Management Guidelines for Business Operations under the BCG Economy Concept: A Study of Small and Medium Enterprises (SMEs) in Nong Khaem District, Bangkok, Thailand

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Abstract

This research aimed to develop management guidelines for business operations under the BCG Economy concept. The study used a qualitative research methodology, collecting data from 30 key informants—SME entrepreneurs in Nong Khaem District, Bangkok—through in-depth interviews. The interview tool was a semi-structured questionnaire, which was validated by experts in terms of structure and content. The data from the interviews were analyzed using content analysis to extract key insights.

The findings of the study revealed that the majority of SME entrepreneurs in Nong Khaem District, Bangkok, had an average age of 37.87 years and an average of 11.57 years of work experience. Most entrepreneurs had a bachelor's degree, and the majority of businesses were in manufacturing, with the business size ranging from 100 to 500 million baht. The interview data showed the following points. 1) Most entrepreneurs understood the management guidelines on their businesses according to the BCG Economy concepts. 2) The main problems were the shortage of raw materials, the lack of skilled labor that met the needs of businesses, and the difficulties in securing funding to invest in business transformation to align with the BCG Economy, which required high investment. This included redesigning products according to this policy. 3) Regarding business operations under the BCG Economy concept, most entrepreneurs agreed with the implementation of Circular Economy policies, particularly reusing and recycling of materials such as packaging. 4) The key success factors for managing businesses under the BCG Economy concept included the ability to achieve significant business growth and sustainability.

Keywords: Management Guidelines, BCG Economy, SME entrepreneurs

Background and Statement of the problem

In 2022, the government announced a policy to drive Thailand towards "Thailand 4.0" through the development of an integrated economy, advancing three key economic dimensions simultaneously: 1) Bioeconomy, which utilized biological resources to create added value, focusing on the development of high-value products; 2) Circular Economy, which emphasized resource conservation through recycling, reducing greenhouse gas emissions, mitigating pollution, and creating a new form of economy; and 3) Green Economy, which developed in parallel with social progress and environmental protection to achieve balance, security, and sustainability. The aim was to transform Thailand's advantages from its biodiversity and cultural diversity into competitive capabilities through innovation, fostering a BCG Economy that grew, competed globally, distributed income to communities, reduced inequality, strengthens communities, and ensured environmental friendliness and sustainable development. This aligns with the United Nations Sustainable Development Goals (SDGs) and the 20-year National Strategy (2018-2038), which envisions a stable, prosperous, and sustainable Thailand as a developed country based on the principles of Sufficiency Economy. [1]

For medium and small enterprises (SMEs), when faced with changes in the economic framework, they play a crucial role in driving economic development, promoting employment, and encouraging innovation. The BCG (Bioeconomy, Circular Economy, and Green Economy) concept has become a strategic framework to promote sustainable growth by integrating biological resources, circular economy principles, and environmentally friendly practices. As the global market shifts towards more sustainable business models,

SMEs must adapt to these changes to maintain competitiveness, achieve long-term profitability, and support sustainable development goals.

Although implementing the BCG Economy concept offers various benefits, SMEs often face challenges in adopting sustainable management strategies due to financial constraints, limited access to technology, and insufficient knowledge about best practices. Therefore, an effective management approach tailored to the operations of SMEs is necessary to facilitate the integration of BCG principles into their business models. This research aimed to explore and develop management approaches aligned with the BCG Economy concept, providing practical strategies for SMEs to enhance efficiency, flexibility, and sustainability in their operations.

Since the government's adoption of the BCG policy, the Department of Industrial Promotion (DIPROM), led by Director-General Mr. Passakorn Chairat, has reported that by 2024, over 1,800 SMEs are expected to adopt the "BCG Model," adding value to the economy and driving industrial transformation towards sustainable growth. This will be achieved through initiatives such as improving environmentally friendly production processes, reducing energy costs, promoting the use of technology and innovation in management, and enhancing production efficiency. The program also focuses on upcycling, turning waste materials within enterprises into new high-value products. [2]

Examples of successful Thai businesses that have adopted the BCG policy include:

1. Para Dough, a toy made from Thai rubber, entering the global toy market. These rubber toys are safe, odorless, and free of harmful chemicals, made from natural rubber.

2. Bio-methanol from waste materials, utilizing CO2 from the coal-fired power industry, in combination with hydrogen, methane, and crude glycerol, to produce semi-industrial bio-methanol, with plans to develop Thailand's first bio-methanol pilot plant.

3. TISTR (Thailand Institute of Scientific and Technological Research) driving BCG by adding value to agricultural waste materials, such as coconut husks, rice husks, corn cobs, straw, Napier grass, banana fibers, sugarcane leaves, water hyacinth, and bamboo, into biodegradable planting pots.

4. TISTR and BJC (Beverage Can Manufacturers) collaborated to respond to the government's BCG policy, focusing on circular economy processes to minimize waste and develop low-carbon materials, promoting recycling, and improving waste management in production. [3]

Therefore, the researchers were interested in studying how SMEs in Nong Khaem District, Bangkok implement the government's BCG policy in practice. The research objectives were to provide insights into strategic management approaches, tools, and best practices necessary for SMEs to transition and thrive in the bioeconomy, circular economy, and green economy. This research discussed challenges such as balancing profit with sustainability, improving resource efficiency, navigating regulatory landscapes, promoting innovation, and engaging consumers. Eventually, the goal was to help businesses not only meet the increasing demand for sustainability but also leverage growth opportunities and competitive advantages in the environmentally conscious market.

Objectives

1) To study small and medium business entrepreneurs' perspectives on applying BGC Economic concept on business operations.

2) To develop management guidelines to lead to business management under the BCG Economy concept.

Expected benefits

1. Promoting Sustainable Business Growth

By applying the BCG (Bio-Circular-Green) Economy concept, SMEs can adopt sustainable business models that enhance profitability while minimizing environmental impact. This helps businesses stay competitive in a market that increasingly values sustainability.

2. Increasing Operational Efficiency

This study can provide management guidelines that improve resource utilization, reduce waste, and enhance production efficiency. SMEs can benefit from strategies that lower costs and increase productivity.

3. Enhancing Market Competitiveness

With growing consumer preference for sustainable and eco-friendly products, SMEs following the BCG Economy principles can differentiate themselves from competitors, attracting environmentally conscious customers.

4. Encouraging Innovation and New Business Opportunities

This research can explore how SMEs can integrate biotechnology, circular economy strategies, and green innovation into the business models, opening new revenue streams and creating added value for products and services.

Research Methodology

This research was qualitative research. The data was collected by using interview instruments with research methods and procedures to be applied for finding guidelines to lead to business management under the BCG Economy concept of SME entrepreneurs in Nong Khaem District, Bangkok. Therefore, the data used in the research came from primary sources that provide qualitative information by conducting semi-structured in-depth interviews. The research design was reviewed for quality of the tools, which are directly relevant, by the small and medium-sized entrepreneurs in Nong Khaem District, Bangkok, and analyzed for internal consistency until a quality interview form was obtained that can be practically applied. Moreover, data from secondary sources that related to the variables in this research were also used, such as documents, books, academic journals, or various publications, to study the management guidelines to lead to business management under the BCG Economy concept of small and medium-sized entrepreneurs in Nong Khaem District, Bangkok. The researcher has studied the concepts and theories from the relevant documents, which have been studied in this research in the data collection tools.

1. Key informants

Key informants in this study were executives of small and medium-sized enterprises (SMEs) located in the Nong Khaem District, Bangkok. As the exact number of entrepreneurs in the district is unknown, the researcher determined a sample size of 30 key informants, which is an acceptable number in qualitative research. This number was also appropriate in relation to the six-month interview data collection period, aiming to achieve data saturation. The key informants were identified and contacted through the Nong Khaem Entrepreneur Club page, which is available on Facebook platform. The informants were selected based on their expertise and practical experience in business management, with an emphasis on achieving diversity across different industry sectors.

2. Research instruments

The research instruments used in this research were interview forms and guidelines for semi-structured in-depth interviews. The information obtained from the interviews was qualitative data.

2.1 Interview forms on business operations in small and medium-sized enterprises in Nong Khaem District, Bangkok

The interview forms on business operations according to the BCG Economy guidelines of small and medium-sized enterprises in Nong Khaem District, Bangkok, which has been quality checked by considering the research framework.

The research was conducted in the following order:

2.1.1 Defining the main issues for the interview according to the research concept, identifying the information required for each issue.

2.1.2 Preparing a draft interview form and a list of questions for each issue.

2.1.3 Evaluating the interview form's quality by the experts to ensure that it was comprehensive and consistent with the content and subsequently implementing the experts' suggestions for improvements.

2.1.4 Developing the complete interview form by editing and enhancing it, and then collecting the data.

2.2 Guidelines for the interview

Focusing on understanding the business operations process according to the BCG Economy guidelines of small and medium-sized enterprises in Nong Khaem District, Bangkok. The interview questions were created based on the literature review, the scope of the research, and an analysis of the quality of the tools according to the critical success factors affecting the BCG Economy guidelines of small and medium-sized enterprises in Nong Khaem District, Bangkok, with comprehensive content coverage.

2.3 Verification of the validity and reliability of the research instruments

The researcher sent the draft interview form to the experts or specialists in the field of BCG Economy of small and medium-sized enterprises to verify the validity and reliability of the interview form. When the level of reliability and validity was at least 0.75, the researcher would proceed to collect the data.

3. Data collection

3.1 Documentary study

The documentary study was the collection of secondary data from books and academic documents, including research papers, theses, academic writings, academic articles, as well as newspapers, journals, magazines, and various printed media. The researcher selected only the parts that were related or relevant to the content and concepts of the research, providing information related to the interview.

3.2 Interviews

This research used both semi-formal interviews and informal interviews. Interviews were conducted with the executives of small and medium-sized enterprises in Nong Khaem District, Bangkok. The questions used as a guide in the interview to obtain the guidelines for business operations according to the BCG Economy guidelines of small and medium-sized enterprises in Nong Khaem District, Bangkok. Respondents were allowed to respond in order to obtain information that would be used as primary data and could represent the facts in accordance with the concept.

The procedures of the interviews were as follows:

3.2.1 Interview preparation stage

Before going to collect data through interviews, the researcher started by making an appointment, date, time, and place to interview the key informants. The researcher has studied the interview questions to be used with the key informants and learned how to use the recording equipment, prepared a notebook, and other equipment before conducting the interview.

3.2.2 Interview stage

Before the interview, the researcher engaged in conversation to familiarize the interviewees, explained the purpose of the interview, explained the reasons and asked for permission to use the recorder during the interview, and informed that the recorded information would be kept confidential. If the interviewees did not want to be recorded at any point, the researcher would not record.

4. Data analysis

The researcher has determined the content analysis of the data obtained from the interviews. Therefore, the characteristics of the data were mostly qualitative. The data analysis consisted mainly of content and used qualitative content analysis through the qualitative content analysis procedures. [4]

Research Results

The research results aimed to develop management guidelines for business management under the BCG Economy concept. The collected data will go through analysis and processing before being presented as a comprehensive overview. Data for this study was gathered through semi-structured interviews with a group of entrepreneurs using a qualitative research methodology.

The research findings are presented in the following four sections:

Part 1: The interviewees' general information

Part 2: Details about issues with business management

Part 3: Perceptions of management strategies that result in business management within the framework of the BCG Economy

Part 4: Information on the BCG Economy concept's success factors for business management

1. The interviewees' general information

Table 1 shows the average age and work experience of the survey participants. (n = 30)

Title	Average (year)
Age	37.87
Work experience	11.57

From Table 1, the majority of the 30 executives in the sample group had an average age of 37.87 years and had average work experience of 11.57 years.

Table 2 shows the number and percentage of the respondents' businesses of the industry standards. (n = 30)

Standard	Quantity	Percentage
ISO 9001	15	50.00
ISO 9100	1	3.33
ISO 14001	10	33.33
ISO 45001	1	3.33
ISO/TS16949	1	3.33
IATF16949	2	6.67
ISO 9001	15	50.00
ISO 9100	1	3.33
ISO 14001	10	33.33
Total	30	100.00

From Table 2, the total of 30 participants from 30 businesses, 15 participants had the ISO 9001 standard, accounting for 50.00 percent. One participant had the ISO 9100 standard, accounting for 3.33 percent. Ten participants had the ISO 14001 standard, accounting for 33.33 percent. One participant had the ISO 45001 standard, accounting for 3.33 percent. One participant had the ISO/TS 16949 standard, accounting for 3.33 percent. Two participants had the IATF 16949 standard, accounting for 6.67 percent, respectively.

Table 3 shows the number and percentage of respondents' education levels. (n = 30)

Education Levels	Quantity	Percentage
Bachelor's degree	25	83.33
Master's degree	4	13.33
High Vocational Certificate	1	3.34
Total	30	100.00

From Table 3, the total sample of 30 people, there are 25 people with a bachelor's degree, accounting for 83.33 percent, 4 people with a master's degree, accounting for 13.33 percent, and 1 person with a higher vocational certificate, accounting for 3.34 percent, respectively.

Table 4 shows the number and percentage of respondents' primary business models. (n = 30)

Primary Business Model	Frequency	Percentage
Manufacturer	15	50.00
Subcontract Manufacturer	1	3.33
Importer	1	3.33
Distributor	7	23.33
Wholesaler/Retailer	3	10.00
Service Business Operator	3	10.00
Total	30	100.00

From Table 4, out of a total of 30 respondents, 15 respondents (50.00 percent) identified their primary business model as manufacturers. One respondent (3.33 percent) operated as a subcontract manufacturer, while another one (3.33 percent) was an importer. Seven respondents (23.33 percent) indicated that their primary business model was as distributors. Three respondents (10.00 percent) were engaged in wholesale/retail businesses, and another three respondents (10.00 percent) operated service-based businesses, respectively.

Table 5 shows the number and percentage of business types of respondents. (n = 30)

Business Type	Quantity	Percentage
Small-sized manufacturing	2	6.67
Small-sized trade or service	1	3.33
Medium-sized manufacturing	13	43.33
Medium-sized trade or service	6	20.00
Large-sized manufacturing	6	20.00
Large-sized trade or service	2	6.67
Total	30	100.00

From Table 5, the total of 30 respondents, 2 respondents (6.67 percent) were categorized under small-sized manufacturing businesses, while 1 respondent (3.33 percent) belonged to small-sized trade or service businesses. Thirteen respondents (43.33 percent) were engaged in medium-sized manufacturing businesses, and 6 respondents (20.00 percent) in medium-sized trade or service businesses. Additionally, 6 respondents (20.00 percent) operated large-sized manufacturing businesses, and 2 respondents (6.67 percent) operated large-sized trade or service businesses, respectively.

Table 6 shows number and percentage of business sizes (n = 28)

Business Size Category	Quantity	Percentage
Manufacturing/Trading < 1.8 million THB	1	3.57
Small-scale manufacturing < 100 million THB	2	7.14
Small-scale trading or service < 50 million THB	1	3.57
Medium-scale manufacturing 100 – 500 million THB	12	42.86
Medium-scale trading or service 50 – 300 million THB	4	14.29
Large-scale manufacturing > 500 million THB	4	14.29
Large-scale trading or service > 300 million THB	4	14.29
Total	28	100.00

From Table 6, out of a total of 28 respondents, 1 respondent (3.57 percent) operated a business in the manufacturing/trading sector with a size of less than 1.8 million THB. Two respondents (7.14 percent) operated small-scale manufacturing businesses with a size of less than 100 million THB. One respondent (3.57 percent) operated a small-scale trading or service business with a size of less than 50 million THB. Twelve respondents (42.86 percent) operated medium-scale manufacturing businesses with a size ranging from 100 to 500 million THB. Four respondents (14.29 percent) operated medium-scale trading or service businesses with a size ranging from 50 to 300 million THB. Four respondents (14.29 percent) operated large-scale manufacturing businesses with a size of more than 500 million THB. Finally, four respondents (14.29 percent) operated large-scale trading or service businesses with a size of more than 300 million THB, respectively.

2. Current Challenges in Business Management Aligned with the BCG Economy

At present, the primary challenges faced by small and medium-sized enterprises (SMEs) in Nong Khaem District concerning business management aligned with BCG Economy are as follows:

2.1 Shortage of Raw Materials

SMEs are currently experiencing difficulties in sourcing raw materials due to price volatility and limited availability across various periods. In many cases, businesses are unable to adjust their product prices in response to such fluctuations. The root causes of raw material shortages are largely attributable to uncontrollable external factors, including the COVID-19 pandemic, which triggered sudden price surges. Furthermore, ongoing global economic instability—driven by warfare, trade protectionism, shifting geopolitical conditions, and market dumping by major economies such as China—has significantly disrupted supply chains and impacted the ability of SMEs to maintain operations effectively.

2.2 Labor Shortages

A declining birth rate and an aging population have led to noticeable labor shortages. Additionally, the available workforce often lacks the necessary skills and competencies required by businesses, particularly in areas related to sustainable business practices. There is also a limited understanding among workers regarding environmentally responsible business operations and the importance of preserving natural resources for future use. Concurrent environmental issues, such as overflowing urban waste, plastic pollution, and improper disposal of industrial waste, further exacerbate the situation.

2.3 Business-Intrinsic Constraints

SMEs are burdened with high start-up costs and rising operational expenses. Transitioning toward a circular economy model necessitates substantial investments in environmentally friendly technologies, such as renewable energy, carbon reduction systems, and biodegradable materials. These often require advanced equipment, research and development, and collaborative networks throughout the supply chain—resources that are frequently beyond the financial capacity of SMEs. Additionally, it is challenging for entrepreneurs to justify such investments to shareholders, as the return on investment is typically long-term and not immediately tangible.

2.4 Limitations in Innovation and Sustainable Product Design

To effectively align with the bio- and green economy pillars of the BCG model, businesses must redesign their products and services to minimize environmental impact, prolong product life cycles, and enable recycling or reuse. This demands a deep integration of sustainable design principles into every stage of product development. However, such processes often present technical and engineering challenges. SMEs encounter difficulties in identifying alternative materials that are both environmentally sustainable and commercially viable. Designing products for disassembly, repairability, or upgradeability also requires specialized knowledge and expertise that may not currently exist within the organizational structure.

The key challenges for SMEs seeking to align with the BCG Economy include shortages in raw materials and skilled labor—obstacles already prevalent in general business operations. However, more specific to the BCG-aligned transformation are the difficulties associated with high-cost, long-term investments in new technologies, as well as the need for innovative product designs that facilitate reuse and recycling. These demands require additional knowledge in design thinking and innovation—competencies that entrepreneurs must actively seek to develop.

3. Entrepreneurial Perspectives on Business Management within the BCG Economy

3.1 Comprehension of BCG-Aligned Business Management

Entrepreneurs in Nong Khaem generally possess a sound understanding of the BCG Economy, recognizing it as a comprehensive model for economic development that encompasses three interconnected pillars: the Bioeconomy, which focuses on adding value to biological resources; the Circular Economy, which promotes efficient resource utilization and waste minimization; and the Green Economy, which encourages environmentally sustainable development. This conceptual framework integrates economic growth with ecological conservation and responsible resource management.

3.2 Perceptions on the BCG Economy's Impact on Business Sustainability

Entrepreneurs believe that integrating the BCG model into business practices can significantly enhance competitiveness and long-term sustainability, particularly across four key industries: agriculture and food, energy and materials, healthcare and medicine, and tourism and services. Science, technology, and innovation are viewed as essential drivers in elevating productivity and value, especially among grassroots producers, such as farmers and local communities. The approach enables resource cost reduction, promotes environmental stewardship, and stimulates exponential growth, income generation, and job creation. Moreover, it contributes to new innovations, efficient resource utilization, carbon reduction, and the development of a circular economic ecosystem that benefits communities and society at large.

3.3 Application of BCG Concepts in Business Management

3.3.1 Bioeconomy

Businesses prioritize the effective utilization of biological resources by selecting multifunctional products and integrating scientific and technological approaches to enhance their value. Emphasis is placed on maintaining ecological balance, while applying innovations that reduce carbon emissions and improve the efficiency of goods and services.

3.3.2 Circular Economy

Businesses adopt practices aimed at maximizing material utility through reuse, repurposing, and minimizing waste, thereby reducing environmental impact. Non-conforming products or production waste are often recycled or resold. Companies are encouraged to design products and processes that reduce waste generation and allow for reuse and recycling at every stage of the product life cycle. Strategies include sourcing raw materials locally, recruiting from local communities, and developing action plans that cover short-, medium-, and long-term goals to ensure all stakeholders are aligned.

3.3.3 Green Economy

The green economy promotes business operations that are socially and environmentally responsible. Companies are urged to adopt environmentally friendly practices, such as minimizing the use of hazardous chemicals and opting for natural alternatives. In logistics, this may involve using low-emission vehicles. Additionally, environmental awareness is fostered through education on global warming and the 3Rs: Reduce, Reuse, and Recycle. Creating green spaces within the business premises can also contribute to employee well-being.

4. Key Success Factors in Business Management Under the BCG Economy Framework

Key factors that contribute to successful implementation of the BCG Economy include operational efficiency, maximizing output with minimal input—and the adoption of technologies that promote exponential organizational growth. The strategic use of biotechnology and optimization of resource use are central to achieving sustainable development, which is the goal. An understanding of green products and environmentally conscious production methods allows businesses to provide more choices to consumers, increase sales opportunities, and broaden customer reach. This, in turn, strengthens sustainability in resource utilization and biodiversity, and enhances competitiveness within BCG-aligned industries.

Additionally, the BCG Economy serves as a powerful marketing tool, aiding businesses in analyzing product performance, identifying success metrics, and managing operations effectively based on the unique nature of each business. The model encourages adaptation in response to technological innovation, socio-economic changes, and organizational preparedness. Addressing environmental issues and pollution management are also critical components of success.

New market opportunities and product innovations, particularly in agriculture and food sectors, can improve competitiveness and empower the grassroots economy through value-added agricultural processing. This approach supports a balanced use of natural and cultural resources, while promoting growth within the community.

Entrepreneurs in Nong Khaem further emphasized the importance of government support in promoting the BCG Economy. With the government currently prioritizing the BCG model across three dimensions—Bioeconomy, Circular Economy, and Green Economy—and focusing on four major industries (agriculture and food, energy and materials, health and medicine, and tourism and services), the prospects for business expansion are promising. Entrepreneurs advocate for comprehensive campaigns and tangible implementation led by both government and industry sectors, including:

1. Strategic economic planning
2. Infrastructure and quality-of-life development
3. Investment facilitation and incentives
4. Industrial development and innovation
5. Human capital development and education
6. Seamless integration and systemic adaptation

Table 7 shows frequency and percentage of business management approaches under the BCG Economy Concept Emphasized by Entrepreneurs (n = 26)

No.	Business Management Approaches	Frequency	Percentage
1.	Achieving balance	1	3.85
2.	Cost reduction	2	7.69
3.	Reusing existing materials	11	42.30
4.	Application of technology and innovation	1	3.85
5.	Enhancing competitiveness	4	15.38
6.	Income distribution to local communities	1	3.85
7.	Reducing raw material shortages	1	3.85
8.	Pollution reduction	1	3.85
9.	Aligning operations with natural systems and processes	3	11.53
10.	Sustainable resource management enabling long-term business operations	1	3.85
	Total	26	100.00

From Table 7, The total of 26 respondents, the highest number—11 individuals or 42.30 percent — highlighted *reusing existing materials* as a key practice aligned with the BCG Economy. Meanwhile, 4 respondents (15.38 percent) emphasized *enhancing competitiveness*, followed by 3 respondents (11.53 percent) who focused on *aligning operations with natural systems and processes*. These results reflect the areas of greatest interest among entrepreneurs in terms of sustainable and circular business practices.

Summary of the Study

According to the research conducted through interviews with 30 entrepreneurs operating medium-sized and small enterprises in Nong Khaem District, it was found that all respondents possess a solid understanding

of the BCG Economy Model and were prepared to implement it in their businesses. Although current business operations face challenges in terms of raw material shortages and labor constraints, the respondents perceived BCG Economy as a practical solution to mitigate these issues. They recognized its potential to lead to long-term business success while simultaneously preserving the environment and fostering harmonious coexistence. The efficient use of resources—through appreciation of the Bioeconomy, Circular Economy, and Green Economy—was regarded as equally important by all participants.

Discussions

The perspective of small and medium-sized enterprises (SMEs) in the Nong Khaem District reflects a strong belief in the potential of leveraging technology and innovation to enhance sustainable competitiveness across four targeted industries: agriculture and food, energy and materials, health and medical services, and tourism and hospitality—with particular emphasis on the tourism industry. This perspective is consistent with the research conducted by Woradapa Phanpeng (2024), which examined sustainable community-based tourism development under the holistic economic concept of the Bio-Circular-Green (BCG) Economy Model. The study identified three key factors driving development under the BCG model: inclusive growth, value-based economy, and resource-circulating society. These factors collectively contribute to the explanation of sustainable community-based tourism development. [5]

Regarding the views of SME entrepreneurs in the Nong Khaem district who advocate for the application of the bioeconomy concept in business management, there is an emphasis on the efficient use of biological resources, the selection of versatile products adaptable to various uses, and the implementation of sustainable business development models. This is coupled with the integration of scientific and engineering technologies to enhance business potential, aiming to optimize the use of biological resources while maintaining environmental balance. This perspective aligns with the findings of Aungkab Boonsung (2023), whose research focused on the creation of environmentally friendly products from rice straw through BCG processes. The study demonstrated that rice straw-based product development using BCG principles can be adapted to a variety of products—such as seedling pots, funeral flowers, containers, and packaging—depending on the materials and production techniques used. These products are highly environmentally friendly due to their biodegradable components. [6]

Recommendations

1. Define the scope and objectives

The purpose of the study should be clearly stated, such as improving the management efficiency of SMEs, promoting sustainability, or improving competitiveness.

2. Identify the target industries

The focus industries should be identified (e.g. food production, retail, manufacturing, or services).

3. Further research

Future studies should adopt a futures research approach to explore emerging trends in green technologies and their potential impact on SME adaptation within the BCG Economy framework.

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