Forging Competitive Edge: Synergizing Digital Competencies with Strategic Supply Chain Management for Operational Excellence

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Abstract

In a fiercely competitive business landscape, the optimization of supply chain management (SCM) strategies and the integration of robust corporate digital competencies stand as pivotal determinants for sustained success across various industries, including the fast-moving consumer goods (FMCG) sector. The study investigates the dynamic interplay between SCM strategies, corporate digital competencies, and operational performance. Through a hypothesis testing research design, the examination sought to determine the influence of these variables. The study revealed strong support for the hypothesis that SCM strategies significantly impact corporate digital competencies and, in turn, operational performance. The results indicated a direct positive relationship between SCM strategies and operational performance while corporate digital competencies indirectly influenced operational performance through their mediation between SCM strategies and operational effectiveness. The findings underscored the integral role of corporate digital competencies in enhancing the efficacy of SCM strategies, amplifying operational performance, and driving customer-centric value. These implications stress the imperative for businesses to strategically align their SCM processes with digital competencies to effectively navigate market complexities and ensure long-term competitiveness.

Keywords: Corporate Digital Competencies, FMCG, Indonesia, Operational Performance, Supply Chain Management Strategies.

In the current climate of intense market competition, companies across diverse industries, including the fast-moving consumer goods (FMCG) sector, are actively engaged in efforts to enhance their operational capabilities to ensure sustained success. A crucial aspect of this endeavor involves a concerted focus on improving the effectiveness of their supply chain management strategies. This strategic emphasis on supply chain management (SCM) is driven by its demonstrated ability to enable companies to outpace competitors, predominantly through

significant reductions in operational costs associated with the delivery of goods and services. Studies have underscored the potential for adeptly implemented supply chain management to elevate overall company performance (Arif, Shah, and Khan 2023; Perano et al. 2023). As a result, the adoption of robust SCM strategies is widely acknowledged as a pivotal factor for fostering growth and triumph in today's highly competitive landscape.

Within the realm of SCM, various strategies, such as Vendor-managed Inventory (VMI), Enterprise Resource Planning (ERP), Collaborative Planning, Forecasting, and Replenishment (CPFR), and Warehouse Management System (WMS), are being actively utilized to streamline and optimize operations (Lee 2021; Tajbakhsh and Hassini 2015; Heizer, Render, and Muson 2020). These strategies provide companies with diverse tools and methodologies to enhance their supply chain performance and drive efficiency.

The current business landscape presents a multifaceted and demanding environment, where the evolving needs and preferences of consumers pose significant challenges for companies to address (Hsieh, Chen, and Huang 2023). In response, companies are intensifying their efforts to excel and lead in their respective markets. Central to this endeavor is a strong emphasis on innovation, particularly through the increased utilization of digital competencies. The adept use of these skills holds the promise of significantly enhancing a company's operational performance. Furthermore, the seamless integration of these digital competencies with effective supply chain management strategies is recognized as a cornerstone for achieving heightened efficiency. This integration not only fortifies operational frameworks but also enables companies to adapt to and meet evolving consumer demands, thereby maintaining a competitive edge.

The convergence of strategic supply chain management with cutting-edge digital competencies is fundamentally reshaping how businesses operate and compete in today's dynamic industrial landscape. This integration goes beyond being a passing trend; it represents a transformative revolution in operational efficiency, resilience, and customer-centric approaches. By effectively merging innovative technologies with strategic supply chain management, industries are experiencing a paradigm shift in how they conduct business, creating a pathway towards sustainable success. This fusion of digital competencies and SCM strategies is redefining industry norms and driving businesses towards sustained growth and competitive advantage.

LITERATURE REVIEW

2.1 Supply Chain Management Strategies

In today's fiercely competitive business environment, top-level executives have come to a pivotal realization: operational efficiency alone is no longer the sole driver of competitive advantage. This revelation extends to a fundamental need for competitiveness spanning the entire supply chain (Amukanga 2018). Supply chain management encompasses a broad spectrum of functions, ranging from understanding and fulfilling customer needs to various critical domains, including product development, marketing, operations, distribution, financial management, and customer service (Jha et al. 2022; Chopra 2019). Each component within the supply chain is unified by a singular goal—to maximize the overall value generated by the organization. Notably, scholars such as Saragih et al. (2020) stress that the efficacy of a supply chain is inherently tied to the quality of decisions made by all stakeholders throughout the entire chain, encompassing suppliers through to end consumers.

Achieving operational efficiency in supply chain management requires meticulous selection and implementation of strategies precisely tailored to the complexities of the supply chain. These strategies constitute an array of

approaches intended to harmonize and optimize production and operational processes to ultimately enhance customer value. Noteworthy among these strategies are VMI, ERP, CPFR, and WMS (Lee 2021; Tajbakhsh and Hassini 2015; Heizer, Render, and Muson 2020). The selection and integration of these strategies serve as a cornerstone in fortifying the entire supply chain, contributing to enhanced performance, streamlined operations, and amplified customer satisfaction.

The crux of the matter lies in recognizing that in today's business landscape, achieving a competitive edge demands a comprehensive approach beyond mere operational efficiency. It requires a holistic view across the entire supply chain, encompassing multifaceted functions aiming to provide value to customers while ensuring operational excellence. The harmonization and implementation of strategic approaches are pivotal in this pursuit, underscoring the significance of tailored strategies designed to augment operational efficiency and, ultimately, drive customer-centric value.

2.2 Corporate digital competency

Corporate digital competency signifies an organization's prowess in effectively harnessing digital technology and data to drive its business objectives (Fonseca and Picoto 2020), serving as a critical linchpin in today's fast-evolving digital terrain. Amid this ever-accelerating digital landscape, digital competency stands as a fundamental pillar in upholding a company's competitive edge and navigating the mounting demands of customers. A profound understanding of the multifaceted components that shape a company's digital competency emerges from comprehensive insights offered by experts and extensive research in the field.

At the core lies digital transformation, an intricate process entailing the seamless integration of digital technology across all operational aspects (Saarikko, Westergren, and Blomquist 2020). It involves not just the adoption of digital innovations but a complete overhaul of traditional business processes and cultivating a corporate culture capable of swift adaptation to the continually evolving technological dynamics. Data management plays an equally vital role, encompassing the adept collection, secure storage, efficient management, and insightful analysis of data. This capability allows for the identification of trends, evidence-driven decision-making, and a substantial boost in operational efficiency (Martínez-Peláez et al. 2023). Amidst the prevalent threat of cyber-attacks, an impenetrable cybersecurity framework to safeguard company data is indispensable. Moreover, expertise in data analytics empowers companies to derive critical business insights, facilitating informed and strategic decision-making. An active engagement in technological innovation, with a keen understanding and integration of trends like artificial intelligence, the Internet of Things, and blockchain, further solidifies an organization's digital footprint.

The competence in effective digital collaboration through tools and platforms, optimization of mobile technology use, and mastery in digital project management are pivotal aspects that further augment a company's digital competency. Drawing from the comprehensive wisdom of experts across diverse fields, it becomes evident that a company's prowess in digital competency is not just an advantage but a cornerstone for sustaining competitiveness and ensuring long-term success in the dynamic and perpetually evolving business landscape of today.

2.3 Operational Performance

As per Taouab & Issor (2019), firm performance is categorized into four distinct facets: financial, customer, innovation and learning, and internal processes. It reflects completed work and can be assessed through both qualitative and quantitative measures (Herciu 2017). Company operational performance, as defined by (Chowdhury and Islam 2021), pertains to a company's capability to achieve superior operational outcomes, and

assess its operational competence. (Farida and Setiawan 2022) asserts that heightened and varied consumer demands necessitate companies to optimize their operational performance to align with these changing dynamics. This operational performance encompasses metrics related to cost, time, quality, and delivery of operational activities (Neely, Gregory, and Platts 2005; Korhonen et al. 2023). It signifies the output of internal operational functions within a company, influenced by both internal and external factors, towards accomplishing predetermined goals within a specified timeframe.

A study conducted by Prajogo & Olhager (2012) reveals that the primary objective of enhancing operational performance is to curtail costs and boost efficiency in day-to-day operations. Operational costs, as emphasized by Tarigan et al. (2021), are intricately linked to the company's operational activities. Operational performance mirrors the efficacy of internal operations by minimizing waste (Agyabeng-Mensah et al. 2020), reducing unnecessary costs (Ditkaew 2018; Zhang et al. 2022), enhancing product quality (Dal, Tugwell, and Greatbanks 2000), innovating in product development (Berndt et al. 2023), and refining delivery performance (Korhonen et al. 2023), leading to heightened productivity. The study aims to gauge the influence of appropriate supply chain strategies on a company's operational performance by examining indicators such as unit product costs, defective products, waiting times, and product customization flexibility.

METHODS

The design carried out in this research is hypothesis testing, the aim is to determine precisely whether the null hypothesis can be rejected in favor of an alternative hypothesis (Sekaran and Bougie 2016), so this research aims to test the independent variable (supply chain management strategies), the mediating variable (corporate digital competency), and the dependent variable (operational performance). This research design focuses on the influence of characteristic relationships between variables to provide a better picture.

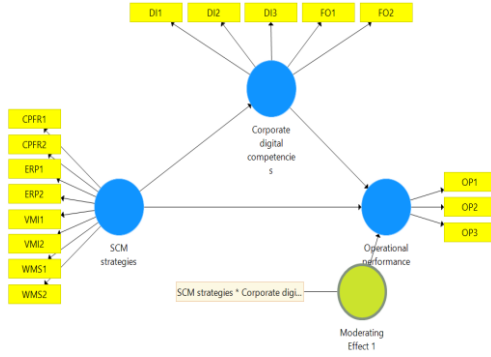

Figure 1: Research model

RESULT AND DISCUSSION

The instrument tests used in this research are Validity, Reliability and Goodness of Fit tests. Below is a table of instrument test results in this research. All variables and statement items in this research are said to be valid because they have a factor loading value greater than 0.500 and are declared reliable because they have a Cronbach's alpha coefficient value above 0.700 (Table 1).

Table 1: Validity and reliability output

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Corporate digital competencies	0.922	0.938	0.941	0.760
Moderating Effect 1	1.000	1.000	1.000	1.000
Operational performance	0.895	0.957	0.933	0.823

SCM strategies	0.946	0.958	0.955	0.727

The structural output of this research is described as follows:

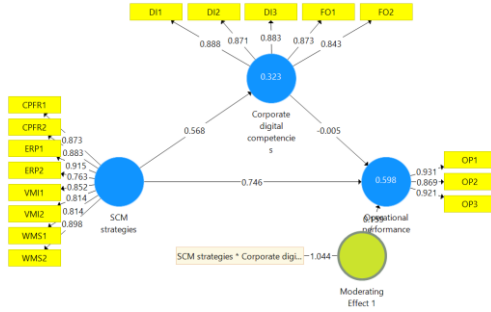

Figure 2: Research model results

Table 2: Structural output

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
SCM strategies -> Corporate digital competencies	0.568	0.57	0.066	8.609	0
SCM strategies -> Operational performance	0.746	0.751	0.061	12.144	0
Moderating Effect 1 -> Operational performance	0.159	0.152	0.063	2.535	0.012
Corporate digital competencies -> Operational performance	-0.005	-0.003	0.102	0.047	0.963

4.1 Hypothesis Testing Result

4.1.1 SCM Strategies Effect on Corporate Digital Competencies

H1: SCM strategies have a positive effect on corporate digital competencies.

Based on the results of the first hypothesis test, the results show a p-value of 0.000, which is smaller than 0.05 (0.000 < 0.05), so that the proposed hypothesis is supported, it can be concluded that SCM strategies have a positive effect on corporate digital competencies. Supply Chain Management (SCM) strategies demonstrate a positive correlation with enhancing corporate digital competencies. Effective SCM strategies often require an integration of digital technologies and capabilities to optimize processes, data management, communication, and overall operational efficiency (Siagian, Tarigan, and Jie 2021; Oubrahim, Sefiani, and Happonen 2023). The adoption of digital tools and technologies within SCM strategies is pivotal in streamlining operations, enhancing visibility across the supply chain, and facilitating better decision-making.

Digital competencies play a crucial role in empowering SCM strategies (Dubey et al. 2023). Technologies like advanced analytics, artificial intelligence, Internet of Things (IoT), cloud computing, and automation systems are integrated within SCM frameworks, allowing companies to manage and analyze vast amounts of data, predict demand, optimize inventory, and improve overall operational performance. Furthermore, digital competencies enable real-time data sharing and collaboration, allowing for swift responses to changes, ensuring more agile and efficient supply chain processes.

The synergy between SCM strategies and digital competencies is evident in how digital tools and innovations bolster supply chain functions. Implementing these technologies

within SCM enhances communication, collaboration, and transparency both internally and externally, allowing companies to adapt swiftly to market changes, reduce operational costs, and meet evolving customer demands. Therefore, the effective integration of digital competencies into SCM strategies proves instrumental in achieving competitive advantages and enhancing overall organizational performance.

4.1.2 SCM Strategies Effect on Operational Performance

H2: SCM strategies have a positive effect on operational performance.

Based on the results of the second hypothesis test, the results show a p-value of 0.000, which is smaller than 0.05 (0.000 < 0.05), so that the proposed hypothesis is supported, it can be concluded that SCM strategies have a positive effect on operational performance. SCM strategies wield a substantial positive influence on a company's operational performance. Well-crafted SCM strategies focus on the optimization and synchronization of various supply chain components, including sourcing, procurement, production, inventory management, logistics, and distribution (Dey, Bhattacharya, and Ho 2015). By effectively implementing these strategies, companies can significantly improve their operational efficiency and overall performance.

SCM strategies streamline processes, enhance coordination, and improve the flow of goods and services throughout the supply chain (Sabet, Yazdani, and De Leeuw 2017; Madhani 2019). They contribute to reducing lead times, minimizing inventory costs, optimizing resource utilization, and enhancing the overall responsiveness of the company to market demands and changes. Additionally, these strategies facilitate better communication and collaboration among various stakeholders, leading to more effective decision-making and problem-solving in the supply chain.

Efficient SCM strategies also aid in minimizing disruptions and enhancing resilience within the supply chain. This is achieved by better risk management, the establishment of backup plans, and the implementation of more flexible processes to adapt to unforeseen circumstances, thus ensuring continuity in operations. In essence, the effective application of SCM strategies positively impacts a company's operational performance by fostering efficiency, reducing costs, improving resource utilization, enhancing responsiveness to market dynamics, and fortifying the overall resilience of the supply chain.

4.1.3 SCM Strategies Effect on Operational Performance through Corporate Digital Competencies

H3: SCM strategies have a positive effect on operational performance through corporate digital competencies.

The results of testing the third hypothesis obtained a p-value of 0.012, this shows that the mediating variable, namely corporate digital competencies, succeeded in mediating the relationship between SCM strategies and operational performance. These results prove that SCM strategies mediated by corporate digital competencies have the potential for operational performance. SCM strategies demonstrate a positive impact on operational performance, particularly when integrated with corporate digital competencies. The incorporation of digital competencies within SCM strategies greatly enhances operational efficiency and performance across various facets of the supply chain.

Digital competencies play a crucial role in optimizing SCM strategies by offering innovative tools and technologies that streamline processes, enable better data management, and facilitate more efficient communication and decision-making (Dharmayanti et al. 2023; Cichosz, Wallenburg, and Knemeyer 2020). Technologies such as data analytics, automation, Internet of Things (IoT), and cloud-based systems contribute significantly to improving the efficiency and effectiveness of SCM strategies. By leveraging digital competencies, companies

can achieve improved visibility and control over their supply chains, allowing for better coordination, inventory management, and predictive capabilities (Fonseca and Picoto 2020). These competencies aid in analyzing vast amounts of data, predicting demand patterns, and optimizing inventory levels, thereby reducing lead times and operational costs.

Moreover, digital competencies empower companies to adapt swiftly to changing market dynamics and consumer demands, enabling a more agile and responsive supply chain. Real-time data sharing and collaboration facilitated by digital tools help in making informed and timely decisions, leading to better operational performance across the entire supply chain. In summary, the integration of digital competencies within SCM strategies plays a pivotal role in enhancing operational performance by improving efficiency, reducing costs, optimizing resource management, and fostering agility in responding to market fluctuations and consumer needs.

4.1.4 Corporate Digital Competencies Effect on Operational Performance

H4: Corporate digital competencies have a positive effect on operational performance.

The results of data processing for the fourth hypothesis obtained a p-value of 0.963, which means that the results of hypothesis testing say that the fourth hypothesis is not supported (0.963 > 0.05), which means corporate digital competencies do not have a direct influence on operational performance. Corporate digital competencies, on their own, may not have a direct, immediate impact on operational performance. While digital competencies are essential for modern business functions, the direct relationship between these competencies and operational performance may not be straightforward or linear. Operational performance within a company is influenced by numerous factors, including the implementation of efficient processes, supply chain management, workforce expertise, market demands, and more. Digital competencies, while crucial, might not singularly determine operational performance. Instead, these competencies often act as enablers, supporting operational improvements by facilitating better data management, communication, decision-making, and technological integration within the existing operational framework.

The influence of digital competencies on operational performance might be indirect or mediated through their impact on various operational aspects. For enhance, these competencies could contribute to enhancing supply chain management, optimizing processes, improving decision-making, and fostering innovation, all of which collectively lead to improved operational performance. Therefore, while corporate digital competencies themselves might not directly cause operational performance improvements, they play a significant role as a catalyst, supporting and enabling various operational enhancements within a company. The full impact of digital competencies on operational performance is often realized when integrated and aligned with the company's operational strategies and objectives.

4.2 Optimizing Supply Chains with Digital Competencies

Efficiency within supply chain management is a multifaceted endeavor that demands an orchestrated approach involving strategic selection and implementation of various methodologies. These strategies are meticulously designed to address the intricate nuances and challenges present within the supply chain. A significant aspect of these strategies involves harmonizing and optimizing the production and operational processes with the central objective of enhancing the value delivered to customers.

- Vendor-managed Inventory (VMI) is one such strategy that delegates the responsibility of inventory management to the supplier, enabling more efficient restocking, reducing stockouts, and often lowering inventory costs (van den Bogaert and van Jaarsveld 2022).

This approach allows the supplier to monitor inventory levels, ensuring timely restocking without the need for frequent communication or orders from the buyer.

- Enterprise Resource Planning (ERP) is a comprehensive software solution that integrates various business functions such as accounting, human resources, and inventory management into a unified system (Adade-Boafo 2018; Yao, Dong, and Dresner 2010). ERP systems offer real-time visibility and data sharing across the organization, streamlining operations, and facilitating informed decision-making.
- Collaborative Planning, Forecasting, and Replenishment (CPFR) involves cross-organizational collaboration between suppliers and buyers to synchronize planning, forecasting, and inventory replenishment. This synchronized approach aims to optimize inventory levels and meet customer demand more accurately (Hill, Zhang, and Miller 2018).

The efficacy of Vendor-managed Inventory (VMI), Enterprise Resource Planning (ERP), Collaborative Planning, Forecasting, and Replenishment (CPFR), and Warehouse Management System (WMS) strategies within supply chain management is significantly augmented when integrated with robust corporate digital competencies. Digital competencies serve as a fundamental catalyst in enabling these strategies to function optimally. The implementation of advanced digital tools, such as data analytics, artificial intelligence, and cloud-based technologies, enhances the effectiveness of these strategies. For instance, digital competencies empower VMI by providing sophisticated inventory monitoring tools, enabling more accurate demand forecasting and efficient stock replenishment.

In the case of ERP, digital competencies offer seamless integration and data sharing across various departments, fostering informed decision-making through real-time data analysis. Likewise, CPFR benefits from digital competencies by enabling swift communication and collaboration among involved stakeholders, ensuring synchronized planning and accurate demand forecasting.

Moreover, WMS leverages digital competencies for optimizing warehouse operations by employing automation, data analytics, and inventory management tools. Integrating these digital competencies into SCM strategies enhances operational agility, fosters efficient decision-making, and bolsters the adaptability of the supply chain to dynamic market changes and customer needs.

The combination of these strategies with robust digital competencies fundamentally reshapes operational efficiency within the supply chain, enabling companies to meet evolving demands and excel in an increasingly competitive landscape. The seamless integration of digital competencies into SCM strategies acts as a linchpin, optimizing supply chain functions and paving the way for enhanced operational effectiveness and customer value delivery. Warehouse Management System (WMS) software provides tools for managing and optimizing warehouse operations. It includes functionalities like inventory tracking, order fulfillment, and optimizing storage capacities to improve warehouse efficiency.

Each of these strategies plays a critical role in refining the operational framework of supply chain management. They address specific challenges and functions within the supply chain, resulting in improved efficiency, reduced operational costs, and enhanced customer satisfaction. The selection and integration of these strategies are instrumental in fortifying the entire supply chain, driving streamlined operations, and delivering amplified customer value.

CONCLUSION

The intersection of SCM strategies and corporate digital competencies stands as a pivotal driver in reshaping operational efficiency within the supply chain. The outcomes of the

hypotheses reveal a strong correlation between SCM strategies and corporate digital competencies, with an evident positive impact on operational performance. While the direct influence of corporate digital competencies on operational performance might not be distinctly apparent, their role as enablers and catalysts for enhanced supply chain management and operational improvements is significant. Integrating robust digital competencies, such as advanced analytics and automation, into SCM strategies amplifies operational agility and efficiency, leading to responsive, resilient, and cost-effective supply chain operations. The meticulous selection and integration of strategies like VMI, ERP, CPFR, and WMS within a framework bolstered by digital competencies are fundamental in driving superior customer value and operational excellence within the dynamic landscape of supply chain management.

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