

THE KEY TO SMOOTHING SUPPLY CHAINS: AN ANALYSIS OF ENTERPRISE RESOURCE PLANNING IMPLEMENTATION AT CV MANDIRI KOPI MEDAN

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Abstract: This study aims to analyze the potential implementation of Enterprise Resource Planning (ERP) in improving supply chain efficiency at CV Mandiri Kopi, a coffee bean processing manufacturer located in Medan, North Sumatra. Using a qualitative approach, this research identifies the benefits and challenges of applying ERP tools in business operational processes and their contribution to supporting Indonesia's digital economic growth. Data collection instruments used interviews with the Export Marketing Manager as the respondent, strengthened by focused group discussions to stimulate “self-disclosure” between the researcher and respondent, revealing primary data on the supply chain condition before ERP implementation. Analyzed data show that ERP implementation can enhance resource efficiency, inventory management intensity, and organized production planning. Challenges such as employee resistance and technological training needs may arise, but the long-term benefits of ERP tools implementation make it a solution for CV Mandiri Kopi's progress and high competitiveness.

Keywords: *Digital Economics, Enterprise Resource Planning (ERP), Supply Chain.*

Introduction

In today's rapidly evolving global business landscape, one of the key factors that determines success is how efficiently a company manages its supply chain. An efficient supply chain not only boosts productivity but also reduces costs, improves customer satisfaction, and strengthens a company's competitive edge. In the coffee industry, where Indonesia plays a pivotal role as one of the world's largest coffee producers, effective supply chain management becomes even more crucial. CV Mandiri Kopi, an exporter based in Medan, North Sumatra, faces significant challenges in managing the flow of coffee beans from farmers in Aceh Tengah and Bener Meriah to the international market. The company navigates complex routes involving several stages of distribution, where inefficient management can lead to issues such as inventory discrepancies, delayed shipments, and poor coordination among various stakeholders.

CV Mandiri Kopi operates with three main supply chain routes, each with different levels of involvement:

Channel I: Coffee farmers in Aceh Tengah (Takengon) and Bener Meriah supply their produce to village collectors. These collectors then distribute the coffee beans to small traders at the subdistrict level. From there, the beans move to large traders in the region, who forward them to agents or suppliers in Medan. The beans are then sent to CV Mandiri Kopi for export.

Channel II: In this channel, coffee farmers also sell to village collectors, but the coffee then moves directly to larger traders at the subdistrict level. From there, the beans are forwarded to agents or suppliers in Medan, and eventually reach CV Mandiri Kopi for export.

Channel III: This route involves a more direct process. Coffee is collected from farmers by village collectors and is then sold to large traders within the village, bypassing subdistrict-level traders. The beans are directly sent to CV Mandiri Kopi for export.

Each of these supply chain channels presents unique challenges, from coordinating between multiple parties to ensuring timely and accurate shipments. Without a robust system in place, CV Mandiri Kopi could face significant delays, errors in inventory, and higher operational costs. This is where modern technology, such as Enterprise Resource Planning (ERP) systems, can play a transformative role.

ERP systems integrate various business functions—such as inventory management, production, shipping, and marketing—into a single connected platform, offering a clear and transparent view of operations. Implementing ERP at CV Mandiri Kopi could help optimize inventory management by allowing the company to track coffee stocks in real time, avoid stock shortages or overstocking, and ensure timely supply to meet market demand. By automating the order and inventory management processes, ERP would minimize the risk of human error, improve data accuracy, and allow for more precise demand forecasting.

Additionally, the ERP system could significantly speed up order processing times, which is crucial in the highly competitive coffee market. As coffee production and demand fluctuate, the ability to process and ship orders quickly can give CV Mandiri Kopi a competitive edge. Through automation and seamless integration across departments, the system would reduce the time spent on manual data entry and coordination between different stakeholders, including farmers, traders, and suppliers. This would not only improve efficiency but also enhance customer satisfaction by ensuring that orders are fulfilled on time and to specification.

Another advantage of implementing ERP is the potential for cost reduction. By automating various business processes, the system can help CV Mandiri Kopi reduce operational costs that arise from inefficiencies in manual processes. For example, in warehouse management, ERP would allow the company to better track inventory levels, reducing the costs associated with excess storage or missed shipments. The system's ability to track and report on each stage of the coffee's journey from farm to export also ensures that each step is transparent, reducing the risk of lost or misplaced goods.

However, the adoption of ERP comes with challenges. The initial investment required for the system can be high, which might be a significant concern for companies with limited budgets. Additionally, the successful implementation of an ERP system requires proper training for employees to use the software effectively. Without adequate training and support, employees may resist the transition, which could hinder the system's success.

Despite these challenges, the long-term benefits of ERP are undeniable. By adopting ERP, CV Mandiri Kopi can enhance coordination among the various parties involved in its supply chain—from farmers to exporters—improving communication and making decision-

making faster and more informed. The system's ability to offer real-time updates on inventory levels, shipment statuses, and market demand will allow CV Mandiri Kopi to react more swiftly and effectively to changes, ensuring smooth operations and a stronger position in the competitive coffee export market.

In conclusion, ERP implementation offers significant strategic advantages for companies like CV Mandiri Kopi, especially in the context of managing a complex supply chain. Through enhanced transparency, efficiency, and cost-effectiveness, ERP systems enable companies to stay ahead in an increasingly competitive global market. By embracing this technology, CV Mandiri Kopi can improve its operations, reduce costs, and expand its reach, ultimately contributing to its success as a key player in the international coffee trade.

Literature Review

Enterprise Resource Planning (ERP) systems are a fundamental component for businesses to manage various operational processes. These systems integrate critical areas such as product planning, manufacturing, development, marketing, and sales. Through ERP software, companies are able to streamline their operations into a unified application, database, and user interface. The software is the most visible part of the program, combining multiple facets of an operation into one seamless solution (Hasan et al., 2021). By doing so, ERP systems enhance business process management, enabling businesses to increase operational efficiency and reduce errors or redundancies.

The ERP system is composed of various modules, each focusing on a specific area of business processes. These modules can be individually purchased based on the organization's needs and technical capabilities. This modularity allows companies to tailor their ERP systems to meet their unique requirements (Beal, 2015). Each module is specialized to handle different business functions such as product development, sales, planning, and marketing, ensuring that every aspect of the business is covered (Siddiqui et al., 2021). The flexibility of ERP systems in their module selection provides organizations with the ability to scale operations based on their growth or specific business needs.

As businesses increasingly move toward digitalization, ERP systems are also transitioning to cloud-based platforms. Cloud-based ERP offers a wide range of benefits, including easy scalability, cost savings, and improved operational efficiency. With the cloud ERP system, businesses can manage various activities, including supply chain management, distribution processes, financial transactions, human resources, and payroll (Siddiqui et al., 2021). Cloud ERP enables faster access to real-time data, improving decision-making and resource management. However, it is important to note that the quality and functionality of cloud ERP services can vary significantly depending on the provider (Alnuaimi et al., 2021).

The evolution of ERP systems can be traced back to the 1960s, where enterprise information systems (EIS) were introduced to automate inventory control functions. During the 1970s, Material Requirements Planning (MRP) systems emerged, primarily used in manufacturing to assist with production and inventory management (Hamadneh et al., 2021). These systems evolved further in the 1980s into Manufacturing Resource Planning (MRP II), which expanded the functionalities of MRP to include workforce management, scheduling, and other production-related processes (Kashif et al., 2021). This evolution laid the foundation for modern ERP systems, which integrate all organizational processes across departments, not just those related to production or inventory management.

A critical benefit of ERP systems is their ability to improve operational efficiencies by reducing redundant tasks, standardizing business procedures, and automating key functions. This integration allows organizations to streamline processes and focus on their core competencies. The software helps to manage activities such as supply chain management, project planning, financial data accuracy, human resources management, and more (Siddiqui et al., 2021). These systems also play a crucial role in the accurate tracking of business resources, lowering purchasing costs, and managing critical back-office operations (Hasan et al., 2021).

Despite the widespread use of ERP systems, the implementation of these systems can present several challenges. Companies must thoroughly understand their business requirements and processes before implementing ERP software. Proper analysis of current operations and active involvement from employees is essential in developing a robust strategy for system adoption (Ghazal, 2021). Furthermore, the performance of ERP systems must be carefully measured and assessed to determine the value they bring to organizations (Shena et al., 2021).

ERP systems also differ significantly in terms of their technology and functionality. For example, while cloud-based ERP offers scalability and flexibility, traditional on-premises ERP solutions may still be preferred by some organizations due to data security concerns or specific customization requirements (Alnuaimi et al., 2021). In choosing an ERP system, organizations need to evaluate the vendor's offerings, ensuring that they align with the company's strategic goals and operational needs.

From an academic perspective, various studies continue to investigate the performance of ERP systems in different organizational contexts. For instance, research conducted by Shena and Chen (2021) explores the performance measurement of ERP systems through a quantitative balanced scorecard approach, aiming to identify factors that influence ERP success. Studies like these are crucial in refining ERP systems and improving their overall effectiveness in business operations. Furthermore, there is a growing interest in understanding how ERP systems can be adapted and implemented across different industries, such as healthcare, retail, and manufacturing (Mondol, 2021).

As companies embrace digital transformation, ERP systems are expected to continue evolving. The future development of ERP systems will likely focus on improving user experience, enhancing accessibility, and enabling better integration with emerging technologies such as artificial intelligence and blockchain. These advancements may lead to more intelligent ERP systems that can predict trends, automate decision-making processes, and enhance overall organizational agility (Alsharari, 2017). Moreover, the shift towards cloud ERP solutions presents an opportunity for organizations to optimize their operations in a cost-effective manner while achieving greater flexibility in managing business resources (Raihana, 2012).

ERP and Supply Chain at CV Mandiri Kopi Medan

The integration of ERP systems is crucial for companies like CV Mandiri Kopi Medan, especially when managing complex supply chains. As a company involved in coffee production, CV Mandiri Kopi Medan deals with sourcing raw materials, managing inventory, production planning, and distribution processes. A well-implemented ERP system could significantly improve the management of these supply chain functions, providing real-time data on inventory levels, supplier performance, and production schedules.

For CV Mandiri Kopi Medan, implementing an ERP system could streamline their supply chain by automating order management, improving vendor relationships, and reducing errors associated with manual data entry. By integrating the supply chain functions into a single ERP system, the company can gain greater visibility into inventory levels, reducing the risk of stockouts and improving the efficiency of procurement processes (Khan & Ghazal, 2021). Additionally, the ERP system would allow CV Mandiri Kopi Medan to track shipments in real-time, providing valuable insights into delivery times, helping optimize the distribution process and reducing delays in the supply chain.

One of the challenges CV Mandiri Kopi Medan may face when adopting an ERP system is selecting the right modules that align with the company's specific needs. Since ERP systems offer a range of modules, CV Mandiri Kopi Medan must carefully evaluate the software based on the unique demands of its supply chain operations (Beal, 2015). The company must also ensure that employees are adequately trained to use the ERP system effectively, which may require a significant investment in training and development (Siddiqui et al., 2021).

In terms of scalability, as CV Mandiri Kopi Medan continues to expand its operations and increase its market reach, an ERP system would provide the necessary flexibility to scale operations efficiently. Cloud-based ERP solutions, for instance, would allow the company to manage multiple locations, suppliers, and distribution networks seamlessly (Alnuaimi et al., 2021). This would be particularly advantageous as the company seeks to expand its coffee production and distribution to new regions, ensuring that the supply chain remains efficient as the business grows.

In conclusion, ERP systems play a critical role in optimizing supply chain management by integrating various business processes and improving operational efficiency. For CV Mandiri Kopi Medan, adopting an ERP system could enhance the efficiency of their supply chain, reduce errors, and enable real-time visibility into key metrics. However, the implementation of ERP systems requires careful planning, selecting the right modules, and ensuring that employees are well-prepared to leverage the system's full potential. As the company grows, ERP systems will continue to evolve, offering greater flexibility and scalability, ensuring that CV Mandiri Kopi Medan remains competitive in the dynamic coffee industry.

Method

This study employs a qualitative research approach to analyze the impact of Enterprise Resource Planning (ERP) systems on the supply chain performance of CV Mandiri Kopi Medan. The primary goal of the research is to understand how the implementation of an ERP system can optimize operational efficiency, streamline business processes, and improve overall supply chain management within the company.

To achieve this, the study relies on qualitative methods, refined and enhanced through Focused Group Discussions (FGDs). This approach is considered suitable for gathering diverse perspectives and obtaining in-depth insights into the challenges and opportunities associated with ERP implementation. The methodology is structured in the following steps:

1. Literature Review

A comprehensive literature review was conducted to explore existing studies on ERP systems and their influence on supply chain performance. This review helped establish the

theoretical foundation for the research and provided a framework to compare and analyze the findings within the context of CV Mandiri Kopi Medan.

2. Data Collection Through FGDs

FGDs were conducted with key stakeholders of CV Mandiri Kopi Medan, including supply chain managers, operational staff, IT personnel, and decision-makers involved in the business processes. These discussions aimed to gather detailed insights into the company's current operational challenges, expectations from ERP systems, and perceptions of how ERP could enhance their supply chain performance. The FGDs were structured around specific themes such as:

- Current supply chain challenges, including inventory management, procurement, and financial reporting.
- Expectations from ERP systems in terms of automation, efficiency, and scalability.
- Barriers to ERP adoption, such as resource limitations, technical capabilities, and training requirements.
- Potential benefits and risks associated with implementing ERP at CV Mandiri Kopi Medan.

3. Thematic Analysis

The data obtained from the FGDs was analyzed using thematic analysis to identify recurring patterns and significant themes. This analytical approach allowed for the categorization of qualitative data into actionable insights. Key themes included operational inefficiencies, the need for better supply chain visibility, and the potential for ERP systems to standardize critical business processes.

4. Validation of Findings

The preliminary findings from the FGDs were presented to the participants for validation. This step ensured that the interpretations accurately reflected their views and that the recommendations were relevant to the specific needs and context of CV Mandiri Kopi Medan. The study emphasizes the importance of involving all relevant stakeholders in the discussion to ensure a holistic understanding of the supply chain dynamics. By using FGDs, this research captures the practical knowledge and experiences of individuals directly involved in the operations, making the results more actionable and applicable to the company's unique circumstances. The qualitative approach, combined with FGDs, also allows for a flexible exploration of ERP systems' potential impacts on the company. It considers the technological, operational, and human resource factors that play a critical role in successful ERP adoption. The findings contribute to a deeper understanding of how ERP systems can enhance CV Mandiri Kopi Medan's supply chain management and support the company's long-term growth and sustainability goals.

Result and Discussion

An interview was conducted with the Export Marketing Manager of CV Mandiri Kopi Medan, along with several employees directly involved in the supply chain process. Additionally, a focused group discussion (FGD) was held to gain deeper insights and evaluate potential improvements in the company's operations. A simulation of ERP implementation was also used to measure the potential benefits that could be gained from this system.

Based on the research findings, it was revealed that the current supply chain management system is still manual, primarily relying on Microsoft Excel as the main tool. Several issues were identified, including difficulties in monitoring inventory in real-time, delays in goods distribution due to a lack of information transparency, and potential errors in transaction records, which could affect the accuracy of financial and operational reports. Key findings related to ERP implementation in the supply chain of CV Mandiri Kopi Medan are summarized in Table 1.

Table 1. ERP Implementation in the Supply Chain of CV Mandiri Kopi Medan from the findings above, several critical issues requiring further attention in the coffee bean supply chain in Medan include:

ERP Implementation	Reaserch Findings
Efficiency Before and After ERP Implementation	<ul style="list-style-type: none"> • Average order processing time. • Inventory errors (number of cases). • Monthly operational costs. • Customer satisfaction rate (percentage).
Inventory Management	<ul style="list-style-type: none"> • Stock levels before and after ERP implementation. • Inventory update time (real-time vs manual).
Distribution Efficiency	<ul style="list-style-type: none"> • Average delivery time. • Number of delayed deliveries.
Employee Training and Adaptation	<ul style="list-style-type: none"> • Number of employees trained. • Understanding level after training (based on survey results).

1. Inventory Management

CV Mandiri Kopi Medan currently manages inventory using a First In First Out (FIFO) method based on Microsoft Excel. While this approach is effective for small to medium-scale operations, it becomes inefficient as production and distribution volumes grow, due to its reliance on manual inputs prone to recording errors and delays in data updates.

2. Distribution Efficiency

CV Mandiri Kopi Medan's distribution chain is relatively complex, involving multiple stakeholders, from coffee farmers and processors to distributors and exporters. This complexity often results in delays in delivery processes, mainly due to the lack of information transparency among stakeholders. One of the biggest challenges in distribution is tracking goods' movements and accurately predicting delivery times. With an ERP system, the company can integrate all distribution-related data into a single platform accessible in real-time by all involved parties. This enhances distribution efficiency by enabling shipment status monitoring, automating record-keeping processes, and optimizing distribution route planning. Additionally, ERP allows CV Mandiri Kopi Medan to better manage relationships with suppliers and distribution partners. The system helps identify delay patterns in distribution, enabling strategy improvements to increase speed and efficiency in delivery.

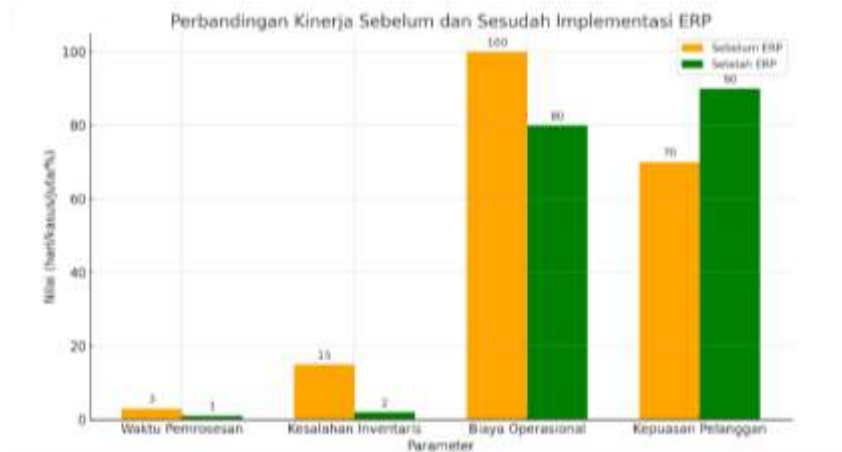
3. Challenges in ERP Implementation

Most employees at CV Mandiri Kopi Medan are accustomed to manual systems and feel comfortable with the existing methods. Transitioning to an ERP-based system will require time for adaptation and may face resistance if not managed effectively. Therefore, it is essential for the company to implement an effective change management strategy to ensure a smooth transition to the ERP system. To address these challenges, the company should provide training programs for employees to enhance their understanding of the new system. This training should cover the technical aspects of operating Microsoft Dynamics 365 and the benefits of the system in improving work efficiency. Additionally, a phased approach to ERP implementation, starting with business units that need it the most, could facilitate a smoother adoption process across the organization.

4. Long-Term Benefits

Implementing Microsoft Dynamics 365 at CV Mandiri Kopi Medan aims not only to address current operational issues but also to unlock long-term business growth opportunities. One significant benefit of this system is improved transaction recording accuracy, contributing to greater transparency in the company's financial and operational reports.

Figure 1. Potential Efficiency Improvement with ERP Implementation



(Include a chart comparing efficiency metrics before and after ERP implementation.)

The chart above illustrates the performance comparison before and after ERP implementation at CV Mandiri Kopi Medan, covering parameters such as order processing time, inventory errors, operational costs, and customer satisfaction levels.

5. Enhanced Data Integration Across Operations

Integrated data also reduces the risk of discrepancies and redundancies in reporting, which is crucial for maintaining operational transparency and compliance with regulatory requirements. For example, synchronized real-time inventory updates with sales and production data allow the company to avoid overproduction or understocking, ensuring an optimal balance of resources.

Conclusion

The implementation of Microsoft Dynamics 365 ERP at CV Mandiri Kopi Medan represents a pivotal opportunity to address several operational challenges and establish a foundation for long-term growth. Current manual systems, which rely heavily on Microsoft Excel, pose challenges in inventory tracking, distribution, and data transparency. By adopting ERP, the company can streamline inventory management, enhance distribution efficiency, and achieve better real-time decision-making.

The adoption of ERP is expected to provide significant benefits, such as improved operational efficiency, more accurate transaction records, enhanced customer satisfaction, and the ability to scale as the company expands. Despite the initial challenges, such as employee resistance and the need for technical training, these can be mitigated through an effective change management approach.

In the long term, the ERP system will provide CV Mandiri Kopi Medan with the tools needed to compete more effectively in both the local and international markets, improve customer service, and align with sustainability goals. Ultimately, the integration of ERP supports the company's strategic objectives of fostering innovation, increasing productivity, and ensuring sustainable growth.

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