture; cooperation within venture and dependent within venture and organization learning. Most of the inter-partner relation variables are categorized under relational aspects or processual factors.

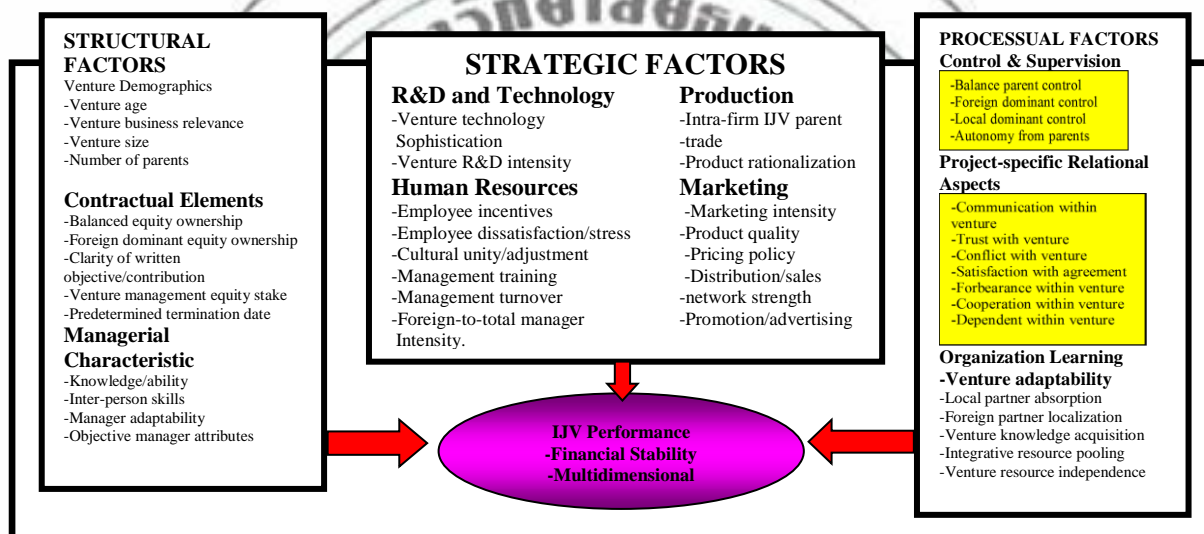


Figure 1 Holistic model of IJV performance

Source: Robson, Leonidou and Katsikeas, (2002)

Since, Robson (2002) framework is a conceptual paper and has not been empirically tested before; it only gives a useful meta-analysis of previous findings from a total of ninety-one IJV articles identified before year 2000. Similarly, Vaidya (2006) reviews the factors affecting IJV performance conceptually by integrating environmental factors with inter-partner factors into one framework (see Figure 2.1). His conceptual framework focuses on the most important issues related to IJV formulation and performance outcomes. The factors that Vaidya (2006) suggested as predictor variables are namely, external and internal environment, motive for formation, partner selection, bargaining power, trust, commitment, control, conflict, experience, learning and stability. The integrated framework represents the importance of partnership among IJV partners in order to maintain long-term relationship and competitive advantage. Based on emulated of Robson's (2002) and Vaidya's (2006) conceptual frameworks, *this study will be adapted these integrated models to guided and investigated the successful predictor of Japanese subsidiaries in Thailand manufacturing sectors.*

### 3. Research Objective

- 3.1 To examine the problem of Japanese subsidiaries in Thailand
- 3.2 To exploring the successful predictors of Japanese subsidiaries in Thailand
- 3.3 To exploring the profitability performance of Japanese subsidiaries in Thailand

### 4. Methodology

The analysis technique of this study was applied of parallel mixed analysis of the qualitative (interview) and quantitative (self-administered questionnaire) data. The quantitative data was analyzed through computer program and evaluated in percentage. The interview data was coded by using theoretical content analysis approach (Lincoln & Guba, 1985; Taylor & Bogdan, 1984).

## 5. Research Finding

### 5.1 Thai-Japanese IJV Successful Factors in Thailand

Table 1 shows the performance of twelve Japanese subsidiaries in Thailand manufacturing sectors. The results indicated that 75% of Japanese subsidiaries (11 firms) are satisfied with their performance, only 25% (1 firm) not achieve the target due to less profitable. These research samples trend to expanding in horizontal business such as aerospace, medical robot and service sectors. Thailand location advantages and environments are beneficial to automotive industries and related industries. There are several opinion and perspective based on these sample discussion in the following below;

#### Japanese Subsidiary (S1)

The researcher was questioned vice chairman in food industry about “*in your opinion, what are the key success factors for your company to do business in Thailand?*” As well we are in the food industry who produce snack, the most important factor we concerned on “*food technology processing and equipment*”. Thanks to extensive research in the United States and Europe into the most modern technology and equipment, our company enable to runs some of the most technologically advanced food processing plants in Japan and Asia to efficiently produce the highest quality food products. The next is ‘*good employee*’, this is because we build people before we build product. Our employee very hard worker, logical and responsibility. The forth factor is Thailand ‘*system logistic*’, this is because system logistics develops automated storage and picking solutions with the aim of improving service within the supply chain, reducing the cost of handling packages. The term of logistics is the ideal partner for the design and development of highly automated distribution centers. By implementing flexible solutions, the customer can meet constantly changing market needs, at the same time optimize the supply chain and service level at the point of sale. The key benefits obtained to the automated storage and order preparation solutions for distribution centers are in Table 2;

**Table 1 Profile and Successful Predictors of Japanese Subsidiaries in Thailand**

Profile	Interview Position	Business Type	Success Factors	Thailand Economic Performance
S1	Vice Chairman	<ul style="list-style-type: none"> <li>▪ Manufacture and sale snack foods</li> </ul>	<ul style="list-style-type: none"> <li>▪ Technology &amp; Equipment</li> <li>▪ Staff quality</li> <li>▪ Delivery route</li> <li>▪ Social factors</li> <li>▪ Logistic system</li> </ul>	<ul style="list-style-type: none"> <li>▪ Profitable</li> </ul>
S2	President	<ul style="list-style-type: none"> <li>▪ Air condition parts</li> <li>▪ Value parts</li> </ul>	<ul style="list-style-type: none"> <li>▪ Customer relationship</li> <li>▪ Staff quality/</li> <li>▪ Good supplier</li> <li>▪ Infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>▪ Profitable</li> </ul>
S3	President	<ul style="list-style-type: none"> <li>▪ Machinery</li> <li>▪ Mold Business</li> </ul>	<ul style="list-style-type: none"> <li>▪ Right man at right job</li> <li>▪ Logistic system</li> <li>▪ Human resources training</li> </ul>	<ul style="list-style-type: none"> <li>▪ Profitable</li> </ul>
S4	Regional Business Affair	<ul style="list-style-type: none"> <li>▪ OEM/Components</li> <li>▪ Automotive Service Parts &amp; Accessories</li> </ul>	<ul style="list-style-type: none"> <li>▪ Cost reduction</li> <li>▪ Customer satisfaction (<i>quality, cost, and delivery: QCD</i>)</li> <li>▪ Adaptability strategy</li> <li>▪ Localization strategy</li> </ul>	<ul style="list-style-type: none"> <li>▪ Strong Profitable</li> </ul>
S5	Executive Vice President	<ul style="list-style-type: none"> <li>▪ Precision Molds</li> <li>▪ Injection Parts</li> <li>▪ Assembly Part</li> </ul>	<ul style="list-style-type: none"> <li>▪ Tax reduction</li> <li>▪ Practice education</li> <li>▪ Supply material</li> <li>▪ HR (<i>Staff quality &amp; attitude</i>)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Profitable</li> </ul>
S6	Managing Director	<ul style="list-style-type: none"> <li>▪ Mold Business</li> <li>▪ Robotic System</li> <li>▪ Factory Automation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Political stability</li> <li>▪ Minimum wage</li> <li>▪ Government support</li> <li>▪ Manpower</li> <li>▪ Infrastructure</li> <li>▪ Taxation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Profitable</li> </ul>
S7	General Manager	<ul style="list-style-type: none"> <li>▪ Machinery &amp; Tooling</li> <li>▪ Mold Business</li> </ul>	<ul style="list-style-type: none"> <li>▪ Government intensive</li> <li>▪ Customer</li> <li>▪ After sale service</li> <li>▪ Technical</li> </ul>	<ul style="list-style-type: none"> <li>▪ Profitable</li> </ul>



Profile	Interview Position	Business Type	Success Factors	Thailand Economic Performance
			satisfaction ▪ Just in time service	training center ▪ Price strategy
S8	Managing Director	▪ Logistic	▪ Logistic system ▪ After sale service	▪ Less Profitable
S9	Managing Director	▪ Aluminum distributor ▪ Copper, Brass ▪ Stainless Steel	▪ Thailand stability ▪ Labour sufficiency ▪ National culture & background	▪ Profitable
S10	Executive Vice President (EVP)	▪ OEM Joint Venture Company ▪ Trading Company	▪ Human Resources ( <i>localization leadership</i> ) ▪ Social/culture similarity	▪ Profitable
S11	President	▪ Chemical ▪ Automobile assemble	▪ Technology knowhow ▪ R&D/Automotive	▪ Profitable
S12	General Manager	▪ OEM Automotive	▪ Culture similarity ▪ Social system ▪ Political stability ▪ Government policy	▪ Profitable
				▪ Staff contribution ▪ Training ▪ Organization cooperation ▪ 20 years Thailand national strategy ▪ Human resources skill ▪ Training

Source: Primary Interview Data

Table 2 Solutions for Distribution Centers

SPACE	TIME	COSTS	SERVICE
1. Improved space utilization and storage density 2. Increased receiving and shipping capabilities	1. Late cut-off times 2. Shortened delivery lead time 3. Higher delivery frequency 4. Greater reactivity in order preparation and management of rush jobs	1. Reduction in workforce cost 2. Reduction to stock centralization 3. Reduced costs on delivery routes 4. Better transport capacity 5. Reduction in cost per package handled	1. Better pallet stability and capacity 2. Reduction in shipment preparation errors 3. Reparation of orders according to customized sequences (unloading, product category, stack ability) 4. Possibility of automatic connection between the point of sale reordering system and warehouse reparation

Source: [http://www.systemlogistics.com/usa/Japanese Subsidiary \(S2\)](http://www.systemlogistics.com/usa/Japanese%20Subsidiary%20(S2))

The president of metal industry who produce air condition parts and value parts was questioned about "what are the key successful factors to do business in Thailand?" The company president express the successful idea for doing business in Thailand that "the successful of our company were supported by long-term customer relationship, good employees and strong infrastructure". With all these important factors we could not reach here where we are now, he said, the president S2.

*Japanese Subsidiary (S3)*

**“Currently, our company is hard to recruiting employee in an organization vacancy and very hard to find out the right man at the right job”,** he said, president S3. In my perception, trend of employment has totally changed from previous, most of new graduate are seeking to have their own business or become an entrepreneurship. Since, Japanese company’s decided to locate in Thailand then they need employee to work for them. Thus, the most important and basic factor need to provide and support the successful business is **“the available and sufficient of skill labor at the affordable rate and time”,** he said, the president S3. The next success factor is “logistic”, from my part experience logistic means **“the recruiting system involves all the process of recruiting material, production planning, recruiting people procedure, quality control, finished product until delivery to final customer”**. Additionally, after sale service system is also a part of logistic to full fill of customer satisfaction, he said. Thus, the logistic also refers to supply chain includes all activities, functions and facilities (direct or indirectly) in the flow and transformation of good and service from the raw materials stage to the finished products and deliver them to end user-customer towards the market (Leskova & Kovacova, 2012).

*Japanese Subsidiary (S4)*

In generally, the most business successful factor is ‘cost reduction’, conferring to *regional business affair manager*, S4 said that car maker has designed production platform or production line upon the specific model. For instant, eco-car model and Fortuner model produce in Thailand while Vios model produced in Philippines. Moreover, the automobile parts supplier ‘who can offer a good price with premium quality’ would be competitive in among car producer market. Thus, our company is OEM automotive systems and components supplied to Thailand and Asia automobile market whereby we gain the largest volume of sale while profitable is less due to high bargaining power of car producer, he said, *regional business affair manager*, S4. **The next success factors to make business in Thailand successfully is ‘customer satisfaction’ that is directly lead to quality, cost, and delivery (QCD).**

*Japanese Subsidiary (S5)*

Human resource is one of the most successful factor which refer to the staffs’ quality and their attitude. **“We have much problem about human factors especially local employee the right one approximately only 10% and most of them cannot work in the same speed as the team”,** he said, the EVP S5. In addition, the next five year, we plan to bring robotic system into our production line to improve our capacity with the best of production result. Finally, the EVP of S5 expressive his appreciated to promote Japanese investor come to Thailand. **“In my opinion Thai social culture is very friendly environment and hospitality for foreigner. They are respected to Japanese people seem like their friend and our social status non difference”**. Thus, no wonder lot of Japanese expatriates are prefer to choose Thailand as the first choice to located in, he said, the EVP of S5

*Japanese Subsidiary (S6)*

The managing director (MD) of famous robotic system and factory automation business from Japanese recommend the way to do business in Thailand successfully; they needs the following supportive.

First of all, Thailand political stability must be stable and peaceful. The Minimum wage standard should be classified separately depend on each regional and province. For instant, in BKK area the minimum wage should be higher than other places according to cost of living, then, the people would stay in BKK rather than return to their hometown. Thai local government should be clarify defensive direction for flooding disaster. Manpower and infrastructure should be providing sufficient in further investment and demand. Finally, taxation should be fix at the appropriate rate.

*Japanese Subsidiary (S7)*

The general manager of machinery and tooling business explain the factors contributing to the successful Japanese subsidiary in Thailand. In macro factor is ‘government intensive’, this is based on the Thailand government policy for aerospace, benefit support by BOI (Thailand 4.0). In the organization factors are such as ‘customer satisfaction’, this is refers to ‘how the company responsive our product to the customer’. Moreover, just in time service, after sale service, technical training center are also important determinant factors contributing to company performance. Finally, ‘price strategy’; this is because of our machine have much more expensive as compare to China (50%), then

we have to make customer awareness of the machine performance and after sale service, *he said, general manager D7.*

*Japanese Subsidiary (S8)*

The next sample is logistic company, the managing director (MD) was asked about *“what criteria do your subsidiaries (Thailand) and your firm (Japan) use to access the performance (success or failure) of the company? Why? “We always communicating keep in touch with our parent firm in Japan to maximize of company profitability and highest customer satisfaction”, he said the managing director S7.* As of this criteria, we are satisfied with our subsidiary in Thailand and consider successfully. The next question was asked about *“what are the successful predictor of your subsidiary in Thailand?”* He said that *“Thailand logistic system are well organized and our employee are delicate handling to service our customer”.* Thus, these are the successful predictor of our business.

*Japanese Subsidiary (S9)*

The managing director in aluminum, copper, brass and stainless steel business suggested the idea to make Japanese subsidiary in Thailand perform better. *“In my point of view Thailand stability is the most important factor effecting to Japanese investor confidence; thus, Thai government should organize the new election as soon as possible”, he said the managing director S9.* The next key success factor is *‘labour sufficiency’, ‘understand national culture and background’, ‘after sale service’, ‘quality assurance’ and finally ‘just in time service’;* these are the important factors contributing to the performance of Japanese subsidiary in Thailand, *he said.*

*Japanese Subsidiary (S10)*

In OEM business, the executive vice president (EVP) express his opinion on key success factors to do business in Thailand in such following ideas. *“Due to high competition in trading business, our company want the staff who work hard and also work smart”.* Thus, human resources is the primary factor to achieve the success in our business, *he said, the EVP S10.* There are many Japanese companies changing organization structure from *‘globalization’ to ‘localization strategy’.* In our company, we are changing from Japanese leader to be a Thai leader, this is for make our business survive (decrease the cost). Moreover, we want to motivate Thai staff to work hard via Thai leader assist and monitoring, *he said, the EVP S10.* The next key success factor is *‘social and culture similarity’* which refer to Japanese communication and understand Japanese national background. Training people by changing their attitude to be work harder and work smart, that enable our company to be competitiveness, *he said, the EVP S10.*

*Japanese Subsidiary (S11)*

The president of chemical industry view the key successful factors of Japanese subsidiaries in Thailand in such following; (1) technology knowhow; (2) research & development (R&D); (3) automation system; and (4) organization cooperation (Training staff, system control). *“In our factory production divided into technology and human processes, in the part of harmful for human and complicated we are using automatic and robotic systems. In automatic parts we have environment friendly system such as car painting department control the release of pollution (carbon dioxide) to the environment”, he said, the EVP S10.* *“Our company profitability focus on cost reduction and innovation to improve the overall performance rather than concern on external factors such as corporate tax and uncontrolled factors. So, our profit trend to increase by year after year”, he said, the EVP S10.*

*Japanese Subsidiary (S12)*

*“We have over 300 supplier companies; above 150 firms (50%) are joint venture companies with Japanese partners. In between 2012 to 2014, there are large number of Japanese companies using merger & acquisition (M&A) strategy to access local supply chain”.* Thus, it is impossible that Japan would ignore Thailand and transfer of investment to some other countries, *he said, general manager administration S12.*

General Manager in largest automotive exporter worldwide suggest the key success factors of Japanese company doing business in Thailand. There are *‘culture Similarity’* such as Thai and Japanese people are respect to Monarchy, Buddhist and humble. *‘Social system’* such as Thai people are friendly and respect to Japanese people. *‘Political stability’* such as social stability in south of



Thailand; *'government policy'* such as law limitation, EV car/ tax exception, R&D in social and science etc., *he said*.

## 6. Conclusion and Discussion

Based on the qualitative interview data from twelve Japanese subsidiaries in Thailand as exhibited in Table 1 Profile and Successful Predictors of Japanese Subsidiaries in Thailand. The key informant explore that human resources is the main problem eroding Thailand competitiveness. This issues is directly related to *'strategic factors'* (see figure 1 Holistic Model of IJV Performance), which refers to employee incentive, human skill and training (refer to interview data of S1, S2, S3, S5, S6, S9, S10, S11). Insufficiency of skill labor and affordable of local minimum wage are the main problem cause the performance of Japanese subsidiaries. The unstable of Thailand political situation, insufficient infrastructure, labour supply and ineffective of local logistic system, these factors are the major issues cause Japanese investor are unconvinced on Thailand investment position. These are the directly factors concerned on *'structure factors'* (refer to interview data of S6, S9, S12). The communication from top to subordinate need well understanding empathy to achieve of one vision and common objective, these are refer to *'processual factors'* (exhibited in Figure 1). To change of organization structure from *'globalization to localization strategy'* requisite well control and supervision, this will enhance the competency of company performance.

Table 1 show several success factors up on the types of business industries such as, in manufacturing and food industry, logistic system, social factors and delivery route are the most important successful factors in Thailand. In automobile industry (OEM) and it's assemble, there are the most important successful factors contribute to the business are such as manpower, infrastructure, good supplier, logistic system and price strategy. In chemical industry, production research and development (R&D) is the most important successful factor which refer to innovation and patent. Now a day, most of Japanese subsidiaries are using *'localization strategy'* to decrease the cost of production while enhance the effectiveness firm's performance (see more detail in Table 1 Profile and Successful Predictors of Japanese Subsidiaries in Thailand). Similarity to Wadecharoen, Lertpiromsuk and Nishisawa, (2017) examined the perspectives of Japanese headquarter in Tokyo Japan, to view the performance of Japanese subsidiaries in Thailand consider successfully cause by national infrastructure standard, logistic system, manpower and government support by given benefits to the investors via Board of Investment, Thailand (BOI). In this study indicated that 75% of Japanese subsidiaries (11 firms) are satisfied with their performance, only 25% (1 firm) not achieve the target due to less profitable. These research samples trend to expanding in horizontal business such as aerospace, medical robot and service sectors. Thus, the Japanese parent firms view Thailand location advantages and environments are beneficial to automotive industries and related industries.

Moreover, the performance of IJVs profitability was examined through subjective measuring of IJV managing director's perception. Subjective approach was conducted measure to IJVs managing director's perception relating to their profitability performance in year 2015 to 2016 (Wadecharoen, Lertnaisat & Klankaew, 2018). Through the subjective approach, the results of Thai-Japanese IJVs profitability performance were moderate with long-term profitable. The finding show that 55% of IJV respondents were perceived profitable level, 15.4 strong profit and 2.6 perceived heavy profit (refer to Table 1). Particularly, in automobile industry, metal/chemical and chemical manufacturing still in good health and secure due earning profitable up to strong profit.

Thus, to maintain Thailand competitiveness, Japanese subsidiaries should be adapting the strategies factors which concerned on venture R&D intensity, technology knowhow (refer to chemical industry, S11), technology. Human resources needs training their capacity to be more value added and qualified. Unskilled labour will be replace by robotic and automatic system to decrease the cost of operation. As of the finding in this study indicate that Japanese subsidiaries still satisfied with their performance. To maintain of their long-term investment Thailand need to improve local labour supply both in term of quality and quantity. Technology, innovation via R&D required for changing implement of Thai SMEs from Original Equipment Manufacturer (OEM) to stands for Original Design Manufacturer (ODM). The use of technology and innovation will help Thailand to overcome of middle-income trap, this will be investigated for further research study.

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**Cross-Cultural Adjustment of Chinese students in Huai Khwang District, Thailand**

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**Abstract**

The research aimed to study the study the process of adaptation of Chinese students in Huai Khwang District, Thailand and To compare demographic backgrounds of informant such as gender, ages, income, education, and length of stay that affect to adaptation of Chinese students in Huai Khwang District, Thailand. Questionnaires were used as data collection for 400 Chinese students samples. The data analysis by using statistical method of percentage, means and One way ANOVA were applied cross-cultural adjustment in this study.

The result of a study the Cross-Cultural Adjustment of Chinese students in Huai Khwang District, Thailand. General Information found that of all Chinese students 51.3 percent were male, 48.8 percent were females. 65.50 percent were Chinese students were age between 20-29 years old. 68.30 percent of Chinese students education were bachelor degree. The most 68.00 percent live in Thailand 2-5 year.

The result of a study the Cross-Cultural Adjustment of Chinese students in Huai Khwang District, Thailand. The average and the standard deviation 4.25 and 0.208. When considering at each aspect, concept of adjustment are 4.70 and 0.239, Feelings of adjustment are 4.25 and 0.322. Behavior Adjustment are 3.80 and 0.355.

The test results of One way ANOVA show no differences. When compare the personal factors with Cross-Cultural adaptation found that Chinese student, by sex, in come per month, Education and the period of residence has no differences.

**Keywords**

Cross-Cultural, Cross-Cultural Adjustment, Chinese students in Huai Khwang District Thailand

**Background**

At the present time, globalization helps people around the world can connect and communicate easily. Therefore, it makes the changes obviously such as in economic systems, society, politics and technology. It seems that culture also was affected by globalization. When people realize the differences and the variety of cultures so people need to learn different cultures in order to live or work with people from different culture effectively and smoothly. The important tools that helps people making understanding together is communication tool.

However, before people will communicate with people from different culture they need to know cross cultural communication. For example, at the present time when people have to go for work, study or work with foreigners they need to know about cross culture communication. In fact, when people grow up in the society they will learn about culture, so it will affect to people's perceptions. However, when people have to move in different culture, they need to adapt the way of thinking in order to live in different criteria of society. People need to adapt and adjust the way of though in the new environment.

In contrast, if people move to the new environment without adaptation and adjustment so they cannot live with people in that society. Therefore, many problems may happen with them and it might be the vast obstacle in their lives.

Nowadays, a lot of people travel abroad because they need to do the business. So in this research, the research studies about the adaptation of cross culture of Chinese students which focus on the process of adaptation of Chinese students that was affected by facing with strangers in different culture such as stressful, pressure. The theory of Roy (1962) revealed that there are 3 steps; the combination of cultures, the integration of cultures which people making understanding but not dominate and the integration the integration of cultures which making people accept the new cultures. In addition, in this research also studies about reason the problems and the obstacle that happen from adaptation.



**The Purpose of study**

1. To study the process of adaptation of Chinese students in Huai Khwang District, Thailand.
2. To compare demographic backgrounds of informant such as gender, ages, income, education, and length of stay that affect to adaptation of Chinese students in Huai Khwang District, Thailand.

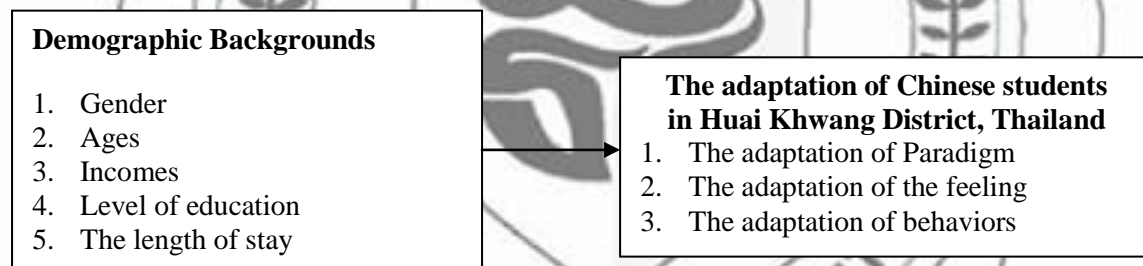
**Scope of Research**

This research studies the adaptation of Chinese students in cross culture in Huai Khwang District, Thailand.

1. This research studies the adaptation of Chinese students in Huakwang area in Thailand only.
2. This research studies only the adaptation of Chinese students.
3. This research studies only the general information and adaptation of Chinese students.
4. The population in this research is Chinese student and Chinese tourist.
5. This research was conducted between November - December 2017

**The benefits of study**

1. Thai government may use the results of this research for planning the policy and supporting Chinese student in Thailand.
2. The private sectors and other business may use the results of this research for planning and managing their business effectively.

**Conceptual framework****Hypothesis of the study**

1. The different gender of participants affect to the adaptation of Chinese students in Thailand.
2. The different ages of participants affect to the adaptation of Chinese students in Thailand.
3. The different incomes of participants affect to the adaptation of Chinese students in Thailand.
4. The different level of education of participants affect to the adaptation of Chinese students in Thailand.
5. The different length of stay of participants affect to the adaptation of Chinese students in Thailand.

**Methodology**

This research is quantitative and survey research. The researcher conducted the research by using questionnaire as the tool. The purpose of this research is to study the adaptation of Chinese students in Huai Khwang District, Thailand.

**Population**

The population in this research is Chinese students in Huikwang area Thailand. This research used as data collection for 400 Chinese students samples.

**Sample**

The sample of the population is Chinese students who come to Thailand for studying. The research do you know exact population. The researcher collected the questionnaires from Chinese students who come to study in Thailand total number is 400 by accidental sampling.

**The Research Instrument**

To produce quality of research instrument tool, the researcher designed questionnaire which covered 3 sectors.

**Sector 1** is demographic Backgrounds such as gender, ages, incomes, level of education and the length of stay. The participants answer the question by check-list

**Sector 2** is the adaptation of Chinese students in Thailand. The research questions covered the adaptation of paradigm, the adaptation of the feeling and the adaptation of behaviors

**Sector 3** is suggestions

In order to find out the quality of the research instrument, the research took the questionnaire to try out with Chinese students in Thailand, the total is 30. To find out the reliability at 0.849.

#### **Data Correction**

This research was conducted by correcting questionnaire from Chinese students in Huikwang area in Thailand. Total number is 400. The research calculate the size of sample by using Taro Yamane by random. The researcher conducted the research within 2 months, November- December, 2017.

#### **Data Analysis**

1. Data obtained from the questionnaire was statistically analyzed by Statistical Package for Social Sciences (Computer program). Percentage and frequency were descriptive statistics used for describing the subjects' background, and mean and standard division were descriptive criteria used for analyzing.

2. t-test, F-test, or one-way ANOVA were the statistical methods used to test the hypothetical relationships between the variables, which were gender, age, level of education and the length of stay in Thailand. Then, the data was used to test the reliability using the Cronbach test to find out  $\alpha$ =coefficient equal .89

3. t-test is the statistical methods used to test the hypothesis

4. Scheffe's Post hoc Comparison is the statistical methods used to analyze the different of mean in pair group.

#### **The Findings**

##### **Sector 1**

In this part shows the demographic backgrounds such as gender, ages, incomes, level of education and the length of stay. According from 400 sample who answering the questionnaire, it was found that the total number of male Chinese students is 205 or 51.30 %. The total number of female Chinese students is 195 or 48.80%. Most participant approximately 262 people fall at the range of age at 20-25 years old or about 65.50%. The number of participants under 20 years old show at 28.30% or 113 people. And the number of participants shows at the range of age at 30-39 years old or about 6.30 %.

According to the income of participants, it was found that most Chinese students about 341 persons have income about 10,000-25,000 or 85.30%. For the number of participants who have income 25,001-40,000 is 57 persons or 14.30%. The number of participant whose income is under 10,000 and over 40,000 is 1 person or 0.30 %.

For the level of education, it was found that the 273 participants or 68.30% of all participants have level education at bachelor degree. The 103 participants or 25.80 % have level education at diploma degree. Additionally, the 24 participants or 6.00% of all participants have level education at higher bachelor degree

Lastly, the length of stay of Chinese students shows that 272 participants or 68.00% stay in Thailand around 1-5 years. And 109 participants or 27.30% stay in Thailand less than 1 year. Lastly, 19 participants or 4.80 % stay in Thailand more than 5 years.

##### **Sector 2**

The findings in sector 2 shows the adaptation of Chinese students in Thailand over all is good ( $\bar{X} = 4.25$ , S.D. = 0.208). It was found that the adaptation of paradigm was excellent ( $\bar{X} = 4.70$ , S.D.= 0.239).The adaptation of feeling was excellent( $\bar{X} = 4.25$ , S.D.= 0.322) and The adaptation of behaviors was excellence ( $\bar{X} = 3.80$ , S.D.= 0.355)

According to the adaptation of feeling, it was found that Chinese students were satisfied when they can use Thai language to communicate with Thai people. It was found in excellence level ( $\bar{X} = 4.77$ , S.D. = 0.437) Chinese students were happy to have friendship with Thai people. ( $\bar{X} = 4.77$ , S.D.=

0.450). And they were happy to do activities and to attend in Thai customs and Thai culture ( $\bar{X} = 4.52$ , S.D. = 0.565).

Lastly, the adaptation of behaviors of Chinese students was excellent. They revealed that Chinese students love to travel with Thai people ( $\bar{X} = 4.67$ , S.D. = 0.491). The level that Chinese students like to watch Thai series was good ( $\bar{X} = 4.12$ , S.D. = 0.591). And they want to learn generally about Thai was moderate ( $\bar{X} = 3.10$ , S.D. = 0.964)

### Sector 3

The findings of the research can conclude that the demographic backgrounds including gender, ages, incomes level of education, and the length of stay doesn't affect to the adaptation of the adaptation of Paradigm, the adaptation of the feeling and the adaptation of behaviors of Chinese students in Thailand.

### Conclusion

According to data analysis, the adaptation of Chinese students in Thailand can conclude that by following these: In this research found that Chinese students who come to study in Thailand have to face with cross cultures. Therefore, Chinese students have to adapt themselves in cross culture for survivors. Many Chinese students revealed that the adaptation of paradigm affect to their lives the most. They revealed that when they have adaptation of paradigm, they will not have problem to live in cross culture in Thailand. The Chinese students revealed that when Chinese students have to think and do the same way with Thai people. The results of this research are similar with Hummer's theory. Hummer (1989) stated that there are 8 factors affect to adaptation in cross cultures; supporting from host country, the structure from host country, acceptance from host country, the way of socialize in host country, and the ability to use dialect language. According to the results of this research show that the ability to use Thai language for communication is the most important factor to live in Thailand of Chinese students, it helps Chinese students have adaptation to live in Thailand. Additionally, the theory of Young Yum Kim (1994) stated that the important reason of adaptation comes from communication. It is the way to help people learn and understand many signals in society. The participants revealed that they always faced with communication problems so they want to solve this problem. They always do a lot of activities with people in their society. So communication is the best way to help them use dialect language (Thai).

Additionally, Chinese students have adaptation about their feeling. The Chinese students have positive feeling with Thai people. Chinese students revealed Thai people are friendly, sincerely, helpful. So that when Chinese students feel positive with Thai society, they are always ready to have adaptation. According to the result of this research is similar with Parida (2005). Parida studies about cross cultural communication of Myanmar in border of Thailand. It was found that when Burmese have positive feeling with Thai people the level of adaptation will grow up together.

Moreover, Chinese students have behavior adaptation in high level. According to the results of this research, it was found that Chinese student have a big effort to learn Thai language and Thai cultures. They try to do a lot of activities such as watching Thai plays, Thai series, and Thai movies. The results of this research are similar with Tanit (2001). Tanit (2001) studies about the adaptation of foreign instructors in Thai university and it was found that personal medium such as Thai friend and social media can help foreign instructor have adaptation in high level.

### Recommendations for Further Study

Regarding the findings of this study, the following recommendations are made for future studies in this field.

1. According to this research have main focus on the adaptation of Paradigm, the adaptation of the feeling and the adaptation of behaviors. So the researcher will recommend the next research to study about the context and environment that may affect to adaptation.

2. The population in this research is Chinese students in Huikwang area only. So the researcher will recommend the next research to study people in different area in Thailand because different area of research may have the different results.



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**Undervalue Degree Research on Chinese Stock Markets : A Case Study of TCL**

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**Abstract**

There are huge investment opportunities lies in developing stock market. Shortage of capital in developing country stock market leads to plenty of undervalued shares. In order to test the level of undervalued, the paper employed DDM model and P/S ratio model, set up TCL as a case study, try to looking for the level of undervalued in Chinese stock market. According to Price to sales ratio analysis, the paper find out that the undervalue level for TCL, is three times lower than its value. According to price to book ratio, the paper find out the undervalue level is 2.66 time.

**Keywords:** Tcl Valuation, Price-to-Sales Ratio, Price-to-Book Ratio, Dividend Discount Model.

**1 Introduction**

There are huge opportunities in developing stock markets because of the misprice. It is common for the developing countries. Considering the shortage of the capital, it is impossible for shares in stock market to trade in its intrinsic value. Most of the time, the value will be undervalued. The capital in developing countries always charge a higher interest rate than developed countries, and the investment in developing countries can always make a better return. Being the second biggest economy in the world, China still suffer the shortage of capital and it is still existed plenty of investment opportunity. The paper will employ Dividend Discount Model (DDM), Price-to-sales Ratio (P/S), and Price-to-book Ratio (P/B), TCL as a example, compare with the industry peer's such as Haier, Midea, Gree which sales over 100 billions, try to find out the level of undervalue in Chinese stock market.

**2 Literature Reviews****The dividend discount model (DDM)**

The dividend discount model is a method of valuing a company's stock price based on the theory that its stock is worth the sum of all of its future dividend payments, discounted back to their present value. In other words, it is used to value stocks based on the net present value of the future dividends. The equation most widely used is called the Gordon growth model. It is named after Myron J. Gordon of the University of Toronto, who originally published it along with Eli Shapiro in 1956 and made reference to it in 1959.[1]

The equation is: Price per Share =  $D1 / (r - g)$

The DDM is derived from the formula for the present value of a perpetuity. Its variables include the dividend per share (D1), the discount rate (also the required rate of return or cost of equity,r) and the expected rate of dividend growth (g). The model, does not work for companies that don't pay out dividends. And the model does not work for companies that dividend growth rate is higher than the required rate of returns. While not accurate for most companies, the simplest iteration of the dividend discount model assumes zero growth in the dividend, in which case the value of the stock is the value of the dividend divided by the required rate of return. If the value obtained from the DDM is higher than the current trading price of shares, then the stock is undervalued.

**Price to sales ratio**

The price-to-sales ratio is a valuation ratio that compares a company's stock price to its revenues. The price-to-sales ratio is an indicator of the value placed on each dollar of a company's sales or revenues. It can be calculated by dividing the company's market capitalization by its total sales over a 12-month period. Abbreviated as the P/S ratio, the price-to-sales ratio is also known as a "sales multiple". Compared with the industry peers, higher ratio means the value for target company is overpriced, and lower ratio means the value for the target company is underpriced.

**Price to book ratio**

The price-to-book ratio is a valuation ratio that compares a company's stock price to its net asset. The price-to-book ratio is an indicator of the value placed on each dollar of a company's net asset. It can be calculated by dividing the company's market capitalization by its net asset over the year.

Abbreviated as the P/B ratio. Compare this indicator with industry peer's level, it will show the undervalue with the lower P/B ratio and overvalue with the higher P/B ratio.

### 3 Methodology

Dividend discount model is widely used to evaluate the firms value. This paper will explore this model to evaluate TCL. According to the situation of dividend for several prior years, you can choose the growth model with the growth dividend companys or use the perpetuity model for those company's without growth. For growth model, if the expected dividend growth rate is higher than the required rate of return, which means a negative result will be employed in the denominator.

In order to solve this problem, this paper will use the price-to-sales ratio, which is mainly used to evaluate the company with negative earnings or the company with a high growth rate. by the way, the price to book ratio will be used to test the result. Like all ratios, the price-to-sales ratio is most relevant when used to compare companies in the same sector. The paper will use the Gree, Midea, Haier to compare because they are all belong to the same industry, they are all international coporation, and all of them enjoy a brand name, with the sales volume over 100 billion RMB each year. A low ratio may indicate possible undervaluation, while a ratio that is significantly above the average may suggest overvaluation. By the compare with the average level, it is possible to observe which kind of undergraduate level the market is.

### 4 Analysis

TCL Corporation was founded in 1981. TCL Corporation focused on global scale household electrical appliance product manufacture and Internet application services, is listed as a whole on the Shenzhen Stock Exchange, and it includes four listed subsidiary companies: TCL Multimedia Technology, TCL Communication Technology, Tonly Electronics and TCL Display Technology. In 2015, Highly Information is listed on the New OTC Market. TCL Corporation currently has 70,000 employees serving 1 billion customers around the world, 26 research institutes and 21 manufacturing bases. It has set up sales offices in over 80 countries and regions, with its business covering more than 160 countries and regions in the world. [2]

#### 4.1 Financial result for 2017

For 2017, TCL achieved the gross annual revenue of RMB 111.57 billion, a year-on-year growth of 4.79%; the operating income of RMB 69.21 billion, a year-on-year increase of 13.3%; and the net profit of 3.54 billion, an increase of 65.83% year on year. Of the above net income, the part attributable to shareholders of the listed company reached RMB 2.66 billion, realizing the basic EPS of RMB 0.21. During 2017, the expenses on research and development reached RMB 4.72 billion, take part in more than 4 percent of sales, and the number also means that it is much bigger than the net profit for the year. Huge investment in research and development will bring the future earnings.

#### 4.2 Dividend discount model to evaluate

The annual cash dividends paid out by TCL between 2013 to 2017: 0.06, 0.08, 0.08, 0.08, and 0.10 in chronological order. TCL's dividend has increased by 0.01 each year, which equals average growth of 17%. Price per Share =  $D_1 / (r - g)$ . Assume TCL paid a dividend of 0.10 per share for 2017, the company expects dividends to grow in perpetuity at 17% per year, and the company's cost of equity capital is 5%, the 0.1 dividend is the dividend for this year and needs to be adjusted by the growth rate to find  $D_1$ , the estimated dividend for next year. This calculation is:  $D_1 = D_0 \times (1 + g) = 0.1 \times (1 + 17\%) = 0.12$ . assume an investor has a required rate of return of 10%, using an estimated dividend of 0.12 at the beginning of 2019, the investor would not use the dividend discount model to calculate a per-share value, because the growth rate is higher than the required return,  $r - g$  will be negative.

#### 4.3 Price-to-sales ratio comparison

Economic factors affect firms in similar ways within industries. Within an industry, firms tend to become more like each other over time, or they go out of existence. Firms may have temporary advantages, new ideas, or innovations that distinguish them from others, but the forces of competition and the ability of existing and new firms to imitate them drive out the temporary advantage.

Based in the same industry sector and similar size in terms of over 100 billion sales, there are four companies sales over 100 billion RMB in domestic appliance industries. Midea is listed on the top with 240.7 billion, followed by Haier with 159.2 billion, Gree with 150 billion, and then TCL with the sales of 111.7 billion (see table 1). All the four companies enjoyed with a global brand name and



operated in the global market. With the detailed analysis, it is easy to find that the market prices these companies differently.

Table 1: the comparison of P/S and P/B (RMB:billion)

	Sales	Total Asset	Net Asset	Market Price	Earning	P/S	P/B
HAIER	159.2	154.5	33.8	111.1	5.6	0.7	3.28
MIDEA	240.7	252.6	79.2	345.0	15.6	1.4	4.35
GREE	150.0	218.4	70.9	280.0	22.5	1.9	3.95
TCL	111.7	163.1	31.1	45.2	3.5	0.4	1.45

Data sources: sales, total asset, net asset data come from the annual report 2017

Market value is collected from the stock market on 10,May,2018

At the present time, the market offered GREE with 1.9 time multiple with the sales; and followed by the Midea, with a 1.4 time multiplier with the sales; for Haier, the market offered a 0.7 time multiplier with the sales, but for TCL, the market only offered a 0.4 time multiplier with the sales.

The valuation multiple in isolation is meaningless, but when compared to industry peers, it forms a basis to determine how fairly valued TCL is at a point in time. The companies with 1 dollar sales only offered 0.4 dollar market value, compared with 1.3 times average multiple with other three companies, it suggests a undervalued valuation for the company.

However if the investor believes that TCL is entering a period where the company is well positioned to grow sales faster than its stock price, then the current multiple will fall. This signals that the stock price should rise in the future to keep pace with the sales growth, expanding the multiple to maintain its current level or increase to higher levels. This is a good buy signal for the stock.

#### 4.4 Price-to-book ratio comparison

Price to book ratio is calculated by divid the market value by the net asset. For TCL 2017, the net asset is 31.1 billion and the market value is 45.2 billion.

From table 1, the result show that the price to book value for TCL is just 1.45, and it means the market value is 1.45 times its book value. But thinking about the ratio for Haier, the market value is 3.28 times higher then its book value, the market offered 4.35 times book value for Midea and 3.95 for Gree. The aveage price to book value for the three companies is 3.86, compared with 1.45 for TCL, the ratio shows that the price for TCL is undervalued. The undervalue degree for TCL is 2.66 time. This is another signal for the stock that the market will push the market price up by 2.66 time to 120 billion.

#### 5 Conclusion

According to the analysis, the price-to-sales ratio of 0.4 shows that the market offered 45.2 billion RMB for a sales of 111.7 billion RMB for TCL, compare with the industry peers average price-to-sales ratio of 1.3, the market value for TCL is undervalued and it also means there is a huge invest opportunity. The stock price should rise in the future to expand the multiple to industry peer's average level, the total market value for TCL should expand to 145 billion, which means three times than present level. If the price to book ratio be pushed up 2.66 time to average of 3.86, the total market value will increase to 120 billion. Limited by the disadvantage of those model, the result still need be evidenced by other evaluation tools.

#### Acknowledgement

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**THE RELATIONSHIP BETWEEN TRANSFORMATIONAL LEADERSHIP AND  
EFFECTIVENESS OF AN KANG GUANG HUA EDUCATION COMPANY IN SHAANXI  
PROVINCE CHINA**Wu Niu<sup>1</sup>, Kittimanorom<sup>2</sup>, Prapatsorn<sup>3</sup><sup>1-3</sup>Master of Business Administration, Rajapruk University, Nonthaburi, 11130, Thailand**ABSTRACT**

The objectives of this research were three-fold; as follows. First was to explore employee satisfaction of GUANG HUA education company. Second was send questionnaire to GUANG HUA education employees. Lastly, it intended to demonstrate the relationship between transformational leadership and effectiveness. A structured-questionnaire was used to collect data from the sample of 103 employees of four departments in An Kang China. The descriptive statistics were used to analyze the data such as Frequency, MEAN, and Standard Deviation, Pearson correlation coefficient was also conducted to assess the strength of linear association between variables.

The purpose of this paper is to examine the relationship between GUANG HUA education company and effectiveness. In this study, Data collected from 103 employees of four departments in in An Kang China. The present study employs a questionnaire survey approach to collect data for testing the research hypotheses. Relevant statistical analytical techniques including regression for analysis was then used.

The results found that both transformational leadership and effectiveness reported at a level respectively (Mean=4.52; 4.70, SD=.15; .08). Besides, the significant positive correlation between transformational leadership and effectiveness was also found. The main contribution of the paper is to provide empirical evidence about the impact of transformational leadership on effectiveness. Also, the findings of the study are important for both company and employee.

**INTRODUCTION**

In recent years, with the rapid development of education, the scale of industry market has been increasing. Promulgated by the China's information industry research network in 2017-2022 China's education training industry market situation analysis and development planning study, according to data from 2014 education training market size is about 750 billion yuan, in 2016, China has reached 990 billion-yuan, education training market scale growth faster. (From: Analysis of the statistics of the education in 2017)

At this era of market globalization and the abundance of information in terms of speed, size and rapid changes in the business domain as well as an increase in competition, there has been an increasing need for flexibility and capability of response. All such requires a careful leadership with clear vision which believes that success, excellence and creativity requires constant adaptation with external changes. This style is what so-called transformational leadership, which is capable of changing the present situation into the desired one. The adoption of modern concepts like transformational leadership enables the organization to cope with the challenges facing it and overcome these challenges in order to achieve competence, effectiveness and excellence in performance.

Present organizations have begun to focus on re-activation and being transformed into ones capable of meeting future competitive challenges. This has been accompanied by growing concern on the part of researchers studying transformational leadership. Such type of leadership helps to quickly spot new market opportunities convenient for the development of proficiency within the organization. A transformational leader is described as being a person of vision, creativity and inspiration who leads the change. The most important challenge, however, is creating effective leadership capable to lead the organization under this changeable turbulent environment into success, continuity and excellence

The problem that is being addressed in this paper is transformational leadership Influenced on effectiveness. The approach is adopted to solve the problem is Bass (1985), Bass & Avolio (1994) and Jiang Man tang (2008). The results obtained in this research suggested that transformational leadership had an impact on effectiveness. The impacts of these results are there is a significant correlation between transformational leadership and effectiveness.

## LITERATURE REVIEW

### 1 Transformational leadership

Bass (1985) described transformational leadership as a process by which leaders and subordinates help each other to advance to a higher level of motivation and morality.

Yu kl (2006) said that transformational leadership refers to the influence exerted by the leader to promote the membership in the state. A commitment to the organization's mission or purpose. That is to emphasize the leadership. Empower members to achieve their goals, change organizational culture and structure, and match management strategies. A process of achieving organizational goals.

Miller (2007) explores transformational leadership and charismatic leadership through self-awareness and personal leadership. The different. She said that when leadership is a deliberate transition, transformational leaders and other leaders exist. Specific behaviors that reflect the interrelationships of these specific behaviors. Use transformational leaders to connect with others. The commonality of mutual contact confirms that its influence process has great relevance and importance, which is the leader and each. The relationship between employees, colleagues, bosses, followers, and so on, when the leader makes a conscious effort to transform. There is common evidence of certain behaviors between leaders and others in interpersonal relationships.

Burns (1978) defined transformational leadership as a process where leaders and followers engage in a mutual process of 'raising one another to higher levels of morality and motivation.'

"Transformational Leadership" refers to the principal forward-looking vision and personal charm, and good use of various incentives, stimulate the organization members work motivation, to lead their members with each other Long, thus to achieve organizational goals.

Burns said: Idealized influence: Refers to the leader can win trust and respect of the employees and make employees can feel the manager has the mission of education, self-confidence, humor, has the characteristics such as concept, and the members to build trust, harmony, and close relationships; Inspirational motivation: The manager cares about the needs of each employee and assumes the employee's position as the employee's position and provides individual assistance to the employee when necessary; Intellectual stimulation: To provide new information or information to members of the company, encouraging members to use their intelligence to exceed their original motivation and expectations; Individualized consideration: Members enhance understanding of the company goal, the future development of the company has a forward-looking view, the manager can view this message to employees, and employees to share, so as to motivate people to reach a Shared vision of the company.

The researchers conclude that the definition of the transformation is the term of the company. Guide - President, with a forward-looking vision, from the shaping of the company vision to inspire the professional intelligence of teachers, to give full play to the unique charm of the individual, arouse the enthusiasm of the staff, and bring the company to the stage of transformation.

### 2 Effectiveness

Wang huiqiu (2014) said that "efficiency" refers to the comprehensive performance of education company, including all aspects of education company. Staff performance, effectiveness, training the students' learning outcomes, atmosphere and culture of the company, employee job satisfaction, employee's ability to adapt to the outside world and members of the company development. Determine the company's and other projects.

The independent variables of the research were the effectiveness theory of Weber (1971) concluded of administrative performance quality, teacher teaching performance, student learning achievements. Refers to the company target, conduct achievement effect quality, students' learning achievement and teacher's teaching performance results. Administrative performance quality: Education company operate in administrative leadership, company development, plans to set up and conduct and performance evaluation and company environment equipment planning and full of all sex, as well as the administrative personnel's service enthusiasm, team cooperation and work quality of excellence in quality. Teacher teaching performance: The teachers are suitable for curriculum and teaching professional quality, professional development, professional service attitude, career planning development, personal and spiritual spiritual adjustment and job satisfaction. Student learning achievements: Students in academic achievement, life education, character morality, physical and mental development, learning status, activity participation and learning satisfaction, and so on.



According to the definition of the above scholars, education company's efficiency is universal and universal, not single. Concepts or indicators can be represented.

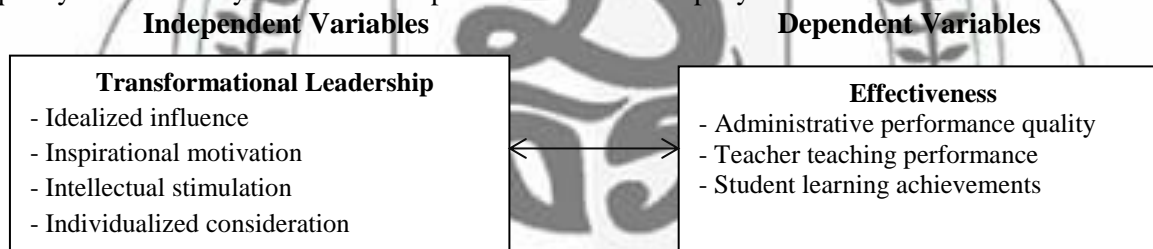
### 3 Related research

Tony Pehrson (2013) Transformational leadership and economic efficiency - Can a charismatic leader in an administration for care motivate the subordinates to improve the economic performance In the study I found some empirical evidence or indicators, which support the idea that a charismatic leadership can improve the performance, the productivity and the efficiency. However, other factors can also have impact on economic performance besides transformational leadership.

Weiping Jiang Xianbo Zhao and Jiongbini Ni (2012) The Impact of Transformational Leadership on Employee Sustainable Performance: The Mediating Role of Organizational Citizenship Behavior. Most research hypotheses have been testified to and proven. First, transformational leadership has been proved to have a positive influence on employee sustainable performance, except for the influence of inspirational motivation on task sustainable performance.

### Edin Strukan, Milan Nikolić, Senad Sefić (2015) IMPACT OF TRANSFORMATIONAL LEADERSHIP ON BUSINESS PERFORMANCE

Transformational leadership has a statistically significant and positive impact on the financial performance of the companies that were included in this study. Generally, transformational leadership describes how manager leaders can encourage, develop and implement significant changes in the company, in a way to empower followers directing them to changes, likewise they achieve greater quality and efficiency of all business processes in their company.



**FIGURE1 .1 Conceptual Frameworks**

## METHODOLOGY

This paper includes the research methodology of the qualitative study. In more details, in this part the author outlines the research methodology: Research Design; Population and Sample; Sampling Method; Instruments; Data Collection Methods; Data Analysis.

### 1 Population

The target population in this study were the in-service teachers of GUANGH HUA education company. The number of the in-service employees is 132 in 2017.

### Sample Size

**Table 1 Kiejcie & Morgan formula**

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
50	44	95	76
55	48	100	80
60	52	110	86
65	56	120	92
70	59	130	97
75	63	140	103
80	66	150	108
85	70	160	113
90	73	170	118

The sample size for employee was calculated based on table (Kiejcie & Morgan, 1970) are as 103 employees. the calculation from a population of 132 (previous population approximation) came up with 103 employees from GUANGH HUA education company.

## 2 Instrument developments

The questionnaire was used as an instrument for this study. The questionnaire was modified based on Bass (1985), Bass & Avolio (1994) and Jiang Man tang (2008). The following steps were performed to develop the questionnaire: Based on the studies of Bass (1985), Bass & Avolio (1994) and Jiang Man tang (2008), summary the instruments and translated into English by a Chinese-English bilingual translator; The instruments of Version I: English were examined and confirmed by two original investigators who developed the two instruments in Chinese language. Then the researcher corrected the instruments based on the original investigators' suggestions; On the basis of these theories and questionnaire, I made changes to the new problems of transformational leadership and effectiveness; Discussed with other students in the group and then asked the teachers for suggestions. Design my own questionnaire.

The questionnaire is used to survey in-service employee opinions of the GUANGH HUA education company. The questionnaire divided into three models: (1) The personal data. (2) Transformational leadership, (3) Effectiveness. The company had four departments: education department, academic affairs office, finance department, logistics department. There were 95, 12, 10, 15 people in four departments. So, I randomly selected 74, 9, 8, 12 people in four departments and sent to them questionnaire. The questionnaire was measured with a Likert scale-5 scales from 1 to 5, where 1 was strongly disagree, 2 was disagree, 3 was general, and 4 was agree. 5 was strongly agree. There were 1-5 point for strongly to strongly agree.

## 3 Data collection

Data collection was conducted after obtaining permission from the HUANG HUA education company, the procedures of data collection were divided into two phases: preparation phase and implementing phase. I received 103 questionnaires and used SPSS to collect data.

## 4 Research method

Using the first panel by two China management experts' opinions, the researcher corrected the instruments based on their suggestions. Managers and employees of related companies had confirmed the validity of the questionnaire. The Item-Objective Congruence (IOC) was used to evaluate the items of the questionnaire based on the score range from -1 to +1. The average score of my questionnaire was 1. The score is higher than 0.5. So, the questionnaire was congruent.

The reliability value was calculated by using Cronbach's alpha to ensure whether there was internal consistency within the items. George and Mallery (2010) illustrated the value of Coefficient Cronbach's Alpha as the following:  $\geq 0.9$ = Excellent,  $\geq 0.8$ = Good,  $\geq 0.7$ = Acceptable,  $\geq 0.6$ = Questionable,  $\geq 0.5$ = Poor, and  $\leq 0.5$ = Unacceptable. Therefore, in order for the research questionnaire to be reliable, its value of Coefficient Cronbach's Alpha must be at least 0.7. According to the pre-test, the Cronbach's Alpha of transformational leadership was 0.750, so the questionnaire was acceptable; the Cronbach's Alpha of effectiveness was 0.850, so the questionnaire was good; the Cronbach's Alpha of questionnaire was 0.800, so the questionnaire was acceptable.

## RESULT

### 1 Transformational leadership

**Table 2 Mean and Std. Deviation of Transformational leadership**

	Mean	Std. Deviation
T1	4.52	.25
T2	4.38	.23
T3	4.47	.22
T4	4.70	.21
Ttotal	4.52	.15

From the table 2, we can know the mean and Std. Deviation of Transformational leadership are (4.52) and (.15).

## 2 Effectiveness

**Table 3 Mean and Std. Deviation of Effectiveness**

	Mean	Std. Deviation
E1	4.71	.12
E2	4.60	.25
E3	4.66	.13
Ettotal	4.68	.081

From the table 4, we can know the Mean and Std. Deviation of Effectiveness are (4.68) and (.081)

## 3 Relationship of transformational leadership and effectiveness

**Table 4 Pearson correlation for Transformational Leadership and Effectiveness**

Transformational Leadership	Effectiveness		Administrative Performance Quality		Teacher Teaching Performance		Student Learning Achievements	
	Pearson Correlation	Sig. (2-tailed)	Pearson Correlation	Sig. (2-tailed)	Pearson Correlation	Sig. (2-tailed)	Pearson Correlation	Sig. (2-tailed)
Idealized influence	.18**	.000	.26**	.000	.17**	.000	.23**	.000
Inspirational motivation	.44**	.000	.45**	.000	.36**	.000	.56**	.000
Intellectual stimulation	.26**	.000	.15**	.000	.15**	.000	.55**	.000
Individualized consideration	.48**	.000	.21**	.000	.44**	.000	.16**	.000
Total	.53**	.000	.33**	.000	.43**	.000	.59**	.000

\*\* Correlation is significant at the 0.01 level(2-tailed).

From table 3 shown that: 1. Transformational Leadership had positive relationship with effectiveness: Effectiveness in the overview of level is ( $r=.53$ ). 2. Transformational Leadership had positive relationship with administrative performance quality: Administrative performance quality in the overview of level is ( $r=.33$ ). 3. Transformational Leadership had positive relationship with teacher teaching Performance: Teacher teaching Performance in the overview of level is ( $r=.43$ ). 4. Transformational Leadership had positive relationship with student learning achievements: Student learning achievements in the overview of level is ( $r=.59$ ).

**CONCLUSION**

## 1 Limitations

Three major limitations existed in the current study: Data was collected via a convenience sample; Data relied on self-reporting; Data was collected at a single institution.

## 2 Heuristic

:Future research could investigate several fields, based of this research Study other studies and papers; Further analysis the level of school transformational leadership and the level of effectiveness .

## 3 Conclusion



The data analysis showed that transformational leadership has related with effectiveness and the transformational leadership had a positive relationship with effectiveness of the GUANG HUA education company.

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**Differentiation Strategy Efficiently**

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**Abstract**

Numerous organizations, at the present time, give precedence to the “Differentiation Strategy” as the significant strategy that encourages customers to buy products from one organization, which is different from the other products, rather than the others in the market. In other words, the differences of products, functions, process of the productions, design of products and packages, and stories of products that represent to customers are critical factors which lead to the success or failure of the organization. Some of the products are acceptable for customers. However, we cannot deny that some are not. The customers do not conceive the difference of the products, values that a producer wants to represent, or they do not want to use them and thus causing a useless benefit and investment.

**Keywords:** Strategy, Differentiation Strategy Efficiently

**1. General details**

At the present time doing the business in any organizations are related with management strategy. The objective of it is for the stability of one organization and the capability to proceed the organization in the industrial business’s competitiveness. Plus, every organization has the purpose to make a profit for stakeholders and develop the organization to have more efficiency. Rakchuchep, K. (2013) [1] In the competition, every company has to try to have the advantage over others to increase the number of customers which is the process that has to combine various techniques together. Only the effective organization will be successful by the use of distinctive strategy that strikes the right chord of the customers.

Thus, management strategy is important factor that makes the organization systematically proceed and have obvious purpose that is suitable with organization’s resources by concentrating on long-term goal in contemporary environment.

The nature of the competitive environment is currently found to be high. There is a lot of competitors and most of them reduce the price (Low cost leadership) in order to attract consumers to buy their goods. This means that the rate of profit declines due to the sale price. We might say that most businesses use Red Ocean Strategy because they fight hard to scramble for customers to buy their goods by reducing the price endlessly. Comparing between two department stores, Tesco Lotus and Big C supermarket, it is a very competitive price. They always have a promotion, such as the buy 1 get 1 promotion and the discount coupons. One store has a promotion that the consumers will get the discount coupon 110 baht for the next purchase when they regularly buy the goods for 999 baht whereas the other store has a more attractive promotion with the discount coupon of 130 baht for the next purchase. It can be seen that reducing the price makes consumers get much more benefits and they are willing to purchase goods and services from those vendors. However, in another aspect, we will find that those vendors will finally receive less profit. Moreover, the shops will push the burden on the manufacturer by underselling the purchase price or raising the price on the shelves. That may affect the risk of loss of the manufacturer or the risk of a production budget to develop its research in the future because the profits are not sufficient for the budget allocation, but it may be enough only for the cost to survive.

There are more relevant factors for the higher competition, such as number, size and competency of competitors in the industry. If, in any industry, there is a competitor with similar competencies, every company will compete fairly and it will be difficult to dominate the market completely. However, if one of the entrepreneurs has remarkable ability and a competitive advantage over the others, he will make the others struggle to get into the market or to enter the industry in the future.

Furthermore, growth rate of industry and economic growth rate are the important factors that affect the size of competition. At the high economic growth, each entrepreneur can easily sell their products because the buyer has higher purchasing power and much more money. Most

companies will be more profitable only they managed to meet the needs of customers and try not to allow competitors to interrupt or scramble their customers. So if the growth of the industry continues to grow, the competition will not intense. On the other hand, if the growth of the industry or the needs of customers decrease, this will cause serious competition as each company wants to increase its market share for survival. Therefore, the company tries to grab the market share from competitors. In such circumstances, every company has a capacity that exceeds the market demand, so it must look for strategies or tactics to increase market share including the use of price cutting tactic as well.

The difference of the product and service significantly affect the consumers, especially if the quality of the product is difficult to imitate from other competitors. The value of such difference will cause loyalty in the product. Customers will not switch to other products even though their qualities are inferior and their prices are higher than other products in the market. These customers will focus on the difference of the goods rather than the price. It is found that if the products in the market have the same quality, any purchase of goods will be subject to price and service factors. This results in a fierce competition.

Switching Cost is the cost of changing usage of one goods to another. If the switching cost is high and the competitor cannot attract customers to change their minds to buy products from that competitor, switching is difficult and the competition will not be serious. On the other hand, if the switching cost is low and changing the purchase from one seller to another is easy, the competition will be more serious.

Moreover, the value of fixed cost and production capacity are important competitive factors. Fixed cost is total cost that does not vary according to the level of production. However, the average cost per unit will decrease if the volume of production increases. Fixed costs are also divided into two types which are Committed Fixed Cost and Discretionary Fixed Cost. Committed Fixed Cost is a fixed cost that cannot be changed in the short term, such as long-term leases and depreciation whereas Discretionary Fixed Cost is a fixed cost that occurs occasionally from meetings or executive decisions, such as advertising costs, research costs. However, for management purposes, most fixed costs are usually controlled by the executives. So if the fixed cost of production is high then variable cost per unit will be low and affects to production in full capacity. That will finally lower total cost. Nevertheless, if all of the company's products are produced at full capacity, the volume of inventory and quantity of products in the market will be very high. It also expands the risk of expired or short-lived or obsoleted product life cycles. So every company tries to release as many products as possible by reducing price, offer special price, and many promotions as well. This results in more intense competition. In conclusion, we can say that if the value of fixed cost is high, the competition is not intense while if the value of fixed cost is low, the competition will be more intense.

Professor Michael E. Porter, an economist from Harvard University in the United States of America has represented many theoretical works and theories. One of them is "Business Level Strategy" or "Competitive Level Strategy." Chewatrakoonkit, B. (2006) [2] This strategy is focusing on the competition with the competitors in a market and creating "Market Share" for the organization. Hence, an executive has to create strategies that boost an organization to have the profit beyond the standard of certain business. The organizations can make themselves to be more valuable than others by various ways. For instance, developing and standardizing the products, using advanced technologies in manufactures, having lower cost in producing the products, having better services, producing the products according to the need of customers rapidly, are able to make the customers perceive the value of the products and services and make them feel that it is worth for their expenditure.

## **2. Business Level Strategy or Competitive Level Strategy**

Business Level Strategy or Competitive Level Strategy is the strategy that encourages the competitive advantage to have more effective capability than other competitors by using tangible and intangible resources in an organization effectively. Sarithwanich, S. (2010) [3] An organization has to understand the true need of the customers and can precisely identify the target customers - mass, segments, or niche.

The advantage in the competition depends on the ability of strategy's uses in 3 ways - Differentiation Strategy, Cost Leadership Strategy, and Focus Strategy.



Firstly, differentiation Strategy is focused on the specialization and uniqueness of products - no one is able to make the same - in other words, in customer's view, the products will have value, uniqueness, or unique characteristics. These characteristics appeal customers to be willing to spend their money on the products due to the differences of the products, for example, out - looking of the products, advantages of uses, positive brand image, and better after-service than other competitors. This difference can lessen the new competitors to join in the market as there is the possibility that they cannot produce better products. Customers will not be interested in the prices even though the prices are higher than the average of markets. Customers will still use the products since they perceive the values and differences that other companies cannot provide for them. All of these things help the company to increase the sales rate more than the others. The more appreciation from the customers, the more familiarity between customers and products. As a result, this will be beneficial for the company as there will be less competition because the products are different from the others so it is not necessary for competing. In addition, this will prevent the new competitors and substituted items by creating the value of the brand. The customers will continue to use the product without the cost's concern as they believe that they will get better products. Hence, the organization can create "Premium Price" such as Rolex (the watch), Mercedes-Benz (the car), Cross (the pen), and Michelin (the wheel) as well.

Secondly, cost Leadership is the way that one organization can produce the products in the lower prices or capitals than other organizations but the quality is not different. Normally, cost leadership can make the profit for the organization as the organization can set the price lower than other competitors. Therefore, it will be more attractive for the customers and it will prevent the competitors from making market share. In fact, lower cost will happen in huge market where there are the high needs and qualified products by using "Economy of Scale" which can produce numerous products in one time. However, "Learning and Experience Curve Effects" can be used to support the organization as well since experience can encourage the better profession and knowledge. The low cost of one or two products is not adequate for being the cost leadership. It has to be the cost in overall view of the organization and every product then we can say that this is the cost leadership. The advantage from being cost leadership is that the organization is able to make higher profit while being able to prevent competitors to be involved in markets. By using the price as the main factor, competitors will not be willing to compete in terms of the price and thus the customers will not want to lessen the price as the product is already considered as low-price product. Furthermore, it prevents the merchant who sells the resources to organization from increasing the price and cost leadership also makes the organization still have more advantages than others in terms of the use of substitute products such as Hundai (car), Big (pen), and Goodyear (wheel).

Thirdly, focus segment or Niche Market is the strategy which represents only the specific products to the specific groups of people or areas. Vitayaudom, V. (2010) [4] Nevertheless, the groups of customers have to be huge enough to ensure that the business will have profits and a big dealer is not interested in it. In doing business, we have to choose whether profit or market domination. In other words, a business that chooses this strategy will have high profit but low market domination. The business should be concentrate on specific groups and not extended the frame of the products to be obscure; for example, high-priced housing estate has the purpose to penetrate the customers who have high income, Alpha Romeo car, and Polaroid camera.

### **3. Efficiency**

Efficiency is the condition that makes success or the ability to make some works. In terms of economics, there are the factors that indicate the successful results which are saving, worthiness, punctuality, and acceptable quality all over the whole process - input, process, output Teerapal, P. (2008) [5]

When the terms which mentioned above apply in an individual, it means that one has ability to work in time and be on time by using less resources. For example, effective staff will make more useful works than ineffective one and he or she will make the organization grow rapidly with the acceptance from the others.

When the terms are used in effective organization, it means that the organization organizes the processes or functions to proceed the works well. Employers also have knowledge and ability. Moreover, there are the methods to check and maintain the quality of the products, and it can produce

the qualified works on time by using the low-range resources in and out of the organization. For instance, we use time, budget, and people only a few but the outcome is acceptable.

Not only using “efficiency” terms to people and organization, it can be used in concrete and abstract ways as well. That is to say, the condition that the work’s process is satisfying. To illustrate, using effective computer notebook, teacher has effective teaching, and efficiency of work process is satisfying.

Therefore, organization acts as the tool for changing the input factors such as labor, land, capital, management of technology. Also, the output factors create products and services. The process in measuring the efficiency is the ratio in the quantity of input resources producing into the output resources. Hence, efficient organization is the organization that has less input but more output to reach the objective.

There are 5 ways to compare the ratio between output and input to make the efficiency - output divided by input. Firstly, output is increased and input is stagnant, such as the working process that can make more work but using the same number of people and amount of time. Secondly, output is increased and input is decreased, such as the working process that makes more works but using less number of people and amount of time. Thirdly, output is the same but input is decreased, such as the working process that has the same result with the goal that one set but using less number of people and amount of time. Fourth, the increasing of output is more than the increasing of input, such as the working process that makes more than three times of the works in the setting goals. However, it uses more than double of the number of people and the amount of time. We can see that the ratio of the increasing of output that affects input has the value more than 1. Lastly, the decreasing of output is less than the decreasing of input, such as the working process that has the work results lower around 10% from the setting goals but the number of people and the amount of time are lessen more than a half. As a result, the ratio of output to input is less than 1. In this case, this is the working process that is effective but does not reach the organization’s goals.

In management strategy, efficiency can be occurred from different factors. First of all, “Economics of Scale” result from “Mass Production” and the “Standardization” of the products lower the cost as the cost of resources is cheaper, distribute stable capital with the result of the products Watcharodomprasert, V. (2016) [6] next, “Learning Effect” result from the predictable works, it makes us familiar with the works and able to do it faster and better. In addition, “Experience Curve” can lower the capital systematically and the result lowers the capital per unit. Moreover, “Flexible Manufacturing”, by trying to lessen the time and setup process of the machines and make the machines more productive. Plus, “Customer defection” is the loss of customers to the competitors. If the loss is high, the expenditure of the organization will be higher, such as the expenditure for finding new customers and for advertising. The another factor is “Just in Time” factor, it helps to lessen the inventory and carrying cost. Next, “R&D”, such as innovative production design or novel design package that is easy to produce. These will lead to the decrease of time and resources in the production. “Human Resources Development” is the important factor as well. The more effective ability of the employees, the more productivity the organization will get. For instance, the seminar for developing the ability of employees or the set of self-managing teams. Furthermore, efficiency of “Information System”, wireless communication, Internet connection, distribution of fiber optic, is the main system for researching and communicating and thus lower the structure of the cost Porter, Michael. E. (2004) [7]

Lastly, efficiency of “Infrastructure” using various regulations and focusing on effective and cooperative working environment is so important as well.

#### **4. The effective “Differentiation Strategy”**

We cannot deny that to select to use this strategy has to use some budget for researching and creating the differences and there is no guarantee whether such differences will long-lasting or not. At the present time, competitors in the market have the ability to imitate the products rapidly and the quality is similar as well. The organization that imitates the product does not need to have the budget for doing the research or creating the work, it just has to view the feedbacks of the customers. If the customers have positive feedbacks, the organization will copy such products. On the other hands, if the customers have negative feedbacks, the organization will not interest to copy such products Arthur

A. Thompson and A.J. Strickland. (1999) [8] The expenditure on this investment, the precursor has to take a risk.

The another risk in using this strategy is how the differences strike the right chord of the customers. If the customers do not feel or understand the value of the product, they will not intend to spend more money on the product as the product has “the difference that is not different”.

In conclusion, when we use the word “efficiency”, it means that there is the investment and worthy result from such investment. The strategy has to be explicitly different from the competitors and strike the right chord of the customers - the customers are willing to buy that difference. To illustrate, “Apple” products are concentrating on every minute details of the products and we can see that the Apple products are very popular all over the world. In January 26<sup>th</sup>, 2016, Apple announced the annual finance in 2016, and in the first quarter ended on December 26<sup>th</sup>, 2015, the new record of quarterly income was \$75.9 billion with net income at \$18.4 billion or \$3.28 per diluted share, comparing to quarterly income last year at \$74.6 billion with net income at \$18 billion or \$3.06 per diluted share. Gross margin was 40.1% while the same quarter last year was 39.9%. Sales in foreign countries was 66% of the quarterly income with the most innovation in the world. Also, new sales record was created for iPhone, Apple Watch and Apple TV as well.

### 5. Conclusion and Discussion

The “Differentiation Strategy” has the risk in the investment for researching the product to be truly different. Hence, the strategy can be effective by the result that worthy for the investment, the income from the customers who accept and see the value of the products, and the differences that are hard to imitate, and thus the normal products cannot be involved in the “differences” market. Discussion, using the current strategy can solve the above problems. The use of differentiation strategy can reduce the price competition. They can find the difference that customers need and increase the profitability of those products and services effectively.

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**An Analysis of Scientific Materials and Equipment Trading Business in Thailand**

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**Abstract**

The objectives of this research are to study 1) The competitive environment of Michael E. Porter in scientific materials and equipment trading business in Thailand 2) To study other factors of competitive environment in scientific materials and equipment trading business in Thailand 3) To analyze the competitive environment of Michael E. Porter and other influencing factors to compete in scientific materials and equipment trading business in Thailand.

This research was realized through the combination of qualitative and quantitative research methodologies using the Delphi Method on 17 experts for obtaining preliminary information factors affecting the business. Then, 156 questionnaires were collected in scientific materials and equipment trading business in Thailand (Source: Trade Association of Science and Technology). Statistical techniques were utilized to analyze the data including Mean, Standard Deviation, Inter-Quartiles Range, Pearson's Correlation Coefficient and Multiple Regressions (Enter Method).

Results from the above indicate that independent variables include 1) Intensity of rivalry between competing firms 2) Threat of new entrants 3) Bargaining power of buyers 4) Bargaining power of suppliers 5) Threat of substitute product 6) Technology 7) External stakeholders 8) Political situation 9) Prediction of natural environment on dependent variable, and competition in scientific materials and equipment trading business in Thailand, at a statistically significant level of .01.

**Keywords:** Scientific Materials, Equipment Trading Business in Thailand

**1. Background of the problem**

The competition in the scientific and technological trade in Thailand has been increasingly competitive. Due to government budget allocations for limiting research or international research, the values of exports and number of products that require quality-check were decreased. The amount of scientific equipment required was reduced. On the other hand, when the economy is in good condition, the expansion of the market will be increased. High value exports will create the flourishing science and technology. Scientific materials which sell in Thailand are produced in many countries over the world, even in Thailand. The manufacturers in Thailand are trying to produce machines, tools, materials and scientific equipment to be sold in the country. Also, they are trying to reduce import values and enter the international market. However, this seems not to be successful.

Information from the Department of Trade from 2014 to 2017 shows that the value of imported materials, equipment and scientific instruments have increased by 38.9%. Eventually, in 2017, an import value is approximately sixteen billion baht per year. According to the cooperation of the Customs Department, the top three countries which export the scientific materials to Thailand, from 2014 to 2016, are Japan, China, and the United States. In 2017, products from Poland were ranked as the third place instead of the United States. The first place is still Japan, following by China in the second place.

**Import Value in Thailand (2017)**

Year	Value (Millions Baht)
2014	11,343.06
2015	10,905.68
2016	13,630.93
2017	15,751.25

(Source: Center for Information and Communication Technology Office of the Permanent Secretary By the cooperation of the Customs Department, 2018)

**2. The importance of the problem.**

According to Potter, the current environment has dramatically changed from 34 years ago, especially in the technology industry, since Porter presented the theory of the five-forces competitive environment. In addition, in communication stance, it has changed from landlines communication to the wireless and internet communication, which enabling immediate communication. This demolished the barriers and created the globalized world. Hence, we can do business and reach the customers and suppliers easier.

Is the case of barriers based on the Porter's Model are still activated?

The changing of environment and procedure and the increasing of stakeholders, especially external stakeholders, lead to the greater bargaining power over the past. This immediately have an impact to the organizations. For instance, the power of bargaining receives the influences from social networks.

The researcher is interested in studying the competitive environment or the five-forces factors of Michael E. Porter to explore whether the five-forces factors or other factors are practical at the present time or not. Due to dramatic changing environment and differences from the past, it is necessary to study the external competitive environment in the current situation. Studying this certain issue are for realizing new factors and knowledge, making adjustments, and applying the methods of operating business in the real world. (Porter, 2004)

### 3. Research Objectives

To analyze the competitive situation in the science and technology trading in Thailand by practicing the competitive factor model of Michael E. Porter. To analyze other competitive factors which have the effects to the competitive environment in the certain business.

### 4. Scope of Research

This study - The Five-Forces of Porter Model and other factors expected to affect the industry competition. In order for this research to achieve the objectives of the research, the scope of research is as follows:

1. Content Scope - The five competing forces of the Porter Model are: 1) Intensity of rivalry between competing firms 2) Threat of new entrants 3) Bargaining Power of Buyers 4) Bargaining Power of Suppliers 5) Threat of Substitute Product. In addition, this research will consist of studies to identify other external factors which may affect the competition in the science and technology trade in Thailand.

2. The science and technology businesses will be the population and sample in this research — there are 156 companies in Thailand. (Information from the Trade Association of Science and Technology), whose membership is in the association.

3. Research scope is divided into 2 parts.

- Qualitative Method by Delphi Technique – An expert's invitation for brainstorming, the researcher's study for finding other factors in addition to the five competitive forces model of Michael E. Porter.

- Quantitative Method – using the result from qualitative method to create the questionnaires for collecting data from the samples by using Correlations statistic and Pearson's product moment correlation coefficient, analysis of the relationship between the variables by Multicollinearity Correlation analysis between independent variable, analyzing all independent variables which affect the dependent variables and they were analyzed by multiple regression analysis to study the influence of the independent variables on the dependent variables.

### 5. Expected Benefits

1. Applying the analysis in the business of trading materials and scientific equipment to better suit the current competitive situation.

2. Finding new fundamental factors which is not related to the model of Michael E. Porter Model to suit the business of trading in scientific materials in Thailand.

3. To improve the knowledge of the practical strategic management.

### 6. Theories and related research.

**1. Resource Dependence Theory** describes the relationship between the organization and the environment. The concept of the theory is to study the impacts of external resources on organizational behaviors and to study the ability for providing external resources that are essential to the organization's managements. This theory is widely accepted since 1970.

Pfeffer and Salancik, 1978, view of resource dependence as it is the importance of managing organizations to the maximum benefit, such as the selection of personnel in management level and staff level, strategic management of production, the structure of the project or contract and the external linkages including all aspects of organizational strategies.

Curtis W. Cook and Phillip L. Hunsaker, 2000 authors of the book named "Management and Organizational Behavior", Third Edition, International Edition, argue that every organization needs

both basic internal resources and extra external resources in the organization to add value to the product or service of the organization. Normally, internal resources consist of five factors which are personnel, job, technology, organization and culture. They are able to create the working process. They are applied to the environment or external factors to achieve the highest quality work.

**2. Organization Environment** The environment has positive and negative impacts on the organization. Environment is either controllable or uncontrollable. Managers should consider the environmental factor to create the strategy. The environment of the organization can be divided into 2 types: external environment and internal environment. Arthur A. Thompson and A.J. Strickland. (1999)

The external environment is the uncontrollable factor but may be predictable. For forecasting trends that directly affects the organization, the management must consider various circumstances which can result in the success or failure of the organization. External environment has both positive and negative impacts on the organization. Sometimes it is an opportunity but sometimes it is a tread. External environments affect the organization differently, some organizations can adapt themselves but some cannot due to different management. To be the sustainable competitive advantages organization, the certain organization should be adapt in the changing environment and can predict the opportunity precisely.

The examples of External general environment. Jintana Boonkang (2009)

- Economic environment
- Social and cultural environment
- Political and legal environment
- Technological environment
- Natural environment
- Demographic Environment

Internal environment aims to find a way to manage the organization and use its resources to the maximum efficiently and effectively. The resources in the organization include assets, capabilities, and competences. Tangible resources are personnel, machinery, equipment, and raw materials. Intangible resources are intellectual property, copyright, trademarks, and etc. The combination of abilities and assets will result in the achievement of organization's goals and then it will create the power competency so it is valuable.

**3. Industrial Competitive Environment.** This is a major factor affecting the pricing, the profitability of the products, production, and distribution. If the competitive environment creates opportunities or positive results to the company, the company will make more profit. On the other hand, if the competitive environment is a barrier or negatively affect the company, the company will be failed. The most common used industrial analysis model is Michael E. Porter's Model, commonly known as the Five Forces Model which consist of the following factors:

- Intensity of Rivalry between Competing Firms
- Threat of New Entrants
- Bargaining Power of Buyers
- Bargaining Power of Suppliers
- Threat of Substitute Product Thipawan Liewsuwan (2006)

**4. Competitive Advantage Theory.** The responsibility of managers is financial responsibilities to shareholders and social responsibilities to stakeholders. If the managers are able to take these responsibilities, there will be wealth and security for the organization. To create wealth and stability, the competitive advantage is needed. Competitive advantage means the ability of the organization to conduct its own business better than the others. Competitive advantage will help the organizations to increase higher profitability than the industry standard or create more organization values than other competitors. Competitive advantages can be achieved in many ways. For example, product development, product quality, technological production process, decreased in production costs, and well service. Moreover, the ability to develop products to meet customer needs is faster and the customers are able to recognize the value of products and services more than competitors. Generally, competitive advantage is based on four factors: Efficiency, Quality, Innovation, and Customer Responsiveness.



## 7. Research result

With Delphi Process Analysis, the results of the nine factors analysis indicate that the expert group has commented all nine factors that they are affecting the present competition. Sorting by descending order,

- Technology Factor. The result was at the highest level (mean = 4.5647, S.D. = 0.42565).
- Natural Environment Factor. The result was at the highest level (mean = 4.4853, S.D. = 0.50366).
- Political Situation Factor. The result was at the highest level (mean = 4.2941, S.D. = 0.54655).
- The bargaining power of the buyer. The result was at the highest level (mean = 4.2500, S.D. = 0.53765).
- Substitute factor. The result was at the highest level (mean = 4.2059, S.D. = 0.42606).
- Factors influencing stakeholder groups, external stakeholders. The result was very high (mean = 4.0118, S.D. = 0.46621).
- The bargaining power of the seller. The result was very high (mean = 4.000, S.D. = 0.40505).
- Factors of competition size. The result was very high (mean = 3.8941, S.D. = 0.39445).
- New Entrants Factor. The result was very high (mean = 3.8235, S.D. = 0.47405).

Then these factors were taken to make questionnaire. The reliability of the questionnaire was tested using Cronbach's alpha coefficient through statistical analysis program. The result from the Cronbach Method or Cronbach Alpha was 0.828, which is considered to be very accurate. The IOC (Item Objective Conguence Index) of the questionnaire was tested and found that the IOC value of the questionnaire was 0.93 points, which means that all experts had the same opinion that such questions had valid content.

Testing of the relation between the independent variables of competition in various aspects affecting competitive environment nowadays in the trade of scientific and technological materials in Thailand using Correlations, Pearson's correlation coefficient. Analysis of the relationship between the variables Muticollinearity by using the Correlation Analysis method, the nine factors derived from the delphi process were analyzed. All of the variables that affect the variables were analyzed by multiple regression analysis. This is because there is no correlation between the correlation coefficient of 0.561 and 0.30-0.69. So all the variables are not interrelated.

The Multiple Linear Regression Analysis was used to test hypothesis on factors affecting the competition in Scientific Materials and Equipment Trading Business in Thailand through the statistical program. The results were as follows:

Equation in raw score form.

$$Y = 0.111X1 + 0.111X2 + 0.111X3 + 0.110X4 + 0.111X5 + 0.111X6 + 0.111X7 + 0.110X8 + 0.112X9$$

Equation in standard score form

$$Y = 0.167X1 + 0.173X2 + 0.150X3 + 0.164X4 + 0.197X5 + 0.170X6 + 0.190X7 + 0.166X8 + 0.189X9$$

When Y represents the competitive environment in the science and technology business in Thailand today.

X1 represents the size of competition.

X2 represents the new entrants.

X3 represents the bargaining power of the buyer.

X4 represents the bargaining power of the seller.

X5 represents substitute factor

X6 represents Technology factor

X7 represents Factors Influence References External Stakeholders

X8 represents Political factor

X9 represents natural environment factor.

## 8. Discussion

The research result showed that technology factor affected competition in present industrial business. This is consistent with Thaveekiet Praputtrakun. He did the thesis about Competitive Advantage Model in Electronic Industry. This topic is about studying of factors that contribute to organizational management model for creating a competitive advantage by using a quantitative study with qualitative research. The research informs that the environment of organizations in technology would specify the organizational characteristics that have the competitive advantage. Also, Suban Manawitayakarn The Factors Effect to The Competitive Advantage in Construction Business studied factors affecting the competitiveness of construction materials trading business and evaluation of the management model to enhance the competitiveness of construction materials trading business in Bangkok. It was found that technology factor also affects the competitiveness of construction material trading business as well.

## 9. Suggestion

### *Suggestions for Entrepreneurs*

The results of the research “Analysis of scientific materials and equipment trading business in Thailand” under five competitive constraints, the researcher has suggested that the development of scientific materials and equipment trading business in Thailand are

1. The sciences material trader must have a vision to study all external factors affecting the operation and survival of the organization and to adapt the organization to suit the changing environment, especially, the substitution factor.
2. The sciences material trader must realize that the same external factors may affect the organization differently depending on the ability of each organization. Therefore, the organization must have employees who understand the changes in the environment and have the ability to share and exchange experiences, knowledge, adaptation, problem solving to the situation.
3. The sciences material trader should assess the external factors that mostly affect the organization and should reinforce the strengths of the organization to develop along with the external factors. Plus, they should adapt the internal system to the external environment such as the development of operational strategies related with conditions change in technology, competition with competitors in the market, influential groups ,and the replacement of the product.
4. The sciences material trader should set up research and development teams to meet the needs of consumers and prevent the substitution of other products by developing products to be modern, easy-to-use and high quality.
5. The sciences material traders should establish good relationships with influential groups and stakeholders to increase competitiveness in all aspects such as the exchange of information, management of marketing operations, sales, and services.
6. The sciences material traders must be able to build capacity, quickly access to information resources, organize seminars in the organization and enhance the ability of the staff to adapt to the rapid changing external environment.
7. The sciences material trader should always monitor and evaluate the potential of the organization. There are advantages and disadvantages, or opportunities and obstacles, that the organization must realize and adapt because the opportunities and obstacles are changed all the time. The organization must meet the criteria and obvious definite indicators. This will be effective as the organization needs.

### *Suggestions for the next research*

To provide research on the analysis of scientific materials and equipment trading business in Thailand, under five competitive pressure models, to be widely used in the study and research of people who are interested in the certain topic. Researchers have some suggestions for the next research:

1. The next research should be made in other business sectors for the comparison between the scientific materials and equipment trading business in Thailand whether there are any factors that match or affects the competition in the future business or not.
2. The next research in the Delphi process should increase the number of experts. If the number of experts increases, it will result in an increasing in diversity of perspectives and the opportunities to find other factors that affect the competition.

3. The next research should be conducted at additional time, according to the information founding in this research. Political factors affect the competition. This may due to the turmoil in the country in the long time, as a result, the respondents think of this factor because they are experiencing all the time.

4. The next research should include other statistical methods such as Factor Analysis and Lisrel application testing and compare the results obtained when using different statistics whether the results are different or not.

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**RESEARCH ON INCENTIVE FACTORS OF KNOWLEDGE EMPLOYEES: A CASE STUDY OF XI'AN SUANNI LEBO MAKER EDUCATION COMPANY LIMITED IN CHINA**

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**ABSTRACT**

The objectives of this research were to study incentive factors in Suanni Lebo Maker Education Co., Ltd. and level of incentive and job satisfaction of knowledge employee in Suanni Lebo Maker Education Co., Ltd. and the relationship between incentive factors and the level of incentive and job satisfaction in this company. A questionnaire was used to collect data from 132 employees. The statistics used to analyze the data were Frequency, Mean, Standard Deviation, and Pearson correlation.

Incentive factors of the Suanni Lebo Maker Education Co., Ltd. was of a moderate level, Level of the state of knowledge employee of the Suanni Lebo Maker Education Co., Ltd. was of a moderate level, There was strong positive relationship between incentive factors and the state of knowledge employee of the Suanni Lebo Maker Education Co., Ltd.

It is the positively correlated relationship between Incentive factors and the state of knowledge employee in Suanni Lebo Maker Education Co., Ltd. It can be seen from the correlation between the factors and the incentive degree that the demands of knowledge employees in the work are multifaceted. Enterprises need to meet the reasonable needs of employees in all aspects. Simply emphasizing material or spiritual incentives is biased.

**Key words:** Knowledge Employee, Work Incentive, Incentive Factors, Job Satisfaction.

**INTRODUCTION**

With the development of knowledge economy in the world, knowledge employees have become the main form of work in many emerging industries. The competition of enterprises is mainly reflected in the management of knowledge and effective management and incentive of knowledge employees. There are great differences between knowledge employees and traditional employees in education background and personal career planning. In the 21st century, the global political and economic environment has changed dramatically. Employees are also different from the previous century in terms of working style, self-perception and development appeal. Therefore, the traditional monotony with an emphasis on the authority's incentives and management methods are not well suited to the knowledge-based employees in the new era. In recent years, more and more enterprises have been severely challenged in the management of knowledge employees. There is a shortage of incentives, frequent job-hopping and rising management costs. Therefore, how to manage knowledge employees, understand their needs and motivate them to become managers of the new economy is a top priority. The human resource management system is a generalized incentive system. Therefore, to strengthen the core competitiveness of enterprises requires enterprise managers to formulate targeted incentive plans and mobilize the enthusiasm and creativity of knowledge employees. Therefore, how to effectively motivate knowledge employees has become not only an important hot topic in the field of many scholars, but also a modern enterprise for sustainable development of a core proposition.

Incentive theory is one of the essential research fields in western behavioral science theory and one of the most important theories in management and psychology. There are mainly three kinds of incentive theories: behavior modification theory, content incentive theory and process incentive theory. In these theories, Maslow's need-hierarchy theory and Herzberg's two factor theory have great influence on the world. Consequently we focus on these two theories. To reveal the complex interactions among incentive factors and the working state of knowledge employees, this study which will see and study the positive impact of incentive factors on the level of incentive.

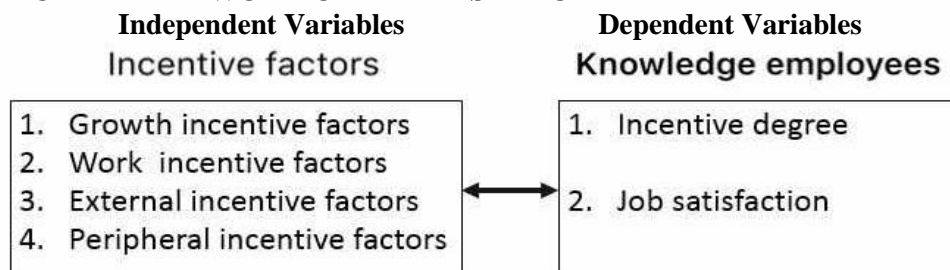
**CONCEPTUAL FRAMEWORK OF THE RESEARCH**

FIGURE 1.1 Conceptual Frameworks

**Literature Review****Knowledge Employees**

Peter Drucker (1956): Knowledge employees are those who master and use symbols, concepts, knowledge and information. From this concept, many middle managers and professional technicians belong to knowledge employees. If we extend the scope, the concept of knowledge employees can actually cover most white-collar employees.

According to the western theories of knowledge economy, combined with the actual situation of our country, the scope of knowledge employees should be divided by the occupation. Knowledge employees typically include scientific research personnel, engineering and technical personnel, technical personnel, management personnel, management personnel and education employees, doctors, lawyers, and consultants.

The characteristics of knowledge employees include:

- (1) High personal quality
- (2) Independence and autonomy are relatively strong.
- (3) Strong incentive of achievement.
- (4) Strong learning tendency.
- (5) Attach importance to communication and participation.
- (6) Advocating science to disdain authority.
- (7) Labor is creative.
- (8) It is difficult to monitor the process of labor.
- (9) It is difficult to measure the results of labor.
- (10) The willingness to flow is strong.

**Incentive**

The term incentive refers to the driving force of psychology. As a term of management, incentive means to stimulate people's incentive and make people have an inherent power towards the desired goal.

The behavior and effect of an individual depend on the level and the degree of incentive he has received. Therefore, incentive plays an important role in mobilizing the potential enthusiasm of people.

**Growth incentive factors** This kind of factors related to personal growth, such as job achievement, ability to play and job promotion.

**Work incentive factors** This kind of factors related to job permissions, job challenges, job recognition, job autonomy, job interest, job responsibility and job competency

**External incentive factors** This kind of factors related to company's prospects, bonus, job security, working conditions, management system, sense of participation, quality of the leaders and the corporate culture

**Peripheral incentive factors** This kind of factors related to interpersonal relationship, team cooperation, entertainment, family arrangement, living security and vacation time.

**Job Satisfaction**

Hoppock (1935) said job satisfaction is a mental state. Smith (1935) said Job satisfaction can be defined as a worker's sense of all levels of work. Job satisfaction is one of the most important indicators of human resource management. According to previous studies, we can understand that the

main influencing factors of job satisfaction are the incentive factors. This is also the focus of this study.

## METHODOLOGY

### Sample Size

By sample size determination using **krejcie and morgan** table, the calculation from a population of 200 (previous population approximation) came up with sample of 132 employees from Suanni Lebo Meker Education Company in China.

### Instrument Development

This research developed a questionnaire, using a 5-point Likert-scale from 1 = Strongly disagree to 5 = Strongly agree. In this study, 132 employees of a company were surveyed as an initial sample.

### Data Collection

Data collected by questionnaire is distributed in China. To participate in this survey a total of 132 employees, consisting of 52 male workers and 80 women.

### Validity and Reliability Test of the Research Instrument

The scales and questionnaire had been used repeatedly in previous studies and had been shown high reliability. Before the distributing the questionnaire, it was approved from the professional scholars and sent it to 30 people for reliability test.

Questionnaire IOC average value is 0.83, higher than 0.5 so the questionnaire through. According to the pre-test, the total Cronbach's alpha was 0.790, the Cronbach's alpha of leadership is 0.781, the performance of Cronbach's alpha was 0.703, so the questionnaire is highly reliable.

The reliability value was calculated by using Cronbach's alpha to ensure whether there was internal consistency within the items. George and Mallery illustrated the value of Coefficient Cronbach's Alpha as the following:  $\geq 0.9$ = Excellent,  $\geq 0.8$ = Good,  $\geq 0.7$ = Acceptable,  $\geq 0.6$ = Questionable,  $\geq 0.5$ = Poor, and  $\leq 0.5$ =Unacceptable. Therefore, in order for the research questionnaire to be reliable, its value of Coefficient Cronbach's Alpha must be at least 0.7.

According to the pre-test, the Cronbach's Alpha of total was 0.721, so the questionnaire was acceptable; the Cronbach's Alpha of KPIs was 0.800, so the questionnaire was good; the Cronbach's Alpha of KPIs was 0.770, so the questionnaire was acceptable.

## Results

### Incentive Factors

Level of incentive factors, mean and SD were used to analysis the data. The results are reveal the following:

Incentive factors of the Suanni Lebo Maker Education Co., Ltd. was of a moderate level ( $M = 3.13$ ,  $SD = .53$ ). Growth incentive factors of the Suanni Lebo Maker Education Co., Ltd. was of a moderate level ( $M = 3.03$ ,  $SD = .49$ ). Work incentive factors of the Suanni Lebo Maker Education Co., Ltd. was of a moderate level ( $M = 3.35$ ,  $SD = .52$ ). External incentive factors of the Suanni Lebo Maker Education Co., Ltd. was of a moderate level ( $M = 3.17$ ,  $SD = .68$ ). External incentive factors of the Suanni Lebo Maker Education Co., Ltd. was of a moderate level ( $M = 2.93$ ,  $SD = .66$ ).

**Table1 Mean and Std. Deviation of Incentive Factors**

Leadership	M	SD	Level	Ranking
Growth incentive factors	3.03	.49	M	3
Work incentive factors	3.35	.52	M	1
External incentive factors	3.17	.68	M	2
Peripheral incentive factors	2.93	.66	M	4
Total	3.13	.53	M	



**Knowledge Employees**

Level of state of knowledge employees mean and SD were used to analyse the data.

The results are reveal the following : Level of the state of knowledge employees of the Suanni Lebo Maker Education Co., Ltd. was of a moderate level (M=3.24, SD=.49). Level of the level of incentive degree of knowledge employees of the Suanni Lebo Maker Education Co., Ltd. was of a moderate level (M=3.26, SD=.57). Level of the level of job satisfaction of knowledge employees of the Suanni Lebo Maker Education Co., Ltd. was of a moderate level (M=3.21, SD=.48)

**Table2 Mean and Std. Deviation of Knowledge Employees**

Knowledge Employees	M	SD	Level	Ranking
Level of incentive degree	3.26	.57	M	1
Level of job satisfaction	3.21	.48	M	2
Total	3.24	.49	M	

**3. Correlation**

The incentive factors variables and the state of knowledge employee variables in the over view were analyzed. The result showed that the incentive factors variable in the overview was related significantly to the state of knowledge employees at a high level ( $r=.67$ ). It was indicated that enterprises need to increase the attention and input of incentives to improve the working status of the employees.

**Table3 Pearson correlation for Incentive Factors and Knowledge Employee of the Suanni Lebo Maker Education Co., Ltd.**

Incentive Factors	Pearson Correlation	
	The incentive level	The job satisfaction level
Growth incentive factors	.55**	.63**
Work incentive factors	.50**	.62**
External incentive factors	.54**	.64**
Peripheral incentive factors	.46**	.56**
Total	.57**	.68**

Table 3 are reveal the following:

1. There was a strong positive relationship between incentive factors and the state of knowledge employees ( $r =.67$ .) Growth incentive factors had a strong positive relationship with the state of knowledge employees at a strong level ( $r=.63$ ). Work incentive factors had a strong positive relationship with the state of knowledge employees at a strong level ( $r=.59$ ). External incentive factors had a strong positive relationship with the state of knowledge employees at a strong level ( $r=.62$ ). Peripheral incentive factors had a strong positive relationship with the state of knowledge employees at a strong level ( $r=.54$ ).

2. There was a moderate positive relationship between incentive factors and the incentive level of knowledge employees ( $r =.57$ .) Growth incentive factors had a strong positive relationship with the incentive level of knowledge employees at a strong level ( $r=.55$ ). Work incentive factors had a strong positive relationship with the incentive level of knowledge employees at a strong level ( $r=.50$ ). External incentive factors had a strong positive relationship with the incentive level of knowledge employees at a strong level ( $r=.54$ ). Peripheral incentive factors had a moderate positive relationship with the incentive level of knowledge employees at a strong level ( $r=.46$ ).

3. That there was a strong positive relationship between incentive factors and the job satisfaction level of knowledge employees ( $r =.68$ .) Growth incentive factors had a strong positive relationship with the job satisfaction level of knowledge employees at a strong level ( $r=.63$ ). Work incentive factors had a strong positive relationship with the job satisfaction level of knowledge employees at a strong level ( $r=.62$ ). External incentive factors had a strong positive relationship with the job

satisfaction level of knowledge employees at a strong level ( $r=.64$ ). Peripheral incentive factors had a moderate positive relationship with the job satisfaction level of knowledge employees at a strong level ( $r=.56$ ).

### Discussion

- 1) On one side, Incentive factors of the Suanni Lebo Maker Education Co., Ltd. was of a moderate level, and on the other side, level of the state of knowledge employees of the Suanni Lebo Maker Education Co., Ltd. was moderate. Through quantitative analysis, we found that the company's working status and incentive level are not high. This exposes problems of management.
- 2) In four groups of incentive factors, we can see the scores of growth incentive factor and peripheral incentive factor are lower. It shows that the company's arrangement on these two kinds of factors are not satisfactory. For knowledge employees, material incentives alone can no longer meet their needs. The concern for personal growth is the characteristics of knowledge employees. Company should provide necessary training for employees and making reasonable plans for their career. This confirms Herzberg's two-factor theory.
- 3) Through correlation analysis, we found that all incentive factors were positively correlated with employees' status at a higher level. It also verifies the hypothesis of predecessors' theory and thesis. Especially, there was strong positive relationship between incentive factors and the job satisfaction level of knowledge employee. Managers need to improve incentives to improve job satisfaction.
- 4) My research can find a solution for this company's problems in management, and put forward rationalization proposals for other enterprises' management. We will find out which incentives are valued by employees. We can combine the resources of the enterprise to focus on improving employees' most focused projects.

### Recommendation for Further Research

Future research could investigate several fields, based on the findings of this research:

- 1) The influence of the external environment on the disturbance of the variable.
- 2) Research on incentive mode of knowledge employees.

### Summary

Through the analysis of the employee questionnaire in Suanni Lebo Maker Education Co., Ltd., we get the degree of the employees' feelings about the various incentive factors. These feelings also represent employees' evaluation of enterprises in various aspects. This helps us to discover what needs to be improved in management. There is a high correlation between incentive level and employee performance. Therefore, it provides a theoretical basis for improving the performance of employees by improving the level of incentive. On the one hand, my research has investigated the application of previous theories in the current enterprise, and also opened up new ideas for the improvement of the enterprise in management.

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**Job Satisfaction of Flight Dispatchers : A Case Study of Thai Air Asia****Tanida Suppharangsarn**Airline Business, Liberal Arts Faculty, North Bangkok University (Rangsit Campus),  
Pathumthani, 12130, Thailand.**Abstract**

The purpose of this research is to study the job satisfaction of flight dispatcher of Thai Air Asia. The population of this research were 21 employees who working in planning flight paths, taking into account aircraft performance and loading, enroute winds, thunderstorm and turbulence forecasts, airspace restrictions, and airport conditions. They get authority to divert, delay or cancel a flight. The survey for this research uses questionnaire as tools for data collection. The statistical data is processed by using a computer software program. The statistical methods used in data analysis are percentage, mean, standard deviation. Resulting are as following :

1. The most of respondents who employed in flight dispatcher of flight operation department at Thai Air Asia were male with age 31-35 years old, graduated bachelor's degree, in the position of flight dispatcher (without license) that have experiences 6 - 10 years and got salary 30,001 – 35,000 baht per month.

2. The most of factors affecting to the job satisfaction for flight dispatcher in flight operation department at Thai Air Asia were job description, works environment, and the least factor of flight dispatcher's job satisfaction is job prosperity.

**Keyword :** Flight Dispatcher, Job Description, Job Satisfaction

**Statement of the Problem**

At present, a famous traveling from one city to another city is traveling by aircraft not only people but including to cargo/goods for international trading. For each flight have many details that concern with many departments in airlines but all of departments need the professional staff to make the best service for customer satisfaction and fly safely. They could not operating flight without any supporting from the ground operations, to keep the aircraft operating on schedule and safety flight until aircraft arrival at destination airport.

As per research aimed that study job satisfaction of flight dispatcher. Siraya Buaphong (2015) In order to find out most of flight dispatchers were satisfied with the work itself and achievement in their job. Moreover, they had to use all of their skills, knowledge and capabilities to make all the flights in their responsible, including flight crews and passengers, operate safely and to be on time which safety is the principle in aviation. And the factor that most of flight dispatcher decided to change their job was the Compensation including welfare and other benefits that they felt they earned less than others in the career. In some cases, childhood ambition, stress on work also the additional reason of this change.

This research make researcher feel interested about flight dispatcher's job satisfactions. So the result of this research will advantages for airlines to be guidelines to improve and meet of flight dispatcher's satisfaction that will make flight dispatcher willing to work with airline by their full potential.

**Research Objective**

1. To study about flight dispatcher's job satisfaction of flight operation department of Thai Air Asia.
2. To develop the human resource management to make the flight dispatchers have more satisfaction for their job.

**Research Process**

This research is descriptive study by casual and comparative to focus on the study the job satisfaction of flight dispatcher of Thai Air Asia. The source of data is primary data from questionnaire.

**Population**

Population are flight dispatcher in Thai Air Asia including license/senior flight dispatcher for 18 employees and assistant flight dispatcher for 3 employees that totally 21 employees

**Research Tools**

The tool of this research, the questionnaire by rating scale for 5 levels and divide in 3 parts as following below :

*Part 1* : Individual factors such sex, age, education, position, experience, and salary.

*Part 2* : Motivation factors that affect to job satisfaction of flight dispatcher such job description, and job prosperity.

*Part 3* : Hygiene factors that affect to job satisfaction of flight dispatcher such compensation, relationship, job successful, and work environment.

**Validity and Reliability Check**

The researcher sent the questionnaire to professor for checking and find out the potential to be the suitable questionnaire as following below :

1. Prepare and check the content validity and wording. Then finding the index of item objective congruence (IOC) for improving the questionnaire.

2. Find out reliability, researcher try out the improved questionnaire for testing the reliability by used the Cronbach alpha  $\alpha$  – Coefficient. The result for this testing got the  $\alpha$  – Coefficient in 0.77

3. Researcher used the improved questionnaire for collecting data to analyze in the research.

**Data Collection**

Collecting data from airline's information and questionnaire. By given the questionnaire to flight dispatchers in flight operation department of Thai Air Asia totally 21 employees and analyzing all of data.

**Statistic for Analyzing Data**

1. Percentage to describe the frequency of data from the questionnaire

2. Mean and Standard Deviation to describe the job satisfaction of flight dispatcher of Thai Air Asia.

**The Result of Research**

1.) *The results of the data analysis from demography of flight dispatcher* found that the majority of Thai Air Asia's flight dispatchers consisted of male employees, for 17 employees (81.00 percent), and next were female for 4 employees (19.00 percent). With the most of them were 38 - 35 years old for 8 employees (38.10 percent). The next 26 - 30 years old for 6 employees (28.60 percent), and the fewest were 20 - 25 years old, for 3 employees (14.30 percent). They had the most education degree was a bachelor degree for 20 employees (95.20percent), and followed by the lower level of Bachelor's degree was 1 employee (4.80 percent). The highest number was flight dispatcher (without license) for 11 employees (52.40 percent), followed by the Senior Director (with a license) for 7 employees (33.30 percent), and the lowest was the Assistant Director There were 3 employees (14.30 percent). The highest number of employee's experiences around 6 - 10 years for 8 employees (38.10 percent), followed by experiences around 11 – 15 years for 7 employees (33.30 percent) and the lowest is the experience of 1 to 5 years for 3 employees (14.30 percent) and have experiences more than 15 years for 3 employees (14.30 percent). The most of the employees have more than 35,000 baht salary for 10 employees (47.60 percent), followed by 30,001 - 35,000 baht salary for 7 employees (33.30 percent), and the lowest were 15,000 - 20,000 baht of salary for 1 employee (4.80 percent) respectively.

2.) *The result of this research found that overall of flight dispatcher's job satisfaction of Thai Air Asia*, the level of feedback was high ( $\mu = 4.33, \sigma = 0.45$ ). The highest level is motivation factors about job description ( $\mu = 4.51, \sigma = 0.42$ ) and the second factor is the hygiene factor about works environment ( $\mu = 4.39, \sigma = 0.49$ ) and the lowest feedback is motivation factors about job prosperity ( $\mu = 4.22, \sigma = 0.37$ ) respectively.

Job Satisfaction	$\mu$	$\sigma$	Result
<b>Motivation Factors</b>			
1. Job Description	4.51	0.42	Highest
2. Job Prosperity	4.22	0.37	High
<b>Hygiene Factors</b>			
3. Compensation	4.25	0.54	High
4. Relationship	4.30	0.43	High
5. Job Successful	4.32	0.44	High
6. Works Environment	4.39	0.49	High
<b>Total</b>	4.33	0.45	High

**Table 1, Result of overall of flight dispatcher's job satisfaction of Thai Air Asia**

2.1) *Job Description* is the factor that affect to flight dispatcher's job satisfaction, overall have feedback level is the highest of job satisfaction ( $\mu = 4.51$ ,  $\sigma = 0.42$ ). When we consider for each items, researcher found that the highest job satisfaction was the other assignments that will add values for worker and make them feel important for airline ( $\mu = 4.62$ ,  $\sigma = 0.59$ ). The second is assignments that suitable for skills knowledge and ability ( $\mu = 4.57$ ,  $\sigma = 0.60$ ) and the lowest feedback level is given assignments have equal and clear ( $\mu = 4.33$ ,  $\sigma = 0.73$ ) respectively.

2.2) *Job Prosperity* is the factor that affect to flight dispatcher's job satisfaction, overall have feedback level is high ( $\mu = 4.22$ ,  $\sigma = 0.37$ ) When we consider for each items, researcher found that the highest job satisfaction was opportunities to promote in higher level with transparency so the feedback level is high ( $\mu = 4.29$ ,  $\sigma = 0.64$ ) The second is opportunities to promote in higher level that analysis from skill, knowledge, and ability ( $\mu = 4.24$ ,  $\sigma = 0.54$ ) and the lowest feedback level is ( $\mu = 4.14$ ,  $\sigma = 0.57$ ) respectively.

2.3) *Compensation* is the factor that affect to flight dispatcher's job satisfaction, overall have feedback level is high ( $\mu = 4.25$ ,  $\sigma = 0.54$ ) When we consider for each items, researcher found that the highest job satisfaction was the benefits appropriate for current economic such as accident insurance, provide training cost, and etc. ( $\mu = 4.33$ ,  $\sigma = 0.66$ ) and salary that suitable for job responsibilities and fair when compare with cost of living ( $\mu = 4.33$ ,  $\sigma = 0.58$ ). Both of them had feedback level in high. The second is the additional compensation and benefits appropriate for current economic such as traveling, bonus, overtime, and etc. ( $\mu = 4.29$ ,  $\sigma = 0.64$ ) and the lowest feedback level is the compensation transparency fairness and can monitor ( $\mu = 4.05$ ,  $\sigma = 1.02$ ) respectively.

2.4) *The relationship* is the factor that affect to flight dispatcher's job satisfaction, overall have feedback level is high ( $\mu = 4.30$ ,  $\sigma = 0.43$ ) When we consider for each items, researcher found that the highest job satisfaction was the excellence co-operation and suitable support for good operation so the feedback level is high ( $\mu = 4.52$ ,  $\sigma = 0.51$ ) The second is opportunities to the mutual responsibility of colleagues in the work ( $\mu = 4.38$ ,  $\sigma = 0.74$ ) and the lowest feedback level is they have party or celebration to make a good relationship for colleague ( $\mu = 4.05$ ,  $\sigma = 0.80$ ) respectively.

2.5) *Job Successful* is the factor that affect to flight dispatcher's job satisfaction, overall have feedback level is high ( $\mu = 4.32$ ,  $\sigma = 0.44$ ) When we consider for each items, researcher found that the highest job satisfaction was ability to archive to operation department's goals so the feedback level is high ( $\mu = 4.43$ ,  $\sigma = 0.75$ ) The second is can solve operation problem and participate of success in work ( $\mu = 4.33$ ,  $\sigma = 0.58$ ) and the lowest feedback level is ability to work within period ( $\mu = 4.19$ ,  $\sigma = 0.60$ ) respectively.



2.6) *Works Environment* is the factor that affect to flight dispatcher's job satisfaction, overall have feedback level is high ( $\mu = 4.39, \sigma = 0.49$ ) When we consider for each items, researcher found that the highest job satisfaction was ability to necessary stationary are modern and enough for operation so the feedback level is high ( $\mu = 4.48, \sigma = 0.68$ ) The second is suitable place for operation such as light or temperature, facilities ( $\mu = 4.43, \sigma = 0.75$ ) and the lowest feedback level is safety work places ( $\mu = 4.29, \sigma = 0.73$ ) respectively.

### Conclusion

The result of study about job satisfaction of flight dispatcher in operation department of Thai Air Asia. Researcher can use the summary of research results to discuss the results as follows below :

1. *General demographic characteristics* found that analyst the differences in demographic characteristics such sex, age, education, position, experiences, and salary about flight dispatcher's job satisfaction in operation department of Thai Air Asia. From analysis of the basic information of flight dispatcher found that the majority of flight dispatcher is male 17 employees (81.00 percent) with age 31 – 35 years old for 8 employees (38.10 percent). They got bachelor's degree for 20 employees (95.20 percent) in position flight dispatcher (without license) for 11 employees (52.40 percent) with 6 – 10 years of experiences around 8 employees (38.10 percent) and got more than 35,000 baht salary for 10 employees (47.60 percent) respectively. This research was consistent of Sgt. Suriya Prasertsri (2013) in topic Satisfaction in their Operations of the Military Noncommissioned Officers, Department of the Air Welfare found that the commissioned officer of Royal Thai Air Force that have different of sex, age, education, position rank, monthly income, and experiences so they will have different job satisfaction level

2. *Opinion about motivation factors and hygiene factors* that make difference of flight dispatcher's job satisfaction of flight operation of Thai Air Asia.

As per result of this research found that overall of flight dispatcher's job satisfaction of flight operation of Thai Air Asia had feedback level in high consistent with the research of Siraya Buaphong (2015) in topic "Job Satisfaction of Flight Dispatcher" found that overall of job satisfaction in high level. It's can divided in 2 categories as motivation factors and hygiene factors. Both factors are high level.

2.1) *Job Description* is the factor that affect to flight dispatcher's job satisfaction. Overall is the highest level of job satisfaction. When we consider for each items, researcher found that the highest job satisfaction was the other assignments that will add values for worker and make them feel important for airline and assignments that suitable for skills knowledge and ability. This result was consistent of Herzberg's two – factors theory (1959) found that the work itself should be meaningful, interesting and challenging for the employee to perform and to get motivated. So it's according to result of interview from research of Siraya Buaphong (2015) said that flight dispatcher had job satisfaction in high level because they feel hard level of their task should always learning, used experience with knowledge to resolving problem, and manage the pressure in work place. So the flight dispatcher satisfied their job because they like job description. It must be used thinking, planning, calculating make them feel challenge and proud of their ability to be part of safely flight.

2.2) *Job Prosperity* is the factor that affect to flight dispatcher's job satisfaction. Overall have feedback level is high. When we consider for each items, researcher found that the highest job satisfaction about job prosperity was opportunities to promote in higher level with transparency so the feedback level is high and opportunities to promote in higher level that analysis from skill, knowledge, and ability. So it's according to Phassorn Khamsorn and Oranuch Mungmee (2010) they study in topic "Job Satisfaction of staff of Thai Post Co.,Ltd. Bangkok" found that Thai Post staff had job satisfaction with job prosperity and stability in high level. Wherewith opportunities to growth in their carrier path because Thai Post have clearly and transparency make them feel confident with process.

2.3) *Compensation* is the factor that affect to flight dispatcher's job satisfaction. Overall have feedback level is high. When we consider for each items, researcher found that the highest job satisfaction about compensation was the benefits appropriate for current economic such as accident insurance, provide training cost, and etc., and salary that suitable for job responsibilities and fair when compare with cost of living including the additional compensation and benefits appropriate for current economic such as traveling, bonus, overtime, and etc. So it's according to Prapharnrasa

Limsukhon and Dr. Monwika Phadungsit (2011) in topic “Job Satisfaction of Accountant of Charoen Pokphand Group” found that the compensation factors are the high level of job satisfaction of accountant.

2.4) *The relationship* is the factor that affect to flight dispatcher’s job satisfaction. Overall have feedback level is high. When we consider for each items, researcher found that the highest job satisfaction of the relationship was the excellence co-operation and suitable support for good operation so the feedback level is high and opportunities to the mutual responsibility of colleagues in the work. So it’s according to Jiraphong Baithong (2007) in topic “Job Satisfaction of Public Health Volunteers of Mae Lao, Chiang Rai Province” found that relationship with colleague affect to job satisfaction of public health volunteers in high level because the most of public health volunteers are people who live in this area for a long time. They feel affectionate with the community like a relative.

2.5) *Job Successful* is the factor that affect to flight dispatcher’s job satisfaction. Overall have feedback level is high. When we consider for each items, researcher found that the highest job satisfaction of job successful was ability to archive to operation department’s goals and can solve operation problem and participate of success in work. So it’s according to Suthaniti Nukul-eungaree (2012) in topic “Job Satisfaction of Thai Airways Staff : A case study of Thai Airways Headquarter” said that job successful make staff feel satisfy in high level because they got assignments that used knowledge and ability suitable for their position including assistance and supporting from their colleague to solving problems. It’s enthusiastic and willing to achieve the organization’s goals.

2.6) *Works Environment* is the factor that affect to flight dispatcher’s job satisfaction. Overall have feedback level is high. When we consider for each items, researcher found that the highest job satisfaction of work environment was ability to necessary stationary are modern and enough for operation and suitable place for operation such as light or temperature, facilities. So it’s according to Suthaniti Nukul-eungaree (2012) in topic “Job Satisfaction of Thai Airways Staff : A case study of Thai Airways Headquarter” found that Overall of job satisfaction have feedback level is high. When we consider for each items, the company has the safety of work place, working environment is suitable for work, the company has good equipment and prompt to use equipment, work place was spacious and not crowded.

Flight Dispatcher is very important for every flight. Because of one of their responsibilities is make safely flight until aircraft arrived and parked to the apron at destination airport. Flight dispatchers working in the airline operations office or control center at the airport. They use computers, calculators, weather charts, information, and loading reports from other departments. So flight dispatcher should get the appropriate compensations and other benefits.

#### **Recommendations for Further Studies**

Regarding the findings of this study, the following recommendations are made for future studies in this field below :

1. Research should be done with another airlines such as Nok Air, Thai lion Air, etc. For compare and lead airlines to make more job satisfaction.
2. For this research, the researcher defined only one airline. It’s makes the scope of the narrow data. So researcher should select at least 2 or more airline for result comparison to develop human resource process to lead the flight dispatcher to work with their full potential.
3. For the future research, researcher should other factors that forecast to affecting with operation such as management factors, human resource management factors, etc. to make more job satisfaction for flight dispatchers.

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**Frozen Phrases of Goodwill in English Language Case study Sales Letters Written by  
Bangkok Hotel Sales Staff**

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North Bangkok University, 12130, Thailand ,E-mail : sarinrat.se@northbkk.ac.th**Abstract**

The purposes of this study were (1) investigate what English phrases of goodwill are frequently used in sales letters in the Bangkok hotel industry, (2) investigate the function of each phrase and its frequency, (3) analyse the grammatical form of such phrases, (4) analyse the relationship between each phrase and its positioning, (5) analyse the relationship between each phrase and the class of hotel from which it originated. The sample of the study was 208 letters from 74 hotels around Bangkok. After the process of collecting data was completed, an analysis was conducted in order to achieve the above-mentioned objectives by compiling a list of all above purposes and listing all the goodwill phrases, categorizing them into 8 groups, counting the frequency of each phrase pattern, including its positioning, grammatical form and the class of hotel from which it originated. The results revealed that 768 phrases were found, which can be summarized as follows.

(1) All the phrases in sales letters can be categorized into 8 groups including expressing appreciation, introducing the hotel/its services, giving information, quoting prices, linking service to reader's needs, promising services, offering further assistance and referring to future contact.

(2) Each phrase has its own level of frequency.

(3) Most of the phrases used with the highest degree of frequency were verb phrases.

(4) Some phrases have their own specific position.

(5) Goodwill phrases were used in all classes of the hotel (in fact no clear relationship could be concluded in the study).

In conclusion, all the phrases collected confirm the study's main idea, which is the importance of goodwill phrases used in sales letters in the hotel industry. The method by which the phrases were selected needed to be focused in order to choose the most effective phrases that would achieve each writer's particular objective. An effective phrase can help convey a correct and effective message and also help attract the reader's attention and influence any decision the client might make to avail himself of the hotel's services. This idea is not just important in the hotel industry, but also in all kinds of businesses in which correspondence plays a large part.

Keywords: Frozen phrases of goodwill, English language, Sales letters

**Rationale and Significance of the Problem**

In communication in the hotel business, as in the most other business, writing is very important of the four communication skills, reading, writing, speaking and listening. (Bang-orn and Waowaew, 2011, 18). Easily encode, transmitted, filed and retrieved, writing is vital because business could not operate without the convenient and permanent record of its transaction that it provides (Janis 2009,9). The purposes of writing can be broadly classified as follows: to improve efficiency, to promote understanding and to sell goods and services.(Janis 2009,9) Writing has various objectives such as to make business contacts, to relay information, to propose, to instruct and to place orders. (Achara 2013, 29) To achieve the objectives of communication, messages are sent through various media such as e-mail, telephone, telex, telegraph and fax. Even though new technology may provide less time-consuming method, the most important medium is the letter.

The sales letter is a vital element of the hotel business. There are various kinds of letters, but they can be classified into four main categories: information letters, negatives letters, application letters and sales letters. (Ninnat 2015, 65) One of the most commonly produced and most important letters in the hotel business is the sales letter, which normally originates from the sales and marketing department. Sales letters may be written to persuade customer to buy products, services or ideas, but the main objective of all sales letters is to sell (Ninnat 2015, 67). Writing sales letters is not an easy process. The difficulty in writing letters is not writing itself, but writing what the writer means, not just affecting the reader, affecting him precisely as the writer wishes. The writer must choose his

words carefully to ensure that the reader will understand the message without waste of time and effort (Reid 2013, 4). In sales letters, the writer should write clearly, introduce the service, link the services to the reader's needs, give details of the services, concentrate on the advantages, explain how to buy the service, make the price attractive and persuade the reader to react immediately (Ninnat 2015, 67). Using languages appropriately helps improve communication between the writer and reader. The writer should choose the right words in the right place to help the writer to communicate effectively (Blundell, Higgins and Middlemiss 2012, 8).

Since choosing appropriate words or phrases in letter is significant and difficult, frozen phrases, phrases which are often used in a fixed position and mostly for specific purposes, are used and copied in order to make the language formal and reduce writing time. To avoid wasting time due to the difficulty in writing effective business letters, some letters are produced by imitating words or phrases from other people's letters or from standard form of letter. Moreover, the sales letter usually performs a similar function in that a lot of standard phrases are used, which will crop up repeatedly in the departments' output. These phrases, which create a standard pattern for each different type of letter, are called frozen phrases and are an essential tool for the writer of business correspondence.

There are a lot of phrases used in sales letters, but some of the most important are phrases expressing goodwill because every letter is written, at least in part, to promote goodwill for the company. Goodwill results from effective communication, and so the use of phrases expressing goodwill must be studied in order to communicate to customers effectively. Especially in the hotel business, goodwill phrases must be emphasized because a hotel's English business letters usually play the role of making and maintaining a good relationship and also of "keeping in touch" (Orn-anong 2015, 72).

This study was an analysis of frozen phrases used in sales letters to examine which ones convey goodwill, how frequently they are used, what their functions are, what grammatical forms such phrases are employed, where they are positioned in sales letters and what their relationship is to the class of hotel from which they originated. Many scholars in business communication areas realized the significance of business letters and business phrases, and a number of studies in the area of business letters have been conducted.

To gain a profound understanding of this field, this research specifically examined the sales letters of Bangkok hotels, to analyze the use of phrases expressing goodwill in this type of business correspondence.

### **Objectives of the Study**

Due to the significance of the hotel's sales letters in the business context as mentioned above, it is necessary to conduct a study of this topic. This study focuses on the general purpose of studying business English in hotel business letters. The study proposed three main research objectives as follows:

1. To investigate what phrases are frequently used to establish goodwill in sales letters in the Bangkok hotel business.
2. To analyze what function those phrases fulfill.
3. To analyze what grammatical form is employed in those phrases.
4. To analyze the relationship between those phrases and their positioning in each letter.
5. To analyze the relationship between those phrases and the class of hotel from which those phrases originated.

### **Scope of the Study**

#### **Scope of content**

The contents developed are based on the Frozen Phrase in Sales letters in Bangkok hotel Business.

#### **Length of the Study**

This study was conducted from November 1<sup>st</sup>, 2017 to, 15<sup>th</sup> May, 2018.

### **Research Methodology**

#### **Sample**

The sample was selected by using form the Reed Travel Group's Official Hotel Guide 2017 (Goldenberg 2017, 108- 115), 74 hotels in Bangkok are listed. Various types of hotel were selected as follows.

1. 18 Deluxe hotels; 3 Superior Deluxe, 7 Deluxe, 8 Moderate Deluxe
2. 44 First Class hotels: 14 Superior First Class, 26 First Class, 4 Moderate First Class
3. 12 Tourist Class hotels: 7 Superior Tourist Class, 5 Tourist Class

#### Review of Literature

**This part reviews and define the key terms related to the study as in the following.**

##### 1. Frozen phrases

1.1. Frozen phrase is a group of words standing in a fixed connection (Bright 2011, 23).

1.2. Frozen phrases are frequently used phrases, written for a specific purpose. Frozen phrases can be of any grammatical structure. Their major characteristic is that they are used commonly together like they were “frozen” in a block of ice. For the purposes of this paper, this general meaning was adopted in the context of expression of goodwill.

2. Business letters refer to a medium of communication in business used for various objectives : to inform, to sell, to get action, to make a good impression

##### 3. Sales letters

3.1. Sales letters are written to sell goods and services.

3.2. Sales letters have something to sell. For example: merchandise, service, a point of view, an idea, or simply goodwill (Clark 2013, 475).

3.3. Sales letters try to accomplish one of the purposes : to get new customers to buy your product now, to develop interest in a product, to get customers to visit your place of business and to get customers to try your products or ask questions about it (Clark 2013, 477).

3.4. Sales letters are always organized into four parts: attracting attention, building interest and desire, convincing the reader and direction favorable action (Clark 2013, 479).

##### 4. Goodwill

4.1. Goodwill is the positive feeling about and the attitude toward a firm by the general public, customers, and suppliers. It is very highly valued. Sale letters written should promote goodwill for the firm, because goodwill is considered one of the major purposes of all business messages (Clark 2013, 372).

4.2. Goodwill is the favour or prestige that a business enjoys which causes people to trade with – and keeps coming back to – that company. Goodwill results from satisfying people’s needs. Three categories of goodwill are discussed by Clark; Customer Goodwill, Vendor Goodwill and Coworker Goodwill (Clark 2013, 19-25). However, this study emphasized only the area of customer goodwill.

##### 5. Classification of hotels

The study was limited to only hotels in the Bangkok metropolitan area. Letters from 74 hotels around Bangkok were collected. The method used to classify the class of hotels are based on “Official Hotel Guide” (Goldenberg 2017, 1108-1115).

5.1 Superior Deluxe means “an exclusive and expensive luxury hotel, often palatial, offering the highest standards of service, accommodations and facilities: elegant and luxurious public rooms, a prestige address, establishments in this category are among the world’s top hotels.”

5.2. Deluxe means “an outstanding property offering many of the same features as Superior Deluxe -it may be less grand and offer more reasonable rates than the Superior Deluxe properties, yet in many instances may be just as satisfactory – safe to recommend to most discriminating clients.”

5.3. Moderate Deluxe means “basically a deluxe hotel, but with qualifications.

In some cases, some accommodations or public rate areas may offer a less pronounced degree of luxury than that found in fully Deluxe properties. In other cases, the hotel may be a well-established famous name, depending heavily on its past reputation. – The more contemporary hotels may be heavily marketed to business clients, with fine accommodations and public rooms offering Deluxe standards in comfort, but with less emphasis on atmosphere and/or personal service.”

5.4. Superior First Class refers to “an above average hotel – It may be an exceptionally well-maintained older hotel, more often a superior modern hotel specifically designed for the first-class market, with some outstanding features. Accommodations and public areas are expected to be tastefully furnished and very comfortable. It may be good value, especially if it is a commercial



hotel. It may be recommended to average clients and in most cases will satisfy the discriminating ones.”

5.5 First Class refers to “a dependable, comfortable hotel with standardized rooms, amenities and public areas. It may have superior executive level or wing, be safely recommended to average clients not expecting deluxe facilities or special services. This type of hotel should also be satisfactory for better groups.”

5.6. Moderate First Class refers to “essentially a First Class establishment hotel with comfortable but somewhat simpler accommodations and public areas. It may be lacking in some features (e.g., restaurants). Some of the rooms or public areas, while adequate, may tend to be basic and functional. Usually suitable for cost-conscious clients.

5.7. Superior Tourist Class means “primarily a budget property with mostly well-kept, functional accommodations, some up to First Class standards. Public rooms may be limited or non-existent. Often it is just a place to sleep, but may have some charming or intimate features – May be good value – Should satisfy individuals (sometimes even discriminating ones) or groups on a budget.”

5.8 Tourist Class means “strictly a budget operation with some facilities or features of Superior Tourist Class, but usually no (or very few) First Class accommodation and should not be recommended to fussy or discriminating clients.

#### 6. Positioning in Letters

Letters are always composed of 5 main parts; heading (address and date), greeting (Dear...), body, complimentary close and signature (Mansell and Lease 2011, 3-4). This study focuses on where each goodwill phrase is positioned in the body of letter; the introductory paragraph (first paragraph), the content paragraph (2<sup>nd</sup>-4<sup>th</sup> paragraph) or the closing paragraph (last paragraph) (Macintose 2011, 11-12).

#### Significance of the Study

It is hoped that after completion of the study, there will be at least two main benefits to be obtained, one direct, the other indirect. The direct benefit of the study is to develop better understanding of frozen phrases used to express goodwill in the hotel sales letters; what phrases are used, the function of each phrase, how frequently they are used, their grammatical form, position and relationship to the classes of a hotel.

This direct benefit should help staff in hotel marketing and sales departments to gain a better understanding of the concepts of generating goodwill through written correspondence. It would provide an insight into the kind of writing their counterparts are producing and give them some ideas for improving their output. By providing some concrete examples of the type of phrases used to generate goodwill and how to use them within the structure of the sentence, this study would enable hotel business writers to enhance both the stylistic and grammatical quality of their work.

The indirect benefit is for those in related industries, for whom this study would provide some insights into what their colleagues in the hotel business are trying to convey in writing. For the general business writer, since the broad concept of creating goodwill in sales letters is universal, ideas presented in the study would provide a model which they can easily adapt to the requirements of their own businesses. The study is also intended to be of assistance to those involved in the academic study of business writing, either teachers or students, to whom it will hopefully provide a useful source of study material.

#### Statistics for Data Analysis

Frequency is used for data analysis.

#### Instrument

Having established the setting, the population for sampling was further narrowed down. Since this study focused on sales letters, the hotels' sales and marketing departments were the main source of materials for this study. Therefore, the population of the study consists of the sales and marketing departments at the hotels selected in Bangkok. Various job positions in this division are designated including Sales Director, Sales Executive, Sales Manager, Sales Representative, Sales Coordinator and Secretary. However, the researcher's request letters were addressed to the Directors of Sales and Marketing Departments and Sales Managers. Respondents of both sexes and of different ages and nationalities wrote the sample letters

received. Each member of the participating population, who was also the writer of each of the sample letters, were indirectly participated by providing the past samples of sales letters they had written.

#### **Data Collection**

Since the purpose of the study was to examine the frozen phrases in hotel business letters, each of the selected hotels was sent a letter requesting three samples of letters in English produced by the Sales and Marketing Department.

#### **Data Analysis**

A thorough study was made of the background material, including any documents, books and journals related to the topics of writing, phrases, business letters, English sales letters and any other research related to the study before approaching the hotels to request samples of their letters.

Once this had been accomplished, the letters were sent to 74 hotels requesting samples of their sales letters. Request letters were sent to the hotels previously selected twice by mail. First, the request letters were sent to these hotels during 15 November to 30 December 2017. In order to obtain 185 letters as great a response as possible and to ensure the requests had got through, this second mailshot was followed up by a phone call after one week. At the end of January 2017, after the mailshot and after the mailshot and telephone reminders, 1-7 letters were returned from each hotel, and 23 more hotels responded.

Finally two hundred and eight letters were collected from 74 hotels:

1. 35 Deluxe hotels; 11 Superior Deluxe (11 letters), 17 Deluxe (23 letters), 7 Moderate Deluxe (9 letters),
2. 36 First Class hotels: 12 Superior First Class (45 letters), 21 First Class (98 letters), 3 Moderate First Class (13 letters),
3. 3 Tourist Class hotels : 3 Superior Tourist Class (9 letters), 0 Tourist Class

During the data collection procedure, it was difficult to collect data from tourist-class hotels because the staffs of such establishments did not usually send correspondence to their clients. The two reasons for their inability to provide data were 1) none of the staff members were responsible for keeping or managing a correspondence file, so nobody was in a position to provide the necessary information and 2) correspondence of this type was non-existent in their hotels since most of their regular guests were walk-in guests or tourists sent to them by their travel agents. Therefore, they could not provide the researcher with any letters for the purpose of this study.

Once the two hundred and eight letters had been received from the hotels, and that had been selected, they were analysed to determine the following information:

1. What frozen phrases are frequently used in English to express goodwill in sales letters?
2. What function these phrases fulfill: To express appreciation, to introduce the hotel/its services, to give information, to quote prices, to link services to the client's needs, to promise excellent service, to offer further assistance or to refer to future contact?
3. How frequently they are used in each function?
4. Which grammatical form of phrases are normally used; absolute phrases, gerund phrases, infinitive phrases, noun phrases, participial phrases, prepositional phrases or verb phrases. (Webster 2013, 226-227)?
5. The positioning of each phrase in each letter: the introductory paragraph, the context paragraphs or closing paragraph
6. The relationship between frozen phrases used and the various classes of hotel from which those phrases originated: Deluxe, First Class and Tourist Class (Goldenberg 2017, 1108-1115).

#### **Results and Summary of the Study**

Data analysis from the content of the letters three main aspects can be derived from the results. The first aspect concerns sales letters in the hotel industry. The second concerns frozen goodwill phrases designed to foster goodwill, while the closing concerns related to word usage.

The results from the content analysis of the sales letters in the hotel industry indicated that there were two points that emerged regarding sales letters. First, the main aim of most hotel sales letters was to inform the clients of the price of room rates, special package deals and services. Of all a total of 208 letters collected, 122 (58.6%) letters were designed to inform the clients of the hotel's prices, while 39 of the letters (18.7%) were designed to give information, 19 letters (9.1%) to introduce the hotel and its services, 13 letters (6.2%) were written to confirm clients' reservation, 9



letters (4.3%) to keep in touch with the clients, and the remaining 5 letters (2.7%) aimed to invite the clients to use the hotel's facilities, to apologize and/or request the clients' cooperation in some way.

Second, goodwill messages are an important element in sales letters which can be seen by the fact that most sales letters contained a number of goodwill phrases. In this study, there was at least one phrase found in each of the letters analyzed. Of all 208 letters in the study, 768 phrases were found. These phrases were mapped into 115 phrase patterns.

Concerning frozen phrases designed to foster goodwill, the results of the data analysis five main points emerged as follows.

First, there was a great variety in the patterns of frozen phrases used in each group of the letters. 182 phrases (27 patterns) were found in the letters of expressing appreciation, 58 phrases (9 patterns) in the letters for introducing the hotel and its services, 38 phrases (14 patterns) in the letters for giving information, 126 phrases (10 patterns) in the group of quoting prices, 45 phrases (8 patterns) in the group of linking services, 60 phrases (19 patterns) in the letters of promising good service, 137 phrases (11 patterns) found in the letters of offering further assistance, and 123 phrases (17 patterns) were found in the letters referring to future contact.

Second, among the great variety mentioned above, only 39 phrase patterns were selected for further study, on the basis that they appeared with the highest degree of frequency. Among those 39 phrase patterns. Some phrases were unique to one particular group and were used only in that group, while some phrases in some group overlapped with other groups.

In the letters used for expressing appreciation, the patterns of frozen phrases which were used were unique, i.e. completely different from these used by the other groups, as in the following: "Thank you for...", "Thank you very much for..." and "We thank you for...". In the group designed to offering further assistance, three unique patterns were used, namely "We look forward to...", "Look forward to..." and "We are looking forward to...". Beside, the group referring to future contact" had their own unique phrase patterns, such as "Please do not hesitate to contact...", "Please feel free to contact..." and "Please contact...".

The above three groups exhibited their own unique patterns although at other times there was certain degree of overlapping with some groups using phrase patterns that appeared in the letters in other groups. For example "We are delighted to..." was used to introduced the hotel/its serviced and quote prices; "Please find..." We are pleased to and "We would like to take this opportunity to..." were used to give information and to quote prices; "We hope..." Was used to link the hotel's services to the reader's need and to promise the client good service.

Third, most of the phrase patterns were verb phrase. Among 39 frozen phrase patterns, 36 were verb phrases such as "Thank you very much for...", "We would like to take this opportunity to thank you for...", "We are delighted to...", "We are pleased to...", "Please rest assured...", "You can be assured...", "We look forward to...", "We hope to...", "Please do not hesitate to contact..." and "Please feel free to let us know" while only two of them, "It was a great pleasure..." and "It is our great pleasure" were noun phrases and the other one, "Assuring you..." was a gerund phrase.

Fourth, most of the phrase patterns analysed had their own fixed position. The patterns used to express appreciation, introduce the hotel/its services and quote prices were mostly found in the introductory paragraph. The ones used to give information and promise service were mostly found in the second or content paragraph. Moreover, the phrases that were mostly found in the closing paragraph of each letter belonged to the following groups : those linking services to the reader's needs, those offering further assistance and those referring to future contact.

Fifth, most frozen phrase patterns were found in correspondence originating from Superior First Class and First Class hotels, though this doesn't mean that these two classes of hotel produced more frozen goodwill phrases than the other classes of hotel. It appears that there is no significant relationship between phrases and the class of hotel from which they originate. Based on an analysis of the various types of hotels. It was concluded that most goodwill phrases were found in the Superior First and First class since 66% of the letters collected for the purposes of the current study were from both classes of hotel.

Therefore, it might be concluded that the large number of goodwill phrases was based on the large number of letters that were collected from both classes of the hotels. Given the bias of this study, in terms of the large number of letters received from these two types of hotel, it would be



possible to conclude with any degree of certainty that there is indeed a direct relationship between such phrases and the type of hotel from which they originated.

However, when the data collected was analyzed by figuring out on average the number of phrases found per letter, it was found that the most frozen phrase patterns were found in the letter were found in letters originating from Superior Deluxe.

### **Discussion of the Findings**

The main purposes of the study were to examine phrases are frequently used to establish goodwill in sales letters, it was found that some frozen phrases used in the letters were not correct. These phrases emerged when a native speaker consider some of those expressions incorrect or unnatural. For example; “We would wish to express our thanks for...”, “We are sincerely thank you...”, “Our sincerely appreciation for...”, “It was indeed my great pleasure...”, “It is with our utmost pleasure...”, “Thank you for your continued support to our hotel.”, “Please find attached the brochures as your request.”, “We assure you of our best attention at all times.” And “Please rest assured that everything will be done to give you entire satisfaction.” However, the researcher replaced those incorrect and unnatural phrases by the correct ones to give the reader correct examples.

Regarding word usage, four kinds of expressions of phrases were found consisting of a group of word used to intensify or emphasize the degree of each message such as “sincerely”, “great”/“greatly”, “certainly”, “very much” or “do”. For example, “Thank you very much for...” and “We are sincerely thank you...” were used in addition to “Thank you for...”. Not only “it is our pleasure”, but also “it is our great pleasure” were used to start the message. To link the hotel’s services to the reader’s needs, “We hope” and “We do hope” were used.

Second, another group of words was used to add a personal touch to the letter. The words such as “I”, “Personally” or “the client’s name” were used to personalize the actual message. For example, not only “We are pleased to...” and “We are delighted to...” were used, but also “I am pleased to...” and “I am delighted to...”. Instead of merely writing “We look forward to...”, some letters start the final paragraph by identifying the client by name, as in “Khun..., we look forward to serving you.”

Third, there was one group of words which was used to impart a formal tone to the message, for example by using “would like to” which is a conditional structure with “like to” plus the infinitive, instead of “want to”, which is in the present simple tense. For example, “We would like to take this opportunity to...” was used instead of “We want to take this opportunity to...” which is a little too informal and may well sound impolite.

Finally, another group of words was used to repeatedly emphasize the hotel’s benefits. Positive words/expressions of this nature were found more than 600 times in the 208 letters collected for the purposes of this research. They were used in order to impress upon the clients the good points and advantages of the hotel’s services and include such words as “amenities”, “benefits”, “complimentary”, “discount”, “free” and “include”. Moreover, words such as “privileges” “personal”, “special” and “upgrade,” were also used to make the clients feel they were being accorded special treatment in contrast to ordinary guests. For example, while it was found that the word “exclude” appeared three times only in the entire sample of 208 letters, the word “include” and “free” were found 103 and 75 times respectively. The word “exclude” was avoided because it conveys the impression that the clients have to pay additional costs. In sales letters, the messages were written in such way that only “nice” words were used to impress the client, while an attempt was made to avoid negative words in order to make the client aware of the positive things their hotel has to offer as well as services.

Those conclusions can also be linked to the reason why this area of the English language should be emphasized and studied. It was mainly because of the importance of frozen goodwill phrases in sales letters, which was now confirmed by the variety of phrase in patterns, the number of goodwill phrases in all the sales letters and also the number of incorrect and unnatural patterns found in this study. Since a lot of frozen phrases were used although some are incorrect, this study needed to select a particular focus in order to understand more about those phrases and to choose those that proved to be the most precise and most appropriate for each of the various objectives in

each letter. This study, which analysed the usage of such phrases, may be of help (both direct and indirect) in the following areas.

For one thing, it can help improve the effectiveness with which such letters are written, so that the readers are at least provided with some examples that they can use in their own letters since this study was designed to provide findings that may be of practical benefit to those interested in writing letters of this nature. In other words, it may help readers to use phrases properly. By conveying a suitable, clear and correct messages, thereby helping to impress the potential recipient, the writer will succeed in creating a good impression, particular in a letter of introduction or letter of application and thus gain an advantage over his/ her competitors. For another thing, it may help to enhance communication as well as foster the relationship between the writer, who may be a member of the hotel sales staff, and the reader, who may be one of the hotel's clients, or between others in the field of business in general by means of creating goodwill messages through the medium of the written word, in this case the business letter.

### **Recommendation**

If this study has been of interest to certain readers, it can be developed further and in greater depth in areas related to the topic. For example, a study could be developed regarding the relationship between the pattern of phrases used and the class of hotel that produces the letters since the researcher could not furnish complete answers regarding this relationship. This may be because of the difference in the number of letters collected from each class of hotel. Besides, there were some interesting areas that were unfortunately beyond the parameters of this study. Firstly, a further in-depth study of goodwill phrases would be invaluable. For example, a study could be discussed regarding goodwill phrases in other kinds of letters, and goodwill phrases in other kinds of communication channels such as the Internet, e-mail, brochures, goodwill phrases in other kinds of accommodation such as service apartments, and goodwill phrases in other kinds of industry such as the import-export business.

Secondly, more research into the usage of words and phrases could help to enhance the effectiveness of sending messages. For example, there could be a study of words and phrases which are grammatically incorrect, or words and phrases which are grammatically correct but would be considered unnatural by a native speaker; a study of words and phrases which are frozen but meaningless in business letters, a study of positive words and phrases which are used to emphasize the benefits of sales organizations, or the factors which make each phrase and word effective, i.e. appropriateness, positioning, level of formality and conciseness.

These further studies should be developed so that teachers of Business English, businessmen or people in general can have a source to help them better understand word and phrase usage. They will have a better understanding of how to write an effective letter – a letter whose effectiveness derives from knowledge of the proper format, the appropriate level of formality, and a solid grasp of both English usage and English grammar.

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**Administration in Accordance with Good Governance of Buengyitho Municipality,  
Pathumthani Province**

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**Abstract**

The purposes of this research were to 1) To study the administration in accordance with good governance of Buengyitho Municipality, Pathumthani province. 2) To compare the the administration in accordance with good governance of Buengyitho Municipality, Pathumthani province. The samples used in this study were 395 people in Buengyitho Municipality. The instruments used in this study were 5-level questionnaires. Statistics used in data analysis were percentage, mean, standard deviation and the test value. The research was studied six aspect of the law. The rule of law, Morality, Accountability, Participation, Responsibility and Cost. The research was found that all levels were moderate, morality ( $\bar{X} = 3.17$ ,  $SD = 0.65$ ), followed by the rule of law ( $\bar{X} = 3.15$ ,  $SD = 0.75$ ) accountability ( $\bar{X} = 3.12$ ,  $SD = 0.73$ ), cost ( $\bar{X} = 3.11$ ,  $S.D. = 0.67$ ), responsibility ( $\bar{X} = 3.06$ ,  $SD = 0.67$ ), and participation ( $\bar{X} = 2.97$ ,  $SD = 0.67$ ). Considering the principles of good governance, responsibility was not different, but moral was different. At the .05 level.

**Keyword** Good Governance**Introduction**

Local government is the foundation of the basic democratic system, because local administration is a political and administrative institution for the people. Make people feel that they are involved in the governance. Local administration Responsibility And cherish the benefits to the local residents. The people will have the opportunity to elect a legislative party. Use the discretion of the appropriate representative. For those who are elected to administer the local affairs. This will lead to further political participation at the national level. The municipality is considered as a local government. It was established in the area of a prosperous community and used for city administration. Municipalities are an important tool in the management of countries, especially developed countries. For Thai society, the municipality is a form of local administration in the urban area. There are representatives of the people in the form of community committees, which represent the people in the municipal administration. By the Office of the Prime Minister The good governance of the country in 1999 mentioned the elements of good governance and social affairs 6 principles. The rule of law, Morality, Accountability, Participation, Responsibility and Cost. "Good Governance" means fair governance. It's not a new concept in society. But the accumulation of knowledge is a culture of social coexistence. For thousands of years, the principle of peaceful coexistence in society and society. Can coordinate the benefits and solve the problem. Conflict by peaceful means and sustainable development of society. Buengyut District Administrative Organization has been promoted as Buengyut District Municipality Pathumthani According to the notification of the Ministry of Interior, the establishment of Tambon administrative organizations is a municipality. Since August 1, 2007, announced as of June 26, 2007 and has been promoted to Municipality From November 25, 2011, the overall character of the city. Population increases The economic and social expansion. Until today, the municipality is another local government organization. It has tried to manage both human resources and employees. At the same time, however, there are still some staffing issues related to the administration. Moral ethics. Every municipal administration must have problems in every organization, such as lack of skilled personnel. Not enough for the agency. The problem is limited in terms of budgeting, administration, procurement and procurement of equipment needed in the organization. Therefore, the researcher is interested to study the management of good governance in the municipality of Pathumthani 6 principles of good governance to be useful and guide the development.

**Objectives**

1. To study the administration in accordance with good governance of Buengyitho Municipality, Pathumthani province.
2. To compare the the administration in accordance with good governance of Buengyitho Municipality, Pathumthani province.

**Hypothesis**

1. Gender the administration in accordance with affect good governance of Buengyitho Municipality, Pathumthani province is different.
2. Age of the administration in accordance with affect good governance of Buengyitho Municipality, Pathumthani province is different.
3. Education the administration in accordance with affect good governance of Buengyitho Municipality, Pathumthani province is different.
4. The statuses the administration in accordance with affect good governance of Buengyitho Municipality, Pathumthani province is different.
5. Occupations the administration in accordance with affect good governance of Buengyitho Municipality, Pathumthani province is different.
6. Income the administration in accordance with affect good governance of Buengyitho Municipality, Pathumthani province is different.

**Conceptual framework**

The study of concepts, theories and research related to the governance of the administration in accordance with good governance of Buengyitho Municipality, Pathumthani province. Can be summarized as the concept of research as follows.

Independent Variables Demographic background data are gender, age, education level, occupation status, and income.

Dependent Variabl. Governance based on good governance of the municipality. Pathumthani consists of 6 principles. The rule of law, Morality, Accountability, Participation , Responsibility and Cost.

**Methodology**

The purpose of this study was to study the administration in accordance with good governance of Buengyitho Municipality, Pathumthani province.

**Population**

The population in this study is the population of the municipality of Year 2017

**Population statistics of Buengyitho Municipality Year 2017**

Buengyitho Municipality	Male	Female	Total
<b>Moo 1</b>	5,012	5,985	10,997
<b>Moo 2</b>	3,421	3,912	7,333
<b>Moo 3</b>	3,763	4,485	8,248
<b>Moo 4</b>	2,371	2,817	5,188
<b>Total</b>	<b>14,567</b>	<b>17,199</b>	<b>31,766</b>

**Sample**

The samples used in this study were the residents of the Buengyitho Municipality, Pathumthani Table 1 defines the sample size using the Taro Yamame formula at the 95% confidence level. The error tolerance is +5% (Yamane, 1967). 395 persons and sampled from each subgroup. To be a member of the Proportional Allocation.

$$n = \frac{31,766}{1 + (31,766) \times (0.05)^2} = 395$$

The samples used in this study were 395

**Table 1** shows the sample used in the research (as of 28 August 2017) :

Buengyitho Municipality	Male	Female	Total	Samples
<b>Moo 1</b>	5,012	5,985	10,997	137
<b>Moo 2</b>	3,421	3,912	7,333	91
<b>Moo 3</b>	3,763	4,485	8,248	103
<b>Moo 4</b>	2,371	2,817	5,188	64
<b>Total</b>	<b>14,567</b>	<b>17,199</b>	<b>31,766</b>	<b>395</b>

### Research Tools

The research instrument was a questionnaire on the administration in accordance with good governance of Buengyitho Municipality, Pathumthani province is divided into 2 sections.

Part 1 The basic information of the respondents about gender, age, education level, occupation status and income. Question Type Check List.

Part 2 Questions about the administration in accordance with good governance of Buengyitho Municipality, Pathumthani province. In The rule of law, Morality, Accountability, Participation , Responsibility and Cost. The question looks a rating scale 5 levels by likert scales include most small, medium and minimum criteria set by the researchers in the following.

5 points	mean	the highest level
4 points	mean	the high level
3 points	mean	the moderate
2 points	mean	comments are at a low level
1 points	mean	comments are minim

Part 3 Suggestions

### Data collection

1. The researcher collected the research data together with the questionnaire on the population of Buengyitho Municipality, Pathumthani province. It takes about 1 month.

2. When the questionnaire was returned. The researcher checked the accuracy and completeness of both the data in the questionnaire and the number of questionnaires.

The questionnaire was categorized into data.

3. The data were then analyzed by computer program.

### Data analysis

The researcher conducted the following steps : Basic information of the respondents. Use descriptive statistics to describe the data. The frequency table and the percentage .

Information in the administration in accordance with good governance of Buengyitho Municipality, Pathumthani province Descriptive statistics were used to describe the data. The mean and standard deviation (S.D.) are as follows.

### Average range

### Interpretation

4.50 – 5.00	mean	The highest level of governance in administration.
3.50 – 4.49	mean	The high level of opinion on governance is very good.
2.50 – 3.49	mean	The medium level of opinion on the administration of governance.
1.50 – 2.49	mean	The level low of opinion on the administration of good governance.
1.00 – 1.49	mean	The level very low of opinion on the administration of good governance.

### The statistics used to analyze data.

The hypothesis test was conducted to compare the differences between the baseline data of the respondents and the administration in accordance with good governance of Buengyitho Municipality, Pathumthani province. T-test was used in the case where the results of T-test were significantly different at .05 level. Additional data were analyzed by Scheffe method. Information from other suggestions. More. Content Analysis by descriptive.



## Results

The results of the data analysis of the respondents indicated that the majority of the sample consisted of 201 females 50.8 percent . The majority of them were 21-30 years old, accounting for 28.3 percent. 240 people, or more than half of them, had a marital status of 199 or 50.3 percent. Most of them had a trade or private business of 222 or 56.2 percent. There were 212 persons, representing 53.6 percent .

The results of the data analysis on the administration in accordance with good governance of Buengyitho Municipality, Pathumthani province. The results were moderate. When considering each aspect. It was found that all levels were moderate. In terms of morality ( $\bar{X} = 3.17$ ,  $SD = 0.65$ ), followed by the rule of law ( $\bar{X} = 3.15$ ,  $SD = 0.75$ ) accountability ( $\bar{X} = 3.12$ ,  $SD = 0.73$ ), cost ( $\bar{X} = 3.11$ ,  $S.D. = 0.67$ ), responsibility ( $\bar{X} = 3.06$ ,  $SD = 0.67$ ), and participation ( $\bar{X} = 2.97$ ,  $SD = 0.67$ ), respectively.

## Discussion

The research on the administration in accordance with good governance of Buengyitho Municipality, Pathumthani province. The researcher will discuss important issues and discuss the results of the research as follows.

1. Management of the administration in accordance with good governance of Buengyitho Municipality, Pathumthani province was found at a moderate level. This may be because. Buengyitho Municipality, Pathumthani works by adhering to the appropriate rules of democracy. To be fair. There is transparency in all parties involved. Be honest And use resources to maximize. This will lead to the development of a nation that is stable, sustainable and stable. This is consistent with the research Mtrak Phalthuwngs. (2556) Management of Good Governance in School Administration. Sakaeo Provincial Administration Organization. Considering each detail. The results are as follows.

1.1 The rule of law was found that the administration in accordance with good governance of Buengyitho Municipality, Pathumthani province is overall at a moderate level. This may be because. Buengyitho Municipality, Pathumthani province is governed by regulations. Regulations apply in the municipality. Buengyitho Municipality, Pathumthani province is a mutual agreement. And enforcement of rules and regulations must be fair. It is accepted by all members of the municipalities. Rules and regulations must bring about equality in the municipalities of Marseille. Buengyitho Municipality, Pathumthani province. Not by arbitrary or by their own power. No damage to the government. This is consistent with the research. Narongsak Nantesing. (2556). Teachers' opinion on management using good governance principles of school administrators in Educational Quality Development.

1.2 The morality was found that the administration in accordance with good governance of Buengyitho Municipality, Pathumthani province is overall at a moderate level. This may be because. Buengyitho Municipality, Pathumthani province works by adhering to the righteousness. There is a campaign for the staff to uphold the virtue in the face. To be an example to society. To promote and encourage people to develop themselves together to be honest, sincere, hard-working, disciplined, professionally honest, a national habit. This is consistent with the research. Mtrak Phalthuwngs. (2556) Management of Good Governance in School Administration. Sakaeo Provincial Administration Organization.

1.3 Accountability was found that the administration in accordance with good governance of Buengyitho Municipality, Pathumthani province is overall at a moderate level. This may be because. Buengyitho Municipality, Pathumthani province is managed by the principle of mutual trust between the people and people in the municipality. Buengyitho Municipality, Pathumthani province as well as related parties. Improve the management of all aspects of the administration to be transparent. It provides a straightforward and straightforward way to communicate information in a language that is easy to understand. People have easy access to information and procedures for the public to check the clarity. This is consistent with the research. Narongsak Nantesing. (2556). Teachers' opinion on management using good governance principles of school administrators in Educational Quality Development.

1.4 The participation was found that the administration in accordance with good governance of Buengyitho Municipality, Pathumthani province is overall at a moderate level. This may be

because. Buengyitho Municipality, Pathumthani is managed by the principle of giving opportunities to those involved in the municipality. Buengyitho Municipality, Pathumthani province has been recognized. Be able to express ideas and opinions in decision making on key issues. Make decisions in the workplace. And participate in the process of reviewing the work. Encourage unity. Engage with the organization. It is the power to achieve goals effectively. This is consistent with the research. Praprateep Srisiuan. (2553). The Use of Good Governance in Educational Administration in Donmuang District, Bangkok.

1.5 Responsibility was found that the administration in accordance with good governance of Buengyitho Municipality, Pathumthani province is overall at a moderate level. This may be because. Buengyitho Municipality, Pathumthani province is managed by the principle of recognizing rights, duties and responsibilities in social responsibility. Focus on public problems of the country. They are enthusiastic about solving problems, respecting the different opinions, and the courage to accept the good and the bad of their actions. This is consistent with the research. Canng nanongdtoom. (2550). The application of good governance principles to the management of educational institutes according to A review of teacher education in schools. Under the jurisdiction of the Office of Khon Kaen Educational Service Area 4.

1.6 Cost was found that the administration in accordance with good governance of Buengyitho Municipality, Pathumthani province is overall at a moderate level. This may be because the municipality of Buengyitho Municipality, Pathumthani province is managed by the principle of managing to use the existing resources in a cost-effective way, using renewable energy efficiently and effectively. As well as preserving natural resources, there is a campaign to save. Use of value. Create quality work. Competitive Reported results Demonstrate and demonstrate resource efficiency in public. Consider the long-term efficiency and effectiveness. This is consistent with the research. Praprateep Srisiuan. (2553). The Use of Good Governance in Educational Administration in Donmuang District, Bangkok.

2. Comparative Analysis of the administration in accordance with good governance of Buengyitho Municipality, Pathumthani province According to the opinions of people, by gender, age, education level, occupation status and income.

People in Buengyitho Municipality, Pathumthani province was found that the public had the opinion that the administration of good governance in the municipality of Buengyitho Municipality, Pathumthani province Overall, the difference. At the .05 level, this was in line with the assumptions. When considering the principle found. There is no difference in opinion, morality and transparency. The statistical significance was .05. The public has different opinions. At the .01 level of significance, This is consistent with the research. Santhwanth Phyalaiyng. (2552). School governance according to good governance in primary schools.

#### **Suggestion**

The results of the research on the administration in accordance with good governance of Buengyitho Municipality, Pathumthani province Researchers have suggestions as follows.

1. Prepare a manual to make clear on rule of law.
2. Promote the development of moral knowledge.
3. Monitor on all proass of working to protect corruption
4. Raise up the level of participation from community.
5. Always survey, supervised and assistd.
6. Use information to set standard performance.

#### **Suggestions for research next time.**

1. To study the factors affecting the use of good governance in the administration in accordance with good governance of Buengyitho Municipality, Pathumthani province In order to know the factors that will contribute to the successful implementation of good governance in the management.

2. The model of good governance should be studied. The information may be useful and guide further development.

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**The opinion of government officials about the tax law toward the principle of good faith**Satchawat Ruengkankun<sup>1</sup> and Nisita Suksathit<sup>2</sup><sup>1</sup>Faculty of public administration, University of North Bangkok, E-mail: satchawat.ru@northbkk.ac.th<sup>2</sup>Faculty of public administration, University of North Bangkok, E-mail: [nisita.su@northbkk.ac.th](mailto:nisita.su@northbkk.ac.th)**Abstract**

The opinion or the tax advice of government officials towards the taxpayers is very essential, although it is not instructed anyone to lose taxable or non-taxable privileges. However, when the taxpayers asks for advices or discusses with the officials that themselves or their own businesses have to pay tax or not, the officials may answer or give comments that are not clearly valid which can make the taxpayers carry the burden of excessive taxes. As a result of this, the taxpayers can apply the principle of good faith to dispute the tax collecting to the tax officials. The study of the criteria, how to apply the principle of good faith, the result analysis together with the suggestion between Thai law and international law can apply to make a proper tax advice.

The study found that there are some differences in the comparison between Thailand and the United States of America, England, Germany and France. The principle of good faith in the context of Thailand had appeared mostly in the civil law. Therefore, applying the principle to the opinion of the officials will be able to adapt, but there are several obstacles. And this research is presenting the guidelines and right ways to prevent the loss and support the fairness to the taxpayers and it will be beneficial to the practice of the government officials in the future.

**Keywords:** Principle of good faith, Taxation law, Government officials

**1. Introduction**

Regarding to the subject of taxation law, although the opinion or suggestion from the government officials is not directed any person to pay tax or not, it actually impacts directly to the taxpayers. To give example, sometimes the taxpayers ask the government official about how much they have to pay for tax or how to deal with property tax. But as the answer is based the individual opinion and the understanding of the law, the government official might suggest not to pay tax or pay in a small amount and later, the result showed that the taxpayer doesn't have the non-taxable privilege and even has to pay in the higher tax rate with penalties. As the result of this, the taxpayers are affected, lost and forced to pay a statutory tax or may file a lawsuit with the tax court to enforce the tax.

The opinion or recommendation from the government officials does not have the legal power to order the taxpayers to follow. And it is not a juristic relationship building between the government agencies that collect tax and the taxpayers that will cause or suspend the duty to pay taxes. Therefore, the opinion of government officials cannot be refuting the purpose of the law.[1]

From the issue, if the principle of good faith is used in legal advice of government officials, the taxpayers might disobey the law by claiming the principle and the law cannot be applied to taxpayers. However, once the government officials do not use the principle of good faith, it may cause people the lack confidence, the willingness of tax paying and the cure of the loss that caused by the government officials.

Therefore, to ensure the rights that the taxpayer is protected and to prevent the loss to the government, the study has adapted the principle of good faith to apply to the legal opinion of how to make it suitable. In this study, there are comparisons of the characters and patterns of the international law and suggestions of how to apply to Thai law.

**2. Research objectives**

1. To study the rule and the legal usage of the principle of good faith of Thai and international law
2. To analyze and propose the usage of the principle of good faith in the advice of the government officials

**3. Methodology**

This study is a mixed method research by studying the related documents and literatures such as thesis, articles, researches and the interviews of the related parties; taxpayers, the government officials or the local officials, etc., from different countries. However, the study will only focus on the opinion of government officials and discussion in the administrative court; not the procedure of the tax court.

#### 4. Literature Review

##### 1. The manner of the principle of good faith

The principle of good faith is a general law for justice and this concept has evolved over time and continued to the present. The origin of this concept comes from the religion and the vow, the natural law and the Roman law. The human belief in religion and the vow is a sign or confirmation of the truth of the debt. The Christian belief is influenced by the Greek philosophy and developed in pattern to the law and morality that generally used in law.

The law of nature has the concept of human justice. Cicero and Aristotle thought that good faith generates fair justice widely and the honesty is one of the elements for human to be reasonable. And the concept of Roman law that influenced by the principle of good faith is the theory of freedom of expression to respect the opinions of others.

The usage of the principle of good faith in the different countries has different details and criteria. In England and the United States, this principle is comparable to the Estoppel. Regarding to the British law, it can be categorized into 3 categories [2]; 1. The principle of the Estoppel by judgment 2. The principle of the Estoppel by contract policy 3. The principle of the Estoppel by demeanor

Regarding to the Estoppel in the United States, The United States Court considers the Estoppel by demeanor is the result of righteousness which prevent any injustice to happen. As a result of this, one party will be losing the legal opportunity and will be prevented from citing or denying any of the facts from a result of his previous actions.

The principle of good faith in Germany has a significant role in “Formation of Contract” and “Culpa in Contrahendo Pre-Contractual Liability theory”. Doing the job before the contract will affect the partner of contract and the person will have the right to claim for the loss. This principle is accepted in the second chapter of the German Civil Code (Bürgerliches Gesetzbuch: B.G.B.) which originally used only for the debt. However, in the field of law and jurisprudence in Germany have all agreed that the principle of good faith should be widely apply to all law such as private and public law[3].

Since the adoption of the Civil Code in France, all types of contracts have obliged the related parties to have their duties as prescribed with the rightfulness by law and the partner in contract will be bound to follow the contract faithfully. In French civil law, Section 1134, paragraph 3 stated that “The contract must be treated in good faith”. Therefore, it clearly shows that France also priorities this principle as well.

However, the French court has only applied this principle practically in a very small extent. The reason might be the fact that the court has developed the fairness in a general law such as the Liability for one’s own Act or the Contract principles that strictly contracted, etc. Nevertheless, the court will not interfere as they have been derived from liberal and contractual freedom or the sacredness of the expression of intentions of the related parties.

Regarding to the principle of good faith in Thailand, The provisions in the Civil and Commercial Code on this principle consists of two types; The Specific Principle and the General Principle. The Specific Principles is determined by the knowledge or the ignorance of the related parties. The General Principles is in Section 5, Section 6 and Section 368. The word “Honesty” has a broad meaning and it does not classify by knowing or knowing of the parties.

Hence, the principle in European countries has been applied with pattern of the principle and many other types of contracts such as insurance policy, sale contract, law in the company, property law or debt matters, etc. Especially England and the United States, they have used the principle of good faith in the form of the Estoppel which will mostly consider about the honesty of the concerned parties that strictly apply. [4]

##### 2. Tax advice

Tax law is complex and frequently amended. As a result of this, the taxpayers do not know the full details of the law but the taxpayers cannot claim that they do not know. Therefore, the taxpayers often ask for advices and confirmation from the government officials to ensure that they can properly comply with the law.

Legal Dictionaries have provided the meanings of tax advice as follow;

A. Tax advice means the official interpretation by the Internal Revenue Service to apply in tax laws on specific practices. The tax adjudications come from the official and maybe trusted by the taxpayer who requested for the adjudication.

B. Tax advice means the comments from the Revenue Department that published which specify the rule that might have the problem in the future based on the same situation. In general, these tax adjudications are often used by taxpayers, tax planners, accountants and attorneys. The tax adjudication will be legally enforced until the tax court decides the adjudication differently. [5]

C. Tax advice means a written guidance provided to the taxpayers by the Revenue Department. The tax adjudication will apply to each situation on a case-by-case basis. The adjudication will be in attention because it shows the analyzing attitude of the Revenue Department; sometimes it is called letter ruling or ruling.[6]

D. Tax advice means the official interpretation of tax law by the Revenue Department that published to give guidance especially to taxpayers and revenue officers.

The responding to the discussion starts when there are enquiries from the taxpayers to the certain related government officials. The government has the duty to consider and respond to the discussions about tax problems for example the taxpayer has asked the government official whether the assessable income is taxable or not. The government officials may feedback in a certain answer or the answer that the receiving income is taxable. And the answer in the letter is only the related of the certain legal issue that asked.

The form of responses to a tax discussion can be in the form of oral advice or in writing which is more formal and commonly used.

The United States has divided the tax discussion into 2 types to classify the difficulty in the consideration; the tax adjudication and the tax advice. The tax adjudication means a written statement to the taxpayer by the National Office. The detail is an interpretation and adaptation of laws and guidelines to specific facts together with the conclusions about the tax consequences of particular businesses. Tax advice means a written statement to the taxpayer by the district director of Internal Revenue who adapted the law and practice including the statements that are published to specific facts.

The tax advice has the same effect as tax adjudication. The difference is that the tax advice is only used in the case with the basic legal or the judgment or opinion of the court that already published in official journals. But for the new discussion or the complex issue, it needs to transfer to the National Office.

What are the legal statuses of response to various types of tax consultations? Is it administrative? What kind of action may be taken? The answer is as below.

The administrative action is divided into 2 types; the Juristic Act and the Real Act.

Regarding to the Juristic Act, it shows the intention of the government officials that aim to tie legal relationships between individuals. It is an act of the organization of the government or the government official to establish a relationship of the rights and the obligations between the governmental organizations or the private and government officials.

Regarding to the Real Act, it is the action when using physical force to manage with the rights and duties. To give some examples are; the police officer parks in the no-parking space, to remove illegal building in the canals or to use the force to arrest the offender, etc. The mentioned examples earlier are considered as the administrative action, not the legal action.

The meaning of legal acts means the intention of the expression of the administrative staff to tie the relationship between the individuals. Or it is an act of government organization or government official who seeks to establish a relationship of rights and obligations between the governmental organizations or the private and government officials.

From above, it can be seen that the suggestion or the answer of the tax advice is not a rule or an order to proceed but it is only one type of administrative action. Unlike the tax adjudication from the committee, it is considered to be ruled and cannot apply in the past of time unless specified otherwise. Therefore, the tax adjudication from the committee is the order from administration that will affect to the concerned parties.



### **3. The usage of the principle of good faith in tax law.**

#### *England and the United States*

It can be seen in the English court when the lawsuits use the Estoppel, it is not commonly accepted in arguments. The taxpayers claim to fight against government officials but the court will allege that the rule the Estoppel will not apply when there are the cases of misuse in power and the government cannot be silenced by the government's own power. Therefore, the Estoppel is used in a limited case that can apply under the customary law.

The Supreme Court of the United States mentioned that a litigant who cited the Estoppel could have never won the case if it does not show that there are elements of the Estoppel in the event that happens. The compositions of the Estoppel are; 1. The litigant of the Estoppel must know the facts. 2. The litigant intends that his actions will be followed or followed as claimed in the Estoppel and has the right to believe that. 3. The claimant will not know the facts 4. The litigant needs to trust in their previous actions while the Supreme Court has referred to the Estoppel claims. The federal courts and tax courts judge that when the litigant claims the Estoppel to a government, it must show that the government is more involved in the affirmative conduct than just negligence.

In the case that claims the Estoppel with the Revenue Department, the proof duty will be assigned to the taxpayers. The court will rule that the Estoppel will not be able to apply in the error case. In addition, the Estoppel will carefully apply in the most limitation to the Revenue Department.

The action of the revenue officer that related to many tax issues is considered by the court that the Estoppel is applicable or not by analyzing the facts and the behavior such as bad debt reserves, community property, exempt income, investment loss, excise tax and property valuation, etc.

Moreover, the court has determined that the actions of the authorities regarding the publication of Revenue Department, the adjudication such as the form with the inserted context, the suggestion of the tax form submission, the specific letter on Regulations of the Ministry of Finance, and the tax adjudication, will be used to claim an Estoppel against the government.

#### *Germany and France*

The German court uses the principle of good faith with Section 242 of the German Civil Code to base the new general principle such as the debt settlement agreement, etc. When the principle of law is not enough to make decision, the principle of good faith is another interesting tool to draft the law as there is enough flexibility to accept in the new law system and has enough ability to win the case.

In French law, all contracts are bound to the legal duty with the fairness and follow the principle of good faith. But in practical use, French law rarely applies this principle but only with the case that has no law requirement to do so.

For the usage in principles of good faith in Thailand, it can be seen that the Supreme Court has applied this principle in a small number of cases which is used in a limited scope. Once they have the legal provisions or the contract, the court will respect them. The court will only interfere in a very special limited scope. When using the principle of good faith to analyze the contract, the judge can use his own discretion to interfere to balance the benefit for the concerned parties.

The case of tax law might be applicable in the principle of good faith by comparing the fact that filed the complaint. For example, Thai Seika Electric Co., Ltd sued the Customs Department to the civil court under a black case No. 165/2548. The company claimed the principle of good faith against the government officials in order to get the compensation from the loss in business preparation that they bought the machines and expanded the factory. This is due to the cost calculation in different import tax from 1 percent and later the Custom Department rose to 35 percent.

### **5. Findings**

#### **The guiding usage in principle in good faith with the optimal tax suggestion of the government officials.**

The study found that government agencies that involved in tax collection have strictly provided a proper and honest advice and opinion that referred by the tax adjudication. But there are several discussion or question that waiting to be replied. This could become a problem directly with the tax liability that the concern party will bring it up in the court to make a norm for the next case.

The arguments using the principles of good faith.

The public law has argued about the usage of the principle of good faith. As it comes from the civil law, therefore it should only apply between the privates, not with the public law that concern between the government and the public or the government and government.

In addition, there is no certain meaning and certain usage of the principle of good faith. Therefore, the result will be judged by the court. The related parties will not know whether their actions contrast with the principle or not. Some lawyers think that the unwillingness to accept the principle is likely to make discrimination between the contractual obligation and the non-contractual obligation. The scholars of the agreement have prioritized the special characteristic of the second page as it is part of the education or academic matter. In addition, not be able to define the definition of the principle of good faith, it affects the value of the certainty and the predictability and the clearness of the contract law structure. The reason that the lawyers do not accept the principle might come from the wording of the text rather than the essence of the principles. These lawyers adhere to the belief that the law is based on rational guidelines, not the moral concept like the principle. Those who believe in the rationality, they find it difficult to accept when there is no clear definition for the principle. However, it is not a good reason that we do not have the right definition of this principle as the Constitution of the United States also have the same unclear meaning for it.[8]

In addition, there is also disapproval in the Estoppel usage with the government. The reasons are as followed;

1. The duty of government is the sovereignty of the state was used by the government. Therefore, the implementation of government will be protected when it has been done by the state, sovereignty of the state and the representative of the state and the citizen so the society can be properly preceded. Some responsibilities are assigned to follow the discretion of the government and only governments can decide to cancel or increase the rate of taxation. The government must be responsible for the development of infrastructure and the use of state power to maintain the peace in the society. Therefore, all these responsibilities are assigned to the government so they are fully protected from the Estoppel.

2. The protection of the public interest is done by the government for the public interest. The duties and responsibilities in the region such as collecting taxes and maintaining the peace have been given to the government to respond to the public interest.

3. There are cases that the government officials had used or acted beyond their scope of duties in the lawsuit that related to the Estoppel. It is the mistakes of the misconduct from the staff that hired by the government therefore the Estoppel could not apply with the government.

However, the principle of good faith has widely used in various fields of public law such as criminal law, administrative law, tax law and international law. When there is a dispute between the citizens and the officials that acted on behalf of the government, the citizens can defend themselves by using the principle of good faith when the officials misuse or misbehave on their scope of duty.

Moreover, in the dispute resolving process, the taxpayers do not always have the principle of good faith to claim in the tax legislation to dispute the assessed tax collection. And these cases are rarely considered carefully. However, it is concerned that the problems with the advice may increase every year. And this can lead to more usage in the principle of good faith in the tax legislation.

If the taxpayers have lost by the answer changing in the discussion or the advice from the government officials, they should apply the principle of good faith to cure the loss. Because the loss of the taxpayer is caused by the government officials, therefore, honesty of both parties is a need to use the principle to create the fairness. The usage of the principle needs to be carefully used with a limitation because the purpose of the tax collection is for the public interest therefore, it must be concern and consider of pros and cons and how to apply.

On the other hand, to prevent the loss to the taxpayer, they should use the tax adjudication to reduce the penalty and offset the loss too.

For questions that should be considered to apply with the tax collection, the researcher thinks that;

1. The taxpayer is misleading or not. The researcher suggests that a government official or government agency must have a clear understanding of the whole guidance process. To make

comments and answer the discussion should use the administrative practices and to balance of public and private interests.

2. What the tax status of the taxpayer is. The researcher thinks that there are many different types and versions of tax collection. Therefore, all of them should be clearly classify to groups to make it easier to understand.

3. The taxpayers are honest or not. In each fact, there are difference in context both in law and types. When the taxpayer asks for advice, it shows that they are honest and the government officials should investigate the information precisely.

4. Government agencies or government officials have given a fraud advice, a hidden advice or do anything to mislead the taxpayers or not. Researcher suggests that this need to be strictly verify that the government agencies or government officials does not mislead the information.

## 6. Discussion

The principle of good faith is a legal principle that has long existed and evolved continuously for thousands of years to deliver justice in the society. The principle concept consists of religion, vow, natural law and the law that human has created. The principle of good faith has still maintained and developed by over time in order to remain the justice that men have always desired.

Therefore, it is extremely vital for the government officials to apply the principle of good faith in the tax advice. From the study that compared the principle usage in Thailand and other countries, it can be seen that the principle is the general law that has taken important role and widely accepted in foreign countries. In England and the United States, the principle can be compared to the Estoppel. In Germany and France, it can be compared to guarantee that the contract in private law can also be applied in the public law as well.

Thailand has been influenced by those countries together with the religious and cultural reasons. Therefore Thailand has the legislation law that implies the principle of good faith in a broad definition that can be adapted to the advice of the government officials as well.

## 7. Recommendations

1. Encourage the principle of good faith to be applied to the taxpayers who have lost because of the given advice or answer about the tax from the government officials

2. Should manage the clearly advice giving system of government officials

3. Should have the solid rule to guide the government officials when giving advice to prevent the misuse in power or the mistaken the advice that may lead to lose to the taxpayers

4. Should have the examples or the references of the tax adjudication that can refer to so the taxpayers can follow

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