

# Development of Small and Medium Enterprises to Large Enterprises to Support the Thailand 4.0 Policies

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**Abstract:** - The number of small and medium enterprises has continuously increased annually, but growth into large enterprises was very small, so it affected the competitiveness of the industrial business quite a lot, and the decision to choose a group of small and medium enterprises to move into large business sectors is therefore very important to the growth of industrial businesses. Therefore, this research aims to study the development of small and medium enterprises to large enterprises to support the Thailand 4.0 policies. Conducted qualitative research with in-depth interviews of 9 experts to create tools used in quantitative research and conducted focused group discussions of 11 specialist persons to find a consensus to certify the model of this research. For quantitative research using a survey data method from 500 prominent industrial business executives in the manufacturing and service sectors with questionnaires, this research used descriptive statistics, Reference Statistics, and Multiple Statistics was used for data analysis. The results showed that the development of small and medium enterprises to large enterprises to support the Thailand 4.0 policies through 5 priorities components are as follows: 1) Information system components ( $\bar{X} = 4.66$ ), the most important in each item is reviewing and updating information to be up to date at all times. 2) Innovation components ( $\bar{X} = 4.65$ ), the most important in each item is to register a patent or intellectual property rights of the innovations that the organization invents. 3) Human resources components ( $\bar{X} = 4.63$ ), the most important in each item is setting standards for selecting personnel suitable for the responsibilities of personnel in each job position. 4) Operation components ( $\bar{X} = 4.60$ ), the most critical item has a system to check every process step that is correct and fast. and 5) Marketing components ( $\bar{X} = 4.58$ ), the essential items are creating online and offline distribution channels to reach customers quickest. For hypothesis testing results, the development of small and medium enterprises up to large enterprises, when classified by type of business, there is no statistically significant difference at level 0.05. The results of the analysis of the developed structural equation model showed that it passed the evaluation criteria and was consistent with the empirical data, with a chi-square probability level value of 0.072, relative chi-square of 1.114, conformity index of 0.948, and root mean square index of the error estimation of 0.015.

**Key-Words:** - Small and Medium Enterprises, Large Enterprises, Thailand 4.0 policies

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## 1 Introduction

From the development strategy of Thai Industry 4.0 within the last 20 years (B.E. 2017-2036). The development of economics and industry in the world standard changes continuously according to technological advances. Communication and transportation have also rapidly developed, resulting in economic expansion—the exchange of information, products, and traditional exchanges

between countries all over the world. So, global trends and changing consumer behaviors are essential factors in determining the vision and strategy for national development. Each country also has the preparation to adjust the vision and strategy of industrial development to align with the changing contexts—a vital factor in developing the industry for sustainable growth. Economic expansion found that small and medium enterprises affect the growth of

large businesses. Overall, this reflects the country's development, both directly and indirectly. Although in B.E., 2020 has been an epidemic of COVID-19, the overall growth of small and medium enterprises, up to large enterprises in these six years, GDP (Gross Domestic Product), or total product in the country. Small and medium enterprises still have a higher growth trend due to expansion in the manufacturing and service sectors. However, when considering the GDP growth from B.E. 2016 to 2021, there is still a tendency to grow continuously until the end of the year 2021 B.E. It has a GDP growth rate at the domestic level of 1.30 and the level of Small and Medium Enterprises at 2.90. It is estimated to continue to grow well and have a GDP growth rate at the domestic level of 4.5. The level of Small and Medium Enterprises will be at 4.9 (Office of Small and Medium Enterprises Promotion, B.E. 2022), as shown in Figure 1.

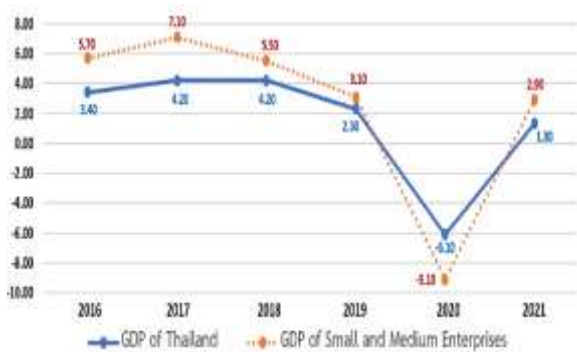


Fig. 1: The expansion rate of Small and Medium Enterprises GDP and GDP at the domestic level (Office of Small and Medium Enterprises Promotion/OSMEP, 2022 B.E.), [1].

Comparing the number of small and medium enterprises with the large enterprises, B.E. 2017-2021 found that small and medium enterprises have increased continuously, even during the COVID-19 crisis. At the same time, large enterprises decreased during the COVID-19 crisis. Therefore, the researcher wants to study the increase in small and medium enterprises, which can grow into large enterprises and affect the country's gross product growth. GDP to compare small and medium enterprises and large enterprises is presented in Figure 2.

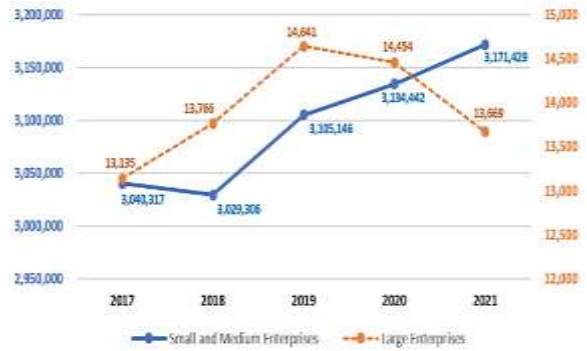


Fig. 2: Information on the amount of small and medium enterprises and large enterprises (Office of Small and Medium Enterprises Promotion/OSMEP, B.E. 2022), [2].

### 1.1 Research Objectives

- 1) To study the structure and operation characteristics of enterprises aiming to become large enterprises to support the Thailand 4.0 policies.
- 2) To study the components of developing small and medium enterprises into large enterprises to support the Thailand 4.0 policies.
- 3) To develop a structural equation model for transforming small and medium enterprises into large enterprises to support the Thailand 4.0 policies.

## 2 Literature Review

### 2.1 Concepts and Theories Related to Operation

The Operational components, defined as an organization with comprehensive management, production, and service, includes process improvement from upstream to downstream of each process. Creating relationships for all parties, including using resources in various fields, creates value for customers-consideration of product quality, price, product delivery, and service before and after the sale. In, [ 3 ], the authors found that 88.6% of SMEs affected by the pandemic (71.3%) report that the organization has ceased operational activities and that there have been layoffs during this period. The results showed that organizations need to adjust policies for the operations of all aspects to achieve consistency throughout the organization. This results in the shortening of the delivery of goods or services to increase production efficiency and more complex market uncertainties, [4].

## 2.2 Concepts and Theories Related to Human Resource

The Human Resources Components, Human Resources refer to managing human resources in an organization and concentrating on employees to have the ability to work in the 4.0 industrial era and a close relationship with the organization. The studies of, [5], found that recruitment and training that is environmentally friendly has a positive effect on work, affecting human resource management to sustainability in loyalty to the organization. However, environment-friendly analysis and work practices also result in sustainable production. Future studies could consider the individual dimensions of green human resource management or other components of green human resource management related to various aspects of corporate sustainability.

## 2.3 Concepts and Theories Related to Innovation

The Innovation component, meaning innovation, is to manage and create new products, services, or processes. Consequently, the organization can compete with competitors and encourage all employees to present ideas and suggestions to help support the organization of innovation. In, [6], the author's studies found that the absorption of change and the ability to leverage knowledge help organizations create innovation strategies for small and medium enterprises and large enterprises efficiently.

## 2.4 Concepts and Theories Related to Marketing

The marketing components aspect refers to the process of communicating the value of a product or service that concentrates on delivering value to customers and covers products, services, market competition, distribution locations, promotions, market segmentation, and target markets. In, [7], the authors found that the role and trend of digital marketing have been increasing over the past three years, and most of them operate in developed and developing countries. Digital marketing channels influence business growth and national development.

## 2.5 Concepts and Theories Related to Information Systems

The Information System component, the meaning of which is to manage information technology systems.

It can be used to support decision-making and coordinate various operations in organizations that cover computer systems, hardware, software, network systems, databases, system developers, and system users, In, [8], the authors found that operations or individual operations on their own and digital transformation can start very well to live effectively in general.

## 3 Research Methodology

### 3.1 Composition Synthesis

According to all concepts and theories, the guidelines for the Development of small and medium enterprises to large enterprises to support the Thailand 4.0 Policies can be summarized into 5 components, which are: Operation, Human Resource, Innovation, Marketing and Information System as shown in Figure 3.

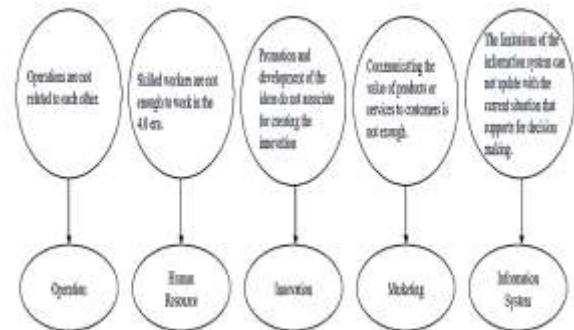


Fig. 3: Conceptual framework

### 3.2 Population and Sample

The population used in this study defined as the entrepreneurs of large enterprises, which received income of more than 500 million baht in B.E. 2020, both in the manufacturing and service sectors, totaling 500 enterprises, [9].

Determining the sample size uses the criteria of research on elemental analysis or structural equation modeling, which has defined the sample size at an outstanding level of 500 samples, [10]. A multistage sampling method was used, [11]. It consists of group sampling procedures, categorizing large enterprises into 2 types. These are product manufacturing and service businesses that use probability random sampling by drawing and collecting data from the sample.

### 3.3 Research Tools

Rating scale questionnaires were used as a research tool, in which responders specify their points, according to Likert Scale Analysis, [12]. The researcher brought the drafted questionnaire, which was created together with the assessment form, to five experts who have knowledge and experience in the study area to find the quality of the tools by examining the Index of Item-Objective Congruence (IOC). The results of checking the IOC showed a value between 0.60-1.00, where the appropriate value is 0.50 or more, [13]. Then, the researcher used the questionnaire to try out 30 people who were in a group of populations that was similar to the population that the researcher would like to study and analyzed discrimination in a part of the questions that looked like a checklist form and questions that looked like an estimation scale by analyzing the standard deviation and correlation coefficient, respectively, to find the reliability of the questionnaire. The discrimination was between 0.31-0.81, and the reliability of the whole questionnaire was 0.98, which was considered to be a very good level of confidence, [14]. Then, the tool was used to collect data by asking for the courtesy of answering questionnaires from the sample group.

### 3.4 Data Analysis

Data were analyzed using both descriptive statistics and inferential statistics with the SPSS program. The statistics were obtained using the SPSS package program. Multistatistical analysis and development of a structural equation model were performed using the AMOS package. Four criteria were used to evaluate the data-model fit: 1) Chi-squared probability greater than 0.05, 2) Relative chi-square less than 2.00, 3) Goodness of fit index more than 0.90, and 4) Root mean square error of approximation less than 0.08. The root mean square error of estimation was less than 0.08, [15].

## 4 Results

The study presents an overview of the development of small and medium enterprises to large enterprises to support the Thailand 4.0 policies, and the research conclusions are as follows.

1) The results of the analysis of the development of small and medium enterprises to large enterprises to support the Thailand 4.0 policies can be divided into five components as follows: 1) Operational

components, 2) Human Resource Components, 3) Innovation components, 4) Marketing components and 5) Information System Components.

- 2) The importance of developing small and medium enterprises to large enterprises to support the Thailand 4.0 policies found that, overall, the importance is at the highest level, with an average of 4.62. The five priorities are as follows: 1) Results of the analysis of the Information System, it was found that the average was at a high level ( $\bar{X} = 4.66$ ), 2) Results of the analysis of Innovation, this proposed in overall, the average was at a high level ( $\bar{X} = 4.65$ ), 3) Results of the analysis of Human Resources revealed that overall, the average was at a high level ( $\bar{X} = 4.63$ ), 4) Results of the analysis of Operation components it was found that overall, the average was at a high level ( $\bar{X} = 4.60$ ) and 5) Results of the analysis of Marketing, it was found that the average was at a high level ( $\bar{X} = 4.58$ ).
- 3) The results of comparing the differences in the development of small and medium enterprises to large enterprises to support the Thailand 4.0 policies classified by business type. The overall results showed no significant differences at level 0.05. For the analysis of the difference in the significance level in each aspect. It was found that none of the aspects were significantly different at the level of 0.05. The aspects of the product manufacturing business emphasize the development of small and medium enterprises to large enterprises to support the Thailand 4.0 policies, which was much more than the service business and statistically significant at the level of 0.05.
- 4) The researcher has improved the model by considering the Modification Indices obtained from the packaged program with theoretical academic principles to exclude some of the unsuitable observational variables one by one and then proceed to reprocess the model. Do this until the model has all 4 statistical values that pass the criterion. After the model has been improved, it is found that as shown in Table 1.

Table 1. Observational variables

Abbreviation	Description
<b>Operation</b>	
OPT3	There is a system for calculating the amount of production of goods and services according to the needs of customers efficiently.
OPT13	Make appropriate budget plans that are in line with the development of the organization.
OPT14	Have a system to verify the operation data in every single step which is correct and fast.
OPT16	Keep the workplace clean and hygienic, contributing to efficient work.
OPT17	Determine policies on the use of resources that are friendly to the environment.
OPT18	Have a security system and insurance that is suitable for the organization.
<b>Human Resource</b>	
HRM1	Determine a policy for work rotation to promptly replace the shortage of labor.
HRM2	Have work plans and readiness for personnel to support them when they retire or resign.
HRM4	Define a clear line of work to allow employees to see opportunities for growth in their own line of work.
HRM8	Provide an operating manual for personnel to use as a guideline for effective work.
HRM13	Implement an appropriate performance appraisal (KPI) system and disseminate it to all personnel.
<b>Innovation</b>	
INV2	Promote the registration of patents or intellectual property of innovative works that the organization invents.

Abbreviation	Description
INV8	Have a system or activity that allows personnel to present ideas about innovative inventions that can be developed into new products and services.
INV11	Encourage internal innovative specialists to help research new ideas.
INV14	Up to date for all innovations information to be applied in the organization.
INV15	Set up a specialized department involved in innovation to develop products or services to meet customer needs.
INV16	Develop the use of virtual reality technology equipment, reduce potential risks in the process, and inform operational efficiency improvements.
<b>Marketing</b>	
MKT1	Have a policy to promote sales (discount, exchange, giveaway) to stimulate sales that are suitable for the situation.
MKT10	Keep track of news, social trends, and information for marketing decisions.
MKT11	Analyze competitors' marketing strategies and adjust strategies to compete in the organization.
MKT15	Evaluate the image of the organization to the public for information on future marketing developments.
MKT20	Have an online and offline distribution channel to reach customers immediately.
<b>Information System</b>	
IMS1	Personnel throughout the organization should be aware of the legal issues surrounding the Computer Crimes Act.
IMS3	Have the consultants

Abbreviation	Description
	specialized in information systems from external agencies of the organization.
IMS10	Review and update the information to be up to date at all times.
IMS13	Have a database system that connects all work sections of the organization together, such as ERP, SAP.
IMS14	Have a system to prevent interference from data networks (Firewall) that is standard and safe.
IMS19	Providing modern technology equipment that is sufficient for the work of personnel.

The objective of this study is to examine the components of small and medium enterprises to large enterprises to support the Thailand 4.0 Policies. The five components considered are Operation, Human Resources, Innovation, Marketing, and Information Systems. All five components were derived from a review of relevant literature and the empirical data showed consistency with a p-value of 0.072, CMIN/DF of 1.114, GFI of 0.948, and RMSEA of 0.015. Therefore, it can be concluded that the structural equation model is consistent with both literature and empirical data and has passed the specified criteria as shown in Figure 4.

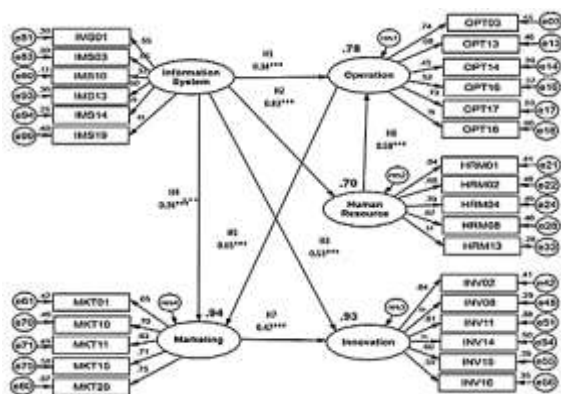


Fig. 4: Structural Equation Modeling

Figure 4 shows the analysis of the overall influence of latent variables in the structural equation model, the Development of small and medium enterprises to large enterprises to support the

Thailand 4.0 Policies in Standardized Estate mode after model improvements. The model consists of five latent variables, one exogenous latent variable (Information System), and four endogenous latent variables (Operation, Human Resources, Innovation, and Marketing). The highest overall influence is on the Information System components Direct and overall influence on Human Resources with a weight value (Standardized Region Weight) equal to 0.83.

The results of the hypothesis testing to analyze the causal influence between the latent variables in the structural equation model of small and medium enterprise development on large enterprises to support the Thailand 4.0 policies. Seven hypotheses were as follows:

H1: Information System component, direct influence on Operational Components statistically significant at level 0.001, has a value of Standardized Regression Weight = 0.34, H2: Information System component, direct influence on Human Resource Components statistically significantly at level 0.001, has a Standardized Regression Weight value of 0.83, H3: For the Information System component, direct influence on Innovation Components statistically significant at level 0.001 has a Standardized Regression Weight = 0.53, H4: Information System component, direct influence on Marketing Components statistically significant at level 0.001 has a value of Standardized Regression Weight = 0.36, H5: Operational component, directly influences Marketing Components statistically significantly at level 0.001, with a Standardized Regression Weight = 0.65, H6: The Human Resource component, directly influences Operation Components and statistically significantly at level 0.001, with a Standardized Regression Weight = 0.58 and H7: Marketing component, direct influence on Innovation Components and statistically significant at level 0.001, has a value of Standardized Regression Weight = 0.47.

## 5 Discussion and Conclusion

Significant issues have been found in research on the Development of small and medium enterprises to large enterprises to support the Thailand 4.0 policies, which is a guideline for enterprise development for small and medium enterprises to create long-term success. From the results of this research, the researcher has brought to the discussion to conclude

a conclusion from 5 relevant research papers that can be cited, supported, or contradicted as follows:

- 1) According to the research results, when comparing the types of manufacturing and service businesses of large businesses to support the Thailand 4.0 policies, there was no statistically significant difference at the 0.05 level. This is consistent with the results of [16]. The results demonstrated quality management in the Lean Six Sigma method in different industries. Different system factors have been adopted due to TQM and Lean Six Sigma to integrate the organization's development for maximum efficiency. Various approaches are managed to achieve an organization's success. Integrating management approaches to optimize an organization's different business models can be of great success. It can be used for every business that is different and can be applied to all sizes of businesses. Incidentally, products from operations found that information obtained from working data can be applied for organizational development from various electronic devices, such as sensors that can efficiently analyze data, equipment, and programs.
- 2) From the research results on the development of small and medium enterprises to large enterprises to support the Thailand 4.0 policies in the Information System aspect have the highest mean at 4.66, consistent with the research of [17], on digital technology capabilities and marketing management for the success of small and medium enterprises, and found that there are two components for business growth in small and medium enterprises, which are the quality of information and the convenience of service, as well as the relationship that digital technology in every aspect has an apparent effect on the growth of the organization.
- 3) From the research results on the development of small and medium enterprises to large enterprises to support the Thailand 4.0 policies, each finding item found that information is constantly reviewed and updated. It has the highest significance mean at 4.79 and aligns with [18]. It studied the challenges in the community of Small and Medium Enterprises in the era of India's globalization. Currently, businesses are behind competitors, and competitors come from neighboring countries. In terms of export competitiveness, this is mainly due to the lack of

modern technology or having data stored that needs to be updated for analysis. This requires more competitiveness and theoretical insight into technology and exports. Research results have found that optimizing business competition requires information, information systems, or modern information technology systems to store data or that other technology activities must be constantly updated. Alternatively, bringing new technologies to use better, reducing infrastructure gaps, and less stringent business regulations can help improve competitiveness effectively.

- 4) From hypothesis testing, it was found that the aspect components of the Information System directly influenced the aspect components of human resources. It had a Standardized Regression Weight at the highest level of 0.83, which is in line with the results of [19]. The authors conducted a study on the impact of communication and information technology on the efficiency of human resource management in Cameroonian enterprises in the mobile phone industry. In particular, we examined how communication and information technology use affects the efficiency of human resource management. Examples include human resource planning, training and development, selection and recruitment, human resource assessment, and compensation. The study found that it positively impacts the use of communication and information technology in selection and recruitment, training and development, human resource planning, assessment and compensation, and human resource management performance. It is an efficient tool in the human resource management of organizations, and ensuring human confidence, training, and development of information systems should be encouraged, [20]. There is appropriate interaction between human resource management and various departments to increase the capabilities and performance of each personnel. This will result in proper personal development and make the organization's operation efficient, [21].
- 5) From the results of the hypothesis testing, the overall influence on the innovation component aspect had a Standardized Regression Weight of 0.95. This provides empirical data on how information systems affect innovation. These results follow those of [22]. The authors demonstrated that in the era of digital technology,

information systems had been applied to bring information in many areas to innovate for the organization's survival. It should be performed to achieve flexibility at all times and develop organizational capabilities and innovation.

- 6) The possible future developments of this research as well as its positive repercussions in the scientific-academic world affect to growth of SMEs contributing to the economic growth of large enterprises. The successful or efficient performance of SMEs involves various factors. Especially the potential development guidelines of Thai SMEs should begin adapting themselves to competition and changes at present that contributed to efficiently performing the businesses. The governmental agencies supported realistic measures to reduce problems and obstacles to SMEs. All participants should realize the essentials of SMEs that were the crucial economic driving engine and attempt small enterprises to be medium, and medium enterprises to be large for the strength of the country in the future, [23].

## 6 Suggestions

Recommendations from research are creating a strategy to prepare Thailand's industry to adapt to gain an advantage on the world stage under Thailand 4.0. In this research, the researcher suggests that the government, private sector, and education sector lead the development of small and medium enterprises into large enterprises to proceed with the following issues:

### 6.1 Government Policies Level

- 1) Formulating a 20 years national strategy: The state should prepare to quickly build up the country's competitive industrial advantage and efficient coherence between the prominent organizations and sub-organizations to develop the country to the international level.
- 2) The Ministry of Industry should integrate technological promotions. Industrial information systems must continuously create innovations and determine the direction of industrial competition to pursue problems and develop them to meet the country's needs.
- 3) The Ministry of Digital Economy and Society: Society should concentrate on developments in information systems and innovation for small

and medium enterprises in all channels. In addition, it increases the transformation of innovation into capital, supporting Thai small and medium enterprises by providing true valuation clarity.

- 4) The Office of Small and Medium Enterprises Promotion (OSMEP) should concentrate on developing information systems technology and innovation for small and medium enterprises in all possible channels and elevate the transformation of innovation into capital, supporting Thai SMEs by creating clarity for an accurate valuation.
- 5) The National Science and Technology Development Agency (NSTDA) should promote the transfer of knowledge in technology to commercial use in the industrial sector for small and medium enterprises. Further, it promotes and supports human resources to increase research and development workforce skills to meet the needs of various industrial sectors.

### 6.2 Operational Level

- 1) The industrial business sector should establish a management system to concentrate on operations and management throughout the production and service organization. It includes improving the processes from upstream to downstream of each process to create relationships with all necessary parties.
- 2) The business sector should emphasize human resources, and it is essential to emphasize that employees in the organization can work in the era of Industry 4.0 and have a relationship with the organization.
- 3) The business sector should consider innovation a critical issue in managing new products, services, or processes. This will result in the organization being able to compete with competitors and encourage all employees to participate in presenting ideas and suggestions to help support an organization of innovation.
- 4) The business sector should support and create Marketing Channels that are important in communicating the value of a product or service that concentrates on delivering value to customers covering products, services, market competition distribution, location promotion, market segmentation, and target market.
- 5) The business sector should make policies on the central issue of the organization concerning



information systems to manage and support decision-making and coordinate the control of various functions in the organization. It includes computer, hardware, and software systems, which business organizations are always interested in keeping up-to-date information.

- 6) The business sector should integrate various systems for the organization's sustainable development. It is crucial to consider the organization's culture and have a management style that can increase work efficiency to be as effective as possible.

### 6.3 Suggestion for the Further Research

Further research on developing small and medium enterprises to large enterprises to support the Thailand 4.0 policies will cover all aspects.

- 1) Building knowledge for the manufacturing and service industries requires a transformational strategy, as with small and medium enterprises. However, ways to adapt business organizations in the manufacturing and service industries have yet to be studied. To prepare and build the competitiveness of small and medium enterprises with large enterprises in each industry.
- 2) Further research should include comparative studies of large businesses in the manufacturing and service industries, classified by industry. More research will be focused on detailing the adaptation strategies regarding the operation, human resources, innovation, marketing, and information systems. By studying in detail, large enterprises in the manufacturing and service industries that are classified by industry assign importance to adaptation in the same direction.
- 3) There should be further research on the development of small and medium enterprises by concentrating on creating strategies to differentiate small and medium enterprises and large enterprises. This should be implemented to develop the organization at each level into a sustainable big business.

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The authors equally contributed in the present research, at all stages from the formulation of the problem to the final findings and solution.

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### **Conflict of Interest**

The authors have no conflict of interest to declare.

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