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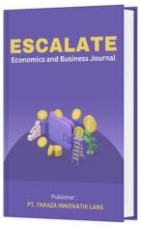

Implementation of a Notion-Based Manufacturing Information System for Operational Optimization (Case Study of MSMEs Dasteran Bendino)

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Abstract: *Indonesian MSMEs face low digitalization hindering operational efficiency and e-commerce competitiveness, particularly in fashion manufacturing like Dasteran Bendino. This study aims to analyze Notion-based Manufacturing Information System (MIS) implementation for operational optimization. Descriptive qualitative research employs interviews, field observations, and literature review. Population comprises Dasteran Bendino's operational processes; sample includes owner, production workers, and operational documents. Instruments are interview guides and observation sheets; data analysis uses thematic and descriptive techniques. Results reveal manual hybrid operations cause stock and production data inconsistencies; Notion implementation enhances recording accuracy, real-time monitoring, and waste reduction. Conclusion affirms Notion as a simple MIS provides practical contributions to MSME digital transformation, fostering scalability and sustainable competitiveness.*

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Introduction

SMEs (Micro, Small, and Medium Enterprises) become one of the key pillars in a country's economy. SMEs are the backbone of the economy, contributing significantly. Based on data from the Ministry of Coordinating Economics Affairs of the Republic of Indonesia, (2025), it states that the contribution of SMEs reaches more than 60% of the national Gross Domestic Product (GDP), and they absorb almost 97% of employment, with the number of SMEs currently exceeding 64 million units. This figure indicates that SMEs play a strategic

role as drivers of rural economic growth and can be useful in maintaining national economic stability. SMEs provide significant benefits, especially in creating jobs and supporting economic equality [Kholifah & Andini, 2024]. However, although SMEs have a significant contribution, this business sector also faces quite complex challenges. A common challenge for SMEs across Indonesia is digitalization. According to Septiani et al. (2024), low digital literacy can hinder access to markets, making them vulnerable to losing various opportunities. Only about 25% of SMEs are connected to the digital economy. This condition reflects limitations in adopting technology, causing business actors to fall behind. In terms of technological development and digitalization, the use of management information systems is also crucial to improving operational efficiency and strategic decision-making [Nababan et al., 2025]. The integration of information systems not only facilitates administration and sales but also plays a role in helping SMEs grow and prepare for increasingly rapid industry dynamics.

The creative industry sector, particularly the fashion industry, faces crucial challenges. Common challenges include difficulties in integrating information systems, from stock management and sales recording to understanding dynamic market trends. Using unintegrated systems can lead to operational inefficiencies, increasing risks such as recording errors and difficulty predicting market trends. In this context, the need for information systems and data flow management becomes even more important.

In digital business management, the concept of Management Information System theory forms a fundamental foundation. According to O'Brien J & Maracas G (2010), management information systems are a combination of people, technology, data, and procedures to present relevant information that supports decision-making related to planning, control, and evaluation. The existence of this information system allows business activities to become more structured amid the continuously evolving operational dynamics. Along with increasing complexity, the need for technological integration through a Manufacturing Information System (MIS) is essential to ensure that the production process can be more structured. According to Bodnar G & Hopwood W (2001), manufacturing information systems serve as frameworks used to generate information supporting manufacturing functions within a company. Manufacturing Information Systems (MIS) play an important role in improving production efficiency and effectiveness. According to Makhfiza & Hasibuan (2025), digital-based production information systems are designed to accommodate the limitations of SMEs and to promote Industry 4.0 transformation.

One SME facing these challenges is Dasteran Bendino SME. This business operates in manufacturing and fashion industry, with main products being home-made nightgowns. The operations of Dasteran Bendino SME are still quite simple, despite implementing online sales systems. The main weakness in this business is the lack of an information system in manufacturing processes, such as stock management, production recording, and daily operations, which are still basic. This condition can lead to operational inefficiencies and difficulty adjusting to market demand dynamics. Therefore, it is worthwhile to conduct a deeper study on the process of integration and improvement, especially Manufacturing Information System (MIS) and the implementation of Notion-based applications in Dasteran

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Bendino SME to enhance efficiency and competitiveness of the business.

Research Methods

This research was conducted at the Bendino Dasteran MSMEs located at Jl. Rejosari II, Keponan, Grabag, Grabag District, Magelang Regency, Central Java. The selection of the location in this research aims to gain a deeper understanding of the process of integration and improvement, particularly in the supply chain management and manufacturing information systems in Bendino Dasteran MSMEs. This research was carried out from October 2025 to November 2025, starting from the research planning process, implementation, to the preparation of the research report.

This study adopts a descriptive qualitative approach, with the goal of providing an in-depth description of the phenomena of integration and improvement, as well as Manufacturing Information Systems (MIS) at Bendino Dasteran MSMEs. The descriptive method was chosen because it can offer a deeper understanding of experiences and perceptions regarding the implementation of MIS in Bendino Dasteran MSMEs [Fadillah & Nasution, 2025]. The data used in this study are primary data, obtained directly from the field. The use of primary data allows researchers to gain a more detailed understanding of MSME operations. In addition to primary data, this study is also supported by secondary data through literature review activities, gathering important data on a specific subject or issue [Febrianto & Siroj, 2024].

Data collection techniques were conducted through interviews, enabling researchers to better understand the situation at Bendino Dasteran MSMEs. This interview process can produce accurate and research-relevant results, and researchers can clearly understand how the production activities are carried out and what challenges are faced. Besides primary data, this study also relies on secondary data through literature review activities. The literature review process was conducted via academic platforms such as Google Scholar and Sinta Journals, accessing several journals on the digitalization of MSMEs relevant to what takes place at Bendino Dasteran MSMEs.

Result and Discussion

The implementation of Manufacturing Information System (MIS) has become one of the essential needs for small and medium enterprises (SMEs) operating in the manufacturing sector because it can improve operational efficiency and maintain product quality consistency. In the context of the manufacturing industry, MIS functions to integrate information from raw materials, production processes, to output so that all production activities can be monitored in real-time and accurately [Widiastuti & Fatmawati, 2022]. Previous studies indicate that implementing MIS in SMEs can reduce production costs, accelerate work processes, and improve the accuracy of material planning and quality control [Hapsari & Azinar, 2018]. Furthermore, SMEs adopting production information systems are proven to have higher competitiveness because they can respond swiftly and data-driven to changes in market demand [Azizah et al., 2024]. Therefore, digitalization through MIS is no longer an option but a strategic necessity for SMEs that aim to survive and grow in an increasingly competitive

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industry environment.

The importance of implementing information systems in SMEs is based on the fact that the application of information technology contributes positively to operational efficiency and increased competitiveness. A literature review concludes that Management Information Systems (MIS) help SMEs in integrating production data, inventory, and reporting thereby improving the quality of business decision-making and resource efficiency [Hasanah et al., 2024]. In Indonesia itself, research on "Production Information Systems for SMEs" emphasizes that digital transformation in small manufacturing sectors requires adaptive, easy-to-use information systems that match the capacity of SMEs — not complex systems like large-scale ERP, but simple systems that can be operated without significant burden [Makhfiza & Hasibuan, 2025]. Consistent with quantitative research in Indonesia, it was found that the use of information technology (computers, the internet) by micro and small enterprises has a positive influence on production levels and output [Heryasa & Purmiyati, 2022].

The implementation of Manufacturing Information System (MIS) in Dasteran Bendino SMEs is carried out through the utilization of Notion application as the main platform for managing production data. Before using Notion, the recording process of raw materials, cutting results, sewing data, and quality control reports was done manually, often causing discrepancies between on-ground data and final reports. This condition made it difficult to monitor raw material availability, determine ordering needs, and evaluate daily productivity. Research by [Isnardi et al., 2024] explains that such issues are common in SMEs that do not have an integrated information system. This is also in line with findings Larasati et al. (2025) that manual recording in SMEs frequently causes data inconsistencies and low accuracy of operational reports.

The use of Notion provides significant changes, especially in the structure of record-keeping. Notion is used as a comprehensive database to store information on fabric inventory, types of materials, suppliers, and the quantity of materials used in each production batch. Each data change can be updated in real-time so that owners and production managers can monitor material availability more quickly and accurately. Digital data storage also facilitates predicting raw material needs based on production history, which previously had to be calculated manually. These findings are consistent with research Pratamansyah (2024) that asserts production information systems can improve material planning effectiveness and reduce stock shortages.

Additionally, Notion is applied to record production stages from cutting, sewing, to quality control. Each production activity is recorded in the form of a table or Kanban board that shows the status of the work in progress. In this way, the entire production process can be monitored transparently, and any status changes can be quickly known by concerned parties. This application simplifies the identification of production obstacles such as delayed sewing or a high rate of non-QC product failure. Digital-based recording like this has proven capable of increasing production efficiency and accelerating information flow, as stated by [Purnomo et al., 2024].

Notion is also used to record daily production outputs. Data concerning the number of

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successful products produced, the number of products failing QC, and production time can be documented in a single dashboard, making it easier for business owners to evaluate performance. The presence of a visual dashboard enables simple quantitative analysis of daily, weekly, or monthly productivity. In the context of MSMEs like Dasteran Bendino, the ability to perform data-based evaluations is crucial for optimizing production time and minimizing waste, as also mentioned by Wilestari et al. (2023), that the adoption of information technology in MSMEs can significantly improve operational efficiency.

Furthermore, the use of dashboards in Notion aids in performance evaluation through automatically recorded daily production data. Business owners can observe production trend results, reject rates from QC, and compare outputs between weeks. This data forms the basis for decision-making, such as determining overtime needs, adding sewing workers, or ordering raw materials earlier. A study by Ainurrokhim et al. (2024) supports this, where digitalization enables MSMEs to make strategic decisions based on data, allowing them to compete in a dynamic market.

The use of Notion as a simple MIS proves to have a positive impact on decision-making processes. With more accurate and structured data, business owners can set production schedules, determine the amount of materials to order, and evaluate employee productivity more objectively. This system supports the reduction of human errors that previously often occurred due to incomplete or unsynchronized production data. This aligns with findings from [Zulfadlillah, 2024], regarding the role of information systems in supporting data-driven operational decisions.

Further analysis shows that the implementation of Notion at Dasteran Bendino not only functions as a recording tool but also transforms into a basic Knowledge Management System (KMS) for the production team. Notion allows storage of technical product specifications, such as pattern cuts, size charts, and reference photos for quality standards in a single accessible page for the entire team. This is vital in the fashion industry to maintain consistency from batch to batch. As explained by Cerchione & Esposito (2016), in their study on knowledge management in SMEs, systems capable of storing and distributing technical knowledge (such as product specifications) can significantly reduce product defect rates caused by worker ignorance. With the centralization of technical data in Notion, Dasteran Bendino can minimize product variability, which is often a main weakness of small-scale garment industries.

In addition to standardization, the integration of Notion-based MIS also contributes to cost efficiency through more precise calculation of the Cost of Goods Sold (COGS). With detailed records of raw material usage per production batch, business owners can calculate the actual fabric consumption and compare it to initial estimates. This data enables the identification of waste during the cutting process. If Notion data shows fabric usage exceeding standards, an immediate evaluation can be conducted. The ability to perform digital cost tracking aligns with research from the International Journal of Production Economics, which states that digitalization of supply chains and production at the MSME level is key to achieving cost-efficiency and reducing material waste [Karatzas et al., 2021]. As a result, Dasteran Bendino becomes not only more organized in administration but also more “Lean” in operations.

Another success factor of this implementation is the aspect of mobility and

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accessibility offered by the cloud-based architecture of Notion. Unlike conventional on-premise systems that are rigid, Notion can be accessed via smartphones by workers on the production floor. This accelerates data input processes (such as marking sewing completion) without waiting for administrative input at the end of the day. The ease of use and perceived usefulness are primary indicators of technology acceptance among MSME actors. As found in research Ilahi et al. (2024), MSME decisions to adopt cloud-based technology are heavily influenced by the relative advantage, i.e., the ability of the technology to provide operational flexibility and cost efficiency compared to traditional systems. This flexibility shortens the production information cycle at Dasteran Bendino, enabling more agile responses to sudden orders. Overall, leveraging Notion as a Manufacturing Information System provides convenience for the MSME Dasteran Bendino in digitalizing and integrating production processes. This solution serves as an effective alternative for MSM.

Conclusion and Recommendation

Implementation of Manufacturing Information System in MSMEs has been proven to have a positive impact on operational efficiency and quality, as well as data accuracy. Digitalization through the use of Notion as a simple MIS can integrate information from raw material recording, production processes, to daily output reporting in real-time, thereby reducing data inconsistencies that previously often occurred when record-keeping was done manually. Previous research findings also reinforce that such digitalization improves planning accuracy, reduces human error, and helps MSMEs respond to market demand changes more quickly. Notion not only functions as a record-keeping tool but also becomes an integrated database for storing operational activity information of MSMEs.

This implementation also extends Notion's function as a Knowledge Management System (KMS), which stores technical production standards such as patterns, size charts, and quality standards to ensure product consistency. Additionally, detailed recording of raw material usage allows for more precise calculation of HPP and identification of waste in the cutting stage, impacting cost efficiency improvements and reducing material waste. Cloud-based access flexibility makes Notion easily accessible to production workers, speeds up data input, and shortens the production cycle time to improve response to sudden orders. Thus, the use of Notion as a simple MIS proves to be effective for Dasteran Bendino MSMEs. This system is not only a supporting tool but also a crucial strategy for MSMEs to enhance competitiveness and business sustainability.

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