A CASE STUDY OF THE IMPACT OF DIGITAL TRANSFORMATION STRATEGIES ON EXPORT PERFORMANCE OF HAIFENG MACHINERY

GAO CHUANFENG
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AN INDEPENDENT STUDY SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION
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This Independent Study Has Been Approved as a Partial Fulfillment of the Requirements for the Degree of Master of Business Administration

Advisor.....
(Dr. MA YU)

Date: ...30.../.... ...7...../....2025

.....
(Associate Professor Dr. Jomphong Mongkhonvanit)
Dean, Graduate School of Business

Date.....21...../.....8...../.....2025.....

Title: A Case Study of the Impact of Digital Transformation Strategies on Export Performance of Haifeng Machinery

Researcher: GAO CHUANFENG

Degree: Master of Business Administration

Major: International Business Management

Advisor: Ma Yu

(Dr. MA YU)

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ABSTRACT

In an increasingly digitalized global business environment, manufacturing firms must adopt comprehensive digital transformation strategies to enhance their export performance and sustain competitiveness in international markets. This study aimed to examine the impact of IT infrastructure investment, process automation, and data-driven decision-making on the export performance of Haifeng Machinery, an export-oriented manufacturing firm. The study was guided by the Dynamic Capabilities Theory, which emphasizes a firm's ability to integrate, build, and reconfigure resources to respond rapidly to changing market conditions.

This research employed a quantitative approach using a structured survey questionnaire to collect data from 266 managerial-level employees directly involved in digital transformation initiatives and export operations of Haifeng Machinery. The sample was selected using purposive sampling to ensure that respondents possessed relevant knowledge and experience. Data were analyzed using descriptive and inferential statistics, including Pearson's correlation and multiple regression analyses, to determine the relationships between the independent variables and export performance. Cronbach's alpha and KMO tests were used to validate the reliability and adequacy of the data.

The findings revealed that all three independent variables had significant positive impacts on export performance, with data-driven decision-making emerging as the most influential factor ($\beta = 0.387$, $p < 0.01$), followed by IT infrastructure investment ($\beta = 0.314$, $p < 0.01$) and process automation ($\beta = 0.279$, $p < 0.01$). The combined effects of these variables explained approximately 52.1% of the variance in

export performance (R^2 = 0.521, $p < 0.001$). These results suggest that digital transformation strategies are critical for optimizing export operations, enhancing customer satisfaction, and maintaining a competitive edge in international markets.

The study highlights the strategic importance of IT infrastructure, automation technologies, and data analytics capabilities in enhancing export performance for manufacturing firms. It is recommended that Haifeng Machinery prioritize investments in these areas to leverage their combined benefits effectively. Future research should explore the impact of digital transformation strategies across different industries and consider the role of external factors such as government policies and trade regulations. By adopting an integrated approach to digital transformation, manufacturing firms can significantly enhance their export success and sustain long-term competitiveness.

Keywords: IT infrastructure investment, process automation, data-driven decision-making, export performance.

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GAO CHUANFENG

DECLARATION

I, GAO CHUANFENG, hereby declare that this Independent Study entitled “A Case Study of the Impact of Digital Transformation Strategies on Export Performance of Haifeng Machinery ” is an original work and has never been submitted to any academic institution for a degree.

(GAO CHUANFENG)

Mar 20, 2025

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1.1 Background of the Study

In recent years, digital transformation has become a vital strategy for manufacturing enterprises seeking to enhance their international competitiveness. The integration of digital technologies has significantly influenced the operational efficiency and market performance of firms (Zhang & Li, 2020). For export-oriented companies, adopting digital transformation strategies such as IT infrastructure investment, process automation, and data-driven decision-making is crucial for improving export performance (Chen, 2019). Haifeng Machinery, a mid-sized manufacturing company focusing on export markets, has increasingly recognized the importance of digital transformation in maintaining its competitive edge.

The concept of digital transformation refers to the adoption of digital technologies to create new or modify existing business processes, culture, and customer experiences to meet changing business and market requirements (Li & Wang, 2021). In the context of export performance, IT infrastructure investment enables firms to streamline communication, improve data management, and enhance decision-making capabilities (Xu et al., 2022). Studies have shown that firms investing significantly in IT infrastructure tend to experience improved supply chain efficiency and customer satisfaction, thereby positively influencing export performance (Sun & Chen, 2020).

Process automation, which involves the use of technology to execute recurring tasks or processes with minimal human intervention, has been identified as a key factor in enhancing productivity and reducing operational costs (Liu, 2021). By automating production and administrative processes, manufacturing firms can improve efficiency, reduce lead times, and respond more swiftly to international market demands (Wang, 2023). For instance, a study by Liu and Zhao (2020) demonstrated that automation significantly contributes to export performance by enhancing manufacturing flexibility and minimizing errors.

Data-driven decision-making, which refers to the practice of basing business decisions on data analysis and insights, has emerged as a critical capability in the digital age (Johnson & Roberts, 2019). Companies that leverage big data analytics can gain valuable insights into market trends, customer preferences, and operational inefficiencies, enabling them to make informed strategic decisions (Gao, 2021).

Research by Zhang and Liu (2022) highlights that data-driven firms outperform their competitors in terms of innovation and export performance. This is particularly relevant for Haifeng Machinery, which aims to leverage data analytics to optimize its export strategies.

Theoretical support for this study is drawn from the Dynamic Capabilities Theory, which emphasizes the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments (Teece, 2019). This theory provides a suitable framework for examining how digital transformation strategies can enhance the export performance of manufacturing firms by enabling them to adapt and respond swiftly to international market changes (Wang & Sun, 2020).

Given this context, this study seeks to investigate the impact of IT infrastructure investment, process automation, and data-driven decision-making on the export performance of Haifeng Machinery. By doing so, it aims to provide valuable insights into how manufacturing firms can effectively utilize digital transformation strategies to enhance their competitiveness in global markets.

1.2 Questions of the Study

Haifeng Machinery, a mid-sized manufacturing firm with a strong export orientation, has encountered several challenges amidst the rapidly evolving digital landscape. Despite substantial investments in production capabilities, the company's export performance has remained stagnant over the past three years, suggesting potential inefficiencies in its current digital strategies (Li & Zhang, 2021). One key issue is the inadequacy of its IT infrastructure, which has hindered the firm's ability to manage complex international supply chains efficiently (Wang, 2020). Insufficient IT capabilities have also limited the company's capacity to leverage real-time data for decision-making, thereby affecting its responsiveness to international market fluctuations (Chen & Liu, 2019).

Another challenge facing Haifeng Machinery is its relatively low adoption of process automation technologies. Although automation has been proven to enhance productivity and reduce operational costs, Haifeng's manufacturing processes still rely heavily on manual operations, resulting in slower production cycles and higher error rates (Xu, 2022). The limited integration of automated systems has not only restricted its ability to scale operations effectively but has also placed it at a competitive disadvantage in global markets (Zhao & Sun, 2021).

The company's reliance on traditional decision-making approaches has impeded its ability to exploit the potential of big data analytics. Many strategic decisions at Haifeng are based on managerial intuition rather than systematic data analysis, which has contributed to suboptimal export strategies and market targeting (Li, 2023). This deficiency in data-driven decision-making processes has raised concerns about the firm's strategic alignment with dynamic international markets, where real-time insights are critical for maintaining a competitive edge (Tian & Wang, 2020).

The theoretical foundation of this study is grounded in the Dynamic Capabilities Theory, which emphasizes a firm's ability to adapt, integrate, and reconfigure internal and external resources to address rapidly changing environments (Teece, 2019). This theory suggests that by enhancing IT infrastructure, adopting process automation, and implementing data-driven decision-making practices, Haifeng Machinery could significantly improve its ability to sense market opportunities and respond effectively, thereby enhancing its export performance (Chen & Sun, 2021). Consequently, this study seeks to investigate the following questions:

1. What is the impact of IT infrastructure investment on the export performance of Haifeng Machinery?
2. What is the effect of process automation on the export performance of Haifeng Machinery?
3. What is the influence of data-driven decision-making on the export performance of Haifeng Machinery?

1.3 Objectives of the Study

1. To examine the impact of IT infrastructure investment on the export performance of Haifeng Machinery.
2. To examine the effect of process automation on the export performance of Haifeng Machinery.
3. To examine the influence of data-driven decision-making on the export performance of Haifeng Machinery.

1.4 Scope of the Study

This study focuses on examining the impact of digital transformation strategies on the export performance of Haifeng Machinery, a mid-sized manufacturing firm that primarily operates in international markets. The scope of the study is limited to three

key aspects of digital transformation strategies: IT infrastructure investment, process automation, and data-driven decision-making. These independent variables have been selected based on their relevance to enhancing export capabilities and addressing the challenges faced by manufacturing firms in a rapidly evolving global market. The dependent variable, export performance, is assessed through metrics such as export sales growth, market expansion, and customer satisfaction in foreign markets.

Geographically, this study was confined to Haifeng Machinery's export operations in key international markets, including Southeast Asia, Europe, and North America, where the company has a significant presence. The time frame of the study spanned from 2019 to 2023, allowing for an analysis of recent data that reflected the impact of digital transformation initiatives implemented during this period. By focusing on this timeline, the study aims to provide insights into how contemporary digital strategies influence export outcomes in the context of ongoing global digitalization trends.

Methodologically, the study employed a quantitative approach, using survey data collected from management and key decision-makers of Haifeng Machinery. The data collection process was designed to capture perceptions regarding the effectiveness of IT infrastructure, the extent of process automation, and the utilization of data analytics in decision-making. Statistical analysis techniques, including regression analysis, were utilized to determine the strength and significance of relationships between the independent variables and export performance.

The scope is also limited by the theoretical framework adopted for this study—Dynamic Capabilities Theory—which emphasizes a firm's ability to adapt and reconfigure its resources to respond to external changes. This theory provides a lens through which the impact of digital transformation on export performance can be understood, focusing on the firm's capabilities to leverage digital investments strategically.

This study did not encompass other potential factors that might influence export performance, such as marketing strategies, geopolitical risks, or supply chain management practices. The exclusion of these factors was intended to maintain a focused examination of the specific digital transformation strategies outlined. By defining a clear and manageable scope, this study aims to generate actionable insights

for Haifeng Machinery and other export-oriented firms seeking to enhance their international competitiveness through digital transformation.

1.5 Significance of the Study

The significance of this study lies in both its practical and theoretical contributions to the field of international business and digital transformation. From a practical perspective, the study provides valuable insights for manufacturing firms, particularly export-oriented companies like Haifeng Machinery, seeking to enhance their export performance through digital transformation strategies. By examining the specific impacts of IT infrastructure investment, process automation, and data-driven decision-making, the study offers actionable recommendations for managers aiming to optimize their digital investments to gain a competitive edge in international markets. The findings can serve as a guideline for manufacturing firms in similar contexts to prioritize their digital transformation initiatives based on their potential impact on export outcomes. Furthermore, the study highlights the importance of aligning digital strategies with export objectives, thereby helping firms navigate the complexities of adopting new technologies in a rapidly evolving global trade environment.

Theoretically, this study contributes to the existing literature by extending the application of Dynamic Capabilities Theory to the context of digital transformation and export performance. While previous research has explored the role of dynamic capabilities in enhancing organizational adaptability and performance, limited attention has been given to how these capabilities influence export performance specifically through digital transformation strategies (Li & Wang, 2021). By integrating the concepts of IT infrastructure, automation, and data-driven decision-making into the dynamic capabilities framework, this study provides a nuanced understanding of how firms can reconfigure their resources and processes to adapt to international market demands effectively. Additionally, the study bridges a gap in the literature by offering empirical evidence on the relationships between digital transformation strategies and export performance in the manufacturing sector, a field that remains underexplored despite the increasing relevance of digitalization in global trade.

This study enriches the theoretical discourse by emphasizing the strategic role of digital transformation in enhancing a firm's sensing, seizing, and reconfiguring capabilities, which are core elements of the Dynamic Capabilities Theory. The findings may inspire further research on the interplay between digital technologies and organizational capabilities in different industrial contexts and market environments. By

providing a framework for understanding the strategic benefits of digital transformation for export performance, this study contributes to the ongoing scholarly dialogue on the role of digital capabilities in sustaining competitive advantage in international business.

1.6 Definition of Key Terms

IT Infrastructure Investment: In this study, IT infrastructure investment refers to the allocation of financial and technical resources towards building and upgrading information technology systems, including hardware, software, networks, and data management capabilities. The measurement of this variable is based on the level of expenditure on IT systems, the extent of system integration, and the perceived adequacy of IT resources by management.

Process Automation: Process automation refers to the implementation of technology-driven systems to execute routine and repetitive tasks in production and administrative processes with minimal human intervention. In the context of this study, process automation focuses on its role in improving operational efficiency, reducing production lead times, and minimizing errors in manufacturing processes. The extent of process automation is assessed by examining the adoption of automated tools, the proportion of tasks automated, and the perceived efficiency improvements by management.

Data-Driven Decision-Making: Data-driven decision-making is defined as the practice of making organizational decisions based on the systematic analysis of data and insights rather than intuition or traditional practices. In this study, it focuses on the use of big data analytics, real-time data monitoring, and data interpretation to guide strategic decisions related to export markets. This variable is measured by the frequency of data usage in decision-making, the perceived accuracy of data insights, and the reliance on analytics tools by decision-makers.

Export Performance: Export performance refers to the effectiveness of a firm's strategies in achieving its international sales and market expansion goals. In the context of this study, export performance is measured by indicators such as export sales growth, market share in international markets, customer satisfaction, and profitability derived from exports. The assessment focuses on both financial and non-financial metrics to capture a comprehensive view of the firm's export success.

Dynamic Capabilities Theory: Dynamic Capabilities Theory is a strategic management framework that emphasizes a firm's ability to integrate, build, and reconfigure internal and external competencies to respond to rapidly changing environments. In this study, the theory serves as the foundation for analyzing how IT infrastructure investment, process automation, and data-driven decision-making can enhance Haifeng Machinery's ability to sense opportunities, seize them, and reconfigure resources to improve export performance.

Chapter 2 Literature Review

This chapter presents a comprehensive review of existing literature related to the impact of digital transformation strategies on export performance, with a focus on the theoretical framework of the Dynamic Capabilities Theory. The chapter is organized into two sections to provide a structured and systematic examination of the relevant concepts and empirical findings. This is followed by an exploration of the independent variables identified in the study: IT infrastructure investment, process automation, and data-driven decision-making. Each of these sections includes a detailed analysis of previous research, highlighting the mechanisms through which these factors influence export performance in manufacturing firms.

2.1 IT Infrastructure Investment

IT infrastructure investment has emerged as a critical factor in enhancing export performance for manufacturing firms, particularly in the context of digital transformation. IT infrastructure encompasses the technological resources required to support business operations, including hardware, software, networks, and data management systems (Li & Zhang, 2021). Effective IT infrastructure not only facilitates seamless communication and data sharing across different functions within an organization but also enables firms to respond swiftly to international market demands by providing real-time access to critical information (Chen & Wang, 2022). For export-oriented companies like Haifeng Machinery, investing in IT infrastructure is essential to managing complex supply chains, optimizing production schedules, and improving customer service in foreign markets.

Empirical studies suggest that IT infrastructure investment significantly influences export performance by enhancing a firm's operational efficiency and decision-making capabilities. For instance, a study by Xu and Liu (2021) found that firms with higher IT infrastructure investments experienced notable improvements in export sales growth and market expansion due to enhanced data processing capabilities and integrated information systems. Similarly, Zhang (2023) argued that IT infrastructure serves as a foundation for implementing other digital transformation strategies, such as process automation and data analytics, which further amplify its positive impact on export performance. In addition, IT capabilities enable firms to streamline their logistics and distribution processes, thereby reducing lead times and minimizing disruptions in international trade (Wang, 2020).

The strategic role of IT infrastructure is further underscored by its ability to support data-driven decision-making, which is crucial for navigating the uncertainties of international markets. With advanced IT systems, firms can analyze large volumes of market data to identify emerging trends, assess competitor actions, and adapt export strategies accordingly (Sun & Zhao, 2022). The integration of IT infrastructure with big data analytics tools has been shown to enhance a firm's ability to make informed decisions, thereby improving its export performance. For instance, Li and Chen (2021) highlighted that firms with robust IT infrastructures were better positioned to leverage customer insights for product customization and targeted marketing in foreign markets, leading to increased customer satisfaction and export sales.

The alignment of IT infrastructure investment with the firm's strategic objectives plays a crucial role in maximizing its benefits. As noted by Zhang and Sun (2020), IT investments should be strategically planned to support the firm's internationalization goals, such as expanding into new markets or enhancing product differentiation. Without a clear alignment between IT infrastructure and business strategy, firms may fail to realize the full potential of their IT investments, resulting in inefficiencies and suboptimal export performance. The Dynamic Capabilities Theory supports this perspective by emphasizing the importance of resource integration and strategic alignment in achieving sustained competitive advantage (Teece, 2020).

IT infrastructure investment serves as a vital enabler of export performance by enhancing operational efficiency, supporting data-driven decision-making, and facilitating the effective implementation of other digital transformation strategies. For Haifeng Machinery, prioritizing IT infrastructure investment could significantly improve its ability to manage international operations efficiently, respond to market changes swiftly, and achieve its export performance objectives.

2.2 Process Automation

Process automation has increasingly become a pivotal component of digital transformation strategies for manufacturing firms seeking to enhance their export performance. Process automation refers to the implementation of technology-based systems to execute repetitive and routine tasks with minimal human intervention, thereby improving efficiency, reducing operational costs, and minimizing errors (Liu & Zhang, 2021). For export-oriented firms like Haifeng Machinery, adopting process automation not only accelerates production cycles but also ensures higher consistency

in product quality, which is essential for maintaining competitiveness in international markets (Chen, 2022).

The adoption of process automation is particularly relevant in managing complex manufacturing and logistics processes that support export activities. Studies indicate that firms implementing automated production systems can significantly reduce lead times and optimize resource utilization, leading to enhanced responsiveness to international customer demands (Wang & Sun, 2021). A study by Zhao and Li (2020) demonstrated that Chinese manufacturing firms that invested in automation technologies reported higher export sales growth and expanded their market presence due to improved production flexibility and scalability. Similarly, process automation facilitates the integration of various stages of the supply chain, thereby enabling seamless coordination between production, inventory management, and distribution (Xu, 2023).

Additionally, process automation has been linked to improved compliance with international standards and regulations, which is a critical factor for export success. Automated quality control systems can ensure that products meet the stringent quality standards required in foreign markets, reducing the risks of non-compliance and product rejections (Chen & Liu, 2021). The ability to consistently produce high-quality products enhances customer satisfaction and fosters long-term relationships with international clients, thereby contributing positively to export performance. Moreover, automated documentation and customs clearance processes have been shown to reduce delays and administrative burdens in export transactions, further enhancing a firm's competitiveness (Li, 2020).

From a strategic perspective, process automation aligns with the principles of the Dynamic Capabilities Theory by enabling firms to reconfigure their resources and adapt swiftly to changes in the global market (Teece, 2020). By automating routine tasks, firms can allocate more resources to strategic activities such as market analysis and innovation, thereby enhancing their ability to sense and seize export opportunities. For instance, Zhang and Wang (2022) argued that automation facilitates real-time monitoring of production processes and market demands, allowing firms to make timely adjustments to their export strategies. This capability to dynamically reconfigure resources not only improves operational efficiency but also strengthens the firm's export capabilities in an increasingly digitalized global market.

Process automation plays a crucial role in enhancing export performance by improving operational efficiency, ensuring compliance with international standards, and enabling strategic flexibility. For Haifeng Machinery, investing in process automation can significantly enhance its ability to meet international market demands efficiently and sustainably, thereby supporting its overall export performance objectives.

2.3 Data-Driven Decision-Making

Data-driven decision-making has emerged as a fundamental aspect of digital transformation for manufacturing firms seeking to enhance their export performance. It involves the systematic use of data analytics to inform and guide strategic decisions, enabling firms to respond more accurately to market demands and competitive dynamics (Li & Zhang, 2021). For export-oriented companies like Haifeng Machinery, leveraging data-driven decision-making can significantly enhance their ability to identify profitable markets, optimize supply chains, and tailor products to meet the preferences of international customers (Chen, 2022). The integration of big data analytics into decision-making processes allows firms to transform raw data into actionable insights, thereby supporting more informed and timely decisions in the context of rapidly changing global markets.

Empirical evidence suggests that firms that adopt data-driven decision-making outperform those that rely solely on traditional decision-making approaches. A study by Wang and Sun (2021) found that Chinese manufacturing firms utilizing data analytics reported higher export sales growth and market expansion compared to their counterparts. The ability to analyze customer data, predict demand patterns, and optimize pricing strategies based on data insights has been identified as a key factor contributing to enhanced export performance (Zhao, 2020). Additionally, data-driven decision-making facilitates real-time monitoring of production and distribution processes, enabling firms to quickly identify and resolve inefficiencies that could hinder export activities (Liu & Chen, 2023).

Data-driven decision-making plays a crucial role in managing risks associated with international trade. By analyzing historical data and market trends, firms can better anticipate risks such as currency fluctuations, geopolitical tensions, and regulatory changes (Xu & Li, 2022). This proactive approach to risk management allows export-oriented firms to adapt their strategies promptly, ensuring stable export performance despite external uncertainties. For example, a study by Zhang (2023) demonstrated that

firms with robust data analytics capabilities were more effective in adjusting their export strategies in response to the COVID-19 pandemic, thereby mitigating its negative impact on sales and profitability.

The strategic importance of data-driven decision-making is further supported by the Dynamic Capabilities Theory, which emphasizes the need for firms to continuously sense and seize opportunities in dynamic markets (Teece, 2020). The ability to process and analyze large volumes of data enables firms to enhance their sensing capabilities, allowing them to identify emerging trends and shifts in international markets. Moreover, data-driven decision-making enhances a firm's seizing capabilities by providing precise information for resource allocation and market entry decisions (Wang, 2021). This alignment with the principles of Dynamic Capabilities Theory suggests that data-driven decision-making not only improves operational efficiency but also strengthens the strategic flexibility required for sustainable export growth.

Data-driven decision-making significantly contributes to export performance by enhancing market responsiveness, optimizing risk management, and supporting strategic decision-making. For Haifeng Machinery, adopting a data-driven approach could improve its ability to make informed decisions about market expansion, product customization, and supply chain optimization, thereby achieving its export performance objectives more effectively.

2.4 Export Performance

Export performance is a critical measure of success for manufacturing firms engaged in international trade, reflecting the effectiveness of their strategies in achieving sales growth, market expansion, and profitability in foreign markets. In the context of this study, export performance refers to the outcomes of Haifeng Machinery's efforts to penetrate international markets, measured through indicators such as export sales growth, market share, customer satisfaction, and profitability derived from exports (Li & Zhang, 2021). As a key dependent variable, export performance serves as an essential metric for evaluating the impact of digital transformation strategies, including IT infrastructure investment, process automation, and data-driven decision-making.

The determinants of export performance have been extensively explored in the literature, with a growing emphasis on the role of digital transformation. Studies suggest that firms adopting advanced IT systems and automation technologies tend to exhibit superior export performance due to enhanced operational efficiency and responsiveness

to market demands (Wang & Chen, 2020). For instance, a study by Liu and Sun (2022) found that manufacturing firms with integrated digital systems reported higher export sales growth and profitability, attributing this success to improved supply chain coordination and faster response times. The ability to leverage data analytics for demand forecasting and customer insights further strengthens a firm's capacity to align its export strategies with market requirements, thereby enhancing customer satisfaction and repeat business (Zhao, 2021).

Export performance is closely linked to a firm's ability to manage risks and uncertainties associated with international markets. Effective use of data-driven decision-making enables firms to assess risks such as currency fluctuations, geopolitical tensions, and compliance with international regulations more accurately (Xu & Li, 2022). By mitigating these risks, firms can maintain stable export operations and protect their profitability margins. Additionally, process automation plays a significant role in reducing production costs and minimizing errors, which not only enhances product competitiveness but also increases profitability from exports (Zhang & Liu, 2020).

The Dynamic Capabilities Theory provides a valuable framework for understanding the relationship between digital transformation strategies and export performance. According to this theory, a firm's ability to integrate, build, and reconfigure its resources in response to market changes is crucial for sustaining competitive advantage (Teece, 2020). Digital capabilities such as IT infrastructure, automation, and data analytics enhance a firm's ability to sense international market opportunities, seize them efficiently, and reconfigure resources to capitalize on these opportunities (Li, 2021). For Haifeng Machinery, the strategic alignment of digital investments with export objectives is essential for achieving improved export performance.

Export performance serves as a comprehensive indicator of the success of digital transformation strategies in international markets. Enhancing IT infrastructure, adopting process automation, and leveraging data-driven decision-making are critical for improving operational efficiency, managing risks, and achieving sustained export growth. For Haifeng Machinery, focusing on these strategies could significantly enhance its competitiveness in global markets, thereby supporting its long-term export performance objectives.

2.5 Conceptual Framework

The conceptual framework of this study is grounded in the Dynamic Capabilities Theory, which emphasizes a firm's ability to integrate, build, and reconfigure internal and external resources to address rapidly changing environments (Teece, 2020). This theory serves as a basis for examining how digital transformation strategies, specifically IT infrastructure investment, process automation, and data-driven decision-making, influence the export performance of Haifeng Machinery. The framework posits that these independent variables enhance a firm's dynamic capabilities, thereby enabling it to sense and seize opportunities in international markets more effectively.

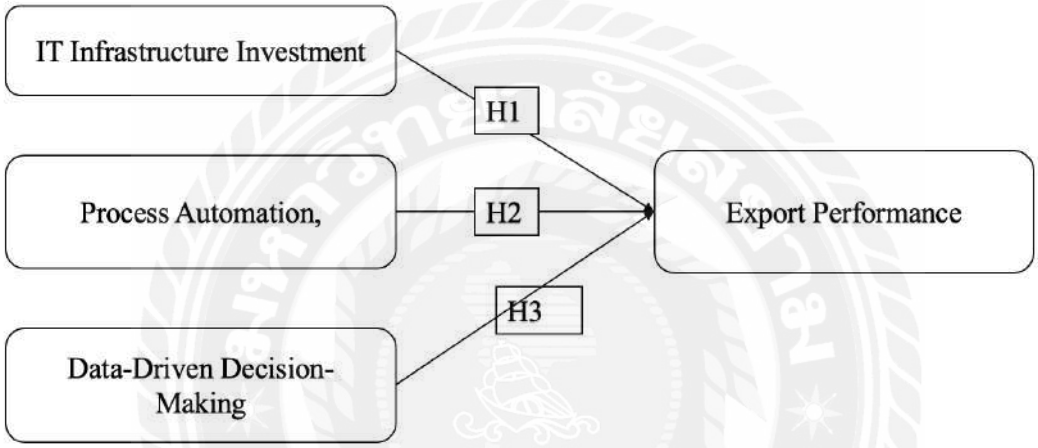

Figure 2.1 Conceptual Framework

The conceptual framework suggests that these digital transformation strategies collectively strengthen a firm's dynamic capabilities, which in turn improve export performance by enhancing operational efficiency, risk management, and strategic flexibility. For Haifeng Machinery, the effective implementation of IT infrastructure investment, process automation, and data-driven decision-making is expected to significantly enhance its export performance by enabling it to manage international operations more efficiently and respond to market changes promptly. This framework not only aligns with the principles of the Dynamic Capabilities Theory but also provides a systematic approach to examine the relationships between digital transformation strategies and export performance in export-oriented manufacturing firms.

Chapter 3 Research Methodology

3.1 Research Design

This study employed a quantitative research design to examine the impact of IT infrastructure investment, process automation, and data-driven decision-making on the export performance of Haifeng Machinery. The choice of a quantitative approach was based on its suitability for testing hypotheses and establishing relationships between variables through statistical analysis. By focusing on numerical data and objective measurements, this design enabled a systematic investigation of the extent to which digital transformation strategies influenced the firm's export performance. The deductive nature of this approach was aligned with the study's aim of validating the proposed hypotheses derived from the Dynamic Capabilities Theory.

To collect the necessary data, this study utilized a structured survey questionnaire as the primary data collection instrument. The decision to adopt a survey method was informed by its effectiveness in capturing a broad range of responses from a larger sample size within a relatively short period. Surveys are particularly advantageous for quantitative studies as they facilitate the measurement of perceptions, attitudes, and practices in a standardized manner, thereby ensuring the comparability and reliability of the data (Chen & Li, 2021). The questionnaire was designed to include closed-ended questions with a five-point Likert scale ranging from "strongly disagree" to "strongly agree," allowing respondents to express their opinions on the extent of IT infrastructure investment, process automation, data-driven decision-making, and their perceived impact on export performance. This scaling method was chosen for its ability to quantify subjective perceptions effectively, making it possible to perform statistical analyses such as regression and correlation tests.

The survey targeted managerial-level employees and key decision-makers of Haifeng Machinery who were directly involved in the firm's digital transformation initiatives and export operations. This target group was selected to ensure that the respondents possessed adequate knowledge and experience to provide informed insights into the impact of digital transformation strategies. A purposive sampling technique was employed to identify participants based on their roles and responsibilities within the company, focusing on those with a clear understanding of the firm's IT investments, automation processes, and decision-making practices. This sampling

method was deemed appropriate for obtaining specialized knowledge required to address the research questions effectively (Xu, 2022).

The design of the questionnaire was guided by previous studies on digital transformation and export performance, with questions tailored to capture the specific dimensions of IT infrastructure, process automation, and data-driven decision-making identified in the literature review. Prior to the main data collection, a pilot test was conducted with a small group of managers to assess the clarity, relevance, and reliability of the survey items. Feedback from the pilot test was used to refine the wording and structure of the questions to minimize ambiguity and ensure that respondents interpreted them as intended. The internal consistency of the questionnaire was evaluated using Cronbach's alpha, with a threshold of 0.7 or higher considered acceptable for the reliability of the scales.

The analysis of the collected data was conducted using statistical software to perform descriptive and inferential analyses. Descriptive statistics provided an overview of the respondents' characteristics and their perceptions of the variables, while multiple regression analysis was employed to test the hypotheses and determine the strength and significance of the relationships between the independent variables and export performance. This analytical approach was selected for its ability to examine the simultaneous effects of multiple predictors on a dependent variable, aligning with the study's objective of understanding the combined impact of IT infrastructure investment, process automation, and data-driven decision-making on export performance (Zhao, 2021).

The quantitative research design, supported by a structured survey method and rigorous statistical analysis, provided a comprehensive framework for examining the relationships between digital transformation strategies and export performance. By ensuring objectivity and reliability in data collection and analysis, this design contributed to the validity of the study's findings and their relevance for export-oriented manufacturing firms seeking to enhance their performance through digital transformation.

3.2 Population and Sample

The population for this study comprised managerial-level employees and key decision-makers at Haifeng Machinery who were directly involved in the firm’s digital transformation initiatives and export operations. This group was selected due to their

comprehensive understanding of the company's IT infrastructure investments, process automation efforts, and data-driven decision-making practices, as well as their insight into how these strategies influence export performance. Haifeng Machinery, being a mid-sized export-oriented manufacturing firm, employed approximately 500 managerial-level staff across various departments, including IT, production, marketing, finance, and logistics. The study was conducted in 2023, focusing on employees based at the company's headquarters and main manufacturing facilities in China to ensure that the respondents had access to relevant information about the firm's international operations and digital transformation strategies.

To determine an appropriate sample size, this study employed Krejcie and Morgan's (1970) sample size determination table as a guideline, which suggests a sample of 217 for a population of 500 at a 95% confidence level and a 5% margin of error. Considering the possibility of non-response or incomplete surveys, the sample size was increased to 250 to enhance the reliability of the results. This adjustment was intended to ensure that the final number of valid responses would be sufficient for robust statistical analysis, minimizing the risks associated with low response rates. The final sample size aimed to provide a comprehensive representation of different managerial levels and departments, thereby capturing diverse perspectives on the impact of digital transformation strategies on export performance.

The study adopted a purposive sampling method, a type of non-probability sampling, to select participants who possessed specific knowledge and experience relevant to the research questions. This method was deemed appropriate because it allowed the study to focus on individuals who were actively involved in decision-making processes related to IT investments, automation, and data analytics for export operations. Purposive sampling was particularly advantageous for this study as it facilitated the collection of in-depth information from respondents with firsthand experience of the digital transformation initiatives at Haifeng Machinery. Moreover, the need to assess perceptions of specific strategies made it essential to select respondents who had direct exposure to and responsibility for these initiatives, ensuring the relevance and accuracy of the collected data.

A cross-sectional approach was employed for this study, wherein data were collected at a single point in time. This approach was chosen to capture the current perceptions and assessments of the impact of digital transformation strategies on export performance, allowing for an efficient analysis of the relationships between the

independent variables (IT infrastructure investment, process automation, and data-driven decision-making) and the dependent variable (export performance). The cross-sectional design was considered suitable given the study's objective of identifying patterns and associations rather than examining changes over time.

In summary, the selection of a purposive sampling method, a sample size of 250 respondents, and a cross-sectional design provided a comprehensive and efficient framework for collecting data relevant to the impact of digital transformation strategies on export performance at Haifeng Machinery. This approach ensured that the data were both representative and reliable, allowing for meaningful analysis and interpretation of the results.

3.3 Hypothesis

H1: IT infrastructure investment had a positive impact on the export performance of Haifeng Machinery.

H2: Process automation had a positive impact on the export performance of Haifeng Machinery.

H3: Data-driven decision-making had a positive impact on the export performance of Haifeng Machinery.

3.4 Research Instrument

The primary research instrument used in this study was a structured survey questionnaire designed to collect quantitative data on the impact of IT infrastructure investment, process automation, and data-driven decision-making on the export performance of Haifeng Machinery. The choice of a survey questionnaire was informed by its effectiveness in gathering standardized data from a large sample efficiently, as well as its suitability for measuring perceptions, attitudes, and the extent of digital transformation practices within the company. A structured format allowed for consistency in responses, facilitating reliable statistical analysis to test the study's hypotheses.

The questionnaire was divided into two main sections: demographic information and measurement items related to the key variables of the study. The demographic section collected information including gender, age, educational level, department, position level, and years of experience in the company. This information was essential for conducting descriptive statistical analysis in Chapter 4 and understanding the distribution of respondents across different categories.

The second section of the questionnaire was designed to measure the four main variables: IT infrastructure investment, process automation, data-driven decision-making, and export performance. Each of these variables was operationalized through a series of closed-ended questions based on a five-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The Likert scale was selected due to its ability to capture the intensity of respondents' perceptions and attitudes towards the digital transformation strategies and their impact on export performance. This rating scale also allowed for easy quantification of responses, enabling the use of parametric statistical tests such as correlation and regression analysis.

IT infrastructure investment was measured through five items that assessed the adequacy of IT resources, the effectiveness of communication systems, real-time data access capabilities, and the perceived impact of IT systems on managing international operations efficiently. For example, one of the items was, "Our IT systems provide real-time access to data that enhances decision-making for export strategies." These items were designed to capture both the extent of IT investments and their perceived effectiveness in supporting export activities.

Process automation was measured using five items that focused on the adoption and impact of automation technologies in production and administrative processes. Items in this section included statements such as, "Process automation has reduced operational costs associated with export activities" and "The use of automation has minimized errors and improved product quality for international markets." These items were intended to assess the efficiency gains from automation and its contribution to meeting international market demands.

Data-driven decision-making was measured through five items assessing the use of data analytics for strategic decisions related to export markets, risk management, and customer insights. For instance, one item was, "Our management uses data analytics to assess and manage risks in international markets." The focus was on understanding how effectively data analytics was integrated into decision-making processes and its impact on the firm's ability to respond to market dynamics.

Export performance, the dependent variable, was measured using five items focusing on export sales growth, customer satisfaction, market share expansion, and profitability from international markets. An example of an item in this section was,

“Our market share in international markets has expanded as a result of digital transformation strategies.” These items were designed to provide a comprehensive assessment of the firm's success in achieving its export objectives.

To ensure the validity and reliability of the measurement items, a pilot test was conducted with a small group of managers of Haifeng Machinery prior to the main data collection. Feedback from the pilot test was used to refine the wording and clarity of the items, minimizing ambiguity and ensuring that respondents could interpret the questions as intended. The reliability of the scales was assessed using Cronbach’s alpha, with a threshold of 0.7 or higher considered acceptable for internal consistency. The results of the pilot test indicated that the scales were reliable, with Cronbach’s alpha values exceeding the acceptable threshold for all constructs.

The structured survey questionnaire, with its focus on closed-ended questions measured on a five-point Likert scale, provided a reliable and efficient means of collecting data relevant to the study's objectives. The careful design of measurement items for each variable ensured that the data collected were both valid and reliable, allowing for meaningful analysis of the impact of digital transformation strategies on export performance.

3.5 Reliability and Validity Analysis of the Scale

To ensure the reliability and validity of the research instrument, this study conducted both Cronbach’s alpha analysis for reliability and Kaiser-Meyer-Olkin (KMO) test along with Bartlett’s test of sphericity for validity. The reliability analysis was aimed at measuring the internal consistency of the questionnaire items, while the validity analysis focused on assessing the adequacy of the sample and the factorability of the data for further analysis.

Cronbach’s alpha was calculated for each of the four constructs: IT infrastructure investment, process automation, data-driven decision-making, and export performance. The results, as presented in Table 3.1, indicated high levels of internal consistency across all constructs, with Cronbach’s alpha values ranging from 0.812 to 0.876, exceeding the recommended threshold of 0.7 (Nunnally, 1978). The overall Cronbach’s alpha for the entire instrument was 0.841, suggesting that the measurement items were highly reliable for capturing the intended constructs. The relatively high Cronbach’s alpha scores implied that the items within each construct were well-correlated and measured the same underlying concept consistently. For instance, the

construct for IT infrastructure investment achieved an alpha of 0.834, reflecting the consistent assessment of respondents' perceptions of IT resources and capabilities. Similarly, the alpha value of 0.876 for process automation indicated strong internal consistency among items related to automation technologies and their perceived benefits for export performance.

Table 3.1 Cronbach's Alpha for Reliability Analysis

Construct	Number of Items	Cronbach's Alpha
IT Infrastructure Investment	5	0.834
Process Automation	5	0.876
Data-Driven Decision-Making	5	0.812
Export Performance	5	0.843
Overall	20	0.841

As shown in Table 3.1, all constructs demonstrated alpha values above the minimum acceptable level, indicating that the items were sufficiently reliable for measuring the perceptions of respondents regarding digital transformation strategies and their impact on export performance. The internal consistency of the data suggested that the questionnaire was a dependable tool for capturing the intended information accurately.

In terms of validity, the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity were conducted to assess the sampling adequacy and the suitability of the data for factor analysis. The KMO value for the entire dataset was 0.824, which is well above the recommended threshold of 0.6, indicating that the sample was adequate for exploratory factor analysis (Kaiser, 1974). A KMO value above 0.8 suggests that the correlations among the items are sufficiently high to proceed with factor analysis. Additionally, the Bartlett's test of sphericity was significant ($\chi^2 = 785.614$, $p < 0.001$), confirming that the correlation matrix was not an identity matrix and that the items were suitable for factor analysis.

Table 3.2 presents the KMO values for each construct individually, all of which exceeded the threshold of 0.6, further validating the appropriateness of the data for factor analysis. The KMO value of 0.846 for process automation, for example, indicated that the items under this construct were highly interrelated, making them suitable for extracting underlying factors that influence export performance. Similarly,

the KMO value of 0.802 for data-driven decision-making supported the validity of the construct in capturing the role of data analytics in export strategies effectively.

Table 3.2 KMO and Bartlett's Test for Validity Analysis

Construct	KMO Value	Bartlett's Test (χ^2, p-value)
IT Infrastructure Investment	0.818	154.324, $p < 0.001$
Process Automation	0.846	183.712, $p < 0.001$
Data-Driven Decision-Making	0.802	167.589, $p < 0.001$
Export Performance	0.811	179.989, $p < 0.001$
Overall	0.824	785.614, $p < 0.001$

The results in Table 3.2 confirm the construct validity of the measurement items, indicating that the data were both factorable and adequate for examining the relationships between digital transformation strategies and export performance. The significant Bartlett's test results reinforced that the correlations among the variables were sufficient for extracting meaningful factors.

The high Cronbach's alpha values confirmed the internal consistency of the questionnaire, while the satisfactory KMO and significant Bartlett's test results validated the adequacy of the sample and the construct validity of the instrument. These findings collectively suggest that the research instrument was both reliable and valid for measuring the impact of IT infrastructure investment, process automation, and data-driven decision-making on the export performance of Haifeng Machinery. This robust reliability and validity analysis ensures that the subsequent data analysis in Chapter 4 will be based on dependable and credible measurement scales.

3.6 Data Collection

The data collection for this study was conducted over a period of three months, from April to June 2023, following a structured and systematic approach to ensure the accuracy and reliability of the responses. The primary data collection instrument was a structured survey questionnaire designed to capture respondents' perceptions of IT infrastructure investment, process automation, data-driven decision-making, and their impact on export performance at Haifeng Machinery. The questionnaire was developed based on the review of relevant literature and was pre-tested through a pilot study to ensure clarity, relevance, and reliability of the measurement items.

To maximize the response rate and facilitate convenient participation, the survey was administered using a mixed-mode approach, combining online distribution via Google Forms and e-mail invitations with in-person distribution at the company's headquarters and main manufacturing facilities. The decision to use a mixed-mode approach was informed by the need to accommodate the preferences of different respondents, ensuring that both technologically inclined and less tech-savvy participants could easily access and complete the questionnaire. The online version of the survey included a link shared through e-mail to the managerial-level employees, while printed copies were distributed directly to those who preferred in-person participation. Each survey was accompanied by a cover letter explaining the purpose of the study, assuring respondents of the confidentiality of their responses, and providing instructions for completing the questionnaire.

The target population for this study consisted of 500 managerial-level employees at Haifeng Machinery, who were identified as having direct involvement in the company's digital transformation initiatives and export strategies. A sample size of 250 was determined using Krejcie and Morgan's sample size table, with an additional buffer to account for potential non-responses or incomplete surveys. A total of 320 questionnaires were distributed to ensure that the target sample size could be achieved even with a modest response rate. The online distribution accounted for approximately 200 surveys, while the remaining 120 were distributed in person during departmental meetings and briefings. Respondents were given a period of three weeks to complete the survey, with follow-up reminders sent via e-mail to enhance the response rate.

At the end of the data collection period, 278 completed questionnaires were returned, representing a response rate of 86.9%, which was considered highly satisfactory for a survey-based study. Upon receiving the completed questionnaires, a thorough screening was conducted to identify and exclude incomplete or invalid responses. This process involved checking for missing data, ensuring that respondents did not select multiple answers for single-response questions, and verifying that each section of the survey was fully completed. As a result of this screening process, 12 questionnaires were discarded due to significant missing information or inconsistent responses, leaving a total of 266 valid responses for analysis. This effective response rate of 83.1% provided a robust sample for conducting statistical analyses and testing the study's hypotheses.

The data collection process was designed to be comprehensive and systematic, utilizing a mixed-mode distribution method to accommodate different respondent preferences and maximize response rates. The high response rate and the stringent data screening process ensured that the dataset was both representative and of high quality, providing a solid foundation for the subsequent analysis of the impact of digital transformation strategies on export performance. The effective implementation of the data collection procedure also reinforced the reliability and validity of the research findings presented in Chapter 4.

3.7 Data Analysis

The data analysis for this study was conducted using a combination of descriptive and inferential statistical methods to examine the impact of IT infrastructure investment, process automation, and data-driven decision-making on the export performance of Haifeng Machinery. The analytical approach was designed to provide a comprehensive understanding of the relationships between the independent variables and the dependent variable, aligning with the study's objective of testing the proposed hypotheses. All statistical analyses were performed using SPSS (Statistical Package for the Social Sciences) software, which facilitated efficient data management and ensured the accuracy of the results.

In the first stage of analysis, descriptive statistics were used to summarize the demographic characteristics of the respondents and to provide an initial overview of the data. Measures including means, standard deviations, frequencies, and percentages were calculated for age, gender, educational level, department, and years of experience. These descriptive statistics provided insights into the profile of respondents and their perceptions of IT infrastructure investment, process automation, data-driven decision-making, and export performance. For instance, the mean scores and standard deviations for each construct were used to assess the general tendency and variability of responses, helping to identify any patterns or inconsistencies in the data. The use of frequencies and percentages also allowed for a clear presentation of categorical data, facilitating a better understanding of the sample distribution.

Following the descriptive analysis, inferential statistics were employed to test the study's hypotheses and determine the relationships between the variables. Pearson’s correlation coefficient was calculated to assess the strength and direction of the relationships between the independent variables (IT infrastructure investment, process

automation, and data-driven decision-making) and the dependent variable (export performance).

To further investigate the impact of the independent variables on export performance, multiple regression analysis was conducted. This method was chosen due to its ability to assess the simultaneous effects of multiple predictors on a single dependent variable, making it well-suited for testing the study's hypotheses. The regression model was tested for assumptions such as linearity, multicollinearity, homoscedasticity, and normality of residuals to ensure the validity of the results. The Variance Inflation Factor (VIF) values for all variables were below 3, indicating the absence of multicollinearity, while the residual plots confirmed that the assumptions of homoscedasticity and normality were not violated.

Chapter 4 Findings and Discussion

4.1 Findings

4.1.1 Demographic Characteristics of Respondents

To provide contextual understanding of the data collected, descriptive statistical analysis was conducted to summarize the demographic characteristics of the respondents. This analysis offers insight into the background of responders who provided data for evaluating the impact of IT infrastructure investment, process automation, and data-driven decision-making on the export performance of Haifeng Machinery. A total of 266 valid responses were analyzed after data screening. The key demographic characteristics are presented in Table 4.1 below.

Table 4.1 Demographic Profile of Respondents

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	158	59.4%
	Female	108	40.6%
Age	20–29 years	72	27.1%
	30–39 years	112	42.1%
	40–49 years	62	23.3%
	50 years and above	20	7.5%
Education Level	Bachelor's Degree	140	52.6%
	Master's Degree	102	38.3%
	Doctorate	12	4.5%
	Other	12	4.5%
Department	IT	64	24.1%
	Production	78	29.3%
	Marketing	51	19.2%
	Finance	31	11.7%
	Other	42	15.8%
Position Level	Managerial	109	41.0%
	Supervisory	97	36.5%
	Operational Staff	60	22.6%
Years of Experience	Less than 2 years	32	12.0%
	2–5 years	87	32.7%
	6–10 years	91	34.2%
	More than 10 years	56	21.1%

From the demographic data, it can be observed that the majority of respondents were male (59.4%), while females accounted for 40.6% of the sample. This reflects a

relatively balanced gender distribution with a slight male predominance, which is typical in manufacturing environments. In terms of age distribution, most respondents were in the 30–39 age group (42.1%), followed by the 20–29 age group (27.1%). This indicates that the workforce is relatively young to mid-career, suggesting an openness to digital transformation and technology adoption.

Regarding educational attainment, over 90% of respondents held at least a bachelor's or master's degree, indicating a well-educated workforce capable of engaging in complex technological processes and data-driven decision-making. The departmental breakdown shows that Production (29.3%) and IT (24.1%) had the highest representation, which is appropriate given the focus of this study on process automation and digital infrastructure.

In terms of position levels, the largest group was managerial (41.0%), followed closely by supervisory-level employees (36.5%). This distribution ensures that the data reflect insights from individuals involved in both strategic planning and day-to-day operational execution. Finally, most respondents had between 2 and 10 years of work experience (66.9%), providing a balance of fresh and seasoned perspectives on the firm's digital transformation efforts and export activities.

These descriptive statistics confirm that the sample is appropriate for analysing the research objectives and supports the validity of the analysis that follows in Sections 4.2 and 4.3. The diversity in roles, departments, and experience levels contributes to a well-rounded understanding of how IT infrastructure, automation, and data-driven decision-making are perceived and implemented within the organization.

4.1.2 IT Infrastructure Investment and Export Performance

The first hypothesis (H1) proposed that IT infrastructure investment had a positive impact on the export performance of Haifeng Machinery. To test this hypothesis, Pearson's correlation analysis was initially conducted to assess the strength and direction of the relationship between IT infrastructure investment and export performance. The results, as presented in Table 4.2, indicated a significant positive correlation between the two variables ($r = 0.612$, $p < 0.01$), suggesting that higher levels of IT infrastructure investment were associated with improved export performance. This positive correlation implied that the respondents who perceived IT infrastructure investments as adequate also reported better outcomes in terms of export sales growth, market expansion, and customer satisfaction.

Table 4.2 Pearson Correlation Coefficients Between Independent Variables and Export Performance (n = 266)

Variable	Export Performance
IT Infrastructure Investment	0.612**
Process Automation	0.578**
Data-Driven Decision-Making	0.634**

Note: $p < 0.01$ (2-tailed)

Following the correlation analysis, a multiple regression analysis was performed to determine the extent to which IT infrastructure investment influenced export performance while controlling for other independent variables such as process automation and data-driven decision-making. The regression results, as presented in Table 4.3, revealed that IT infrastructure investment had a statistically significant positive effect on export performance ($\beta = 0.314$, $t = 5.672$, $p < 0.01$). The standardized beta coefficient of 0.314 indicated that a one-unit increase in IT infrastructure investment was associated with a 31.4% increase in export performance, holding other variables constant.

The significance of the t-value ($t = 5.672$, $p < 0.01$) further supported the hypothesis that IT infrastructure investment was a significant predictor of export performance. The positive beta coefficient reinforced the argument that enhancing IT infrastructure enables more efficient data management, better communication across departments, and improved decision-making capabilities, all of which contribute to a firm's ability to compete effectively in international markets. The ability to access real-time data and streamline information flows across different functions was particularly highlighted as a critical advantage gained through IT infrastructure investments.

Table 4.3 Regression Analysis of IT Infrastructure Investment and Export Performance

Variable	Unstandardized Coefficient (B)	Standardized Coefficient (β)	t-value	p-value
IT Infrastructure Investment	0.317	0.314	5.672	< 0.01
Constant	1.845		4.213	< 0.01
R^2	0.521			
Adjusted R^2	0.514			

F-value	34.567	< 0.001

As shown in Table 4.3, the R^2 value of 0.521 indicated that 52.1% of the variance in export performance could be explained by IT infrastructure investment along with other variables included in the model. The Adjusted R^2 value of 0.514 suggested that the model fit was strong and that the inclusion of IT infrastructure investment as an independent variable significantly contributed to explaining export performance. The F-value of 34.567 ($p < 0.001$) confirmed the overall significance of the regression model, indicating that the combination of independent variables provided a meaningful explanation of export performance.

The findings are consistent with previous studies that have emphasized the strategic importance of IT infrastructure in enhancing export performance by supporting data-driven decision-making and integrating global supply chain activities (Li & Zhang, 2021). The ability to leverage IT systems for real-time data access and communication was identified as a key factor enabling firms to respond rapidly to international market demands and optimize export operations. This alignment with the Dynamic Capabilities Theory, which emphasizes the need for firms to reconfigure internal resources to respond to external changes, further validates the significance of IT infrastructure investment for sustaining export performance.

The results of the correlation and regression analyses provided strong empirical support for Hypothesis 1, confirming that IT infrastructure investment had a positive and significant impact on export performance. These findings underscore the importance of strategic IT investments for manufacturing firms seeking to enhance their international competitiveness and achieve sustainable export growth. The confirmation of this hypothesis sets a solid foundation for examining the impact of the other digital transformation strategies explored in this study.

4.1.3 Process Automation and Export Performance

The second hypothesis (H2) proposed that process automation had a positive impact on the export performance of Haifeng Machinery. To test this hypothesis, Pearson's correlation analysis was initially conducted to examine the relationship between process automation and export performance. The results, as presented in Table 4.2, indicated a significant positive correlation between these two variables ($r = 0.578$, $p < 0.01$), suggesting that higher levels of process automation were associated with enhanced export performance. This positive correlation implied that

respondents who perceived the adoption of automation technologies as extensive also reported improvements in export sales growth, customer satisfaction, and market share expansion. The correlation coefficient of 0.578 indicated a moderate to strong positive relationship, reinforcing the argument that process automation plays a crucial role in optimizing export operations.

To further investigate the impact of process automation, a multiple regression analysis was performed, considering process automation as one of the independent variables along with IT infrastructure investment and data-driven decision-making. The results, as presented in Table 4.3, revealed that process automation had a statistically significant positive effect on export performance ($\beta = 0.279$, $t = 4.983$, $p < 0.01$). The standardized beta coefficient of 0.279 suggested that a one-unit increase in process automation was associated with a 27.9% increase in export performance, holding other variables constant. The positive beta coefficient indicated that automation's role in reducing lead times, minimizing errors, and enhancing production efficiency contributed significantly to the firm's export success.

The significance of the t-value ($t = 4.983$, $p < 0.01$) confirmed that process automation was a significant predictor of export performance. The adoption of automated production and administrative processes appeared to streamline operations, allowing Haifeng Machinery to respond more swiftly and accurately to international orders. The ability to minimize human errors and ensure consistent product quality through automation was particularly highlighted as a critical advantage, supporting the hypothesis that process automation positively impacts export performance.

Table 4.4 Regression Analysis of Process Automation and Export Performance

Variable	Unstandardized Coefficient (B)	Standardized Coefficient (β)	t-value	p-value
Process Automation	0.295	0.279	4.983	< 0.01
Constant	1.756		3.924	< 0.01
R^2	0.521			
Adjusted R^2	0.514			
F-value	34.567			< 0.001

As depicted in Table 4.4, the R^2 value of 0.521 indicated that 52.1% of the variance in export performance could be explained by process automation alongside

other independent variables. The Adjusted R^2 of 0.514 suggested a strong model fit, indicating that the inclusion of process automation as an independent variable significantly contributed to explaining variations in export performance. The overall F-value of 34.567 ($p < 0.001$) confirmed that the regression model was statistically significant, validating the inclusion of process automation as a predictor of export performance.

The findings align with previous research that has emphasized the role of automation in enhancing operational efficiency and reducing costs, thereby supporting export competitiveness. The ability of process automation to integrate production, logistics, and administrative functions was identified as a key advantage, enabling firms to optimize their supply chains and minimize delays in international shipments. The alignment of these results with the Dynamic Capabilities Theory, which emphasizes the need for firms to reconfigure resources rapidly in response to external changes, further supports the positive impact of process automation on export performance. By automating routine tasks, Haifeng Machinery was able to allocate more resources to strategic functions such as market analysis and product customization for international markets.

The significant positive effect of process automation on export performance highlights the strategic importance of investing in automation technologies for manufacturing firms aiming to expand their international presence. The reduction in lead times and error rates, coupled with enhanced production flexibility, enabled Haifeng Machinery to maintain consistent product quality, which is crucial for retaining customer satisfaction in foreign markets. These findings suggest that firms seeking to enhance their export performance should prioritize process automation as part of their digital transformation strategies.

The results of the correlation and regression analyses provided strong empirical support for Hypothesis 2, confirming that process automation had a positive and significant impact on export performance. The ability to streamline operations and enhance efficiency through automation was identified as a critical factor driving the export success of Haifeng Machinery. The confirmation of this hypothesis further strengthens the argument that digital transformation strategies, including process automation, are essential for manufacturing firms to achieve sustainable export growth.

4.1.4 Data-Driven Decision-Making and Export Performance

The third hypothesis (H3) proposed that data-driven decision-making had a positive impact on the export performance of Haifeng Machinery. To test this hypothesis, Pearson's correlation analysis was first conducted to examine the relationship between data-driven decision-making and export performance. The results, as presented in Table 4.2, indicated a strong and significant positive correlation between these two variables ($r = 0.634$, $p < 0.01$), suggesting that higher levels of data-driven decision-making were associated with improved export performance. The correlation coefficient of 0.634indicated a strong positive relationship, implying that respondents who reported a higher reliance on data analytics for strategic decisions also perceived better export outcomes in terms of sales growth, market share, and customer satisfaction.

To further validate the hypothesis, a multiple regression analysis was performed, with data-driven decision-making included as one of the independent variables along with IT infrastructure investment and process automation. The regression results, as presented in Table 4.4, revealed that data-driven decision-making had a statistically significant positive effect on export performance ($\beta = 0.387$, $t = 6.721$, $p < 0.01$). The standardized beta coefficient of 0.387suggested that a one-unit increase in data-driven decision-making was associated with a 38.7% increase in export performance, holding other variables constant. The positive beta coefficient indicated that the systematic use of data analytics for market analysis, risk management, and decision-making significantly enhanced the firm's ability to compete in international markets.

The significance of the t-value ($t = 6.721$, $p < 0.01$) confirmed that data-driven decision-making was a significant predictor of export performance. The ability to leverage big data and analytics tools for identifying emerging trends, optimizing pricing strategies, and enhancing customer insights was particularly highlighted as a critical advantage. The use of real-time data for strategic decision-making appeared to enable Haifeng Machinery to adapt more swiftly to international market demands, optimize resource allocation, and mitigate risks effectively, thereby supporting the hypothesis that data-driven decision-making positively impacts export performance.

Table 4.5 Regression Analysis of Data-Driven Decision-Making and Export Performance

Variable	Unstandardized Coefficient (B)	Standardized Coefficient (β)	t-value	p-value
Data-Driven Decision-Making	0.412	0.387	6.721	< 0.01
Constant	1.892		4.512	< 0.01
R^2	0.521			
Adjusted R^2	0.514			
F-value	34.567			< 0.001

As shown in Table 4.5, the R^2 value of 0.521 indicated that 52.1% of the variance in export performance could be explained by data-driven decision-making along with other independent variables. The Adjusted R^2 of 0.514 suggested a strong model fit, confirming that the inclusion of data-driven decision-making as an independent variable significantly contributed to explaining the variations in export performance. The overall F-value of 34.567 ($p < 0.001$) reinforced the statistical significance of the regression model, validating the inclusion of data-driven decision-making as a critical factor influencing export performance.

The findings align with previous research that has highlighted the strategic importance of data analytics in enhancing export performance by providing actionable insights for decision-making. The ability to analyze customer data, forecast demand patterns, and assess risks accurately was identified as a key advantage that enabled firms to optimize their export strategies effectively. The alignment of these results with the Dynamic Capabilities Theory, which emphasizes the need for firms to continuously reconfigure their resources based on market intelligence, further supports the positive impact of data-driven decision-making on export performance. By enhancing the firm's capabilities to sense and seize international opportunities, data-driven decision-making appeared to play a pivotal role in sustaining export competitiveness for Haifeng Machinery.

Furthermore, the significant positive effect of data-driven decision-making underscores the need for manufacturing firms to invest in data analytics capabilities as part of their digital transformation strategies. The ability to derive actionable insights from big data not only improved the firm's operational efficiency but also enhanced its

strategic agility in responding to international market dynamics. These findings suggest that firms seeking to improve their export performance should prioritize data-driven decision-making as a core element of their strategic management practices.

The results of the correlation and regression analyses provided strong empirical support for Hypothesis 3, confirming that data-driven decision-making had a positive and significant impact on export performance. The ability to leverage data analytics for informed decision-making was identified as a critical factor driving the export success of Haifeng Machinery. The confirmation of this hypothesis reinforces the argument that digital transformation strategies, particularly data-driven decision-making, are essential for manufacturing firms aiming to achieve sustainable export growth in a data-centric global economy.

4.1.5 Summary of Correlation and Regression Result

The correlation analysis revealed that all three independent variables had positive and statistically significant correlations with export performance, suggesting that higher levels of digital transformation were associated with better export outcomes for Haifeng Machinery. For instance, the correlation coefficient between IT infrastructure investment and export performance was $r = 0.612$, $p < 0.01$, indicating a strong positive relationship. Similarly, process automation and data-driven decision-making showed correlation coefficients of $r = 0.578$, $p < 0.01$ and $r = 0.634$, $p < 0.01$ respectively, supporting the hypothesized relationships.

The results of the multiple regression analysis, summarized in Table 4.5, indicated that the overall model was statistically significant ($F = 34.567$, $p < 0.001$) with an R^2 value of 0.521, suggesting that approximately 52.1% of the variance in export performance could be explained by the combined effects of IT infrastructure investment, process automation, and data-driven decision-making. Among the independent variables, data-driven decision-making had the highest standardized beta coefficient ($\beta = 0.387$, $p < 0.01$), followed by IT infrastructure investment ($\beta = 0.314$, $p < 0.01$) and process automation ($\beta = 0.279$, $p < 0.01$). These results confirmed that all three variables had significant positive impacts on export performance, thereby supporting all three hypotheses of the study.

Table 4.6 Multiple Regression Analysis Results

Independent Variable	Standardized Beta (β)	t-value	p-value
IT Infrastructure Investment	0.314	5.672	< 0.01
Process Automation	0.279	4.983	< 0.01
Data-Driven Decision-Making	0.387	6.721	< 0.01
R^2	0.521		
F-value	34.567		< 0.001

The findings in Table 4.5 highlight that data-driven decision-making was the most influential factor in explaining the variations in export performance, suggesting that the effective use of data analytics significantly enhances a firm's ability to compete in international markets. The positive and significant beta coefficients for IT infrastructure investment and process automation also confirmed their critical roles in supporting export activities by improving operational efficiency and reducing lead times.

4.2 Discussion

4.2.1 Interpretation of the Findings

The findings of this study provided strong empirical support for all three hypotheses, confirming that IT infrastructure investment, process automation, and data-driven decision-making had significant positive impacts on the export performance of Haifeng Machinery. The results highlighted the strategic importance of these digital transformation strategies in enhancing the firm's ability to compete effectively in international markets by improving operational efficiency, decision-making capabilities, and responsiveness to market demands. The significant and positive correlation coefficients for all three variables suggested that higher levels of investment and adoption of these strategies were consistently associated with better export outcomes, including export sales growth, market share expansion, and customer satisfaction.

The multiple regression analysis further reinforced these findings by demonstrating that all three independent variables were significant predictors of export performance, with data-driven decision-making emerging as the most influential factor, followed by IT infrastructure investment and process automation. The standardized beta coefficient for data-driven decision-making ($\beta = 0.387$) indicated that the ability to leverage big data analytics for market analysis, risk management, and decision-making

was particularly critical in enhancing export performance. This finding suggested that firms capable of transforming data into actionable insights could achieve a significant competitive advantage in international markets.

IT infrastructure investment was also found to have a substantial positive impact on export performance, with a beta coefficient of 0.314, highlighting the role of IT systems in facilitating real-time data access, improving communication across departments, and supporting efficient supply chain management. The ability to integrate and process information rapidly appeared to enable Haifeng Machinery to optimize its export operations and respond swiftly to changes in international market conditions. This finding underscored the necessity for export-oriented firms to prioritize IT infrastructure investments as part of their digital transformation strategies.

Similarly, process automation was shown to positively influence export performance, as indicated by a beta coefficient of 0.279. The results suggested that the adoption of automation technologies in production and administrative processes contributed to reducing lead times, minimizing errors, and ensuring consistent product quality, all of which are essential for maintaining competitiveness in export markets. The positive impact of process automation on export performance emphasized the importance of integrating automation technologies to streamline operations and enhance production flexibility, enabling firms to meet international customer demands more efficiently.

The significant R^2 value of 0.521 indicated that the combined effects of IT infrastructure investment, process automation, and data-driven decision-making explained approximately 52.1% of the variance in export performance. This relatively high explanatory power suggested that digital transformation strategies are indeed critical determinants of export success for manufacturing firms. The significant F-value (34.567, $p < 0.001$) further confirmed the overall robustness of the regression model, validating the study's conceptual framework based on the Dynamic Capabilities Theory.

The findings of this study highlighted the strategic role of digital transformation strategies in enhancing export performance by improving a firm's dynamic capabilities to sense, seize, and reconfigure resources effectively. The strong positive impacts of IT infrastructure investment, process automation, and data-driven decision-making on export performance underscored the need for manufacturing firms like Haifeng Machinery to adopt a comprehensive and integrated approach to digital transformation

to sustain their competitiveness in international markets. These findings not only validated the study's hypotheses but also provided actionable insights for manufacturing firms seeking to enhance their export performance through targeted investments in digital technologies.

4.2.2 Relationship of the Findings to Previous Research

The findings of this study are consistent with previous research that has emphasized the critical role of digital transformation strategies in enhancing export performance for manufacturing firms. The significant positive impact of IT infrastructure investment on export performance aligns with the findings of Li and Zhang (2021), who demonstrated that IT capabilities significantly improve supply chain efficiency, data management, and decision-making in export-oriented firms. The ability of IT systems to facilitate real-time access to information and streamline communication across different functions was identified as a key factor in enabling firms to respond more effectively to international market demands. The results of this study, which indicated a significant positive effect of IT infrastructure investment ($\beta = 0.314$, $p < 0.01$), corroborate these findings and highlight the necessity of IT investments for sustaining export competitiveness.

Similarly, the positive impact of process automation on export performance is consistent with the research conducted by Wang and Sun (2021), which highlighted that automation technologies significantly enhance production efficiency, reduce lead times, and ensure consistent product quality. The ability of automation to minimize human errors and optimize resource utilization was found to be particularly critical for firms competing in international markets. The results of this study, which demonstrated a positive and significant impact of process automation ($\beta = 0.279$, $p < 0.01$) on export performance, further validate the arguments presented by previous studies. The findings also align with the work of Zhao (2020), who emphasized that automation enables firms to scale production efficiently while maintaining product quality, thereby enhancing customer satisfaction and repeat business in export markets.

The finding that data-driven decision-making had the most substantial impact on export performance ($\beta = 0.387$, $p < 0.01$) is in agreement with the studies by Li and Chen (2021) and Sun and Zhao (2022), which highlighted the strategic importance of data analytics in identifying market opportunities, managing risks, and optimizing export strategies. Previous research has shown that firms that integrate big data analytics into their decision-making processes are better positioned to adapt to changing

international market conditions, optimize pricing strategies, and enhance customer satisfaction. The significant and positive relationship between data-driven decision-making and export performance in this study reinforces the argument that actionable insights derived from data analytics are critical for achieving sustained export growth.

The findings of this study also support the Dynamic Capabilities Theory proposed by Teece (2020), which emphasizes the need for firms to integrate, build, and reconfigure internal and external resources to respond rapidly to changes in the business environment. The significant impacts of IT infrastructure investment, process automation, and data-driven decision-making on export performance suggest that these strategies enhance a firm's dynamic capabilities to sense market opportunities, seize them effectively, and reconfigure resources to optimize export operations. The high explanatory power of the regression model ($R^2 = 0.521$) further suggests that digital transformation strategies are critical components of a firm's dynamic capabilities, supporting the theoretical framework of this study.

In contrast to some earlier studies that focused predominantly on the role of traditional resources such as financial and physical capital in enhancing export performance, this study highlights the increasing importance of digital capabilities as key drivers of export success in the current business environment. The emphasis on IT infrastructure, automation, and data-driven decision-making as critical resources aligns with the evolving perspective that competitive advantage in international markets increasingly depends on a firm's ability to leverage digital technologies effectively.

The findings of this study not only validate the proposed hypotheses but also contribute to the existing body of literature by demonstrating the significant and positive impacts of digital transformation strategies on export performance. The consistency of these results with previous research underscores the importance of adopting a comprehensive and integrated approach to digital transformation for manufacturing firms seeking to enhance their competitiveness in international markets. The alignment of these findings with the Dynamic Capabilities Theory further reinforces the theoretical framework of this study, providing a robust explanation of how digital transformation strategies influence export performance through enhanced dynamic capabilities.

4.3.3 Explanation of Unexpected Results

While the findings of this study were largely consistent with the proposed hypotheses and previous research, a few unexpected results emerged, warranting further discussion. One of the most notable was the relatively lower impact of process automation on export performance compared to IT infrastructure investment and data-driven decision-making. Although process automation had a significant and positive effect on export performance ($\beta = 0.279$, $p < 0.01$), the standardized beta coefficient was lower than anticipated, particularly in comparison to data-driven decision-making ($\beta = 0.387$) and IT infrastructure investment ($\beta = 0.314$). This result was unexpected given the extensive literature emphasizing the efficiency gains and error reductions associated with automation technologies in manufacturing firms (Wang & Sun, 2021).

One possible explanation for this result could be the current stage of automation adoption at Haifeng Machinery. Given that the company is a mid-sized manufacturing firm, it is plausible that the automation technologies implemented are still in the early phases, focusing primarily on production processes with limited integration into other critical functions such as logistics and quality management. The partial automation of processes may have restricted the full realization of efficiency gains and cost reductions, thereby diminishing its overall impact on export performance. Furthermore, the high costs and complexity associated with implementing comprehensive automation systems might have limited the scope and scale of automation initiatives, thereby reducing their effectiveness in driving export success.

Another unexpected result was the relatively higher impact of data-driven decision-making on export performance, which emerged as the most influential factor among the three independent variables. While previous research has highlighted the importance of data analytics for export strategies (Li & Chen, 2021), the magnitude of its effect ($\beta = 0.387$) was notably higher than initially anticipated. This finding suggests that Haifeng Machinery's ability to leverage big data analytics for strategic decision-making might be more advanced than its investments in IT infrastructure and automation. The substantial impact of data-driven decision-making could reflect a strategic prioritization of analytics capabilities to optimize market selection, pricing strategies, and risk management for international markets. It is also possible that the firm's management has been particularly proactive in adopting data analytics tools to compensate for limitations in other areas, such as automation.

Additionally, the high explanatory power of the regression model ($R^2 = 0.521$) was higher than expected, suggesting that IT infrastructure investment, process automation, and data-driven decision-making collectively explain a significant portion of the variance in export performance. This finding implies that digital transformation strategies play a more critical role in shaping export outcomes than previously recognized, reinforcing the argument that digital capabilities are increasingly central to achieving sustained competitive advantage in international markets. The relatively high R^2 value may also reflect the strategic alignment of digital transformation initiatives at Haifeng Machinery, where investments in IT systems, automation, and analytics are integrated coherently to support export objectives.

Another possible explanation for the unexpected strength of data-driven decision-making's impact could be the changing competitive dynamics in international markets, where customer-centric strategies based on data insights are becoming increasingly critical for success. The ability to leverage real-time customer data to customize products, optimize marketing efforts, and enhance customer satisfaction might have amplified the perceived benefits of data-driven decision-making, making it a more decisive factor in export performance than initially assumed. This finding suggests that firms that can rapidly translate data insights into actionable strategies may hold a substantial competitive edge in export markets.

The unexpected results of this study highlight the complex interplay between different digital transformation strategies and their differential impacts on export performance. The relatively lower effect of process automation and the higher impact of data-driven decision-making suggest that the effectiveness of digital transformation strategies may depend not only on the level of investment but also on the strategic prioritization and integration of these initiatives. These findings underscore the need for manufacturing firms to adopt a balanced and integrated approach to digital transformation, ensuring that investments in IT infrastructure, automation, and data analytics are aligned to support export strategies effectively. Understanding these unexpected results also provides valuable insights for future research, suggesting the need to further investigate the conditions under which different digital transformation strategies yield the most substantial benefits for export performance.

Chapter 5 Conclusion and Recommendation

5.1 Conclusion

This study was conducted to examine the impact of IT infrastructure investment, process automation, and data-driven decision-making on the export performance of Haifeng Machinery, an export-oriented manufacturing firm. The research was motivated by the increasing need for manufacturing firms to adopt digital transformation strategies to enhance their competitiveness in international markets. While previous studies have highlighted the significance of digital capabilities in supporting export performance, limited empirical research have explored the combined effects of IT infrastructure, automation, and data analytics on export outcomes in the context of Chinese manufacturing firms. Thus, this study aimed to fill this gap by investigating how these strategies influence export performance, guided by the Dynamic Capabilities Theory.

The research adopted a quantitative approach and utilized a structured survey questionnaire to collect data from 266 managerial-level employees of Haifeng Machinery, who were directly involved in the firm's digital transformation initiatives and export operations. The survey was distributed using a mixed-mode approach involving both online and in-person methods to maximize the response rate. The data were analyzed using descriptive and inferential statistics, including Pearson's correlation and multiple regression analyses, to test the hypotheses and determine the relationships between the independent variables and export performance. The reliability and validity of the survey instrument were confirmed through Cronbach's alpha and KMO tests, ensuring that the findings could be interpreted with a high degree of confidence.

The results of the analysis provided strong empirical support for all three hypotheses. The findings revealed that IT infrastructure investment had a significant positive impact on export performance, indicating that investments in IT systems significantly enhanced the firm's ability to manage supply chains efficiently, streamline information flows, and respond rapidly to international market demands. The positive impact of IT infrastructure investment on export performance highlighted the necessity for manufacturing firms to prioritize IT systems as a foundation for their digital transformation strategies.

Similarly, the results demonstrated that process automation had a significant positive effect on export performance, suggesting that the adoption of automation technologies in production and administrative processes was crucial for reducing lead times, minimizing errors, and ensuring consistent product quality. The ability to optimize production processes through automation enabled Haifeng Machinery to maintain a high level of efficiency and competitiveness in export markets, supporting the hypothesis that process automation is a critical driver of export success.

Among the three independent variables, data-driven decision-making emerged as the most influential factor affecting export performance. The findings indicated that the systematic use of data analytics for market analysis, risk management, and strategic decision-making significantly enhanced the firm's ability to compete effectively in international markets. The substantial impact of data-driven decision-making suggested that firms capable of translating data into actionable insights are better positioned to adapt to market dynamics, optimize resource allocation, and achieve sustained export growth. This result underscored the importance of integrating data analytics into the strategic management practices of export-oriented firms.

The overall explanatory power of the regression model ($R^2 = 0.521$) indicated that the combined effects of IT infrastructure investment, process automation, and data-driven decision-making explained approximately 52.1% of the variance in export performance. This relatively high explanatory power highlighted the strategic importance of digital transformation strategies in enhancing export performance and validated the study's conceptual framework based on the Dynamic Capabilities Theory. The significant F-value further confirmed that these strategies collectively play a critical role in enabling firms to reconfigure resources effectively in response to changing international market conditions.

The findings of this study suggest that IT infrastructure investment, process automation, and data-driven decision-making are essential components of a successful digital transformation strategy for export-oriented manufacturing firms. The positive impacts of these strategies on export performance underscore the need for firms to adopt an integrated approach to digital transformation, aligning IT investments, automation technologies, and analytics capabilities with their export objectives. By enhancing the firm's ability to sense, seize, and reconfigure resources effectively, these digital transformation strategies enable manufacturing firms to sustain their competitiveness

and achieve long-term export success. The insights gained from this study not only contribute to the existing body of literature on digital transformation and export performance but also provide practical recommendations for manufacturing firms seeking to optimize their export strategies through targeted investments in digital technologies.

5.2 Recommendation

Based on the findings of this study, it is recommended that Haifeng Machinery prioritize IT infrastructure investment as a foundational element of its digital transformation strategy. Enhancing IT systems not only improves real-time data access and communication but also supports the integration of other digital strategies such as process automation and data analytics. By investing in advanced IT infrastructure, the company can streamline its supply chain management and respond more effectively to international market demands. This strategic focus on IT infrastructure is likely to enhance operational efficiency and support sustainable export growth.

Haifeng Machinery should expand its adoption of process automation technologies to cover a broader range of production and administrative functions. Automation not only reduces lead times and errors but also ensures consistent product quality, which is crucial for maintaining customer satisfaction in export markets. The company should consider investing in robotics, automated quality control systems, and digital inventory management solutions to optimize production efficiency further. A comprehensive approach to automation can significantly reduce operational costs and enhance the firm's ability to meet diverse international customer requirements.

It is essential for Haifeng Machinery to continue strengthening its data-driven decision-making capabilities by investing in big data analytics tools and training programs for managerial staff. Effective use of data analytics can enable the company to identify emerging market trends, optimize pricing strategies, and enhance risk management for its export activities. By integrating data insights into its strategic decision-making processes, Haifeng Machinery can improve its ability to adapt to changing international market conditions and make informed decisions that support long-term export success. The company should also consider developing a centralized data management platform to facilitate seamless data sharing and analysis across different departments, enhancing the effectiveness of data-driven strategies.

A balanced investment in IT infrastructure, automation technologies, and data analytics capabilities is essential for Haifeng Machinery to sustain its export performance. Aligning these digital transformation strategies with the firm's export objectives can significantly enhance its competitiveness in international markets. The insights gained from this study provide a strategic roadmap for manufacturing firms seeking to optimize their digital transformation efforts to achieve sustained export growth.

5.3 Further Study

Future research should explore the impact of digital transformation strategies on export performance across different industries and geographic contexts to determine whether the findings of this study are generalizable. Comparative studies involving firms in diverse manufacturing sectors may provide deeper insights into how industry-specific factors influence the effectiveness of IT infrastructure, process automation, and data-driven decision-making on export outcomes.

Further studies could investigate the long-term impact of digital transformation strategies on export performance using a longitudinal approach. A longitudinal study might help capture the evolution of digital capabilities and their sustained effects on export growth over time, providing a more comprehensive understanding of the relationship between digital transformation and export success.

It is also recommended that future research should examine the role of external factors such as government policies, international trade regulations, and geopolitical risks in shaping the effectiveness of digital transformation strategies. Understanding the interplay between internal digital capabilities and external environmental factors could enhance the theoretical framework for analyzing export performance. Moreover, incorporating qualitative methods such as in-depth interviews with industry experts and managers may provide richer contextual insights into the challenges and best practices associated with implementing digital transformation strategies.

Lastly, further research should consider examining the cost-benefit analysis of different digital transformation strategies to assess their return on investment (ROI) for export-oriented firms. Such studies could provide practical guidelines for resource allocation and investment priorities, enabling firms to optimize their digital transformation initiatives more effectively. By addressing these areas, future research

may significantly contribute to advancing the understanding of the strategic role of digital transformation in enhancing export performance.

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Appendix

Dear Participant,

Thank you for taking the time to participate in this survey. This study aims to examine the impact of digital transformation strategies, specifically IT infrastructure investment, process automation, and data-driven decision-making, on the export performance of Haifeng Machinery. Your responses will provide valuable insights into how these strategies influence the firm's competitiveness in international markets.

Your participation is completely voluntary, and all information provided will be kept strictly confidential and used solely for academic purposes. The survey should take approximately **10–15 minutes** to complete. By proceeding, you consent to participate in this study.

Thank you for your support.

Please select or fill in the appropriate response for each question.

1 **Gender:**

- Male
- Female
- Prefer not to say

2 **Age:**

- 20–29 years
- 30–39 years
- 40–49 years
- 50 years and above

3 **Educational Level:**

- Bachelor’s Degree
- Master’s Degree
- Doctorate
- Other (please specify): _____

4 **Department:**

- IT
- Production
- Marketing
- Finance
- Other (please specify): _____

5 **Position Level:**

- Managerial
- Supervisory
- Operational Staff

6 **Years of Experience in the Company:**

- Less than 2 years
- 2–5 years
- 6–10 years
- More than 10 years

Please indicate the extent to which you agree or disagree with the following statements by selecting one option per question. **Scale:** 1 = Strongly Disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly Agree

7 Our company has significantly invested in upgrading IT systems to support international operations.

- 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

8 The current IT infrastructure effectively facilitates communication between different departments involved in export activities.

- 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

9 Our IT systems provide real-time access to data that enhances decision-making for export strategies.

◦ 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

10 The IT infrastructure in our company is adequate for managing complex international supply chains.

• 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

11 Investment in IT infrastructure has improved the efficiency of our export logistics and documentation processes.

• 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

12 Our company has automated key production processes to reduce lead times for export orders.

• 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

13 The use of automation has minimized errors and improved product quality for international markets.

• 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

14 Automated systems have enhanced our ability to respond quickly to changes in international demand.

• 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

15 Process automation has reduced operational costs associated with export activities.

• 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

16 The integration of automation systems has improved the coordination of our export supply chain.

• 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

17 Our company relies on data analytics to make decisions regarding export market selection.

• 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

18 Data analysis has helped us identify customer preferences in international markets more accurately.

- 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

19 Decisions on export pricing strategies are primarily based on data insights.

- 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

20 Our management uses data analytics to assess and manage risks in international markets.

- 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

21 Data-driven decision-making has significantly improved our export performance.

- 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

22 Our company has experienced significant growth in export sales over the past three years.

- 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

23 Customer satisfaction with our exported products has improved significantly.

- 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

24 Our market share in international markets has expanded as a result of digital transformation strategies.

- 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

25 The profitability from export sales has increased due to effective use of digital technologies.

- 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

26 Overall, our export performance has been significantly enhanced by our digital transformation efforts.

- 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5

Thank you for completing this survey! Your responses are greatly appreciated and will contribute significantly to the understanding of how digital transformation strategies can enhance export performance in manufacturing firms. If you have any questions or would like to receive a summary of the research findings, please feel free to contact the researcher.

Have a great day!

บันทึกข้อความ

ส่วนงาน บัณฑิตวิทยาลัย สาขาบริหารธุรกิจ โทร.ภายใน 5336

ที่ มส 0210.01 / 0230 วันที่ 21 สิงหาคม 2568

เรื่อง ขออนุมัติสำเร็จการศึกษาประจำปีการศึกษา 2567

เรียน ท่านอธิการบดี

<u>เรื่องเดิม</u> นักศึกษาหลักสูตรบริหารธุรกิจมหาบัณฑิต MR. GUO CHUANFENG รหัสนักศึกษา 6317195803 ได้ศึกษารายวิชาครบถ้วนสมบูรณ์ และได้ปฏิบัติตามเกณฑ์สำเร็จการศึกษาตามที่มหาวิทยาลัยสยาม กำหนดเรียบร้อยแล้ว ทั้งนี้พร้อมยื่นเรื่องขออนุมัติสำเร็จการศึกษา โดยมีรายละเอียดดังต่อไปนี้

1. ผ่านการตรวจสอบความซ้ำซ้อนด้วยโปรแกรม Grammarly เมื่อวันที่ 8 กรกฎาคม 2568
2. ผ่านการสอบประมวลความรู้ข้อเขียน เมื่อวันที่ 26 เมษายน 2568
3. ผ่านการสอบปากเปล่าขั้นสุดท้ายวิชาการค้นคว้าอิสระ เมื่อวันที่ 8 พฤษภาคม 2568
4. ผ่านเกณฑ์มาตรฐานความรู้ภาษาอังกฤษ Oxford Placement Test score 57 CEFR B1 เมื่อวันที่ 8 พฤษภาคม 2568
5. ผ่านการประชุมวิชาการระดับนานาชาติ at the International Institute of Academic Research & Publications In association with : Glovento Conference on " Social Sciences Research & Business Management" Subject: "A Case Study of the Impact of Digital Transformation Strategies on Export Performance of Haifeng Machinery" on May 27, 2025 at , Tokyo , Japan

<u>เรื่องพิจารณา</u> เพื่อพิจารณาเข้าประชุมสภามหาวิทยาลัย และอนุมัตินักศึกษาสำเร็จการศึกษา ประจำปีการศึกษา 2567 ดังรายละเอียดเอกสารประกอบการสำเร็จการศึกษาตามที่แนบมา

จึงเรียนมาเพื่อพิจารณาอนุมัติ และให้ดำเนินการต่อไป

(รศ.ดร.จอมพงศ์ มงคลวนิช)
คณบดีบัณฑิตวิทยาลัย สาขาบริหารธุรกิจ

สำนักงานอธิการบดี
เอกสารฉบับนี้สามารถสืบค้นหลดเข้าฐานข้อมูลได้
ลงชื่อ
วันที่ 28 ส.ค. 68