

SMALL AND MEDIUM BUSINESS ADMINISTRATION STRATEGIES OF ENTREPRENEURS MANUFACTURING ELECTRONIC COMPONENTS IN THE AGE OF INDUSTRY 4.0

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Abstract

The objectives of this research were to study the business conditions, the composition of small and medium-sized business management strategies and the service strategies of small and medium-sized businesses of electronic components manufacturers in the Industry 4.0 era by collecting data from 350 executives and entrepreneurs in the electronic components industry in Thailand. The research instrument was a questionnaire. The statistics used in the data analysis were frequency, percentage, mean, standard deviation and factors analysis. The results revealed that the majority of respondents were male, aged 36 to 40, had a Bachelor's degree in business administration, had worked for the company for 11 to 15 years, distributed electronic components, were in a joint venture with foreigners, had 51 to 100 employees, 6 to 8 million baht in value assets, 1 to 10 percent of raw material imports of production costs, 1 to 10 percent of product exports, and a decline in performance compared to the previous year. The organization's overall management strategy factors 4.0 were at a high level. In descending order of importance, the most important factors were job satisfaction, economy, quality, command, planning, coordination, just in time, and technology. The issue with moderate importance was the management of control and organization. The small and medium-sized business management strategies of electronic component makers in the era of Industry 4.0 are comprised of five primary components and twenty-five subcomponents, including organizational quality management, cost-effective planning, coordination, and command and control.

Keywords: Business Management Strategy, Electronics, Industry 4.0

INTRODUCTION

Context Entering the Industrial Age 4.0 (Shen, Luong, Ho, & Djailani, 2020). It is a technological (Allal-Chérif, 2022) advancement in the sector. This permits machine data to be collected and analyzed. Make the manufacturing sector more efficient and robust so it can generate items more effectively. 4.0. It will revolutionize productivity in order to enhance productivity. Drive the economy and support the expansion of the industry. However, this modification has increased awareness of the risks. This may influence personnel who must be knowledgeable and prepared. To be able to work with robots and artificial intelligence, as well as to adapt to changes in the industrial age, it is vital to have the appropriate mindset and skills. 4.0 in this particular Thailand Innovation (Wang, Li, & Zhong, 2022) is replacing industrial labor in this transition. This transformation (Ilić, Milošević, & Ilić-Kosanović, 2022; Li, Trappey, Lee, & Li, 2022; Yigitcanlar, Degirmenci, Butler, & Desouza, 2022) will not occur instantly, but will occur gradually based on the availability of resources in each business. By preparing people for new jobs and focusing on previous workers with the industrial age's required labor skills. 4.0, which creates a competitive advantage in the tool industry (Ammar,

Haleem, Javaid, Bahl, & Verma, 2022), will develop and generate employment. Industrial applications are supported by the industry's research into the production model for sharpening cutting tools for manufacturing processes that demand high precision electrical components production auto components parts. Aerospace both domestically and internationally, as well as to examine distribution channel options for establishing competitive advantages for the firm. In the age of Digital Marketing, the use of media in product presentations is prevalent. Differentiation Adding value to items to attract customers in a highly competitive climate is the focus of this investigation (Chirumalla, Oghazi, & Parida, 2018; Popa, Soto-Acosta, & Perez-Gonzalez, 2018) into establishing competitive advantages. This will help business owners to utilize the data as a guideline for expanding and improving their businesses in order to make future modifications.

Each type of electronic product manufactured (Alteneiji, Ali, Khan, & Al-Rub, 2022; Kawahara, Andersson Ersman, Wang et al., 2013) in Thailand has a unique export potential on the global market, with the most significant product category and the largest export value is HDD and IC (total share accounted for 50% of the export value of Thai electronic products), with HDD being an integral part of the global computer industry's supply chain (Supply Chain). As a result of the migration of multinational corporations and their continued investment in Thailand, the manufacture and export of computer components in Thailand have risen to the top of the globe. This caused the Thai manufacturing structure to shift away from keyboards and other computer components with poor added value. Monitors have evolved into HDDs, which rely on advanced technology and skilled labor to manufacture Thai IC. Although the majority of them are investing in foreign export production. However, the sluggish transition may hinder global (Kim, 2021; Kirtiş & Karahan, 2011; Olejnik & Krammer, 2002; Zhu, Yan, & Song, 2022) market competitiveness.

Industry (Ammar, Haleem, Javaid et al., 2022) tendencies in 2021-2023, Thailand's electronics industry is anticipated to resume expansion. As a result of the recovery of the global economy (the IMF forecasts that the global economy will rise by 5.5% in 2021 and 4.2% in 2022) as a result of numerous countries' economic stimulus initiatives and success in vaccine development The COVID -19 vaccine (Singh, Lee, & Park, 2022), which has been administered gradually to patients in various nations throughout the world since late 2020, should assist in gradually easing the pandemic situation combined with on account of the period's increased demand, there are few available electronic items. As a result of the lockdowns in a number of nations, manufacturing has resumed, and it is anticipated that the revenue of Thailand's electronics industry will increase between 2021 and 2023 (Yadav & Rahman, 2017). As a result of the worldwide economic recovery, there was an increase in demand for electrical devices according to the development (Blasi, Ganzaroli, & De Noni, 2022; Chang & Lai, 2021; Duygan, Fischer, Pärli, & Ingold, 2022; Girish, Anupama, & Lakshmi, 2022; Hajek, Youssef, & Hajkova, 2022) of contemporary technologies Global Circuit Board and Component Manufacturers' Megatrends Expect Export Value IC will expand steadily sales-driven variables Semiconductor. The expansion of the planet is anticipated to be favorable. As a result of the COVID-19 epidemic, demand for electronic equipment, particularly in the Internet of Things (IoT) sector, has increased, as have the number of data centers. The development of smart vehicles and 5G

telecommunications is promising and fast expanding (considering the future investment in global 5G network infrastructure, it is projected to increase dramatically), which will raise the demand for electronic items in particular. IC tends to increase continuously. However, entrepreneur IC and subcontractor in Thailand must expedite the growth of manufacturing in order to stay up with quickly evolving technology and satisfy consumer demand. Superior integrated circuits consequently; there may be a rise in investment expenses. Competitors like Vietnam have lower labor costs and greater manufacturing (Austin, Gliebe, Muratore et al., 2021) growth. It may undermine the industry's performance and competitiveness. Thai IC, which is contract-manufacturing based and heavily labor-dependent based on the aforementioned data, the researcher has predicted that people must utilize computers and other electronic gadgets in the present-day other computers and electronic gadgets, including the use of the Internet to assist in work and other aspects of daily life in the current period, are integral to the success of individuals. As the primary driving force behind the organization (Ananda, Hernández-García, & Lamberti, 2016; Babu, Roopa, Shukla et al., 2022; Kuechel, 2010), it has proven crucial. However, when utilized, it must deteriorate cause the need for maintenance whether it's a computer, a Smartphone, a tablet, or an app, software upgrades are always changing and updating electrical components and this is just as vital as components in other sectors other because if there are no emergency spare components, it will not function in the gadget and the tendency of using technological gadgets has changed in recent years other. There are increasingly other Consistent with global trends, production must be constantly increased. Therefore, the researcher recognizes that the issue of this research is what is the future trend for developing a competitive edge in the manufacturing of electronic components? It is essential to establish a competitive advantage in the manufacturing of electronic components so that the company can effectively compete in other industrial markets that are expanding. The Objectives of theresearch 1) to study the business conditions of small and medium-sized parts manufacturers 2) to study the composition of small and medium-sized business management strategies of electronic components manufacturers in the Industry 4.0 era 3) To study the service strategy of small and medium-sized businesses of electronic components manufacturers in the age of Industry 4.0

LITERATURE REVIEW

2.1 The 20-year Strategy for Thai Industry Development

Ministry of Commerce Prepare a 20-year development strategy for Thai Industry 4.0 (2017-2036) to serve as a roadmap for the growth of Thai industry. According to the Industry 4.0 development framework, Thailand must escape the development trap within the next two decades in order to escape the development trap. Both the middle-income trap (Middle Income trap), the inequality trap (Inequality trap), and the imbalance trap must be avoided in order for the nation's competitiveness to flourish and the economy to grow and a 20-year sustainable national strategic framework Contains the 10 strategies listed below: Increasing and cultivating human capital capability. Creating equity and minimizing social inequality. Increasing economic vitality and long-term competitiveness. For sustainable development, grow green. Develop national security for the prosperity and sustainability of the nation's growth. In Thai

society, management in the government sector, the prevention of corruption and wrongdoing, and good governance. Infrastructure and transport development scientific and technological innovation and research urbanization and economic growth international development collaboration

Bhattacharyya, Seth, Tudu et al. (2007) said: industry 4.0 is a difficult policy approach that tries to restructure the industrial structure of the country from industrialization. Utilizing labor-intensive and basic technologies, it produces simple, low-value goods and services to a competitive industry, superior knowledge and technology Innovation and Development Somchai brave)

Ministry of Commerce (2017) Industrial Revolution 4.0 combines the world of production with network connectivity in the form of the Internet of Things) will set up networks to enable communication and information sharing to oversee the entire manufacturing process

2.2 Management theories and concepts

Cheng, Wei, Huang et al. (2022)said that management or management Refers to the operation of two or more individuals collaborating to attain the goals established by all variables comprising people, money, and other items regarded as equipment for such manipulation, as well as the organization of departments and usage of resources. Working cooperatively to attain shared objectives The Hole G hypothesis POCCC 's Eksangsri and Jaiwang (2014)claimed theory The POCCC has ceased duty. Henri Fayol (Henri Fayol) established five things for corporate management. Each one has its own significance. Concurrently, they are connected and result in one another. To complete the task and achieve success.

RELATED STUDIES

Edinbarough, Balderas, and Bose (2005)Strategies that affect the success of transportation operations from a management standpoint utilizing a vehicle in Nakhon Sawan Use 156 instances as a sample size. The outcomes were examined using frequency determination % average standard deviation t-test and multiple regression analysis utilizing the enter technique to compare the difference by value. The results demonstrated that 1), the majority of management strategies included operational and production strategies then research strategy and strategy formulation Management of human resources, marketing and financial initiatives. Successful trucking operations from the customer/market perspective followed by internal operations, learning and growth, and finances; 2) transportation patterns of the sample group affecting the success of trucking operations in the province of Nakhon Sawan (Thailand), excluding the industrial cargo business. 3) The performance of transportation business operations can be predicted by the relationship between business features and management techniques with trucks in the province of Nakhon Sawan (Thailand) with a period of business operation and high human resource management techniques, a sample group scoring 91.20 will be successful in the operation of high truck transportation.

RESEARCH METHODOLOGY

This study's population consists of entrepreneurs and business leaders in the electronic components manufacturing industry whose operations are located in Bangkok and its environs and provincial locations. The sample group for this study consists of 336 entrepreneurs and company executives who manufacture electronic components in the Bangkok metropolitan area and upcountry. The researcher utilized a sample size of 350 individuals, which is a sample selection strategy that does not include probability theory by selecting a sample of referrals

To rank the importance of small and medium-sized business management strategies of electronic components manufacturers in the Industry 4.0 era in the Likert Scale as follows:

A mean score of 1.00-1.49 means that it is least important.

A mean score of 1.50-2.49 means less important.

A mean score of 2.50-3.49 means that it is of medium importance.

A mean score of 3.50-4.49 means very important.

The average score of 4.50-5.00 means that they are the most important.

RESEARCH TOOLS

The researcher has identified the instruments utilized in this study, namely questionnaire separated into three sections:

Section 1: General information about respondents, it resembles a checklist.

Section 2: Information on the organization's overall nature it resembles a checklist.

Section 3: Details on Enterprise Management Strategic Factors 4.0 the questionnaire is of the estimate scale variety. There are five tiers According to Likert's technique

Section 4: Comments Questionnaire

Independent variable is the technology of saving (resources capital labor) quality, completion time, job satisfaction, planning, organization management, commanding, coordination, and control.

Dependent variable is Electronic component manufacturers' small- and medium-sized firm management strategies in the era of industry 4.0 Group of business owners and executives producing electronic components in Bangkok, its surrounding provinces, and certain provinces' industrial estates.

RESULT

The following is a summary of the study of small and medium-sized business management methods of electronic component makers in the Industry 4.0 era:

- The majority of respondents were sex workers, aged 36-40 years, with a bachelor's degree in business administration. 11 to 15 years of experience in the company. The company is a distributor of electronic components and a joint venture with foreigners.

- Factors affecting general organizational structure in industry transformation. The majority of them work for the corporation. 51 - 100 Assets are worth between 6 and 8 million baht. 1 - 10% of production costs are borne by raw material imports. 1 - 10% of total product sales are exported. The current performance of the company it is significantly worse than the 5-year average.

Table 1: Mean and Standard Deviation of Overall 4.0 Enterprise Management Strategy Factors

Factors in corporate management strategy 4.0	\bar{x}	S.D
Technology	3.51	.800
Economical (resourcescapitallabor)	3.75	.662
Quality	3.62	.825
Finishedontime (time)	3.57	.755
Jobsatisfaction	3.72	.772
Planning	3.60	.707
Organizationmanagement	3.37	.799
In thefield of command	3.62	.719
Coordination	3.59	.695
Controlside	3.43	.742
Overall	3.58	.638

The table1: The results of the analysis of the importance of factors in the organizational management strategy 4.0 revealed that the over all management strategy factor of the organization 4.0 has a high average level of importance ($\bar{x}= 3.58$) when considering each aspect. found The mean side is very important in order is in terms of job satisfaction ($\bar{x}= 3.72$), followed by is Economical (resources capital Labor) ($\bar{x}= 3.75$), Quality ($\bar{x}=3.62$), Commanding ($\bar{x}= 3.62$), Planning ($\bar{x}= 3.60$), Coordination ($\bar{x}= 3.59$), Timely completion ($\bar{x}= 3.57$), technology ($\bar{x}= 3.51$), control ($\bar{x}= 3.43$) and organizational management ($\bar{x}= 3.37$). The factors in each aspect are as follows:

Corporate management strategy factors 4.0 are easily summarized as follows:

Factors influencing the organization's overall management strategy 4.0 with a high average importance level. The negative side is crucial. Job satisfaction comes first, followed by savings (resources, capital, and labor), quality, and command. Coordination of planning completed on time and using cutting-edge technology. The control aspect was of moderate relevance as well as organizational management. Furthermore, when considering organizational management strategic elements 4.0, it is possible to conclude that the findings of the elements in each aspect are as follows:

Technology, the introduction of automation or AI to assist in production was given medium priority, followed by the corporation pushing the introduction of new technology in the operation for the workers in each department. There is also a system in place to ensure that equipment and software are safe according to standards. Technology Average of moderate

importance: Wi-Fi is quick, simple to use, and widely available and software and hardware development are efficient and quick as well as saving production time

The average level of importance in the element of saving (resources, capital, and labor) is extremely high, i.e., the organization has specific means to detect wasting in the production process, followed by the organization with the number of employees suited for the task. Organizations can concretely minimize the costs and expenses of importing raw materials into production. Organizations can use resources like as machines, facilities, and workers more efficiently. The average of the savings (resources, capital, and labor) was medium, indicating that the firm could utilise the production components cost-effectively. In terms of quality, the organization has a system of systematic and dependable electronic component quality inspection, followed by the organization's ability to produce electronic components that meet the criteria. The standards authorities concerned in standard auditing and certification have certified the organization for production standards. The company has a production process and production standards that are in line with industry norms. Furthermore, the firm conducts quality inspections prior to, during, and after sales by external quality assurance groups as requested by customers Completion on time, the organization's ability to plan product output based on capacity and duration of work is of average importance. Organizations can provide clients with items that fulfil their wants and everything on time. Second, the firm can successfully implement the customer management plan both before and after the sale and the organization has mechanisms in place to carry out production that are neither redundant, onerous, nor time-consuming. The part was finished on time. The organization's average priority is that the inputs be procured on time in accordance with the production plan. to stay up with customer demands Job fulfilment Feeling pleased of working when the manufacturing process was efficient, followed by being willing to work according to the system and production process to decrease waste and satisfy product quality standards, was ranked as the most important a desire to learn new skills and work methods Prepared to grow in order to make the work process more effective in accordance with the organization's aims and enjoy working with challenges and participation chances Organization The average level of importance was clearly defined objectives, aims, and operational techniques, followed by there is a system in place to alert staff of the work schedule ahead of time as well as a clear plan and rules for the operational planning portion, the average level of importance was moderate, indicating that the duration of work was well defined as well as an operation control plan

Organizational leadership, the average importance level was medium. The business gave training to develop employees' abilities, knowledge, and ability to work, followed by a chart depicting the line of work. The job's duties and responsibilities are clearly outlined. There is a distinct organizational or management structure. The organization has assigned employees jobs based on their aptitude, knowledge, and ability. Work groups are clearly separated based on status, duties, and responsibilities and the employees' job characteristics, duties, and obligations are defined

Command and control the supervisors' use of appropriate authority in ordering duties and management positions was rated as important on average. Providing support for the opportunity

to execute supervisory activities towards subordinates each department's work is controlled by a delegation of authority. According to the management structure, there is a clear division of command lines. And commanders can deal with issues that emerge

CONCLUSION

According to a research of the business environment of small and medium-sized electronic component makers in the era of Industry 4.0, entrepreneurs had 51-100 employees and assets worth 6-8 million baht. 1 to 10% of production costs 1 - 10% of total product sales are exported. The current performance of the company It has deteriorated in comparison to the 5-year average. This could be because management needs to be altered to accommodate the constantly changing external environment. Operators must implement management tactics such as developing an action plan or a plan of action from beginning to end. to encompass all processes, it is a guideline for future work, job titles, duties, and responsibilities, as well as the number of people to cover all work processes, including the organizational structure to prioritize administration and command, as well as having the right command powers to help make decisions in a timely manner. Decision-makers must be able to conduct thorough analyses and effective coordination is required at all levels. Supervisors to subordinates, departments to departments, and executives to all departments within the organization. And is in charge of resources such as raw materials, machinery, production, and the budget for all activities. In accordance with Siriwan Sereerat and team, in order to work as efficiently as possible (Yang, Qian, Deng, Yuan, & Jiang, 2022). The formulation of operational guidelines and directions various elements must be analyzed and evaluated. In addition to the initial cause, caused by the environment both inside and outside the company to select how to work Also called as "strategies," they are activities, plans, or initiatives that are carried out in accordance with each strategy as a guideline for the business to reach the greatest vision and goals.

According to the findings of a study on the makeup of small and medium-sized business management strategies of electronic component makers in the Industry 4.0 era, there are five major components. And the researcher went over the findings in each component as follows:

Organizational quality management is divided into eight sub-components: (1) job description and duties (2) organizational structure (3) Allocating work according to position and responsibility (4) Arranging employees to perform their duties according to their knowledge and competence (5) Employees are happy in challenging work (6) Ready for development for work efficiency (7) Timely implementation of the customer management plan (8) Quality assurance of external organization standards This could be because business administration necessitates the determination of job titles, roles, and obligations. as well as the amount of employees required to cover all job operations, including the organizational structure to prioritize administration and command If the organization has a systematic management system. The job is clearly divided and does not overlap, the obligations are comprehensive, and the quantity of personnel is adequate. It will undoubtedly increase the efficiency of the work. and a strong likelihood of success Research on "Developing Technological University into Industry 4.0" is consistent with the findings of Chirumalla, Oghazi, and Parida (2018).This

paper addresses the causes that led to Industry 4.0 and management advice for Technological University to support their entry into Industry 4.0 through surveying and data collection via questionnaires. The University of Technology should develop a multi-sector strategy. Its emphasis should be on student and industry development. And should invest worthwhile resources in enhancing competitiveness. To grow and change the market position of all technological universities. In addition, according to Dai, Wang, Zhu, and Zeng (2014), quality management throughout the organization is a critical aspect in achieving excellence in organizational management. As a result of quality management, a good work system exists throughout the organization. Have standard verifiable work and meet consumer needs

Cost-effective planning is made up of four parts: (1) explicitly specifying the working time period (2) clear operational guidelines (3) creating software and hardware with high manufacturing efficiency (4) Oversee operation planning. (5) There is a system in place to alert staff of the work schedule in advance. This could be due to developing an action plan or a course of action from beginning to end to cover all procedures. It is a blueprint for future projects. This planning is driven by vision and forward-thinking managerial creativity. This will be communicated as an action plan with goals that must be met in order to be successful. Eksangsri and Jaiwang (2014) conducted study on "Developing Human Resources Competency 4.0 to Optimize Operations for Thailand 4.0." The examination of demographic factors is discussed in this paper. Human resource development. Furthermore, upgrading to Industry 4.0 has an impact on staff performance. The research discovered that developing people who are associated to advanced technologies by surveying and gathering data from questionnaires and interviews. Internet connection via workplace application and digital technologies industrial machine and robot integration Industry that is environmentally friendly Furthermore, the usage of sophisticated and advanced technology relevant to the industry in the future might explain employee performance. According to Estill, Slone, Mayer, Chen, and La Guardia (2020), organizational management planning is a long-term goal for the organization.

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