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IMPLEMENTING DIGITAL SUPPLY CHAIN MANAGEMENT TO IMPROVE EFFICIENCY: A CASE STUDY OF INDOCUP SABLON

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Abstract

Digital transformation in supply chain management has become a strategic necessity to improve company efficiency and competitiveness, especially in the small and medium enterprise (SME) sector. This study aims to analyze the implementation of Digital Supply Chain Management (DSCM) in improving company operational efficiency, with a case study of Indocup Sablon. The study used a qualitative descriptive approach through interviews, observation, and documentation techniques. The results show that the implementation of DSCM stages such as digital order receipt and processing, structured production planning, real-time inventory management, automated procurement systems, production recording, digital quality control, and customer management and feedback has resulted in significant efficiency improvements. Production time efficiency increased by 20%, order errors decreased by 35%, and logistics costs decreased by 15%. Despite facing challenges such as limited infrastructure and human resources, the implemented gradual digitalization strategy was able to have a significant positive impact on operational performance. These findings are expected to serve as a strategic reference for other SMEs wishing to implement a digital-based supply chain system.

Keywords: Digital Supply Chain Management, Efficiency, Development Strategy, SMEs, Indocup Screen Printing

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INTRODUCTION

Information technology has been widely utilized to improve the supply chain, a crucial aspect of supply chain management. Digital Supply Chain Management (DSCM) has emerged as a strategic innovation that integrates supply chain processes with digital platforms to increase efficiency, speed, transparency, and collaboration between business partners (Devyana et al., 2023). DSCM implementation not only automates manual processes but also optimizes data management, accelerates decision-making, and strengthens a company's competitive advantage amidst intense market competition (Vania S Nabila, MI Lubis, 2022).

Digitalization in supply chain management, or Digital Supply Chain Management (DSCM), has become a key factor in increasing efficiency, reducing costs, and accelerating decision-making. The use of advanced technologies such as the Internet of Things (IoT), big data, artificial intelligence (AI), and blockchain offers companies significant potential to streamline processes, increase visibility, and create better connectivity between all elements of the supply chain (Ruchiyani et al., 2023). This is because information is the foundation for implementing supply chain management and serves as a reference for managers in making decisions related to the process (Fakri Mursala, Grace Amalia Tondang, 2022). Without accurate information, managers will have difficulty making the right decisions, such as knowing the amount of market demand that must be met, the availability of stock for sale the next day, and the type and quantity of products that need to be produced to meet market demand (Jamal et al., 2024). Digital Supply Chain Management (DSCM) consists of several important stages that are integrated and supported by digital technology to create a reliable supply chain.Efficient, responsive, and adaptive supply chain management. The first stage is planning, where companies use technologies such as big data analytics and artificial intelligence (AI) to forecast market demand, develop production plans, and optimize distribution in real time through a cloud-based platform. The next stage is sourcing, which involves supplier selection, contract management, and raw material purchasing through an e-procurement system, as well as the use of blockchain to ensure the transparency and reliability of supplier data (Tri Inda et al., 2023).

Next, at the manufacturing stage, the company implements intelligent manufacturing systems such as Manufacturing Execution Systems (MES) and Internet of Things (IoT) technology to monitor machine performance and

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efficiently automate production lines. The fourth stage is inventory management, where the company utilizes cloud-based inventory systems and technologies like RFID to monitor stock in real time and prevent excess or shortages of raw materials. Then, at the distribution and logistics stage (delivery & logistics), the integration of GPS, IoT, and Transportation Management System (TMS) is used to efficiently manage the delivery of goods to the end customer, including live delivery tracking.

The next stage is returns/reverse logistics, which manages the customer return process, including managing damaged goods or recycling them, supported by a digital system based on a customer portal and returns application. Finally, all these stages are supported by data integration and collaboration, namely: The use of Enterprise Resource Planning (ERP) systems, data lakes, and cloud-based dashboards enables real-time connectivity across the supply chain. With this digital approach, DSCM not only improves efficiency but also empowers companies to be more adaptive in the face of increasingly complex market dynamics.

In Indonesia, the manufacturing sector, particularly the printing and screen printing industry, is one of the industries that continues to grow and faces various challenges related to supply chain management. Indocup Sablon, as a company engaged in the screen printing industry, is also not immune to the challenges and opportunities presented by this digital transformation. With increasing market demand, intense competition, and the need to provide quality products at competitive prices, companies are required to manage their supply chains more efficiently. Therefore, it is important to explore how supply chain management transformation in the digital era can positively impact company operational efficiency (Bahauddin, 2019).

There is a discrepancy between fact and theory. The theory put forward by Klaus Schwab (2016) in his book, The Fourth Industrial Revolution, emphasizes that the fourth industrial revolution has transformed the supply chain through digitalization—using technologies such as IoT, AI, blockchain, cloud computing, and real-time data integration. However, in reality, small and medium-sized companies like Indocup Sablon likely haven't fully implemented these advanced technologies. Indocup Sablon still uses manual or semi-digital systems (e.g., Excel, WhatsApp, or simple software).

This mismatch also occurs in the efficiency variable. In the theory proposed by Michael Porter (1985) in Competitive Advantage, efficiency is one way for companies to achieve competitive advantage through cost reduction

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and increased productivity. However, the reality is that implementing digital technology in small companies does not always immediately increase efficiency. The costs of implementation, training, and employee adaptation can actually reduce short-term efficiency. Furthermore, there is a mismatch, such as the theory proposed by H. Igor Ansoff's Ansoff Matrix (1957), which emphasizes that strategy development can be carried out through market development, product development, diversification, or market penetration—all of which require thorough internal and external situational analysis. However, in reality, MSMEs like Indocup Sablon generally do not have formal strategic planning. At Indocup Sablon, decisions are often reactive, not based on in-depth strategic analysis.

The implementation of Digital Supply Chain Management has great potential to increase efficiency (Helva Diansyah Putri, Indah Wulan Sari Batubara, 2022). However, in practice, especially in small companies like Padang, there are several major obstacles that can hinder the optimal implementation of DSCM (Utami RA Padang, 2022). DSCM implementation requires adequate technological infrastructure such as a stable internet network, hardware (computers, scanners, servers), and specialized software (ERP, SCM software). Indocup Sablon still uses a manual or semi-digital system, requiring significant investment in procuring this infrastructure. The implementation of technologies such as Enterprise Resource Planning (ERP), automated inventory management systems, and the use of real-time data can accelerate decision-making, reduce human error, and optimize stock management and shipping. However, this also requires significant investment in technology, human resource training, and careful planning for successful implementation (Sanni, 2024).

Limited funding and investment are also obstacles to the implementation of DSCM.DSCM isn't just about technology, but also costs. The costs of purchasing systems, training employees, and maintaining software and hardware can be a significant burden for MSMEs. Therefore, at Indocup Sablon, we tend to delay or limit digitalization for fear of not being worth the short-term results.

Human resource (HR) readiness is also a challenge. There's a lack of skilled workers in technology and digital supply chains. Some employees at Indocup Sablon may be unfamiliar with SCM software, unfamiliar with digital data, or reluctant to adapt due to their reliance on manual work methods. This can hinder the digitalization process, even when systems are in place.

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Data security and privacy are also challenges. As companies transition to digital systems, cybersecurity threats and data protection become critical issues. Smaller companies may lack robust security systems, leaving them vulnerable to hacking or data breaches. These concerns can discourage companies from digitalizing. Therefore, implementing DSCM at Indocup Sablon faces quite complex challenges, ranging from technology and human resources to organizational culture. Overcoming these challenges requires a phased approach, ongoing education, and collaboration with external parties (such as consultants or digital system providers). The DSCM development strategy must be tailored to the company's scale and capacity to achieve tangible efficiencies.

When Digital Supply Chain Management (DSCM) is successfully implemented, companies can experience numerous efficiencies—both in terms of time, costs, and the quality of their business processes. The following is a detailed explanation of the efficiencies that can be achieved after DSCM is implemented, specifically in the context of a company like Indocup Sablon. Time efficiency: all data is integrated into a single digital system. For example, when stock is running low, the system can immediately notify and even automatically process orders to suppliers. This speeds up workflows and reduces waiting times. For example, ordering raw materials, which previously took two days due to manual confirmation, now only takes a matter of minutes. Cost efficiency: Administrative costs also decrease because data processing is automated, reducing the need for paper, filing, and administrative labor. For example, with a digital tracking system, companies can avoid production delays due to raw material shortages, which previously could have resulted in overtime costs or lost orders. Process efficiency: DSCM simplifies and automates many processes in the supply chain, such as purchasing, shipping, tracking, and financial recording. The system also helps reduce manual data input errors (human error) that often occur in traditional SCM. For example, customer order input automatically enters the production system, without the need for re-recording by the production admin.

This study aims to analyze the implementation of Digital Supply Chain Management in improving company efficiency, using a case study of Indocup Sablon. The main focus of this research is to identify how the company utilizes digital technology in its supply chain management, as well as its impact on operational efficiency, inventory management, cost control, and responsiveness to market demand. Therefore, this research is expected to provide insights for other companies seeking to implement similar strategies and contribute to the development of knowledge in the field of digital supply chain management.

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Through this research, it is hoped that recommendations can be found that can help Indocup Sablon in improving and optimizing the implementation of their Digital Supply Chain Management, so that they can achieve higher efficiency and increase the company's competitiveness in an increasingly competitive market.

LITERATURE REVIEW

Supply Chain Management (SCM)

Supply Chain Management (SCM) is a strategic approach aimed at effectively and efficiently managing all activities involved in the production and distribution of goods or services, from raw material procurement through the production process to distribution to the end consumer. The concept of supply chain management is the process of managing the supply network of related companies, collectively aiming to produce a product and deliver it to the end consumer (Titik Kusmantini et al., 2015). In the context of digital transformation, SCM is increasingly oriented towards the use of information technology to increase visibility, transparency, and speed in every operational process of the supply chain (Rika Ampuh Hadiguna, 2015). SCM encompasses procurement, production, inventory management, distribution, and managing relationships with suppliers and customers (Tanjung et al., 2023). The application of digital technology in SCM can optimize the management of the flow of goods and information by reducing the time required for decision-making and increasing responsiveness to customer needs (Royyana, 2018).

Digital Supply ChainManagement (DSCM)

Refers to the integration of digital technology into the supply chain process. This transformation involves the use of technologies such as the Internet of Things (IoT), Big Data Analytics, Artificial Intelligence (AI), Blockchain, and Enterprise Resource Planning (ERP) systems to improve supply chain transparency, efficiency, and responsiveness. According to Ivanov et al. (2021), DSCM is able to create a supply chain that is more flexible and adaptive to market dynamics. As a development of traditional SCM, the concept of Digital Supply Chain Management (DSCM) emerged, integrating digital information and communication technology throughout the supply chain process. DSCM utilizes digital platforms to increase the speed, accuracy, and transparency of information sharing between entities in the supply chain. Examples of technologies commonly used in DSCM include ERP (Enterprise Resource Planning), SCM Software, RFID, the Internet of Things (IoT), Big

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Data Analytics, Blockchain, and Cloud Computing. With these technologies, companies can access data in real time, respond to market demand more quickly, avoid overstock or stockouts, and design more adaptive production and logistics strategies. In addition, DSCM also enables automation processes in procurement, production planning, delivery tracking, and electronic payments.

Company Efficiency

Corporate efficiency refers to a company's ability to maximize output with minimal resources. In the context of operations and supply chain management, efficiency not only means cost reduction but also relates to labor productivity, timely distribution, minimal waste, and improved service quality. Corporate efficiency is closely linked to the speed and accuracy of decision-making, the smooth flow of information, and the synchronization of internal and external processes within the supply chain. Therefore, in the digital era, efficiency is determined not only by production capacity but also by the ability of digital systems to integrate and automate all operational processes.

RESEARCH METHOD

The research method used in this study is a qualitative descriptive method with a case study approach. This approach was chosen to gain a deep understanding of the analysis of digital implementation in Supply Chain Management (SCM) and its impact on company efficiency.

This research will use Indocup Sablon as a case study object to analyze how the company implements digital technology in its supply chain, as well as how the technology contributes to increasing operational efficiency.

RESULTS AND DISCUSSION

Analysis of the Implementation of Digital Supply Chain Management (DSCM) at Indocup Sablon

1. Order Receiving and Processing. Before digitization, order receipt was done manually via WhatsApp or written notes, which often resulted in errors in recording designs, colors, sizes, and quantities. After implementing a semi-digital system, Indocup Sablon began using digital forms and spreadsheet-based filing, allowing for more structured customer order

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recording. This system allows admins to directly input data into an integrated file accessible to production, reducing the risk of input errors and speeding up the order confirmation process.

a) Customers make orders through a digital system via the web
b) The system automatically records order specifications (screen printing type, color, quantity and deadline)
c) Order confirmation is done automatically via notification or email.

2. Production Planning. Previously, production planning was based solely on estimates and work experience, which made the process inefficient and often led to backlogs. Through the development of DSCM, Indocup Sablon began implementing a digital scheduling system using structured Excel-based templates combined with customer demand data. This system allows management to prioritize work based on deadlines and machine/workforce capacity, resulting in more efficient and measurable production times.

a) The production scheduling system arranges work sequences based on machine capacity and labor availability.
b) Material allocation and work schedules are directly integrated with order data.

3. Digital Inventory Management. Before digitalization, raw material inventory management was done manually without systematic record-keeping, resulting in frequent stockouts. Now, Indocup Sablon has implemented basic digital inventory management, where inventory of materials such as ink, plain t-shirts, and plastic is controlled using an electronic inventory list that is updated daily. This system includes visual notifications for low inventory levels. As a result, raw material availability has increased, and production lead times due to stockouts have been significantly reduced.

a) A real-time inventory system monitors the stock of raw materials such as ink, plain t-shirts, and other supporting materials.
b) When stock is running low, the system automatically notifies the purchasing department.

4. Raw material procurement. Before digital development, raw material procurement was reactive and unplanned, often relying on fixed suppliers without periodic evaluation. Currently, Indocup Sablon has begun implementing an automated raw material requirements recap system linked to weekly production plans. Procurement is conducted through more systematic

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digital communication (email, simple e-invoices), and the company has begun building a digital supplier list to record purchase history, quality, and delivery times. This helps speed up the procurement process and improve the timeliness of supply.

a) Submission of material purchases is done automatically or semi-automatically through integrity with suppliers.

b) Purchase Orders (PO) are sent digitally, and delivery status can be monitored in the system.

5. Screen Printing Production Process. The screen printing production process is the core of the company's operations. Previously, there was no centralized documentation system for work schedules or order statuses. After digitization, Indocup Sablon began digitally recording work progress, from the design stage, film printing, screen printing, to final screen printing. While the system is still rudimentary, this status dashboard allows all departments to track the progress of each order, minimize delays, and avoid duplication of work. Production time efficiency increased by 20% compared to before and after digitization.

a) Production operators work based on work instructions from the system.

b) Production status is recorded in the system so that it can be monitored in real-time by management and other departments.

6.Quality Control. Before the implementation of DSCM, quality control was conducted randomly and Undocumented. Now, Indocup Sablon has created a simple digital checklist that the QC team uses to assess final orders based on design, color, and print accuracy. The check results are digitally summarized and used as evaluation data to reduce customer complaints. This reduces product return rates and increases overall customer satisfaction.

a) The quality inspection process is carried out according to the digital SOP displayed on the system.

b) Results are recorded directly into the system

7. Customer Management and Feedback. The customer service system was initially based solely on informal communication. Now, Indocup Sablon has developed a system for digital *customer feedback.* Through Google Forms, the WhatsApp Business API, and social media, feedback data is collected and processed into monthly evaluation reports. Customer complaints, such as delays, inappropriate screen printing results, or damaged packaging, are addressed more quickly thanks to a clear recording system. Furthermore, the company has begun

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implementing a digital loyalty system, including order history tracking for repeat customers.

a) The system stores order history and customer preferences.
b) Feedback can be collected automatically through surveys.

Research conducted at Indocup Sablon shows that the company faced significant challenges in its supply chain processes before adopting a digital supply chain management (DSCM) system. One of the main issues identified was manual and unintegrated order management, which frequently led to errors in recording design specifications, colors, and order quantities from customers. Furthermore, the management of raw material stocks, such as ink and plain t-shirts, was not optimal due to the lack of an inventory system that could monitor stock availability in real time. As a result, the company frequently experienced sudden stockouts, which hampered production. The screen printing production process itself was also not yet fully integrated. The company lacks structured time standards, resulting in frequent delays in order fulfillment. Another significant issue is the inefficient distribution and delivery of goods due to the lack of strong integration between production and logistics. These issues are exacerbated by the lack of real-time data that management can use to make strategic decisions, particularly regarding operational efficiency and production cost control.

To address these issues, researchers recommend several strategic solutions that Indocup Sablon can implement. First, the company is advised to implement an integrated digital supply chain application, such as Odoo, which can integrate order processing, inventory management, production, and distribution into a single digital platform. Implementing an automated order management system will help reduce the risk of errors in recording customer orders and expedite the order confirmation process. Furthermore, real-time inventory digitization is necessary to enable the company to accurately monitor raw material stock and receive notifications when supplies are running low. To address production delays, it is recommended to use a digital production scheduling system that can manage production processes according to machine capacity and available labor. Integration between the goods delivery system and production status is also crucial so the logistics department can prepare shipments earlier and more efficiently. Additionally, the company needs to build a monitoring dashboard that displays real-time data on production efficiency, stock availability, shipping status, and financial performance so management can make more informed and timely decisions.

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After the solution was implemented, initial results showed a significant increase in Indocup Sablon's operational efficiency. Production time increased by 20%, while order error rates decreased by 35%. Delivery delays were also reduced by 25%, and logistics operational costs decreased by 15%. These findings indicate that the digital supply chain management development strategy has had a significant positive impact on improving the company's overall efficiency.

Discussion

The research results show that the implementation of Digital Supply Chain Management (DSCM) at Indocup Sablon has had a positive impact on operational efficiency, although it is still being implemented gradually and is semi-digital. Digitization has begun to be implemented at several key stages, such as order receipt, production planning, stock management, and raw material procurement. With digital forms, spreadsheet-based filing, and structured production scheduling, the company has successfully reduced order errors by 35% and increased production time efficiency by 20%. The use of a daily electronic inventory system helps minimize raw material stockouts, while digitizing the procurement process and recording production status has accelerated communication between divisions. Quality control and customer management have also begun to be integrated with simple digital tools such as Google Forms, WhatsApp Business API, and spreadsheets, resulting in faster response to complaints. Although Indocup Sablon has not yet fully transitioned to a fully digital system like ERP or sophisticated SCM software, the gradual steps taken by Indocup Sablon have been proven to improve internal coordination, reduce delivery delays, and lower logistics costs by up to 15%. This strategy is relevant for SMEs with limited resources, where digitalization is implemented partially but purposefully to maximize results without excessively burdening the company's finances.

However, the implementation of DSCM at Indocup Sablon still faces several strategic obstacles that cause the company to continue using a semi-digital system. Limited technological infrastructure is a major obstacle, as the company lacks adequate hardware and software, such as servers, ERP systems, or integrated SCM applications, and faces challenges with unstable internet connections in production areas. Furthermore, limited funding makes it difficult for Indocup Sablon to fully invest in technology, given that the costs of software licenses, equipment purchases, training, and maintenance are quite high for an SME. Therefore, budget priorities are focused more on

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working capital and daily operations. Human resource (HR) readiness is also a challenge, as some employees are unfamiliar with complex digital systems, requiring intensive training to prevent productivity disruptions during the transition. Data security remains a concern, given that full digitalization requires a robust cybersecurity system to avoid the risk of information leaks or hacking attacks, while the company lacks adequate protection. Finally, the organizational culture, which is still in the transition stage, also has an impact, because some personnel feel more comfortable with the manual methods that have been used for a long time, so management chooses to carry out digitalization gradually so that the changes can be accepted and adapted well by all employees.

CONCLUSION

This study shows that the gradual implementation of Digital Supply Chain Management (DSCM) at Indocup Sablon has proven to be able to improve the company's operational efficiency. Digitalization at key stages—order receipt, production planning, stock management, raw material procurement, and quality control—has resulted in: Production time efficiency increasing by 20%, Order error rates decreasing by 35%, Logistics costs reducing by approximately 15%. Despite still facing infrastructure, human resource skills, and budget constraints, the gradual digitalization approach has proven effective for MSMEs. This is an important contribution to the DSCM literature, demonstrating that a partial digitalization strategy can still provide tangible benefits without requiring a full technology investment from the start.

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