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Innovation management and operational effectiveness of small and medium-sized businesses (SMEs) in Krabi Province, Thailand

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Abstract

This study aimed to: 1) examine innovation management and operational effectiveness in small and medium-sized enterprises (SMEs) in Krabi Province, 2) investigate the relationship between SME business characteristics and operational effectiveness in SMEs in Krabi Province, and 3) explore the relationship between innovation management and operational effectiveness in SMEs in Krabi Province. The sample consisted of 240 SME entrepreneurs in Krabi Province, selected using Krejcie and Morgan's sample size table. Data were collected using questionnaires. The statistical methods used for analysis included descriptive statistics, such as frequency, percentage, mean, and standard deviation, and inferential statistics, including Chi-square tests and Pearson's product-moment correlation coefficient. The research results showed that the majority of respondents were engaged in commercial enterprises, with 21-30 employees, registered capital of 1,000,001-2,500,000 THB, and business operation duration of 1-5 years. Overall, innovation management was rated at a high level, and operational effectiveness was rated at the highest level. Hypothesis testing revealed that business type, number of employees, registered capital, and duration of business operation in Krabi Province did not correlate with operational effectiveness in any aspect. However, overall innovation management was found to have a high and positive correlation with operational effectiveness in SMEs in Krabi Province, with statistical significance at the 0.01 level.

Keywords: innovation management, operational effectiveness, small and medium-sized businesses

Introduction

In Thailand, small and medium-sized enterprises (SMEs) play a crucial role in driving economic growth, particularly in developing countries where they are instrumental in job creation and global economic development. SMEs have become a priority for many nations, showcasing their ability to generate employment opportunities. In emerging markets, seven out of ten jobs are created by SMEs (Bank for Small and Medium Enterprises Development of Thailand, 2020). This underscores their potential in alleviating poverty, reducing inequality, and fostering a more inclusive economy. However, significant challenges remain, particularly in accessing financial resources. The lack of adequate financial options and limited access to funding hinder many SMEs from securing the necessary capital. This issue is prevalent in emerging markets and developing countries. The financial gap restricts the ability to invest in technology, such as SME loan schemes, venture capital, and innovative financial products tailored to the specific needs of businesses. Collaboration between the public and private sectors is essential to build a robust ecosystem throughout the business lifecycle, from startups to scale-ups, with access to finance, government support, and financial institutions (Office of Small and Medium Enterprises Promotion, 2019). This aims to enhance innovation capacity, job creation, and economic progress, serving as a mechanism for economic development and representing positive social change with an increasing trend in operations.

Since 2020, the COVID-19 pandemic has impacted the global economy, including SME businesses, leading to a GDP decline of up to -9.5% and affecting employment rates. Business performance has suffered, prompting a shift in business strategies to align more closely with the evolving lifestyles and behaviors of customers. This includes an increased emphasis on online distribution channels, enhancing production efficiency through innovations to replace human labor, and elevating operational standards and business knowledge. Innovation is a critical component in the industrial sector, even for SMEs, which must adapt to survive. Innovation stimulates economic growth and serves as a competitive advantage in the market. The increasing adoption of innovative practices enhances organizational efficiency (Tidd, Bessant, & Pavitt, 2005) ^[13]. SMEs are often dispersed across provinces with diverse economic activities. Krabi is one of the provinces with high economic potential and diverse cultural richness, leading to a significant number of SMEs in the area. From 2013 to 2018, there were as many as 2,138 SMEs in Krabi (Office of Small and Medium Enterprises Promotion, Krabi Province, 2023). Government agencies, such as the Tourism Association, Thai Traditional Medicine Association, and Restaurant Entrepreneurs Association, have all affirmed the importance of SMEs in Krabi to the Southern economic system (Tourism Enterprise Network, Krabi Province, 2022). However, following the COVID-19 pandemic, the number of SMEs in Krabi dropped to just 635. Despite the economic importance, SMEs face financial liquidity problems. Even though the government has policies to promote business entrepreneurs, there are still many limitations, including internal factors such as knowledge and operational expertise, and external factors that enhance market competition. It is essential for entrepreneurs to adopt technological innovations to elevate their operations and create sustainable business value. Given this context, the researcher is interested in studying innovation management and operational effectiveness of SMEs in Krabi Province. The findings can be used to analyze the potential of using innovation to enhance operational efficiency and develop marketing strategies for SMEs, enabling them to increase efficiency, reduce risks, generate income, and create sustainable employment.

Research Objectives

1. To study innovation management and operational effectiveness in small and medium-sized enterprises (SMEs) in Krabi Province.
2. To study the relationship between the characteristics of SMEs and the operational effectiveness of small and medium-sized enterprises (SMEs) in Krabi Province.
3. To study the relationship between innovation management and operational effectiveness of small and medium-sized enterprises (SMEs) in Krabi Province.

Theoretical Concepts and Related Research

Concepts and Theories Related to Innovation Management

The development of innovation critically relies on the collaboration and capacity building of personnel to create innovation expertise. When expertise is achieved, it can effectively respond to the needs of businesses, society, and communities, leading to the creation of new innovations (Office of the Public Sector Development Commission (OPDC), 2022) ^[7]. Innovations are categorized into four areas:

1. **Products, Services, and Market Innovations:** These innovations respond to market activities. Entrepreneurs should use appropriate techniques and methods to adapt to customer behavior.
2. **Process Innovations:** These are operational steps that incorporate innovation to enhance operational efficiency, reduce costs, and improve production quality.
3. **Social Innovations:** These focus on organizational development goals by considering the broader impacts on communities and society. Applying innovations can add business value while also providing an alternative way to support communities.
4. **Business Model Innovations:** These involve adjusting operational models to align systematically with the organization's mission, goals, and vision, thereby fostering organizational sustainability.

Concept of Operational Effectiveness

Harrington Emerson (1992: 111-115) stated that operational effectiveness is the degree to which desired outcomes are achieved. When a company is effective, it drives the creation and production of high-quality products or services that continuously satisfy customers. Effective employees not only strive to complete tasks as quickly as possible but also work to find creative solutions to problems and continuously improve work efficiency to achieve the best results.

Woolf (2022) described operational effectiveness as a fundamental basis for achieving business goals, as follows:

1. **Setting Expectations:** Setting expectations is essential because it helps achieve organizational goals. Without expectations, work becomes inefficient.
2. **Not Blocking Opportunities for Feedback:** Allowing employees to operate according to their initiatives and methods results in better outcomes. Some employees do not want to be overly controlled. As a leader, it is crucial to trust that personnel work effectively and efficiently, which fosters better working relationships.
3. **Skills and Tasks:** The potential of employees aligned with existing tasks helps improve work performance. This is one way to drive efficiency and effectiveness in work.

Therefore, it can be said that having good operational effectiveness is essential for an organization, especially for high-performing teams. To increase efficiency, it is necessary to be open to change, embrace collaboration, and listen to everyone's opinions within the team. Diverse perspectives help team members work together more effectively. However, focusing too much on minor details often leads to inefficiency. Looking at the overall picture instead of paying attention to minute details can provide the necessary clarity for efficient performance management within the organization.

Research Methodology

1. **Population:** The population consists of 635 SMEs operators in Krabi Province (Office of Small and Medium Enterprises Promotion, Krabi Province, 2023).
2. **Sample:** The sample size for this study was determined using the Krejcie and Morgan formula (Krejcie and Morgan, 1970) with a 95% confidence level and a 5% acceptable margin of error, resulting in a sample size of 240 participants.
3. **Research Instruments:** This research is a quantitative

study utilizing a questionnaire, divided into the following sections:

- **Section 1:** General information about the respondents of SMEs, using a checklist format.
- **Section 2:** Information on innovation management in SMEs in Krabi Province, using a 5-point Likert scale.
- **Section 3:** Information on the operational effectiveness of SMEs in Krabi Province, using a 5-point Likert scale.
- **Section 4:** Open-ended questions for additional comments and suggestions beneficial to the research.

Statistics Used in the Research

1. Descriptive Statistics: Frequencies and percentages were used to analyze personal information of the respondents.
2. Descriptive Statistics: Mean and standard deviation were used to describe the results of innovation management and operational effectiveness of SMEs.
3. Chi-square Test: This statistic was used to test the relationship between independent and dependent variables, such as the relationship between business characteristics and operational effectiveness.
4. Pearson Product-Moment Correlation Coefficient: This analysis was used to determine the relationship between two variables, specifically to test the relationship between innovation management and operational effectiveness of SMEs in Krabi Province.

Analysis of Operational Effectiveness

Table 2: Below presents the mean and standard deviation of operational effectiveness

Operational Effectiveness	\bar{x}	S.D.	Interpretation
1. Quality of Work	4.27	0.640	Highest
2. Quantity of Work	4.17	0.635	High
3. Time Spent on Tasks	4.27	0.636	Highest
4. Costs	4.20	0.628	High
Average	4.23	0.564	Highest

From the analysis table of operational effectiveness, the overall mean was **4.23**, which is at the highest level. The majority of the sample had the highest level of agreement regarding the quality of work and the time spent on tasks, both with a mean of **4.27**. This was followed by costs, which were at a high level with a mean of **4.20**, and work quantity, which was also at a high level with a mean of **4.17**.

Table 3: Below shows the relationship between the characteristics of SMEs (type of business, number of employees, registered capital, and duration of business operation) and operational effectiveness in Krabi Province

SME Business Characteristics	Chi-square	Sig.
Type of Business	4.182	0.382
Number of Employees	0.522	0.770
Registered Capital	5.369	0.497
Duration of Business Operation	10.786	0.095

From the table, it was found that the characteristics of SMEs, including type of business, number of employees, registered capital, and duration of business operation in Krabi Province, are not related to operational effectiveness.

Hypothesis 2: Innovation management, including product,

Research Findings

Analysis of Personal Factors

From the sample of 240 participants, the majority were involved in commercial enterprises, totaling 133 participants (55.4%). Most enterprises had 21-30 employees, totaling 72 participants (30.0%). The registered capital of 1,000,001-2,500,000 baht was reported by 90 participants (37.5%), and the duration of business operation was 1-5 years for 100 participants (41.6%).

Analysis of Innovation Management

Table 1: Below presents the mean and standard deviation of innovation management

Innovation Management	\bar{x}	S.D.	Interpretation
1. Product, Service, and Market	4.15	0.691	High
2. Process	4.15	0.681	High
3. Social	3.66	0.730	High
4. Business Model	4.25	0.616	Highest
Average	4.05	0.572	High

From the analysis table of innovation management, the overall mean was 4.05, which is at a high level. The majority of the sample had the highest level of agreement regarding business model innovation, with a mean of 4.25. This was followed by product, service, and market innovation, and process innovation, both at a high level with a mean of 4.15. Social innovation was also at a high level, with a mean of 3.66.

Hypothesis Testing

Hypothesis 1: The characteristics of SMEs, including type of business, number of employees, registered capital, and duration of business operation in Krabi Province, are related to operational effectiveness as tested by the Chi-square test.

service, and market innovations, process innovations, social innovations, and business model innovations, is related to the operational effectiveness of small and medium-sized enterprises (SMEs) in Krabi Province. Multiple regression analysis was used for this hypothesis testing.

Table 4: Below presents the results of the hypothesis testing for the relationship between innovation management (product, service, and market innovations, process innovations, social innovations, and business model innovations) and the operational effectiveness of small and medium-sized enterprises (SMEs) in Krabi Province

Innovation Management	Operational Effectiveness of Small and Medium-sized Enterprises (SMEs) in Krabi Province				
	Quality of Work	Quantity of Work	Time Spent on Tasks	Costs	Overall
Product, Service, and Market	0.656 (<i>0.000**</i>)	0.628 (<i>0.000**</i>)	0.668 (<i>0.000**</i>)	0.543 (<i>0.000**</i>)	0.730 (<i>0.000**</i>)
Process	0.719 (<i>0.000**</i>)	0.688 (<i>0.000**</i>)	0.686 (<i>0.000**</i>)	0.673 (<i>0.000**</i>)	0.780 (<i>0.000**</i>)
Social	0.509 (<i>0.000**</i>)	0.490 (<i>0.000**</i>)	0.466 (<i>0.000**</i>)	0.470 (<i>0.000**</i>)	0.545 (<i>0.000**</i>)
Business Model	0.729 (<i>0.000**</i>)	0.656 (<i>0.000**</i>)	0.730 (<i>0.000**</i>)	0.665 (<i>0.000**</i>)	0.783 (<i>0.000**</i>)
Overall	0.772 (<i>0.000**</i>)	0.728 (<i>0.000**</i>)	0.752 (<i>0.000**</i>)	0.694 (<i>0.000**</i>)	0.830 (<i>0.000**</i>)

**Significant at the 0.01 level

From the table, the results of the analysis of the relationship between innovation management and the operational effectiveness of small and medium-sized enterprises (SMEs) in Krabi Province show that overall innovation management is highly and positively correlated with the operational effectiveness of SMEs in Krabi Province, with statistical significance at the 0.01 level ($r = 0.830$, Sig. = 0.000).

Discussion

The innovation management and operational effectiveness of small and medium-sized enterprises (SMEs) in Krabi Province revealed that the sample group rated innovation management and operational effectiveness at a high level. This is because SME entrepreneurs in Krabi Province recognize that conducting business in the modern era necessitates adapting business management strategies to keep pace with the ever-advancing globalization. Therefore, applying various innovations to enhance the efficiency of management in various areas, while maintaining the same level of investment, is crucial. The integration of new technologies to improve business performance is a key driver prompting organizations to transform into innovative enterprises. This aligns with Phusadee Phonsaram's (2014) study, which found that marketing innovation significantly impacts the operations of export businesses in Thailand. The overall level of marketing innovation in Thai export companies was high. Similarly, Pan-aht Chairat (2015: 152) defined innovation as introducing new ideas or utilizing existing assets in novel ways to generate economic benefits. This is consistent with the National Innovation Agency (2017), which stated that being an innovative business is based on a new business model supported by outstanding technology, high market potential, good organizational management, intellectual property protection, and creating an innovation-driven culture. Additionally, SME entrepreneurs also recognize the importance of natural and human resources, such as developing leadership alongside staff development, planning operations suitable for the changing global context, and establishing an efficient and rapid information system compatible with globalization. These measures aim to maximize the benefits for the organization and its personnel.

Relationship between SME business characteristics and operational effectiveness of SMEs in Krabi Province

The analysis revealed that the characteristics of SMEs, including type of business, number of employees, registered capital, and duration of business operation, do not correlate with the operational effectiveness of SMEs in Krabi Province across all aspects. This finding contradicts the research of Kanjana Sukhantasirikul (2011), who studied the impact of innovative businesses on the performance of SMEs in

Thailand. Her research found that SME entrepreneurs with different business types, business models, registered capital, current funds, and number of employees had varying opinions on having an innovative business. Furthermore, SME entrepreneurs with different education levels, business types business models, duration of operations, registered capital, current funds, and number of employees had differing views on business performance outcomes.

Relationship between innovation management and operational effectiveness of SMEs in Krabi Province

The analysis indicated that overall innovation management is highly and positively correlated with the operational effectiveness of SMEs in Krabi Province. This finding aligns with the research of Chisanupong Thongphuang (2018), who studied the causal relationship between business innovation and organizational performance in SMEs. His results showed that business innovation directly influences organizational performance in SMEs ($B = 0.29$, $p < .05$). This also aligns with Satayu Romyen's (2019) study on the impact of innovation capability and marketing capability on the performance of SMEs in Songkhla Province. The results revealed that process innovation capability and strategic capability significantly affect business performance. Process capability is crucial for enhancing operational efficiency, reducing costs, budgets, and unnecessary expenses, while maintaining quality management principles for sustainable organizational management. Additionally, this finding is consistent with Chadarat Kwannak's (2019) study on the impact of innovation on the performance of community-based tourism enterprises in Upper Northeastern Thailand. The study found that digital innovation among entrepreneurs has a positive and significant relationship with business performance.

Recommendations from the Study

1. Innovation Management: SMEs in Krabi Province should prioritize innovation management to enhance overall performance and customer-oriented outcomes. Emphasis should be placed on business model innovation by fostering leadership at all organizational levels and encouraging employee participation in decision-making processes. Process innovation should be clearly defined to establish standard procedures, and the importance of human resources should be recognized as they are the most valuable assets in the organization.
2. Information Technology: SMEs in Krabi Province should focus on innovation management by leveraging information technology. The existing data should be utilized to maximize organizational benefits. Information technology should be integrated to improve internal processes, making operations more structured and efficient.

3. Operational Effectiveness: SMEs in Krabi Province should continuously focus on improving operational effectiveness across all aspects. Organizations should adopt a long-term vision and aim to become continuously innovative. Regular development and adaptation are essential for sustaining competitiveness.
4. Performance Metrics: SMEs in Krabi Province should integrate comprehensive performance metrics to review past operations and ensure balanced attention across various aspects. For instance, the focus should not solely be on financial outcomes but also on customer satisfaction to ensure that the organization remains attractive to its customers.
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Recommendations for Future Research

1. Expanded Study Area: This study focused solely on SMEs in Krabi Province. Future research should explore innovation management and operational effectiveness of SMEs in other provinces to provide a broader perspective.
2. Qualitative Research Methods: This study employed quantitative questionnaires exclusively. Future research should include qualitative methods, such as interviews or focus groups, to gain deeper insights and more detailed information.

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