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Manager's Perception Influences Public Technological Innovation in Small and Medium - Sized Manufacturing Companies in Hanoi

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Abstract

For enterprises, technological innovation is a "survival" aspect. But at the moment, a lot of companies are having trouble because there is a lack of knowledge about technology, financial support policies that encourage them to innovate technologically, and incentives for goods that result from transformation. There isn't much innovation or delivery of technology...Businesses in the industrial and business sectors always require technological solutions to boost productivity and efficiency across all functional phases, including supply, production, and control. Quality, product advertising, distribution for finance, investment, and human resource management... In order to fulfill market demands and increase productivity and quality, technological innovation must always be promoted,

particularly in manufacturing firms. However, administrators' understanding is a determining factor in how far technological innovation is implemented, particularly in small and medium-sized businesses. This paper assesses managers' knowledge of technical innovation by conducting research in small and medium-sized manufacturing companies in Hanoi. The findings of the study indicate that managers in small and medium-sized manufacturing companies recognize the significance and function of technological innovation. However, there is not much technical innovation because of the impact of corporate scale. The author makes recommendations for improving technological innovation based on the findings of the study.

Keywords: Technological Innovation, Manager's Perception, Small and Medium-sized Manufacturing Companies in Hanoi

1. Introduction

Using digital transformation and intelligent information technology is a problem that improves the world economy. Businesses are facing intense competition driven by globalization and the increasingly rapid change in customer needs, which is why businesses are promoting digital transformation to gain competitive advantage and survive in the market. Society as a whole faces a rapid and fundamental change in the mainstream composition of digital technologies and their diffusion into all markets (Reis *et al.*, 2018). Although small and medium-sized manufacturing businesses are regarded as the foundation of the economy, technical innovation is hampered by a number of factors, including scale, energy availability, and the caliber of human resources. Promoting technological innovation in small and medium-sized manufacturing enterprises requires great efforts both from the state management side and from the business side. In terms of state management, propaganda and dissemination of technological innovation to businesses is very important. In addition, supporting resources, building a suitable institutional environment, developing human resources and even providing digital platforms for small and medium-sized manufacturing enterprises is essential. On the business side, to succeed in technological innovation, small and medium-sized manufacturing enterprises need to build strategic strategies and long-term directions for technological innovation. To implement that strategy, small and medium-sized manufacturing enterprises need to mobilize resources, innovate technology, and train human resources for technological innovation. However, these activities can only be implemented when businesses properly perceive the role and nature of technological innovation. This study was conducted to survey managers' awareness of technological innovation. The research was conducted at small and medium-sized manufacturing enterprises in Hanoi.

2. Theoretical Background

Technological innovation

The replacement of a significant portion, if not all, of the present technology by a more sophisticated and efficient technology is known as technological innovation. Technological innovation may be used to develop new products or services for the market or to increase the productivity, quality, and efficiency of the manufacturing process.

Technological innovation might involve the development or use of entirely new technologies that aren't on the market yet, as well as significant modifications to already-existing technologies.

The following two fundamental components are included in technology innovation activities:

- **Product innovation:** This might be the development of an entirely new product or the enhancement of an existing line of items from your business. Coming up with a new product is really challenging. Building infrastructure to support this activity is sometimes quite expensive; it also requires a staff of officials and technical personnel who can carry out the necessary tasks.
- **Innovation in production processes:** The major goal of technical advancements for emerging nations is to increase the effectiveness of their technological processes. This enhancement makes it possible to raise employee productivity. This is seen by the supply curve shifting to the right as a result of upgrading the manufacturing process, indicating the ability to increase production capacity.

Experience has shown that technical innovation is critical to the success of any firm. Innovation and advancements in science and technology will enable the production of more goods, the diversification and creation of many new items, higher output, higher worker productivity, and the sensible and efficient use of raw materials. Contents... As a result, it will boost market expansion, encourage quick growth, raise competition, and enhance productivity and corporate efficiency. Companies who do not quickly use technology to develop and do business in conventional manners run the risk of being driven out of the market.

Many new business strategies based on online development platforms have emerged in recent years, coinciding with the advancement of science and technology, particularly with the explosion of the Industrial Revolution 4.0. Examples of these strategies include: Connecting thousands of individuals. Materials, cloud computing, big data, automation in production, and quality control technologies... In addition to helping companies improve productivity and quality control, these business techniques can also be used in conjunction with one another to create innovative business initiatives, such as online consulting, automated production and quality control, remote working, customer behavior analysis, new product development, and product promotion. Small and medium-sized manufacturing businesses can make better use of their resources by streamlining production procedures, increasing worker productivity, and enhancing product quality, after-sales policy, and product consumption through the innovation of production and management technologies. It should be highlighted, nevertheless, that a variety of factors, including the type of business, its financial potential, the age and gender of its workforce, and others, can impact how

innovative a small or medium-sized manufacturing company can be in terms of technology. The decision of an entity to develop its technology is influenced by several factors, including its capital and labor scales, operational time, relationships with other businesses in the same industry or state-owned companies, and the opinions of its managers.

The contribution of technology innovation to business and industrial processes

Numerous businesses are being greatly impacted by technological innovation, including the banking, manufacturing, healthcare, and telecommunications sectors (Nadeem *et al.*, 2018). Because of the benefits that technological innovation offers to businesses and social communities, it is becoming more and more significant in all nations. From an economic standpoint, technical innovation lowers prices, increases quality, and boosts productivity for companies and the economy as a whole. Technological innovation for organizations results in altered goods and services, altered consumer interactions, and altered operational procedures, all of which help to develop new business models and boost an organization's ability to compete. Or small and medium-sized manufacturing enterprises, studies have shown that technological innovation processes can improve enterprise performance because of the transformation of key business activities, affecting to the business's products and operating processes (Cardona *et al.*, 2013). Furthermore, small and medium-sized manufacturing enterprises that take advantage of technological innovation processes can improve the efficiency of information use within the enterprise and improve business efficiency (Marchand *et al.*, 2002). Can access market opportunities, gain new knowledge about customers and improve new product development processes and can contribute to organizational impacts (Bayo-Moriones *et al.*, 2013). The benefits of technological innovation for small and medium-sized manufacturing businesses can include: improved process efficiency and quality; increase employee productivity; increase customer satisfaction; easier access to new markets; strengthen business relations with large companies; ensure business flexibility; increase return on investment; Reduce management costs and focus more on core business activities.

3. Research methods

Qualitative research methods

In order to shed light on managers' actual perspectives of technological innovation in small and medium-sized manufacturing businesses, the author employs a blend of qualitative and quantitative research techniques. To explore the indicators used to gauge the kind of technical innovation and its significance in small and medium-sized manufacturing firms, qualitative methodologies are employed. The author created a two-part questionnaire based on the synthesized theoretical foundation. The first section asked managers at nearby small and medium-sized manufacturing companies about their knowledge of technical advancement. Hanoi desk, and the second section contains the respondents' personal information and the name of the organization they work for. In order to shed light on managers' actual perspectives of technological innovation in small and medium-sized manufacturing businesses, the author employs a blend of qualitative and quantitative

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Techniques for quantitative research

Gather information

The author chose 50 firms for the survey because, in accordance with Hair *et al.* (1998), the lowest sample size must be 50, ideally 100, and the ratio of observations/measured variables is 5/1. Businesses that have innovated in the previous three years—that is, utilized new technologies or produced new goods—will be chosen based on these criteria. A practical random approach is the sampling method. Two managers were polled by the author in each firm. There are one hundred administrators that are taking part in the poll in total.

Data processing

Survey data processing is carried out in the next stage to screen out inappropriate survey forms due to blank answers or inconsistencies in the answers. The number of survey questionnaires included for data analysis included 85 questionnaires. The questionnaires included in the analysis were entered and processed using SPSS software with the main analysis techniques: descriptive statistics, EFA testing. Finally, there is the presentation of the research results and the presentation of the article.

4. Research results

Statistical results and description of the survey form

Based on the generalized theory and predetermined research methods, the author has synthesized the results of a survey of managers' perceptions of technological innovation in medium and large-scale manufacturing enterprises. Small in Hanoi. Among businesses participating in the survey, the majority of small and medium-sized manufacturing enterprises in Hanoi have recently implemented technological innovation (76.6%).

Regarding the characteristics of the administrators participating in the survey: The number of male administrators is 63, accounting for 74.12%, the administrators are mainly between the ages of 31 and 40 years old with 50 administrators accounting for 58.82%; The number of managers with post-university degrees is 65, accounting for 76.47%.

Table 1: Personal characteristics of administrators participating in the survey

Criteria	Classify	Quantity	Ratio (%)
Gender	Male	63	74,12%
	Female	22	25,88%
Age	22 - 30	6	7,05%
	31 - 40	50	58,82%
	41 - 50	22	25,88%
	More than 50	7	8,25%

Level	College	0	0
	Ccademic degree	20	23,53%
Experience at work	After-university qualification	65	76,47
	Less than 5 years	18	21,18%
	5 - 10	52	61,18%
	More than 10 years	15	17,64%

Source: Author survey, 2023

Findings from a survey on managers' knowledge of technological innovation

The findings of a survey about managers' awareness of technological innovation at small and medium-sized manufacturing businesses indicate that managers' knowledge of this topic is still lacking. Thirty-two times NQT claimed that the essence of technical innovation is the use of digital technology to the development of novel goods and services; however, it appears that this assertion is limited to companies engaged in information and communication technology. Pine. With 34 options, a sizable portion of administrators believe that leveraging digital technology to transform customer interactions is the essence of technical innovation.

In the theoretical basis, the author finds that the roles of technological innovation for businesses are considered from two aspects: The role of technological innovation with operational management activities and the role of Technological innovation with business performance. The results of the survey measuring managers' awareness of the role of technological innovation are shown in Table 2.

Table 2: Survey results of managers' awareness of technological innovation (Descriptive Statistics)

	N	Mean	Std. Deviation
MD. QT1.Technological innovation helps businesses improve new product development processes	85	3.8215	.57825
MD. QT2.Technological innovation helps improve the efficiency of information use in businesses	85	3.5863	.62725
MD. QT3. Technological innovation helps businesses improve process efficiency and quality	85	3.6172	.58521
MD. QT4.Technology innovation aids companies in maintaining flexibility in their operations.	85	3.5851	.59581
MD. HQ1.Technological innovation helps businesses increase employee productivity	85	3.8263	.58328
MD. HQ2.Technological innovation helps businesses reduce costs and increase investment returns	85	4.0314	.62126
MD. HQ3.Technological innovation helps businesses expand their operations into new business areas	85	3.6829	.53682
MD. HQ4.Technological innovation helps businesses improve their operational efficiency	85	3.6024	.54157
Valid N (listwise)	85		

Source: Author's calculations

A notable point in the survey results on managers' awareness of the role of technological innovation is that the average value of all observed variables is greater than 3.5, reflecting the level of agreement with the statements about technology innovation. The role of technological innovation is quite good. Administrators believe that technological innovation

plays an important role for small and medium-sized manufacturing enterprises in Hanoi. At the same time, technological innovation helps businesses improve the efficiency of their activities, expressed in improving labor productivity, reducing costs, increasing profits, focusing on core business activities, and innovating operations. Business activities, improving business performance. This is why technological innovation is important for small and medium-sized manufacturing enterprises in particular, and for organizations and social communities in general. Technological innovation is considered an important driving force for global economic development. However, the results of research on the current status of technological innovation in small and medium-sized manufacturing enterprises are not really high.

Table 3: The table describes the variables measuring the level of technological innovation of small and medium-sized manufacturing enterprises in Hanoi (Descriptive Statistics)

	N	Mean	Std. Deviation
MD. PT1.Companies are drawn to research and development.	85	2.6925	.53295
MD. PT2.Increase investment in facilities for R&D	85	3.1203	.62725
MD. PT3.Knowledge and skills of human resources for R&D	85	3.0272	.61521
MD. SP1.Boost manufacturing procedures	85	3.2851	.59681
MD. SP2.Improve product quality	85	3.4314	.58328
MD. SP3.Expand product portfolio	85	2.8263	.61026
MD. SP4.Take your company's activities into new markets.	85	2.8109	.57882
MD. SP5.Change production and business activities of the enterprise	85	2.9074	.52057
Valid N (listwise)	85		

Source: Author's calculations

4. Conclusion

According to research findings, managers in small and medium-sized manufacturing businesses understand how technology innovation affects both company performance and management tasks. However, there hasn't been much of a push for technical innovation because financial resources are still scarce. In light of competition and the 4.0 Industrial Revolution, which is changing how businesses produce their goods and services, the question that arises is whether or not technological innovation has to be encouraged in order to make goods and services more competitive. In order to address these concerns, attention must be paid to several topics in the near future, including:

On the management side

- Improve the effectiveness of mechanisms and policies to support the development of science and technology for small and medium-sized manufacturing enterprises. For example, effective implementation must be ensured from the issuance of the policy to the person reviewing the application; at the same time, cutting down unnecessary procedures and paperwork, creating conditions for businesses to access capital and supporting technology as quickly as possible. Research more specific policies on new technology issues like venture capital funds accepting risks in the field of new technology, creating conditions for businesses to access capital.
- Create a database of cutting-edge technologies, as well

as a force of technology specialists, to facilitate the application of new and innovative technologies by small and medium-sized manufacturing companies. Assist small and medium-sized manufacturing companies in implementing information technology, developing information systems for resource management, and product promotion.

- Assist companies with research, testing, application of cutting-edge technology, recruiting, training, and professional staffing for the creation of new goods and the modification of technical procedures.

On the business side

- Improve the financial potential of businesses through loans from banks and support capital from the State to research and invest in appropriate technologies to serve the production and business process. Strengthen the expansion of cooperation and relationships with businesses in the same industry and credit institutions to not only help businesses gain more business information but also help expand accessible capital sources.
- Manufacturing businesses that are small to medium-sized should think about implementing technological innovation gradually. In light of this, companies may divide up the investment process based on the business cycle or think about streamlining each stage to ease the burden on investment funds.
- Establish closer ties and cooperative relationships with foreign-invested businesses to facilitate the adoption of new practices, standards, and technology. Businesses must simultaneously prepare their workforce to reap the benefits of worldwide technology advancement.

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