PROCEEDING INTERNATIONAL CONFERENCE ON RELIGIOUS & CULTURAL SCIENCES
PENELEH RESEARCH INSTITUTE
E-ISSN : 3024-2364
VOLUME 7, SEPTEMBER 2025

INCRECS

ANALYSIS OF THE IMPLEMENTATION OF PRODUCTION MANAGEMENT INFORMATION SYSTEMS AT DEGAN SEHATI MSMES

Agil Rendra Pamungkas, Alif Fikrie Zainul Fais, Audhina Putri Nur Juliansyah, Dina, Nashiruddin Adli Y, Novrida Qusdi Lutfillah

Malang State Polytechnic, Jl. Soekarno Hatta No. 9, Jatimulyo, Lowokwaru District, Malang City, East Java, 65141, Indonesia

agilpamungkas511@gmail.com, zainulfaiz@gmail.com, audhinaputrinurjuliansyah@gmail.com, dina67774@gmail.com, nashiruddinadli10@gmail.com, novrida@polinema.ac.id

ABSTRACT

This study aims to analyze the implementation of the Production Management Information System (MIS) at the Degan Sehati MSME.This research uses a qualitative approach with a case study. The data obtained were analyzed using the Miles and Huberman interactive model. The research results show that Degan Sehati's production management system remains manual and heavily dependent on the owner's experience. The lack of historical data-based production planning, manual inventory management, and suboptimal waste management are key challenges. Research provides a real picture of how an informal information system operates in the context of MSMEs. This study uses an analysis that maps how the absence of a formal information system is the root cause of a series of interrelated operational challenges across the entire production management line of MSMEs.

Keywords: Management Information System; Production; MSMEs; With One Heart.

INTRODUCTION

Management Information System (MIS) is a group of steps to process data, analyze, and display data so that it has meaning and is useful in the decision-making process.(Ridwan et al., 2021)One relevant type of MIS is the Production Information System, a management information system that provides information on activities related to planning and monitoring the process of producing goods or services. A production information system consists of two elements: a physical production system, which is the activity of carrying out production, and a production information system, which is a system to support the production process.(Asmawati et al., 2017).

Generally, production is the process of processing raw materials into finished products or increasing the value of a product (either goods or services). Meanwhile, the production process is the activity that combines various existing production elements to create a product, whether goods or services. The purpose of the production process is to produce goods or services.(Arwini, 2021)The

creation of goods or services through a process is commonly referred to as production. Effective and efficient production decision-making is the goal of production management.(Oktaria et al., 2024).

In this context, information regarding production is very necessary in making decisions related to production management, such as decision making in a manufacturing industry, especially decisions in aggregate planning including inventory, scheduling, capacity and resources.(Pradana et al., 2015). Unpredictable demand in MSMEs poses obstacles to the implementation of Management Information Systems (MIS). Therefore, MSMEs require a management information system, especially in the production department. This is based on the results of problem identification, which indicates issues such as delays in raw material purchases, delays in the arrival of raw material suppliers, and other issues that affect production planning and disrupt the performance and productivity of the production department.(Tjandrarini et al., 2024).

In line with this, a Production Management Information System (MIS) is a system that can integrate and automate production management. A MIS uses technology to organize production information effectively and accurately. Previous studies have shown that increased production efficiency is due to the proper implementation of a MIS.(Sidik et al., 2018). The implementation of an integrated production management information system helps with rapid data processing, thereby resolving production SIM issues to support planning, process optimization, and operational monitoring.(Hery et al., 2022). Dwijaya et al.,(2020) Information about stock, production processes, sales, and purchasing can be managed and accessed in real time thanks to an integrated information system. This allows companies to respond quickly to customer demand and market changes. Management decision-making can be supported by an integrated management information system. Therefore, this can be done because it can reduce data redundancy, improve coordination, and execute business processes across management functions, ultimately increasing productivity.(Tjandrarini et al., 2024).

Degan Sehati is a Micro, Small, and Medium Enterprise (MSME) operating in the culinary sector, specifically in the processing of young coconuts. Degan Sehati produces coconut water, a refreshing drink offering pure coconut water without added sugar or artificial preservatives. During the production process, three workers process the young coconuts using simple equipment without the aid of modern machinery. However, the production process is often hampered by weather, especially during the rainy season. Despite these production challenges, Degan Sehati strives to maintain optimal product quality.

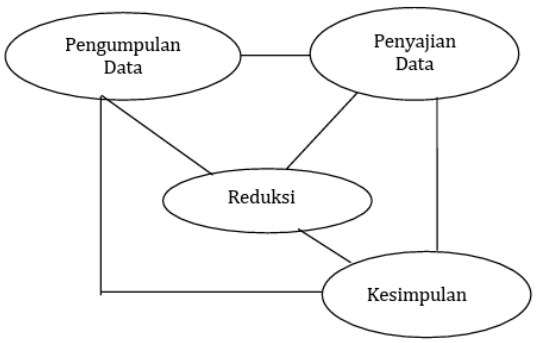
Production management at Degan Sehati is carried out simply by summarizing purchases and sales using Microsoft Excel software. However, this recording only considers incoming and outgoing cash without considering costs incurred during the production process. Based on this, Degan Sehati's recording is considered to have limited information to maximize the production process. This lack of production information causes inefficiencies in the raw material procurement process, the production planning process, mismatches between supply and demand, and during the distribution and financial recording process. Therefore, the implementation of a Management Information System (MIS) is highly relevant and important to support the performance of MSMEs, especially in production management.

Based on the problems mentioned above, this study aims to determine the implementation of a management information system at the Degan Sehati MSME. Furthermore, this study has broader significance in the context of MSME development in Indonesia. Many MSMEs are still reluctant or unable to adopt management technology due to limited knowledge, costs, and access to technology. Therefore, the results of this study are expected to serve as a reference for other MSMEs in understanding the real benefits of implementing MIS, as well as serve as a reference in policy-making by MSME support institutions. Therefore, this study will focus on how the Manufacturing Information System (MIS) Production is implemented at the Degan Sehati MSME, by examining how the system is structured, how it works, and what results have been achieved from its use. This study uses a qualitative approach with a case study method, where data is obtained through interviews, direct observation of the production process, and a review of documents used in managing production information. Data analysis is carried out descriptively.

RESEARCH METHODS

The research method in this article is descriptive with a qualitative approach, where researchers describe and analyze phenomena, events, attitudes, and perceptions individually and in groups in order to find principles and explanations that lead to conclusions.(Sukmadinata, 2017)This study used a semi-structured interview as a data collection method, which involved creating an outline of questions for the owner of Degan Sehati. The interview was conducted in one meeting, with an estimated duration of 60 to 90 minutes. Questions covered general aspects of production planning, raw material management (coconut), production and operational processes, quality control, and inventory management.

In addition to interviews, direct observations will be conducted at Degan Sehati's production site to observe detailed workflows and operational practices. Meanwhile, secondary data will be collected through documentation of each production process carried out by Degan Sehati. All collected data will then be analyzed using the Miles and Huberman interactive model.(Miles et al., 2014). Miles and Huberman's analysis flow consists of 1) Data collection, 2) Data reduction, 3) Data presentation, and finally 4) Conclusion. Miles and Huberman's interactive model when conducting data analysis is implemented simultaneously with the data collection process. The techniques used in analyzing the data can be visualized as follows:



Picture1. Quantitative Data Analysis Techniques

Source: Miles and Huberman (2014)

Data Collection Stage This phase includes collecting data obtained from interviews, observations, and documentation, recorded in descriptive notes. Descriptive notes are direct documentation of the researcher's observations and experiences. This phase focuses on collecting relevant and original data from Degan Sehati.

Data Reduction Stage Data reduction involves selecting relevant and meaningful data, focused on solving problems, discovering, interpreting, or answering research questions. After collecting data at Degan Sehati, the next step is the data reduction process. Researchers will only retain findings relevant to Degan Sehati's research problem, namely data related to production management processes such as data from selling price determination, production planning, production, completion, and sales. Meanwhile, unrelated data will be discarded, such data can be other management processes unrelated to production management, such as marketing carried out by Degan Sehati. In other words, data reduction serves to sharpen analysis, classify, direct, and organize data, making it easier for researchers to draw accurate conclusions about Degan Sehati.

Data Presentation Stage Data presentation is a written or verbal presentation, using images, graphs, and tables to combine information to illustrate the current situation. Data presentation is used to organize and structure complex information into a concise, concise, and systematic format. After the data from Degan Sehati has been reduced, it is presented in written form to describe the findings and explain the production process at Degan Sehati, along with evidence in the form of interview quotes and documentation images.

Conclusion Drawing Stage This process is carried out throughout the research process, such as data reduction. Once sufficient data has been collected, preliminary conclusions are drawn. Once the data is complete, final conclusions are drawn. In the Degan Sehati research, the conclusion-drawing process is dynamic. From the beginning, researchers strive to identify patterns, themes, and relationships within the data. The existing data is then combined to gain a deeper understanding of Degan Sehati.

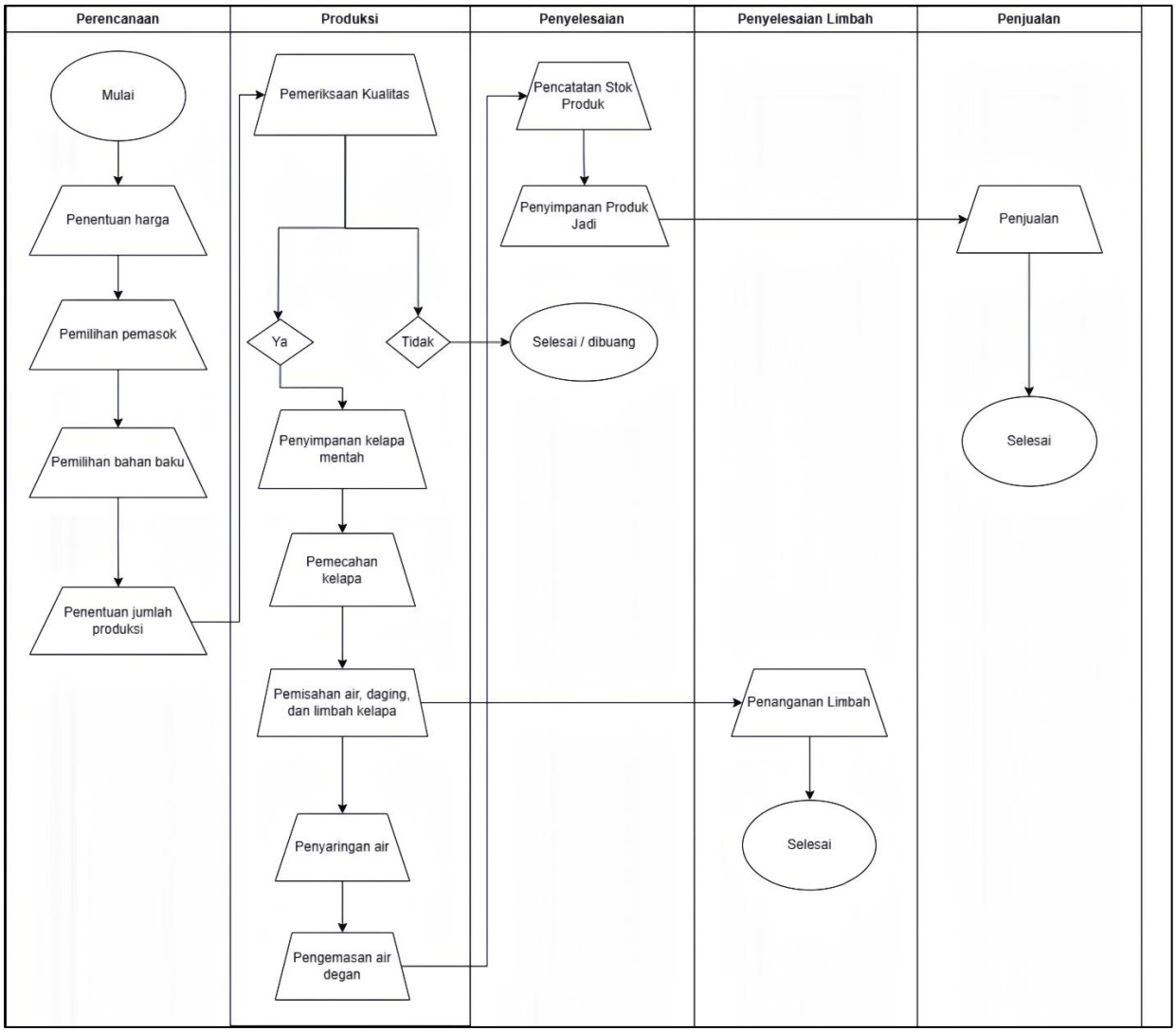
RESULTS AND DISCUSSION

Overview of Degan Sehati

Degan Sehati is a micro, small, and medium enterprise located in Malang, East Java, that focuses on the production and sale of ready-to-drink young coconut water (degan). Founded in 2024, Degan Sehati has grown into a locally recognized supplier of fresh degan drinks, serving customers directly and through events such as Car Free Day (CFD) and partnerships with offices. Their main product is pure coconut water served in glass cups. The production process still relies heavily on manual labor with simple equipment, from selecting coconuts from local suppliers, opening the coconuts, filtering, and packaging. The main challenges Degan Sehati often faces include issues related to fluctuations in coconut supply and suboptimal stock management. This study aims to identify crucial areas in Degan Sehati's production management system in order to formulate more efficient and sustainable planning.

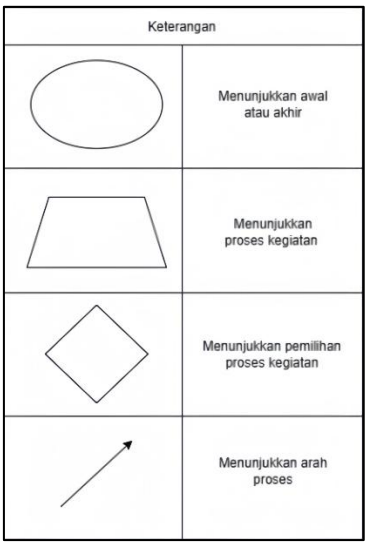
Implementation of Production Management Information System at Degan Sehati

The implementation of a production management information system at Degan Sehati is crucial for improving efficiency, data accuracy, and decision-making. Currently, most processes are still manual, but with information system integration, each stage can be better monitored and managed. The following is a flowchart illustrating the Degan Sehati production process.



Picture2. Flow Chart of the Degan Sehati Production Management Information System

Source: Processed data



Picture3. Explanation of symbols from Flow Chart

Source: Processed data

The implementation of the production management information system at Degan Sehati will touch every block in the flowchart above, transforming manual processes into more automated and data-driven ones.

a. Production Planning (Weekly Production Planning)

Degan Sehati's production planning process involves determining the selling price, selecting raw materials, selecting suppliers, and determining production volume. The first step in Degan Sehati's production planning process is determining the selling price.

> "We used to determine our selling price through trial and error. We first looked at the target market. For events, we usually priced it at around Rp 10,000 to Rp 15,000 for a 500 ml bottle, depending on the variant. For office sales, we priced it at Rp 10,000 for a 350 ml bottle," explained Mr. Welly on May 24, 2025.

Degan Sehati's pricing has been determined repeatedly through various estimates based on the target market, booth rental costs, and transportation costs. The target market influences the higher price. During sales events like Car Free Day, many potential customers are tired from exercise and the hot weather. Therefore, the pricing for certain events is set at between Rp 10,000 and Rp 15,000 for a 500 ml bottle, taking these factors into account.

Furthermore, Degan Sehati also implements a consignment sales system, where Degan Sehati products are consigned to certain offices. The consignment price is Rp 10,000 for a 350 ml bottle. The consignment price is lower than the price at events because consignment eliminates rental and transportation costs. Furthermore, it targets consumers, such as employees, who expect affordable prices.

The results of an interview with the owner of Degan Sehati, Mr. Welly, showed that production planning when selecting suppliers and raw materials at Degan Sehati is still optional.

"We usually look for collectors who can deliver the coconuts we request. We choose suppliers who can fulfill our requests," explained Mr. Welly on May 24, 2025.

The coconut selection process typically involves finding suppliers who meet the desired coconut criteria. Degan Sehati seeks out collectors capable of meeting its demand. Problems often arise from suppliers being unable to meet sudden demand. This forces Degan Sehati's owners to quickly find suppliers who can meet the demand.

This approach highlights a major problem in Degan Sehati's raw material supply management. The system Degan Sehati employs tends to address existing problems, rather than prepare for them. The habit of seeking suppliers on the spur of the moment puts the business in a weak position during price negotiations. As a result, the business is vulnerable to price fluctuations, and the cost of obtaining raw materials can become significantly higher.

After selecting suppliers and raw materials, Degan Sehati begins the production volume determination process. This is to ensure that there are neither too many nor too few items produced.

*"We usually look at previous sales trends and the weather. If it's hot, demand increases, so we stock up on more coconuts. But sometimes we miss the mark."*said Mr. Welly during an interview on May 24, 2025.

Degan Sehati determines production volume based on existing conditions. This process is determined by previous sales results and the weather at the time of production. If previous sales are high and satisfactory, production will be increased. However, sometimes results don't meet expectations. Degan Sehati's production volume determination method is highly practical for small to medium-sized businesses. This is because it relies solely on the owner's intuition and unpredictable external factors like weather, which can make production estimates inaccurate.

Inaccurate forecasting can lead to two types of losses. The first is the risk of overproduction, which occurs when sales are high but sales are low, resulting in wasted product, resulting in losses. The second is the risk of underproduction. This occurs when sales are lower than expected, leading to Degan Sehati missing out on opportunities for greater profits.

However, Degan Sehati has a way to address the first problem, as explained by Mr. Welly, the owner of Degan Sehati.

"If there's still a lot of leftovers, we usually try selling via WhatsApp. We promote them directly through WhatsApp. This way, we can sell all the remaining Degan. The only difference is that it takes longer to sell and has to be delivered to consumers," said Mr. Welly during an interview on May 24, 2025.

In an interview, Mr. Welly explained the strategy he employs when faced with a surplus of product. If there's a large amount of unsold leftover degan at the stand, Degan Sehati will switch to WhatsApp as an alternative sales channel. Through direct promotion to their contacts, Degan Sehati

successfully sells out the remaining product. However, Mr. Welly acknowledged some consequences of this method, including a longer sales process and the need to deliver the product directly to consumers.

b. Production process

The production process at Degan Sehati, a small and medium enterprise, begins with checking the quality of young coconuts from local suppliers. Quality control is a key component of degan production. According to Degan Sehati's owner, Mr. Welly, coconut quality varies widely.

> "We try to choose young coconuts, those with lots of water and little flesh. But sometimes we find some that are bad, with little water or rotten. That's a challenge in itself," explained Mr. Welly on May 24, 2025.

Degan Sehati's quality inspection process involves visually selecting coconuts to ensure the quality of the raw materials. However, Mr. Welly explained that this effort isn't always consistently successful, as substandard coconuts are often found. Coconuts that appear to be rotting on the outside typically have cloudy water, making them unusable, affecting the quality of the Degan being sold. Coconuts that fail inspection are discarded, and those that do pass are then moved to the raw coconut storage stage, where storage monitoring is carried out manually.

The next stage is storing the raw materials. Observations show that the coconuts are stored in the backyard without any special temperature control.

Picture4. Storage Location for Degan Sehati Coconuts
Source: Personal Document

Figure 4 shows coconuts stacked in an open area. Lack of temperature and humidity regulation can accelerate spoilage, as also mentioned in the interview with Mr. Welly. Storing coconuts in the open can affect their shelf life by a maximum of two weeks.

> *"Stored coconuts usually last up to two weeks if stored in an open place like this."*said Mr. Welly during an interview on May 24, 2025.

Degan Sehati's coconut storage process reveals a serious problem in raw material inventory management. Storing coconuts outdoors, with a maximum shelf life of two weeks, leads to indirect losses. This is because Degan Sehati must purchase raw materials in small quantities, forcing it to fall into the habit of seeking suppliers at short notice. Overall, this inadequate storage method makes Degan Sehati's work patterns impromptu, high-risk, and inefficient.

The next step after storing the coconuts is the process of cracking them. Mr. Welly himself uses a sharp machete to crack the coconuts. Observations demonstrate the worker's speed and precision.

Picture5. Coconut Cracking Process at Degan Sehati
Source: Personal Document

Figure 5 shows the coconut cracking process carried out by the owner. The process primarily produces coconut water, which then produces coconut waste.

Picture6. Coconut Waste in Degan Sehati
Source: Personal Document

Figure 6 shows coconut waste from coconut cracking. Coconut waste is the unused material left over from coconut processing. For Degan Sehati, this coconut waste is discarded because the owner has not yet processed it further. This waste processing actually presents a potential area for increasing efficiency and revenue. Each component of the coconut waste has economic value that can

be developed into value-added products. By exploring this waste processing opportunity, Degan Sehati has the potential to create new revenue streams, reduce disposal costs, and implement a more sustainable, zero-waste business model.

The next step is filtering the coconut water. The coconut water is filtered using tissue paper before being stored in a large container. Packaging: The coconut water is packed into plastic cups and sealed using a press. Hygiene is a primary concern at this stage.

Picture7Coconut Water Packaging Process
Source: Personal Document

Figure 7 shows the packaging process. The packaging stage is crucial because it maintains the quality and hygiene of the product before it is sold. Degan Sehati employees carry out the packaging process one by one using a special press. An automatic press was chosen for the packaging sealer because it is more time-efficient and maintains the product's hygiene.

c. Completion Stage

The final stage at Degan Sehati is the inventory management process. This stage involves counting products ready for sale and storing them in a refrigerator to maintain their best quality.

> *"At the finishing stage, we only count the number of products we want to sell tomorrow, and then once we have calculated it, we store it in the refrigerator so that the product remains in good condition for sale."*said Mr. Welly during an interview on May 24, 2025.

Degan Sehati's product completion process begins with product counting and storage. The calculation of the products to be sold is done by directly counting the number of products. Once the products meet the planned quantity, they are stored in the refrigerator.

Product

The final production stage at Degan Sehati demonstrates a clear work order. Refrigerating the product is the right step, as it maintains freshness and quality. Once the storage process is complete, the company can proceed to the sales stage.

d. Sales Stage

The sales stage in Degan Sehati's production management system is the point at which products, having gone through the entire production and finishing process, are ready for distribution to consumers. Once the products are packaged, stocked, and stored, they move to the sales stage.

Picture8. The Sales Process with Heart

Source: Personal Document

Figure 8 depicts the Degan Sehati sales process and the products themselves. At this stage, the products will be distributed or sold to customers. This sales process serves as the final link between the Degan Sehati MSME and its market, where the products produced will meet consumer demand.

> "Usually, we sell regularly at every CFD event or if there are other special events. Besides the main sales at the event, we also consign sales to offices that have collaborated with us," said Mr. Welly during an interview on May 24, 2025.

According to the owner, Degan Sehati implements a two-channel sales strategy. Its primary sales channel is direct sales during events, such as Car Free Day (CFD). This channel offers the advantage of quickly reaching a large number of customers, but presents challenges such as uncertain income and difficulty in estimating production volumes. As a counterbalance, Degan Sehati uses a second channel, a consignment system, through partner offices. This system provides a more stable income, although the potential profit per product is smaller. Combining these two channels is an effective strategy for maintaining business balance. However, this sales model requires more careful production planning and preparation to maximize profits.

Production Management System Recommendations for Degan Sehati

Based on a comprehensive analysis of Degan Sehati's production management system, several strategic proposals are recommended to improve operational efficiency, quality, and sustainability.

a. Development of Production and Quality SOPs

Developing Production and Quality Standard Operating Procedures (SOPs) is a crucial step. SOPs can be clear, written guidelines covering every stage of the production process, from receiving raw materials and opening, screening, and packaging. Their purpose is to ensure consistent product quality, minimize errors, and streamline the training process for new employees.

b. Data-Driven Production Planning System

Implementing a data-driven production planning system is crucial. This involves systematically recording daily or weekly sales. This historical sales data is then used to predict future demand, such as average daily/weekly sales, which then forms the basis for adjusting production volumes. The primary goal is to reduce the risk of overstocking or understocking, minimize coconut waste, and optimize the use of existing resources. Initial implementation can be achieved simply by using a more structured notebook or utilizing a simple smartphone app to facilitate sales recording.

c. Improved Inventory Management

Degan Sehati can adopt a more organized stock recording system, for example using detailed manual stock cards or a simple computerized spreadsheet, for both raw materials (coconuts) and finished products. Furthermore, implementing the First-In, First-Out (FIFO) method for coconuts is crucial to prevent spoilage and minimize losses. The goal of this improvement is to reduce the risk of loss or waste, facilitate accurate stock tracking, and fundamentally support more precise production planning.

d. Optimizing Waste Utilization

Optimizing waste utilization offers significant opportunities to increase economic value and business sustainability. Degan Sehati can process coconut shells into charcoal or briquettes, or process remaining coconut flesh into snacks or animal feed, or even sell the waste. The goal of this strategy is to increase the selling value of by-products, reduce the volume of waste generated, and overall improve business sustainability.

Conclusion

Based on the research and discussion on the implementation of a production management information system at the Degan Sehati MSME, it can be concluded that the current production management system is still manual and highly dependent on the business owner's experience. Production planning is not based on structured historical data, resulting in frequent mismatches between production volume and market demand. Inventory management is carried out manually and lacks a neat and accurate recording system, leading to the risk of data errors and difficulties in stock recording. Furthermore, the potential waste from the production process has not been optimally utilized, despite its high economic value. These weaknesses indicate an urgent need for the implementation of a more structured and data-driven production management information system to make Degan Sehati's operations more efficient, consistent, and sustainable.

This research contributes both scientifically and practically. Scientifically, this research adds insight into the application of production management information systems at the MSME scale, which still relies heavily on manual processes, and demonstrates the urgency of digitizing micro-business operations to increase competitiveness. Practically, the results of this research can serve as a direct reference for similar MSMEs in implementing simple yet effective strategies such as developing production SOPs, structured sales data recording, an efficient stock management system, and optimizing waste into value-added products. The novelty of this research lies in the integration of a data-driven management approach in the context of MSMEs with limited resources.

REFERENCE

Arwini, NPD (2021). Bread, Selection of Ingredients and Manufacturing Process. Vastuwidya Scientific Journal, 4(1), Article 1. https://doi.org/10.47532/jiv.v4i1.249

Asmawati, E., Absari, DT, Herlambang, A., & Haryono, Y. (2017). Analysis and Design of Production Information Systems in Sidoarjo Cracker MSMEs. Teknika, 6(1), 1–6. https://doi.org/10.34148/teknika.v6i1.64

Dwijaya, DA, & Setiawansyah, S. (2020). APPLICATION DESIGN FOR STUDENT VIOLATIONS AND ACHIEVEMENT AT SMP KARTIKA II-2 BANDAR LAMPUNG. Journal of Informatics and Software Engineering, 1(2), 127–136. https://doi.org/10.33365/jatika.v1i2.313

Hery, Kaheja, AM, Haryani, CA, & Widjaja, AE (2022). Development and Research of Production Management Information Systems (Partner: PT. Maju Bersama Persada Dayamu (MBPD) Tangerang). GIAT: Technology for Society, 1(1), Article 1. https://doi.org/10.24002/giat.v1i1.5855

Miles, M. B., Huberman, A. M., & Saldana, J. (2014). Qualitative Data Analysis.

Oktaria, R., Numberi, ATA, Triyoga, M., Rouf, A., Ainisyifa, R., & Suryati, A. (2024). PRODUCTION MANAGEMENT OF HOME INDUSTRY OPAK COIN IN SIDORAHAYU VILLAGE, NORTH LAMPUNG. 6(1).

Pradana, AC, Santoso, PB, & Eunike, A. (2015). Designing a Production Management Information System Using a Fuzzy Logic Approach to Determine Production Quantities. Journal of Industrial Systems Engineering and Management, 3(1), 154–165.

Ridwan, M., Widiastiwi, Y., Zaidah, A., Purabaya, hy H., Isnainiyah, IN, Ardilla, unita, Kraugusteeliana, Krisnanik, E., Yuliana, R., Arta, IPS, Ningsih, S., Solihin, IP, Guntoro, Putra, AR, & Rahayu, T. (2021). Management Information Systems (1st ed.). Publisher Widina Bhakti Persada Bandung.

Sidik, A., Bronto Waluyo, ET, & Susilawati, S. (2018). Design of Production Management Information System at PT Aneka Paperindo Sejahtera. GLOBAL SISFOTEK JOURNAL, 8(2). https://doi.org/10.38101/sisfotek.v8i2.186

Sukmadinata, NS (2017). Educational Research Methods. Rosdakarya Youth.

Tjandrarini, T., Tanuwijaya, H., & Purnawan, Y. (2024). Implementation of an Integrated Production Management Information System Using Agile Methods. Journal of Information Systems Management Economics, 5(6), 650–662. https://doi.org/10.38035/jemsi.v5i6