

Factors Influencing the Firm Performance of Digital Merchandising Businesses in Thailand

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Abstract

Thailand's national strategy focuses on making the country more competitive by helping modern entrepreneurs succeed both within the country and internationally. This research aims for development a new framework that shows how critical elements like market capabilities, IT capabilities, digitalization, and innovation contribute to the success of digital businesses in Thailand. The study uses a mixed method research, combining an integration of qualitative and quantitative techniques are utilized. Within qualitative research, we gathering insights from 20 experts, by using e-Rough Set Delphi method. In quantitative research, The research was based on a collection of 611 valid datasets, which were gathered from digital merchandising business owners in Thailand via online questionnaires. The results indicate that market capabilities, IT capabilities, digitalization, and innovation all have an influential and meaningful effect on business performance. Research also emphasizes importance of investing in IT infrastructure, adopting advanced IT strategies, and improving market capabilities to stay competitive in the fast-changing digital market. The insights from this study are valuable for strengthening the digital economy, as adopting digital technologies and innovations can help businesses grow sustainably and positively impact the overall economy and society.

Keywords: *Firm Performance, IT Capability, Digitalization, Marketing Capability.*

Introduction

The upcoming years mark a pivotal era of digital transformation, a period when digital technologies are set to infiltrate sectors traditionally dominated by analog processes. Public services, finance, and healthcare are progressively migrating online, showcasing developments like the initial prototypes of electronic passports and digital payment systems that operate independently of traditional banks and physical currency. This digitalization represents a fundamental shift, aiming to boost productivity and profitability by transitioning from material to digital prowess.

Amidst this transformation, developing nations face formidable challenges such as integrating the principles the Fourth Industrial Revolution is reshaping economies with advanced technologies and innovation, invigorating small and medium enterprises are evolving and undergoing transformation monopolistic firms SMEs are transforming into competitors, globally oriented entities. To tackle these issues, strategic initiatives are necessary, including economic empowerment, enhancing regional connectivity through digital infrastructure, and promptly recognizing global digital trends (Doroshenko et al., 2023).

Another crucial aspect involves proactive business owners who are adept at identifying errors and swiftly rectifying operational issues, thus averting fraud, poor customer service, and potential financial mismanagement. By employing advanced tracking software and establishing strict control measures, these owners preemptively mitigate risks to their business operations. This approach—Proactive Error Blocking (PEB)—encompasses identifying potential setbacks early and crafting preemptive solutions, essentially forecasting and preparing for future business scenarios and developments (Muhammad et al., 2022).

Globally, nations like Australia, the U.S., the UK, South Korea, India, and China are emphasizing innovation strategies to fuel domestic economic growth. Thailand, too, has introduced policies aimed at transforming its economic landscape into a value-based and innovation-driven framework. As digital marketing, globalization, and evolving consumer expectations converge, the significance of robust marketing capabilities as a driving force behind firm performance has become more pronounced than ever (Christopher et al., 2018).

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Technological advancements, shifts in global trade, and the repercussions of the COVID-19 pandemic present Southeast Asia with a unique opportunity to expand its digital economy and hasten economic recovery. The rapid evolution of market dynamics, underscored by the proliferation of online platforms and mobile applications, offers unprecedented convenience and accessibility to a broad array of products and services, thereby intensifying competition and fostering new market developments (Nimisha, 2020).

In Thailand, consumer behaviors are diversifying, and the pace of change is accelerating with the broader application of digital technologies. E-commerce extensions on the internet are enhancing consumer convenience, while the advent of virtual and augmented reality advancements is bolstering confidence within the digital era reliability pertaining to online shopping trends. Moreover, as digital operations expand between businesses, there is a noticeable increase in sectors like product transportation and IT services. With the demographic shift towards an aging population, sales channels for products and services are transitioning from traditional retail outlets to online platforms, facilitated by digital technologies. In response to these rapid changes in consumer preferences, businesses must continue to differentiate through uniqueness and convenience (Ozawa et al., 2022).

Within the framework of national strategic issues on building competitiveness (Section 4.5), there is a concerted effort to stimulate the economy by fostering modern entrepreneurs, including those in startups, community, and social enterprises, as well as farmers. The goal is to cultivate entrepreneurs who are adept in production and sales, with a strong service orientation, enabling them to thrive both domestically and internationally. This initiative emphasizes three key areas of innovation: in business models, goods and offerings, along with production as well as delivery procedures, aiming to bolster the nation's trading capabilities (National Strategy 2018 – 2037, 2018).

Given the importance of information technology advancements, marketing, and innovation breakthroughs in driving the performance outcomes of digital commerce businesses, it is surprising that few studies have examined this area in Thailand. This gap has sparked the researcher's curiosity in investigating the connection between the potential and outcomes of digital commerce businesses in Thailand, aiming to generate insights that will guide the development and growth of these enterprises.

Literature Review

Market Orientation and Market Capability

Several studies have demonstrated the favorable effect of Market Orientation strategies (MO) on Market Capability (MC). For example, Joensuu-Salo et al., (2018) investigated the dynamic interaction between market-driven strategies, marketing proficiency, and embracing digital technologies within organizational frameworks globally operating SMEs. Their research highlighted that firms with strong market orientation were better equipped to leverage their marketing capabilities, particularly in digital environments, leading to enhanced market capability and improved performance outcomes. Similarly, Liang et al., (2022) examined the relationship between organizational effectiveness and promotional strategies data analysis within the Chinese market. Their findings suggested that a strong market orientation enabled firms to better utilize marketing analytics, which enhances their responsiveness to market demands and ultimately improves market capability. Market capability (MC) involves the company's capacity to effectively adjust to market trends and demands. This capability is crucial for firms operating in dynamic and competitive environments. Previous research indicates that MO positively influences MC as it helps firms to be more responsive and adaptable to dynamic market dynamics (Knight & Cavusgil, 2004). For this reason, the present study focuses on the synergy between MO and MC, which are hypothesized to positively impact firm performance. The impact of MO on MC has proven to be extensively studied in existing research. MO enables firms to enhance their market capability by providing tools and systems to gather, process, and distribute market information effectively (Vorhies & Morgan, 2005).

Hypothesis 1 (H1). Market orientation exerts a beneficial impact on Market capability.

IT Infrastructure as well as IT Capability

Numerous studies have explored the linking IT infrastructure to IT capability, emphasizing how robust IT infrastructure strengthens an organization's capacity toward develop utilize and implement IT capabilities effectively. For instance, Nwankpa and Roumani (2016) discussed the contribution to maximize IT capability playing a crucial part in shaping digital transformation and organizational performance, emphasizing that a strong IT infrastructure is foundational for these capabilities. Similarly, Elazhary et al., (2022) examined the effect of IT governance in enhancing corporate flexibility, emphasizing the function of IT infrastructure in mitigating market turbulence. Their study highlighted that IT infrastructure played a vital function in empowering firms to adjust quickly to shifting market dynamics. Fink and Neumann (2007) further explored the mediating role of IT infrastructure competencies in driving efficiency in achieving organizational agility. They argued that IT personnel capabilities, when supported by a strong IT infrastructure, significantly enhanced overall IT capability within firms. Kala et al., (2019) presented an example from a developing nation, illustrating how IT capabilities, supported by robust IT infrastructure significantly contributes to enhancing firm performance. Their findings suggested that IT infrastructure was a key enabler of effective IT capability, particularly in resource-constrained environments. Awamleh and Ertugan (2021) investigate the connection between IT the synergy among capabilities, organizational insight, and strategic competitiveness. Their study highlighted the significance of IT infrastructure in developing and sustaining IT capabilities that lead to gaining a competitive edge. Dahiya and Mathew (2018) conducted a data-driven investigation on the effectiveness of IT infrastructure and its impact on eGovernment system performance, finding that a well-developed IT infrastructure is essential for the successful implementation and performance of eGovernment systems. Wirattanapornkul and Wonglorsaichon (2013) examined the influence of IT capabilities and the alignment of business-IT strategies on enhancing organizational flexibility. Their study determined that IT infrastructure served as a critical key element in aligning IT capabilities with business strategies to enhance organizational agility. IT capability denotes a company's capacity to capitalize on and implement technological assets in conjunction in conjunction with other assets, assets and competencies. This involves managing and leveraging technology in alignment with business strategies to enhance organizational agility and innovation (Lu & Ramamurthy, 2011). Drawing from the theory, we put forward the proposed hypothesis:

Hypothesis 2 (H2). IT Infrastructure exerts favorable effect on IT Capability.

IT Business Spanning and IT Capability

Studies have demonstrated that IT business spanning is essential in enhancing IT capability within organizations. For instance, Nwankpa and Roumani (2016) discussed how IT capability drove advancing digital transformation and improved firm performance, with IT business spanning being a key component in integrating IT with business strategies. Similarly, Elazhary et al., (2022) highlighted the significance of IT governance in fostering organizational agility, where effective IT business spanning helped mitigate market turbulence and align IT capabilities with organizational goals. Awamleh and Ertugan (2021) examined the connection between IT capabilities and competitive edge, emphasizing that information technology business spanning was essential for leveraging IT to enhance organizational intelligence and gain a competitive edge. Wirattanapornkul and Wonglorsaichon (2013) explored how integrating IT capabilities with business strategies, facilitated by IT business spanning, improved business outcomes agility. Their findings suggested that a cohesive IT-business alignment significantly contributed to improved decision-making processes and organizational agility.

According to recent studies, IT Business Spanning positively impacts IT Capability, enhancing organizational performance and agility by enabling a cohesive and strategically aligned IT environment (Saputro et al. 2022).

Hypothesis 3 (H3). IT business spanning positively influences the field of Information Technology capability.

IT Proactive Stance and IT Capability

Research has demonstrated that an IT proactive stance is crucial in enhancing IT capability. For instance, Nwankpa and Roumani (2016) highlighted the importance of IT capability in digital transformation, underscoring how a proactive IT approach enabled firms to leverage technology effectively to improve operating results. Similarly, Elazhary et al., (2022) emphasized the function of IT governance in organizational flexibility, noting that a proactive IT stance could help firms navigate market turbulence by continuously adapting their IT capabilities. Awamleh and Ertugan (2021) further explored the connection between IT capabilities, organizational intelligence, and achieving a competitive edge, suggesting that firms with a proactive IT stance were better equipped to align IT with strategic goals. Moreover, Wirattanapornkul and Wonglorsaichon (2013) discussed the impact of information technology competencies and strategic alignment in fostering enterprise adaptability, arguing that a proactive stance in IT management facilitated better alignment between IT and business strategies, thereby enhancing agility. Research has shown that a proactive IT stance positively impacts IT capability. For example, a study by Bharadwaj (2000) found that firms with a proactive IT strategy were more likely to develop advanced IT capabilities, which consequently led to superior firm performance (Bharadwaj, 2000). Another study highlighted that proactive IT management practices, such as regular technology assessments and strategic IT planning, significantly enhanced an organization's capacity to innovate and adjust to technological disruptions (Chen et al., 2015). By fostering a proactive IT stance, organizations can ensure that they remain at the forefront of technological advancements, continuously improving their IT capabilities to support strategic business objectives. This strategy boosts operational efficiency while fostering innovation and competitiveness in the marketplace.

Hypothesis 4 (H4). IT proactive stance positively influences the domain of Information Technology capability.

Market Capability and Firm Performance

Various researches have established the notable effect of market competency on organizational performance. For instance, Joensuu-Salo et al., (2018) explored the interaction among market orientations, marketing proficiency, and digital transformation in SMEs, finding that strong market capability is crucial for improving firm performance, particularly in internationalized contexts. Homburg and Wielgos (2022) further investigated the significance on digital marketing capabilities in enhancing firm performance. Their study emphasizes the significance of digital marketing in enhancing market capability, which directly contributes to improved firm performance metrics. Liu (2022) investigated the effect of digital marketing skills and their influence on distributed ledger technology innovation's impact on business performance and organizational behavior. This study demonstrated that organizations leveraging advanced digital marketing capabilities could significantly enhance their market capability, leading to better firm performance outcomes. Feng et al., (2015) discussed the role of marketing department power in driving firm performance. They argued that a strong marketing department, empowered by market capability, was essential for achieving superior performance. Li et al., (2022) provided evidence from the COVID-19 pandemic, showing that digital technology-enabled dynamic capabilities possessed a positive influence on firm performance, with market ability playing a key role in this relationship. Cacciolatti and Lee (2016) revisited the connection among marketing capabilities and organizational outcome, highlighting the influencing role of market orientation, marketing tactics, and corporate influence. Their findings suggested that market capability was a critical factor in this dynamic. Liang et al., (2022) examined firm performance and the function of marketing analytics within the Chinese market context, emphasizing the importance of market capability in leveraging analytics to enhance performance. Verhoef and Bijmolt (2019) provided a framework for understanding digital business models, demonstrating how market capability was central to successfully navigating digital transformations and achieving firm performance goals. Chinakidzwa and Phiri (2020) studied the impact of digital marketing competencies on the marketplace dynamics effectiveness in Zimbabwean SMEs, showing that enhanced market capability led to improved firm performance in emerging markets. Research has shown that marketing capability significantly impacts firm performance across various industries. For example, an investigation on the impact into online marketing innovations and its influence on organizational performance outcomes highlighted that marketing proficiency acted as an intermediary in the relationship of online marketing efforts and firm performance. This

mediation leads to improved customer acquisition, retention, and overall firm performance. Specifically, companies that effectively leverage digital marketing innovations can enhance their market capabilities, which subsequently leads to better firm performance metrics, including profitability and customer engagement (Jung & Shegai, 2023; Christian et al., 2022). Drawing from the theory, this study suggests the subsequent the subsequent hypothesis:

Hypothesis 5 (H5). Market capability exerts a favorable impact on corporate performance.

IT Capability and Firm Performance

Research studies have repeatedly demonstrated the profound effect of IT capability on organizational effectiveness. For instance, Nwankpa and Roumani (2016) discussed how IT capability supports technological evolution and enhances firm performance by aligning IT strategies with organizational objectives. Ilmudeen and Bao (2018) provided insights from China, highlighting the intermediary role of managing information technology in improving firm performance. Their study emphasized the importance of effective IT management in leveraging IT capability in attaining exceptional results in performance. Kala et al., (2019) explored the connection between IT capabilities, organizational performance, and the intermediary role of data Systems Risk Management (ISRM) in a developing country context. Their findings suggested that robust IT capabilities were crucial for mitigating risks and improving overall firm performance. Recent study highlights the crucial function that IT capabilities play in facilitating corporate flexibility and adaptability, especially within the structure of small and medium-sized enterprises (SMEs). These competencies empower organizations to not just react to immediate market changes but also to foresee and adapt to future challenges. As a result, IT capabilities significantly contribute to improving firm performance by ensuring that companies can remain competitive in an increasingly volatile business environment (Hoa et al., 2023). Furthermore, the capacity to incorporate IT capabilities alongside other organizational resources is essential for developing dynamic capabilities, which are vital for long-term success. These capabilities allow firms to continuously innovate and optimize their operations, leading to sustained competitive advantage. In this way, IT capabilities are not just a support function but a strategic resource capable of fueling business growth and resilience. By developing and enhancing IT capabilities, firms can achieve sustained competitive advantages, improve operational performance, and drive innovation. This strategic approach to IT management ensures that technology investments are aligned with business objectives and contribute to overall firm success. Drawing from the theory, his study presents the following hypothesis:

Hypothesis 6 (H6). IT capability possesses a beneficial effect on organizational performance.

IT Capability and Digitalization

A variety of researches have shown demonstrated the significant impact of IT capability on digitalization within organizations. For instance, Nwankpa and Roumani (2016) discussed the role of IT capability in facilitating digital transformation and enhancing firm performance by aligning IT strategies with business goals. Thuy (2021) provided insights from businesses in Vietnam, showing how strategy, organizational culture, human resources, and IT capability collectively drove digital transformation and improved organizational performance. This research highlighted the significance of a comprehensive approach to digitalization, supported by strong IT capabilities. A study by Samuel Fosso Wamba et al., (2017) emphasized the critical function of IT capabilities in facilitating digital transformation in organizations, finding that IT capabilities were crucial for better resource management and strategic alignment, which in turn enhanced organizational agility and innovation. These capabilities are essential not only for enabling digitalization but also for achieving superior firm performance, as they improve customer acquisition, retention, and overall business outcomes (Wamba et al., 2017). The synergy between IT capability and digitalization allows firms to leverage digital tools and platforms, enhancing their overall technological infrastructure and enabling continuous innovation. This alignment ensures that firms maintain a strong foothold in the ever-changing digital environment. Expanding upon the theory, we put forward the following hypothesis under consideration is:

Hypothesis 7 (H7). IT capability has a constructive impact on digitalization.

Digitalization and Innovation

A wealth of studies has established the beneficial effect of digitalization on innovation within organizations. For instance, Nwankpa and Roumani (2016) discussed how IT capability supports digital transformation and enhances firm performance, which in turn fostered innovation by aligning digital strategies with business objectives. Boonmalert and Phoothong (2021) presented a causal influence model that explored the linkage between innovation and digital marketing within the context of SME performance in Thailand. Their findings underlined the critical significance of digitalization in driving creativity and improving business results. Zhang et al., (2021) investigated the effect of technological advancements transformation on organizational adaptability, using results from PLS-SEM and FSQCA analyses. Their study emphasized that digitalization not only enhanced resilience but also significantly boosted innovation within firms by enabling a flexible and adaptive business environment. Digitalization entails the incorporation of digital technologies across different corporate workflows, which can significantly enhance a firm's innovation capabilities. This process enables businesses to streamline operations, improve data management, and promote a culture of ongoing enhancement and creativity (Masoud & Basahel, 2023). As stated by the theory, the subsequent hypothesis is presented.

Hypothesis 8 (H8). Digitalization exerts a favorable impact on innovation.

Digitalization and Firm Performance

A significant collection of literature has demonstrated the beneficial effects of digitalization on organizational effectiveness. For instance: Nwankpa and Roumani (2016) discussed how IT capability supports digital transformation, which directly enhanced firm performance through improved operational efficiency and strategic alignment. Verhoef and Bijmolt (2019) provided a framework for understanding digital business models, showing how digitalization enhanced firm performance by allowing businesses to adjust to the rapidly changing digital environment and innovate more effectively. Heredia et al., (2022) explored the ways digital competencies influence firm performance, highlighting the intermediary the significance of advanced technological competencies, especially within the framework of the "new normal" post-pandemic environment. Rosamartina et al. (2022) examined the link among digital reputation and corporate performance, showing that firms with strong digital reputations, especially those aligned with sustainable development goals, experience improved performance outcomes. Yang and Yee (2022) examined the effect of digitalizing processes initiatives on organizational effectiveness, highlighting the significance of cultivating dynamic capabilities to adapt to digital advancements and sustain a competitive edge. Astuti et al., (2020) examined the effect of innovation as well as digital technology on SME performance in Indonesia, showing how digitalization drove business growth and improved competitive positioning. Nuseir and Aljumah (2020) investigated the influence of the role of digital marketing in business effectiveness, moderated by environmental factors within SMEs in the UAE, revealing the beneficial effect of digitalization on business performance. Doreen et al., (2019) investigated the influence of digital marketing on the effectiveness of micro and small, as well as medium-sized enterprises (MSMEs) in Kenya, demonstrating how digitalization enabled enterprises to attain wider markets and enhance performance. Hachimi et al., (2021) analyzed the impact of digital marketing on organizational effectiveness within enterprises operating within Morocco's Northern Region, illustrating the essential role of digitalization in gaining a competitive edge. Boonmalert and Phoothong (2021) presented a cause-and-effect model examining how innovation and online marketing impact the performance of SMEs in Thailand, showing how digitalization and innovation worked together to boost firm performance. Chinakidzwa and Phiri (2020) analyzed the influence of digital marketing capabilities on the market dynamics effectiveness of SMEs Zimbabwe, indicating the significant role digitalization played in enhancing competitiveness. Thuy (2021) provided insights derived from Vietnamese businesses, demonstrating how approaches, organizational culture, human resources, and IT capability collectively drove technological advancement, which in turn enhanced firm performance. Wang et al., (2020) explored the multidimensional perspective of information systems capability within the structure of Chinese small and medium-sized enterprises (SMEs), showing how digital enterprises strategies supported by IT capabilities led

to improved firm performance. Digitalization involves embedding digital technologies into different facets of business operations, significantly enhancing firm performance by improving efficiency, enabling innovation, and fostering better customer experiences (Masoud & Basahel, 2023). The adoption of digital technologies can revolutionize how organizations operate, making procedures more streamlined and data driven. The integration of digital technologies helps firms to collect and analyze data more efficiently, supporting strategic decisions that drive performance improvements (Masoud & Basahel, 2023). According to the theory, the research proposes the proposed hypothesis:

Hypothesis 9 (H9). Digitalization possesses a beneficial effect on company effectiveness.

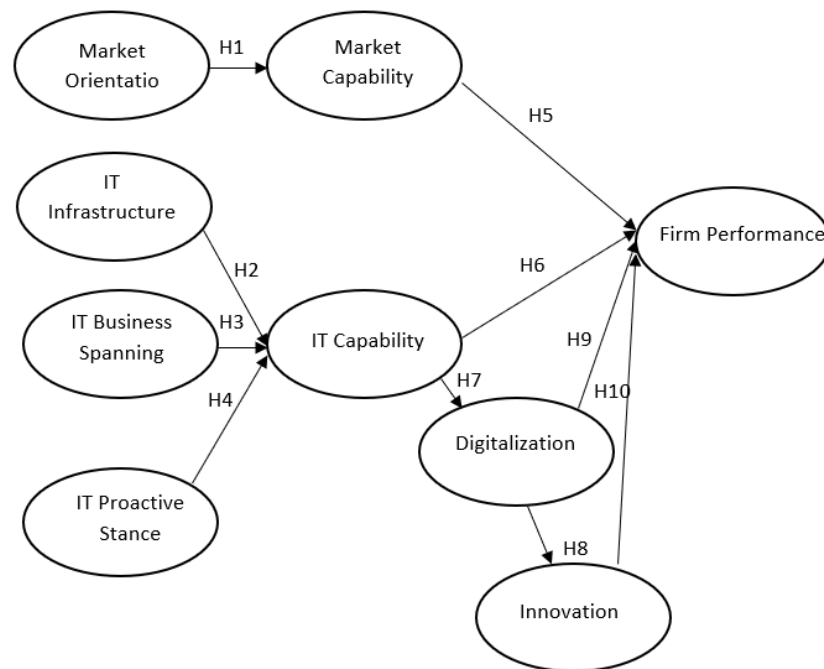
Innovation as well as Firm Performance

Numerous researches have emphasized the significant function of innovation in improving firm performance across different sectors and environments. For instance, Nwankpa and Roumani (2016) discussed how IT competence and digital evolution contributed to firm performance by enabling continuous innovation. Similarly, Lin et al., (2020) explored the impact of technological innovations in a business-to-business (B2B) environment, emphasizing the importance of ethical leadership in driving firm performance. Kijkasiwat and Phuensane (2020) investigated the moderating and intermediary roles of organizational scale and SME finance within the relationship between innovation and organizational effectiveness, demonstrating that tailored innovation strategies could lead to improved outcomes. Astuti et al., (2020) analyzed how innovation and digital technology attributes impact SME effectiveness in Indonesia, providing evidence of the positive effects of technological advancement on business success. Schulze et al., (2022) explored the effect of proactive competitor strategies focus on innovation and organizational performance, showing how market-oriented strategies could enhance innovation-driven growth. Le and Ikram (2022) provided insights into how sustainable innovation and organizational competitiveness contribute to improved firm performance the small and medium-sized enterprise (SME) sector in Vietnam. Hermundsdottir and Aspelund (2022) discussed the effects of sustainability strategies and environmental and social innovations on organizational performance, particularly within the framework of competitive sustainable production. Boonmalert and Phoothong (2021) presented a causal model examining the influence of innovation and digital marketing on SME performance in Thailand, emphasizing the synergy between these factors in driving business success. Pramuki and Kusumawati (2021) explored the impact of product innovation, digital marketing, along with competitive positioning on the marketing outcomes of SMEs in Bali, highlighting the essential function of innovation in enhancing market outcomes. Chinakidzwa and Phiri (2020) explored the impact of digital marketing capabilities in the marketplace results within Zimbabwe, further supporting the importance of innovation in achieving competitive advantage. Afriyie et al., (2019) studied the relationship between innovation and marketing outcomes in SMEs, emphasizing the influencing effect of transformational leadership. Nuseir and Aljumah (2020) examined the influence the function of digital marketing in Organizational performance within Small and Medium Enterprises (SMEs) in UAE, highlighting how environmental factors moderated the linkage between innovation and performance. Numerous researches have consistently found that innovation positively impacted firm performance. For instance, a systematic review by Al Naqbia et al., (2020) highlighted where innovation played a crucial role in enhancing firm performance across various dimensions, including profitability, market share, and overall organizational growth. The review consolidates findings from numerous studies published between 2010 and 2020, demonstrating that firms investing in innovation strategies see significant improvements in their competitive positioning and market valuation. According to the theory, the following subsequent is proposed.

Hypothesis 10 (H10). Innovation exerts a favorable effect on organizational effectiveness.

Research model

The independent, dependent, and mediating variables in the current research include as illustrated in Figure 1.



Drawing from the existing study and an extensive analysis of the elements influencing the performance of digital merchandising businesses, we developed hypotheses to explore the connections among these elements. Table 1 presents the proposed hypotheses that were examined and examined within our structural equation model.

Table 1. Hypotheses

Hypotheses	
H1	Market Orientation (MO) has a beneficial impact on Market Capability (MC).
H2	IT Infrastructure (II) has a beneficial effect on IT Capability (IC).
H3	IT Business Spanning (IB) has a beneficial impact on IT Capability (IC).
H4	IT Proactive Stance (IP) exerts a positive influence on IT Capability (IC).
H5	Market Capability (MC) holds a beneficial effect on Firm Performance (FP).
H6	IT Capability (IC) holds a beneficial effect on Firm Performance (FP).
H7	IT Capability (IC) holds a beneficial effect on Digitalization (DI).
H8	Digitalization (DI) holds a beneficial effect on Innovation (IN).
H9	Digitalization (DI) holds a beneficial impact on Firm Performance (FP).
H10	Innovation (IN) holds a beneficial impact on Firm Performance (FP).

Materials and Methods

This research used a mixed methods of both qualitative and quantitative research which received the Rangsit University Research Ethics Committee Ethical Approval (Reference No: RSUERB2023-144). The procedures for evaluating both qualitative and quantitative data in the study's findings are outlined below in Table 2.

Table 2. Step of research

Step	Details
Step 1: Qualitative Research utilizing the e-Rough Set Delphi Method.	
1. Define the issue	Review and combine previous studies and research to the topic.
2. Designate Experts	Select 20 specialists in digital merchandising business
- Group 1	7 Government officials related to digital merchandising business.
- Group 2	6 University professors who teach business administration.
- Group 3	7 Digital merchandising business owners.
3. Elicit Opinions	Create an online survey to be presented to 20 experts across three phases.
- Round 1	Develop an open-ended online survey
- Round 2	Design a closed-ended online survey by extracting and analyzing the answers from Round 1, then evaluate the suitability and possibility according to a 7-point Likert Scale.
- Round 3	Confirm the answers in round 2.
4. Summarize Results	Summarize the consensus of 20 experts used the Rough Set theory.
Step 2: Quantitative Research	
1. Create and Distribute Questionnaire	Create an online questionnaire based on opinion from experts in Step 1. Distribute the online questionnaire to collect data from 611 people of digital merchandising business owners in Thailand who have been operating their businesses for at least 2 years.
2. Summarize Data	Analyze the data and provide an overview of the results from the quantitative study.

Qualitative research employing the e-Rough Set Delphi approach.

Divided the sample into 3 groups which consist of 7 government officials related to digital merchandising business, 6 university professors teaching business administration and 7 digital merchandising business owners. A total of 20 experts were selected, following the criteria of Nuamthong and Pankham (2023), who suggested that a group size of 17-21 experts would result in an error rate of only 0.02. Data were collected in 3 rounds: the 1st round through an open-ended online questionnaire, followed by expert opinions used to create a structured online questionnaire with a 7-point Likert scale for rounds 2 and 3. The questionnaires were distributed by email from November 2023 to February 2024. The process of obtaining expert opinions was conducted using Rough Set theory, as detailed in Table 3.

Table 3. Expert consensus derived using Rough Set theory

Step	Details
Start	Set properties number of features and the results of the properties of the scrap.
Step 1	Displays the decision table: Lower Approximation and Upper Approximation.
Step 2	Condition 1: If suitability ≥ 5 and possibility ≥ 5 (Lower) let decision=1 (Agree)
Step 3	Condition 2: If suitability ≤ 4 and possibility ≤ 4 (Upper) let decision = 0 (Disagree) Condition 3: Other than this (Upper), let decision = 2 (Disagree)
Step 4	Calculate the quality value of the lower zone (QL) approximation.
Step 5	Check QL: 1. If $QL \geq 0.75$ --> get agreement from experts -- > display QL results. 2. If $QL < 0.75$ --> did not receive agreement from experts
End	

Quantitative research

The sample group consisted of 611 digital merchandising business owners residing in Thailand, all of whom contain a minimum of 2 years of expertise in their field. This sample size adheres to Kline's criteria (2015), which suggested that the appropriate the number of participants should be 10-20 times the count of observed variables. In this research, with 47 observed variables, the required sample size was no less than 470 participants. Data were gathered employing a web-based survey employing a 7-point Likert scale spanning from March to May 2024. Structural equation modeling (SEM) was utilized for analyzing the information.

Results*Result of qualitative research***Table 4. Expert consensus assessment using Rough Set theory**

Statement	QL	Consensus Result
IT Infrastructure		
1. You have an efficient computer and network system.	0.90	Achieved
2. You manage the provision of information database services satisfactorily.	0.95	Achieved
3. You provide fast internet network services.	0.95	Achieved

Statement	QL	Consensus Result
IT Business Spanning		
1. You consistently collaborate in strategic planning between the IT team and relevant departments.	0.85	Achieved
2. Your management understands the importance of investing in information systems.	0.90	Achieved
3. Your IT management regularly participates in business planning meetings.	0.85	Achieved
IT Proactive Stance		
1. Your IT team is capable of testing new IT systems when opportunities arise.	0.90	Achieved
2. Your IT team actively proposes new approaches for using information systems to improve the organization's future operations.	0.95	Achieved
3. Your IT team receives feedback on the effectiveness of the IT systems used in your business and can present this information to management for future planning.	0.90	Achieved
Digitalization		
1. You consistently use digital marketing strategies to enhance your business's competitive advantage.	0.95	Achieved
2. You use social media effectively to increase profitability.	0.95	Achieved
3. You use digital marketing strategies to expand your customer base.	0.80	Achieved
IT Capability		
1. Your IT staff is consistently capable of adopting new technologies.	0.90	Achieved
2. Your IT staff is capable of effectively implementing business projects.	0.90	Achieved
3. Your IT staff should also have knowledge and understanding of the work of other departments.	0.90	Achieved
Innovation		
1. You consistently improve business processes.	0.85	Achieved
2. You consistently use new social media platforms as tools for market expansion.	0.90	Achieved
3. You consistently implement new methods to solve business problems	0.90	Achieved
Market Orientation		
1. You ensure a deep understanding of customer needs to remain competitive.	0.95	Achieved
2. You frequently conduct activities to boost sales through regular customer interaction.	0.90	Achieved
3. You always prioritize the importance of customer service.	0.95	Achieved
Market capability		
1. You have the capability to quickly develop and bring new products or services to market.	0.95	Achieved
2. You have the ability to set prices that quickly respond to customer needs.	0.95	Achieved
3. You have the ability to increase distribution channels effectively.	0.90	Achieved
Firm Performance		
1. Your profit has increased annually.	0.80	Achieved
2. Your sales revenue has increased consistently.	0.80	Achieved
3. Your customers are increasingly satisfied with your services.	0.90	Achieved

Result of quantitative research

Table 5. Sample characteristics

Classification	Item type	(%) Respondents
1	Product type	
	Consumer products	51.8
	Industrial products	47.9
	Other	0.3
2	Number of employees in the business	
	1-5 people	35.0
	6-50 people	53.6
	51-200 people	9.3
	201 people or more	2.1
3	Period of doing enterprise	
	Under 1 year	32.3
	1-3 years	31.5
	4-6 years	17.7
	7 years or longer	18.5

Measurement Model

Table 6. Standardized Factor Loadings (λ), t-test values, Reliability Coefficients (R^2), Composite Reliability (CR), and Average Variance Extracted (AVE)

Observable variables	Latent factor	λ	t-test	R^2	CR	AVE
MO1	MO	0.785	21.285***	0.616		
MO2	MO	0.784	21.640***	0.615	0.975	0.930
MO3	MO	0.793	21.872***	0.629		
II1	II	0.786	21.894***	0.618		
II2	II	0.823	21.872***	0.677	0.999	0.999
II3	II	0.838	21.872***	0.702		
IB1	IB	0.765	19.467***	0.585		
IB2	IB	0.763	20.264***	0.583	0.962	0.894
IB3	IB	0.787	21.872***	0.620		
IP1	IP	0.801	22.936***	0.641		
IP2	IP	0.820	23.016***	0.672	0.998	0.994
IP3	IP	0.822	23.016***	0.675		
MC1	MC	0.807	23.424***	0.651		
MC2	MC	0.822	21.549***	0.676	0.988	0.967
MC3	MC	0.779	22.936***	0.607		
IC1	IC	0.783	22.294***	0.613		

Observable variables	Latent factor	λ	t-test	R ²	CR	AVE
IC2	IC	0.813	21.872***	0.661	0.980	0.941
IC3	IC	0.780	21.872***	0.608		
DI1	DI	0.770	21.021***	0.592		
DI2	DI	0.783	21.567***	0.614	0.974	0.927
DI3	DI	0.805	21.468***	0.648		
IN1	IN	0.792	21.948***	0.627		
IN2	IN	0.803	21.468***	0.645	0.983	0.952
IN3	IN	0.795	23.255***	0.632		
FP1	FP	0.787	21.914***	0.619		
FP2	FP	0.838	23.016***	0.702	0.993	0.981
FP3	FP	0.801	21.914***	0.641		

Structural Model

The assessment of the proposed hypotheses is illustrated in the table 7, that presents the fit indices for model. Model fit indices indicate a good fit and are all acceptable. Evaluate the harmony of the model by looking at the following values that Chi-square (χ^2) statistic, commonly used in statistical models. It explains that the ratio of χ^2 to degrees of freedom (df) should be less than or equal to 2 or 3, goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), and comparative fit index measure (CFI) should have a value ≥ 0.9 , and root mean square error of approximation (RMSEA) should have a value ≤ 0.08 . Incremental fit index (IFI) Should have a value ≥ 0.9 . Tucker-Lewis: TLI Should have a value ≥ 0.9 . Comparative fit index (CFI) Should have a value ≥ 0.9 . Root Mean square Residual (RMR) index Should have a value < 0.05 .

Table 7. Model Fit Indices

Model Fit Quality Indices	Value	Acceptable Values
χ^2 / df	2.239	≤ 3 (Kline, 1998)
AGFI	0.904	≥ 0.90 (Schumacker & Lomax, 2004)
GFI	0.921	≥ 0.90 (Jorsekong & Sorbom, 1984)
CFI	0.970	≥ 0.90 (Hu and Bentler, 1999)
IFI	0.970	≥ 0.90 (Bollen, 1989)
TLI	0.966	≥ 0.90 (Schumacker & Lomax, 2004)
RMSEA	0.045	< 0.08 (Schreiber et al., 2006)
RMR	0.021	< 0.05 (Schumacker & Lomax, 2004)

The findings from the SEM analysis reveal presented in Table 8 (findings from hypothesis testing). The outcomes suggested that MO has a positive impact on MC ($\beta = 0.95$). IC is directly related to II, IB, and IP

($\beta = 0.24, 0.20, \text{ and } 0.57$, respectively). IC positively influences DI ($\beta = 0.95$). DI positively influences IN ($\beta = 0.91$). Finally, it was found that FP is directly related to MC, IC, DI, and IN ($\beta = 0.39, 0.20, 0.15, \text{ and } 0.21$, respectively) as Figure 2.

Table 8. Hypotheses testing results

Hypothesis	β	b	S.E.	t-test	Results
H 1: MC <- MO	0.95	0.94	0.04	21.04***	Support
H 2: IC <- II	0.24	0.20	0.04	14.83***	Support
H 3: IC <- IB	0.20	0.20	0.06	14.83***	Support
H 4: IC <- IP	0.57	0.54	0.04	14.83***	Support
H 5: FP <- MC	0.39	0.41	0.11	3.74***	Support
H 6: FP <- IC	0.20	0.20	0.09	2.37***	Support
H 7: DI <- IC	0.95	1.06	0.05	21.24***	Support
H 8: IN <- DI	0.91	0.91	0.05	19.28***	Support
H 9: FP <- DI	0.15	0.20	0.10	2.10*	Support
H 10: FP <- IN	0.21	0.15	0.10	2.37*	Support

All hypotheses tested in the model were supported, indicating that the proposed relationships between constructs are statistically significant and align with theoretical expectations.

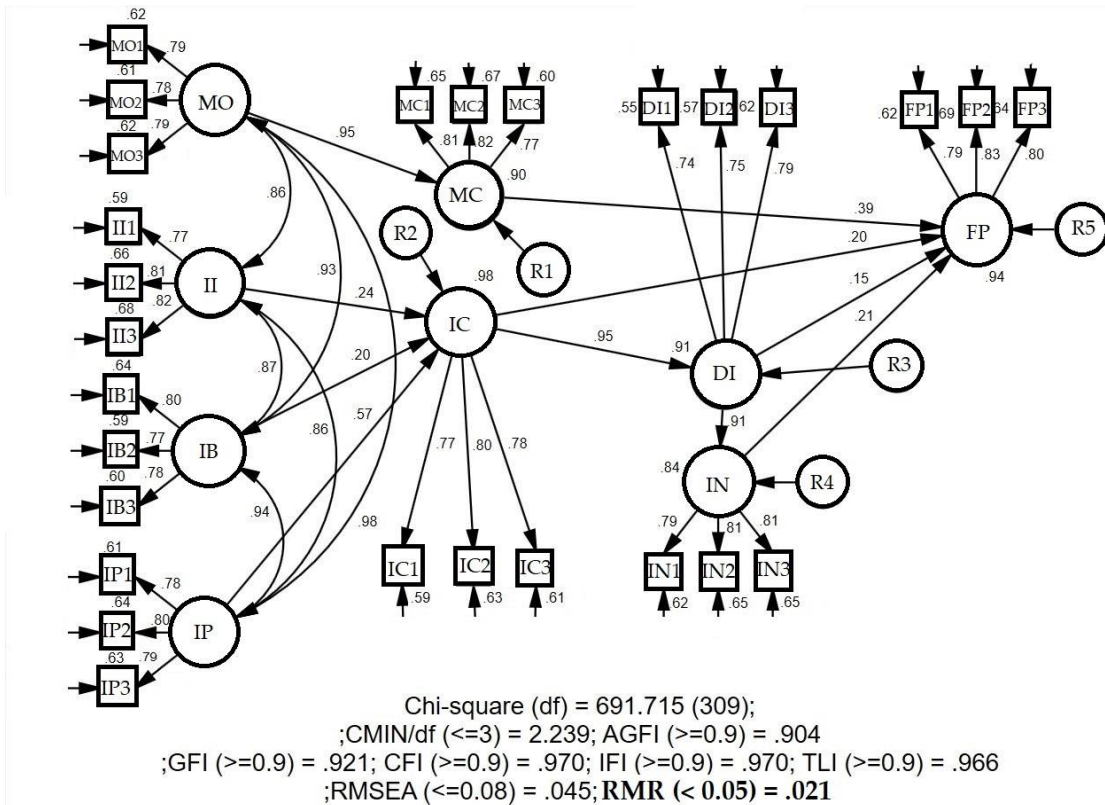


Figure 2. Estimation of structure model

Discussion

In this article, the researchers aim to present the findings on the relationships between Market Orientation (MO), Marketing Capability (MC), IT Infrastructure (II), IT Business Spanning (IB), IT Proactive Stance (IP), IT Capability (IC), Digitalization (DI), and Innovation (IN) on Firm Performance (FP) within the context of digital businesses in Thailand. The primary goal is to examine whether these factors positively impact organizational performance.

According to Figure 2, which shows the findings from the SEM analysis of conceptual framework, Structural Equation Modeling (SEM) analysis indicates significant positive relationships between the studied factors and organizational performance.

First, the findings reveal that Market Orientation (MO) positively influences Marketing Capability (MC). This supports previous research showing that a clear market orientation helps develop and enhance a firm's marketing capabilities (Narver & Slater, 1990). Additionally, Kamboj and Rahman (2017) studied the role of market orientation in driving sustainable innovation through enhanced marketing capabilities. Their findings indicate that market orientation not only strengthens market capability but also plays a crucial role in linking sustainable innovation with strategic advantage.

Second, IT Infrastructure (II) possesses a beneficial effect on IT Capability (IC), consistent with studies indicating that strong IT infrastructure supports the development of IT capabilities (Byrd & Turner, 2000). Finally, Lu and Ramamurthy (2011) provide an empirical examination of the link between IT capability and organizational flexibility, underscoring the function of IT infrastructure as a foundational element in enhancing IT capabilities.

Third, the findings indicate that IT Business Spanning (IB) and IT Proactive Stance (IP) positively affect IT Capability (IC). This suggests that integrating IT thoroughly into business operations and having a proactive IT management approach are crucial for enhancing IT capabilities (Bharadwaj, 2000). Lu and Ramamurthy (2011) provide a practical examination of the connection between IT capability and enterprise agility, underscoring the role of IT business spanning in creating a strategically aligned IT environment that supports enterprise agility. Lu and Ramamurthy (2011) provide empirical evidence on how IT capability and organizational agility are interlinked, further supporting the notion that a proactive IT stance significantly contributes to enhancing IT capability.

Fourth, Digitalization (DI) has a favorable effect on innovation (IN) and Firm Performance (FP), with standardized path coefficients valued at 0.91 and 0.15. This value supports research indicating that digital technologies enhance innovation and improve organizational performance (Chen et al., 2015). Thuy (2021) provided insights from enterprises in Vietnam, demonstrating how tactics, organizational mindset, personnel resources, and IT capability collectively drove technological evolution, which in turn fueled innovation and improves firm performance.

Fifth, Marketing Capability (MC), IT Capability (IC), Digitalization (DI), and Innovation (IN) directly impact Firm Performance (FP). The pathway coefficients connecting MC and FP, IC and FP, DI and FP, and IN and FP are 0.39, 0.20, 0.15, and 0.21, respectively. This demonstrates the importance of developing marketing capabilities, enhancing IT capabilities, adopting digital technologies, and implementing innovations to boost organizational performance. Kamboj and Rahman (2017) examined the function of market capability in mediating in the connection sustainable innovation and competitive advantage, highlighting its importance in driving firm performance. Wang et al. (2020) analyzed the multidimensional perspective regarding IT capability, particularly within the framework of Chinese SMEs, with their studies indicate that IT capability plays a critical function in improving business efficiency and firm performance by supporting digital business strategies. Abdullah (2021) investigated the role of digital innovations in smart supply chains and its effect on organizational performance, revealing the crucial contribution of digitalization to operational efficiency and competitive advantage. Thuy (2021) provided insights from enterprises in Vietnam enterprises, demonstrating how tactics, organizational mindset, personnel resources, IT capability, and digital transformation collectively influenced firm performance, further emphasizing the critical role of innovation in business success.

Sixth, there is an observation regarding the path coefficient between IT Capability and Digitalization. The path coefficient from IT Capability (IC) to Digitalization (DI) is 0.95, which shows a strong and accurate relationship between these two factors. This indicates that the data and model are reliable, and there are no apparent issues affecting the connection between IT Capability and Digitalization. Wang et al., (2020) explored the multidimensional perspective of IT capability within the context of Chinese SMEs. Their research showed that IT capability is critical for executing digital business strategies and improving overall business efficiency, thereby contributing to successful digitalization.

This study confirms that having strong Marketing capabilities, IT capabilities, Digitalization and Innovation positively impacts organizational performance. These findings can be used to develop strategies and management practices that improve organizational performance and success in the digital era.

Conclusions

This research concludes that digital commerce businesses in Thailand are on the right track. The research focuses on exploring the relationships between various factors: Market Orientation (MO), Marketing Capability (MC), IT Infrastructure (II), IT Business Spanning (IB), IT Proactive Stance (IP), IT Capability (IC), Digitalization (DI), and Innovation (IN) on Firm Performance (FP) in the framework of digital businesses in Thailand. The research finds that these factors have significant positive relationships with organizational performance, highlighting the significance of integrating these strategies to enhance and enhance organizational performance. Market Orientation (MO): The research finds that Market Orientation (MO) plays a notable favorable effect on marketing capability (MC), supporting previous research that indicates a clear market orientation helps develop and enhance an organization's marketing capabilities (Narver & Slater, 1990). Additionally, Kamboj and Rahman (2017) found that market orientation not only strengthened marketing capability but also played a crucial role in linking sustainable innovation with competitive advantage. IT Infrastructure (II): The study also showed that IT Infrastructure (II) had a significant beneficial influence on IT Capability (IC), consistent with previous research that indicated strong IT infrastructure supports the development of an organization's IT capabilities (Byrd & Turner, 2000). This research by Lu and Ramamurthy (2011) further emphasized the important role of IT infrastructure in enhancing IT capabilities and organizational agility. IT Business Spanning (IB) and IT Proactive Stance (IP): The research indicated that IT Business Spanning (IB) and IT Proactive Stance (IP) had positive impacts on IT Capability (IC). Integrating IT thoroughly into business operations and adopting a proactive IT management approach are crucial for enhancing IT capabilities (Bharadwaj, 2000). Lu and Ramamurthy (2001) provided empirical proof showing the linkage between IT business spanning and enterprise agility, supporting the creation of an IT environment aligned with strategy, which enhanced organizational agility. Digitalization (DI): The results indicated that Digitalization (DI) demonstrated a beneficial impact on both Innovation (IN) and Firm Performance (FP), accompanied by path coefficients between DI and IN at 0.91 and between DI and FP at 0.15. This aligns with previous research indicating that digital technologies played an essential function in enhancing creativity and improving business performance (Chen et al., 2015). Thuy (2021) provided evidence from Vietnam, demonstrating that strategy, culture, human resources, and IT capability collectively drive digital transformation, which ultimately enhances innovation and improved firm performance. Marketing Capability (MC), IT Capability (IC), Digitalization (DI), and Innovation (IN): The structural path coefficients connecting MC and FP, IC and FP, DI and FP, and IN and FP are 0.39, 0.20, 0.15, and 0.21, respectively, highlighting the importance of developing marketing capabilities, enhancing IT capabilities, adopting digital technologies, and implementing innovations as factors that contribute to improved organizational performance (Wang et al., 2020; Abdullah, 2021). IT Capability and Digitalization: The path coefficient between IT Capability and Digitalization is 0.95, indicating a strong and precise relationship between these two factors, suggesting that the data and model are reliable (Wang et al., 2020). The research shows that IT capability is essential for executing digital business strategies and improving overall business performance, leading to successful digitalization. In summary, this study confirms that strong Marketing Capability (MC), IT Capability (IC), Digitalization (DI), and Innovation (IN) positively impact organizational performance. The findings of this research can be used to develop strategic and management practices that effectively improve organizational performance and achieve success in the digital era.

Recommendations

However, this study is not comprehensive factor of artificial intelligence (AI), which is becoming more important in digital merchandising. AI can greatly improve business efficiency, reduce costs, and enhance customer experiences. It is widely used in analyzing big data, forecasting customer demand, managing inventory, and automating customer service. However, at the time of this research, there were not enough businesses using AI in digital merchandising to provide sufficient data. Implementing AI is still new and has challenges, including complexity, cost, lack of skilled workers, and issues regarding data protection and confidentiality. Based on the study of digital innovation, AI is expected to become more common in digital merchandising businesses. Future research should include AI as a factor to cover all aspects affecting businesses. This will help us understand AI's role in improving business processes, increasing efficiency, reducing costs, and gaining competitive advantages. Including AI in future research will allow us to study this growing technology in detail, develop new innovations, and improve existing processes. These studies will help create suitable policies and strategies, preparing businesses and governments for future changes. Research that includes AI will deepen our understanding of its role and lay a foundation for sustainable innovation and growth in the digital era. This will benefit entrepreneurs, researchers, and policymakers in planning for a future full of opportunities and challenges brought by technological advancements.

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