



# Evaluation of the Implementation of Enterprise Resource Planning on Inventory Recording at PT Varia Usaha Beton

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## ARTICLE INFO

### Keywords:

Enterprise Resource Planning, Inventory, Concrete Business Varieties, Information Systems, Real-Time

### Manuscript Submission Story ID 528

Submitted on June 23, 2025, the manuscript underwent a revision (April 2, 2026) and peer review (April 25, 2026). Following the editor's decision on the same day, it was published on April 30, 2026.

## ABSTRACT

This study aims to implement an Enterprise Resource Planning (ERP) system for recording raw material inventory at PT Varia Usaha Beton (PT VUB). This company operates in the construction sector and requires an information system that is able to record stock accurately and in real time to help smooth the production process. The research method used is a qualitative approach with a case study method. Data were collected through in-depth interviews with three informants from the procurement and warehouse divisions, as well as direct observation and internal documentation. The results of the study indicate that the implementation of Sunfish ERP improves the efficiency of inventory recording, reduces human error, and allows real-time data integration between departments. However, there are several obstacles such as slow network connections, lack of user discipline, and less than optimal integration of ERP with external systems. The implications of this study indicate that the implementation of ERP can improve operational efficiency and decision making at PT VUB, but requires adequate infrastructure support and HR training. These findings are expected to be the basis for companies in planning policies to improve digital infrastructure, strengthen information system governance, and develop human resources to optimize the benefits of the ERP system as a whole. Keywords (4-5): Enterprise Resource Planning, Inventory, Concrete Business Varieties, Information Systems, Real-Time

## 1. Introduction

In the era of globalization and increasingly intense business competition, companies are required to optimize resource management efficiently and effectively in order to maintain operational sustainability and competitiveness. One of the most critical aspects of operational management is inventory management because inventory directly influences production continuity, cost efficiency, and customer satisfaction. To address these challenges, many companies have implemented Enterprise Resource Planning (ERP) systems as integrated information systems that support coordination among organizational functions, including accounting, purchasing, warehousing, and production management. ERP systems enable companies to manage operational activities in a more integrated, accurate, and real-time manner (Indrayani, 2022). The implementation

of ERP is increasingly important in industrial and manufacturing sectors where inventory availability determines the continuity of operational processes and the company's ability to meet market demand effectively.

Globally, ERP implementation has become a strategic solution for improving operational efficiency and strengthening internal control systems. ERP systems provide integrated databases that minimize duplication of data entry, reduce human error, and improve decision-making quality through accurate information availability. Inventory information systems integrated within ERP also contribute significantly to operational cost control and production effectiveness (Wijaya et al., 2023). Previous studies indicate that ERP implementation provides various advantages, including accurate planning and analysis, better cost estimation, operational efficiency improvement, integrated and

reliable data management, enhanced customer service quality, and increased competitiveness (Febrianto & Soediantono, 2022). In addition, ERP systems help organizations improve transparency and coordination among departments, thereby reducing delays and inefficiencies in operational activities.

At the local level, companies in Indonesia, particularly in the construction and manufacturing sectors, continue to face challenges related to inventory management and internal control. PT Varia Usaha Beton (PT VUB), a company engaged in concrete production, requires accurate management of raw material inventories such as cement, sand, and aggregates because production continuity depends heavily on the availability of these materials. Errors in inventory recording may result in stock shortages, overstocking, production delays, and increased operational costs. Therefore, accurate inventory recording is essential to support efficient purchasing planning, minimize storage costs, maintain profitability, and provide reliable information for managerial decision-making. Without an integrated ERP system, companies often experience recording inaccuracies and data inconsistencies that hinder operational effectiveness (Setyani et al., 2023).

Several previous studies have examined ERP implementation and inventory management systems across different sectors. Admaja et al. (2022) found that ERP implementation improved inventory management efficiency in plantation companies, although technical constraints still limited optimal performance. Yustian and Vendy (2023) demonstrated that implementing an inventory accounting system using SAP reduced data input errors and improved billing efficiency in construction companies. Apriyono and Hwihanus (2023) reported that although accounting systems in culinary businesses were relatively adequate, stronger internal controls were still necessary to improve raw material inventory management. Krisnawati et al. (2023) further revealed that ERP implementation based on Odoo 14.0 significantly enhanced inventory control and reduced recording errors in pharmaceutical healthcare services. Similarly, Pratomo et al. (2025) showed that the Just In Time method improved raw material inventory efficiency and optimized production flow in the metal casting industry.

Other studies also highlighted challenges related to information system integration and operational effectiveness. Purba and Sihotang (2023) reported that users were generally satisfied with the “Daytrans” application based on the PIECES framework, although certain aspects still required improvement. Salsahira and Tannar (2024) found weaknesses in interdepartmental data integration at PT VUB that slowed the raw material purchasing process despite the system functioning adequately. Shalshabila (2024) emphasized that manufacturing companies still needed accounting system updates to improve the speed and accuracy of inventory recording. Situmorang et al. (2022) demonstrated that implementing TOGAF ADM improved operational efficiency and clarified information technology architecture requirements in healthcare services. Meanwhile, Wibowo et al. (2023) explained that Dolibarr ERP implementation improved business process integration, although user training and system customization remained significant challenges.

Despite extensive discussions regarding ERP implementation in previous studies, several research gaps remain evident. Most prior studies focused on large corporations, plantation industries, healthcare services, or general manufacturing sectors, while limited studies specifically investigated ERP implementation in construction-related companies such as PT VUB. In addition, previous research largely emphasized technical implementation and system efficiency, whereas studies exploring ERP's direct impact on inventory recording accuracy, operational cost control, and stakeholder satisfaction remain relatively limited. Furthermore, challenges associated with inventory recording errors and real-time data accessibility in construction material management have not been sufficiently explored in existing literature. These limitations indicate the need for further investigation into ERP implementation in the context of construction material inventory management.

Based on these gaps, the research problem in this study is formulated as how ERP implementation influences inventory recording accuracy and operational effectiveness in PT VUB. Specifically, this study examines whether ERP implementation can minimize inventory recording errors, improve operational cost control, facilitate

direct data accessibility, and support faster and more accurate managerial decision-making processes.

Accordingly, this study aims to evaluate the implementation of ERP systems in inventory recording at PT VUB. The study also seeks to identify inventory recording problems that occur during operational processes and analyze the effectiveness of ERP systems in improving inventory management performance. In addition, this research aims to assess the contribution of ERP implementation toward operational efficiency and stakeholder satisfaction, including employees, management, and shareholders.

Theoretically, this study contributes to the development of knowledge related to accounting information systems and ERP implementation, particularly in the context of inventory management within construction-related industries. This research enriches existing literature by providing empirical evidence regarding the relationship between ERP implementation and inventory recording effectiveness in PT VUB. Practically, the findings are expected to provide useful insights for company management, practitioners, and decision-makers in improving inventory control systems, strengthening operational efficiency, and supporting strategic business decisions through integrated information systems. The novelty of this study lies in its focus on evaluating ERP implementation specifically in PT VUB's inventory recording system, emphasizing operational effectiveness, inventory accuracy, and stakeholder-oriented outcomes within the construction materials industry context.

## 2. Literature Review

### 2.1 Conceptual and Theoretical Foundations

#### 2.1.1 Enterprise Resource Planning (ERP)

Enterprise Resource Planning (ERP) is an integrated system designed to manage various core business processes, including finance, production, and inventory, in real time (Apriyono & Hwihanus, 2023). Although many companies have implemented ERP systems, continuous updates are often required to support the accuracy and speed of transaction recording. Such updates are essential to ensure that the ERP system remains effective in managing data and supporting smooth operational activities (Shalshabila, 2024). Moreover, ERP facilitates cost estimation and assists companies in

conducting more accurate analysis and planning (Wijaya et al., 2023).

In the construction industry, ERP implementation is particularly important to ensure operational continuity and minimize potential recording errors that may affect efficiency and the accuracy of resource management (Wibowo et al., 2023). ERP adoption in construction companies can optimize resource management and improve operational efficiency (Febrianto et al., 2022). By utilizing an integrated ERP system, companies can reduce recording errors and enhance data accuracy (Setyani et al., 2023). ERP implementation has also been proven to improve operational cost control and maintain corporate profitability (Krisnawati et al., 2023). In addition, ERP plays a significant role in improving customer service and strengthening competitiveness in the global market (Purba & Sihotang, 2023). Despite its advantages, companies still face challenges in inventory management even after ERP adoption (Nafi et al., 2025). Effective ERP implementation can support strategic decision-making, particularly in supply chain management (Admaja et al., 2022).

#### 2.1.2 Inventory Recording Procedures

Inventory recording procedures constitute a vital component of the accounting system aimed at ensuring the accuracy and reliability of inventory information within a company. These procedures involve several stages, including recording the cost of finished goods, raw materials, and work in process. Every transaction affecting inventory—whether additions or reductions—must be recorded using relevant source documents, such as goods receipt reports, cash disbursement vouchers, and credit memos.

The procedure for recording finished goods begins by transferring the cost of completed products into the Finished Goods Inventory account, based on completed production reports and journal vouchers. When finished goods are sold, their cost is recorded in the inventory card based on shipping orders and sales invoices. If products are returned by customers, the returned quantities and costs are recorded using goods receipt reports and credit memos as supporting documents. The recording of work in process inventory is conducted at the end of the accounting period, using journal vouchers and work-in-process

reports to record the cost in the general journal (Mulyadi, 2016: 469–479).

To record additional quantities and the cost of purchased inventory, procedures rely on goods receipt reports and cash disbursement evidence. If purchased inventory is returned to suppliers, the reduced quantity and related cost are also recorded. The cost of raw and auxiliary materials used in production is documented through material requisition and issuance procedures, supported by material request and issuance forms. Returned materials from the warehouse are recorded to increase inventory and reduce production costs, based on material return documents.

To ensure the reliability of accounting records, a physical inventory count system is essential, and the results must correspond with recorded balances. This procedure involves the use of physical count cards, general journals, and summary sheets to record necessary adjustments. Proper inventory recording enables companies to maintain data accuracy and integrity, thereby supporting more effective inventory management decision-making (Mulyadi, 2016: 479–491).

## 2.2 Review of Empirical Studies

Previous empirical studies have demonstrated that ERP implementation contributes positively to inventory management effectiveness across various industries. ERP implementation in the industrial sector has been shown to improve inventory recording accuracy by up to 20%. Krisnawati et al. (2023) aimed to analyze inventory control in healthcare services using the open-source ERP system Odoo 14.0. Data were collected through direct observation and interviews and analyzed using descriptive techniques. The results indicated that Odoo 14.0 was highly effective in improving inventory control and reducing recording errors in pharmaceutical stock management. However, user resistance to changes in work processes remained a primary challenge.

Salsahira and Tannar (2024) conducted research in a construction company to evaluate the accounting methods used for raw material purchases. Data were collected through interviews and observations and analyzed using a qualitative approach. The findings revealed that the ERP system improved the efficiency of raw material quality monitoring, although issues such as human

error in data input and delays in stock updates persisted. These findings align with Nafi et al. (2025), who examined ERP integration with production planning systems at PT ABC using surveys and interviews, with data analyzed through linear regression. Their study emphasized the importance of ERP integration in optimizing raw material safety stock management.

Beyond technical factors, ERP implementation success also depends on organizational aspects. Pratomo et al. (2025), in a study conducted in the metal casting industry, evaluated raw material inventory using the Just in Time method. Data were collected through interviews and documentation and analyzed qualitatively. The results recommended integrating supporting technologies such as Just in Time to enhance ERP collaboration with warehouse management. Situmorang et al. (2022) emphasized that ERP success in healthcare services requires system updates and strong management commitment. Using the TOGAF ADM method, data were collected through interviews, observations, and literature review, and analyzed both qualitatively and quantitatively. The findings indicated that ERP improves operational efficiency when supported by management commitment, training, and continuous system maintenance.

Purba and Sihotang (2023) evaluated user satisfaction with the Daytrans application using the PIECES framework. Data were collected through surveys, interviews, and observations and analyzed based on PIECES aspects. The results showed that most users were satisfied with existing features, although improvements were needed in accessibility and service speed.

Admaja et al. (2022) conducted research in a plantation company using interviews and direct observations, with data analyzed descriptively to evaluate ERP effectiveness in inventory management. The results indicated that although ERP improved efficiency, technical constraints still required improvement for optimal performance. Yustian and Vendy (2023) studied a toll road construction company using document analysis and interviews with financial staff. Through a case study approach and quantitative evaluation of SAP effectiveness in inventory accounting, the study found that SAP implementation minimized data input errors and improved material billing

efficiency.

Apriyono and Hwihanus (2023) examined the accounting system of a restaurant business using surveys and interviews. Data were analyzed qualitatively to assess the effectiveness of internal control in managing raw material inventory. The results indicated that while the accounting system was relatively adequate, internal controls required strengthening.

Shalshabila (2024) conducted research in a manufacturing company using observation and financial statement analysis. Quantitative analysis was applied to evaluate the accuracy and speed of inventory transaction recording. The findings showed that although the accounting system was adequate, updates were still necessary to enhance recording accuracy and speed. Meanwhile, Wibowo et al. (2023) applied a case study method involving interviews and observations in an organic fertilizer company implementing Dolibarr ERP. Descriptive analysis demonstrated that Dolibarr ERP improved data integration and business process efficiency, although challenges remained in user training and system customization to meet company needs.

### 2.3 Identification of the Research Gap

Although numerous studies have examined ERP implementation in inventory management, several research gaps remain evident. First, previous studies predominantly focused on measuring ERP effectiveness quantitatively, while limited research has explored in depth how ERP systems are practically implemented in inventory recording procedures within organizational settings. Second, many studies emphasized technical performance and operational efficiency without comprehensively examining user experiences, implementation obstacles, and procedural conformity within ERP-based inventory systems.

Third, prior research has largely been conducted in manufacturing, healthcare, and plantation sectors, while limited empirical evidence exists regarding ERP implementation in PT VUB's operational context. In addition, earlier studies generally focused on ERP effectiveness independently, with insufficient attention given to the interaction between ERP systems and inventory recording procedures as part of organizational accounting information systems.

Therefore, this study seeks to address these

gaps by employing a qualitative case study approach to evaluate ERP implementation in inventory management at PT VUB. The study emphasizes practical implementation, employee perspectives, procedural conformity, and operational challenges associated with ERP-based inventory recording systems.

### 2.4 Development of the Conceptual Framework

This study is developed based on the relationship between ERP implementation and inventory recording procedures in supporting effective inventory management. ERP systems function as integrated information systems that facilitate real-time transaction recording, improve operational coordination, and reduce inventory recording errors (Apriyono & Hwihanus, 2023; Setyani et al., 2023).

Meanwhile, inventory recording procedures ensure that inventory transactions are systematically documented using reliable accounting procedures and supporting documents (Mulyadi, 2016). The integration between ERP systems and inventory recording procedures enables organizations to maintain accurate inventory information, strengthen internal control systems, and improve decision-making effectiveness.

The conceptual framework of this study assumes that effective ERP implementation positively influences inventory management effectiveness through improved recording accuracy, operational efficiency, and data integration. However, implementation effectiveness may also be influenced by organizational commitment, employee competency, system maintenance, and user adaptation challenges.

### 2.5 Research Propositions

Based on the conceptual framework and empirical findings, the following research propositions are formulated:

#### **Proposition 1:**

The implementation of ERP systems improves the effectiveness and accuracy of inventory recording procedures at PT VUB.

#### **Proposition 2:**

ERP implementation enhances operational efficiency and supports inventory management decision-making through integrated and real-time information systems.

**Proposition 3:**

The effectiveness of ERP implementation in inventory management is influenced by organizational commitment, employee competency, system maintenance, and user adaptation.

**3. Research Methods****3.1 Research Design**

This study employs a qualitative research approach using a case study method to evaluate the implementation of Enterprise Resource Planning (ERP) in inventory management at PT VUB. The qualitative case study approach was selected because it enables an in-depth understanding of organizational practices, employee experiences, and operational challenges related to ERP implementation. This design is considered appropriate for exploring the practical application of ERP systems in inventory recording procedures and understanding the contextual factors influencing implementation effectiveness.

**3.2 Research Context and Setting**

The research was conducted at PT VUB, focusing on the company's procurement and

inventory management activities. The company was selected because it has implemented an ERP system to support inventory recording and operational coordination. The research setting is relevant for examining how ERP systems are utilized in practical operational environments, particularly in managing raw material inventory and procurement activities.

Field observations were conducted during the internship period from January to May 2025 to obtain direct insights into the implementation of ERP systems within the company's operational processes.

**3.3 Research Participants**

The participants in this study were selected purposively based on their involvement in procurement and inventory management activities at PT VUB. The purposive sampling technique was used to ensure that participants possessed sufficient knowledge and experience regarding ERP implementation.

The informants involved in this study are presented in Table 1.

**Table 1. Informants**

No	Initial	Position	Informant
1	RIK	General Manager Procurement	Informant 1
2	MUA	Site Manager Procurement	Informant 2
3	HP	Team Leader Procurement	Informant 3

Source: Author (2025)

**3.4 Data Sources and Data Collection**

This study utilized both primary and secondary data sources. Primary data were collected through semi-structured interviews and direct observations. Interviews were conducted with procurement staff and managerial personnel to obtain comprehensive information regarding their experiences and perspectives related to ERP implementation in inventory management.

The interview process was conducted from April 17 to April 25, 2025. Meanwhile, direct observations were performed to examine how ERP systems functioned in daily inventory recording activities and to identify operational obstacles arising during implementation.

Secondary data were obtained from company documents, including financial statements,

inventory records, and accounting information system documentation. Document analysis was conducted to assess the conformity between implemented inventory recording procedures and company policies.

**3.5 Measurement of Variables and Research Instruments**

As a qualitative study, this research focuses on exploring key concepts rather than measuring variables quantitatively. The primary concepts examined include ERP implementation, inventory recording procedures, operational efficiency, data accuracy, and implementation challenges.

The research instruments consisted of interview guidelines, observation sheets, and document analysis checklists. The interview

guidelines were developed based on prior studies concerning ERP implementation and inventory management practices (Yustian & Vendy, 2023). Observations focused on operational activities related to inventory recording, procurement coordination, and ERP system utilization.

### 3.6 Data Analysis Techniques

The data analysis technique applied in this study followed the qualitative data analysis model developed by Miles and Huberman (1992), consisting of three stages: data reduction, data display, and conclusion drawing.

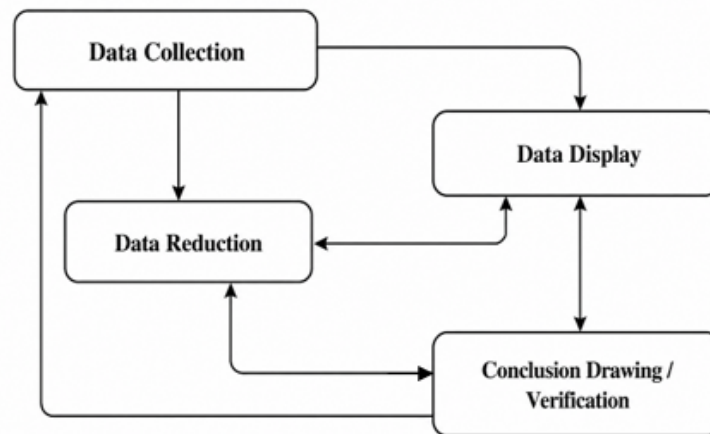


Fig 1. Qualitative Data Analysis Techniques  
Source: Miles & Huberman (1992)

### 3.7 Validity, Reliability, and Trustworthiness

To ensure research credibility and trustworthiness, this study applied data triangulation by comparing information obtained from interviews, observations, and company documents. Method triangulation was also conducted to strengthen the consistency and reliability of the findings.

In addition, member checking was performed by confirming interview interpretations with selected informants to minimize researcher bias and improve interpretative accuracy. The researcher also maintained detailed field notes and documentation to support dependability and confirmability throughout the research process.

### 3.8 Ethical Considerations

This study adhered to research ethics principles, including informed consent, confidentiality, and data protection. Prior to conducting interviews and observations,

Data reduction was conducted by selecting and simplifying relevant information obtained from interviews, observations, and documents. Subsequently, the data were organized systematically through data display to facilitate interpretation and pattern identification. Finally, conclusions were drawn based on the findings and supported through continuous verification processes to ensure analytical consistency. Figure 1 illustrates the qualitative data analysis process adopted in this study.

participants were informed about the research objectives and procedures. Participant identities were anonymized using initials to maintain confidentiality and privacy. The collected data were used solely for academic purposes and stored securely to prevent unauthorized access.

### 3.9 Research Procedure

The research procedure consisted of several stages. First, the researcher conducted preliminary observations and identified research problems related to ERP implementation in inventory management. Second, relevant literature and empirical studies were reviewed to establish the theoretical foundation of the study.

Third, data collection was conducted through interviews, observations, and document analysis. Fourth, the collected data were analyzed using the Miles and Huberman qualitative analysis model. Finally, conclusions were formulated based on the findings and aligned with the research objectives

and propositions.

### 3.10 Methodological Limitations

This study has several methodological limitations. First, the research was limited to a single company context, which may restrict the generalizability of the findings to other organizational settings. Second, the study relied primarily on qualitative data obtained from a limited number of informants, potentially affecting the breadth of perspectives captured.

Third, the research focused specifically on inventory management and procurement activities; therefore, other ERP functional areas were not examined comprehensively. Despite these limitations, the study provides valuable insights into ERP implementation practices and inventory recording procedures within organizational contexts.

## 4. Results and Discussion

### 4.1 Research Results

#### 4.1.1 Sample Description and Descriptive Findings

This study employed a qualitative case study approach at PT Varia Usaha Beton focusing on the implementation of the Sunfish Enterprise Resource Planning (ERP) system in raw material inventory recording. The primary units of analysis consisted of inventory management activities, ERP operational workflows, and reporting procedures related to raw material management. Data were obtained through interviews, observations, and company documentation involving key informants from procurement, warehouse, and operational divisions.

The findings indicate that ERP implementation significantly transformed inventory recording procedures from manual and fragmented systems into an integrated real-time recording mechanism. Prior to ERP adoption, inventory data were recorded separately by each operational unit, resulting in delays, inconsistencies, and duplicate recording systems. Following the implementation of Sunfish ERP, inventory transactions became centralized within a single integrated platform connecting all plants under PT VUB.

#### 4.1.2 Main Analytical Results

The results reveal several major improvements after ERP implementation:

##### a. Real-Time Inventory Recording

The Sunfish ERP system enables automatic recording of incoming and outgoing raw materials through integration with the weighbridge system. Inventory data are updated immediately after weighing activities are completed, reducing delays in stock reporting.

##### b. Improved Operational Efficiency

The integration between inventory, purchasing, and operational modules reduces administrative workload and minimizes manual recording activities. Procurement managers can monitor stock availability across plants in real time, enabling faster distribution and purchasing decisions.

##### c. Reduction of Human Error

Automated recording significantly decreases the likelihood of input errors commonly found in manual systems. Inventory transaction histories are digitally stored and easily traceable, supporting audit efficiency and transparency.

##### d. Enhanced Internal Control Mechanisms

ERP implementation strengthens inventory supervision through standardized workflows and documented transaction procedures. Every inventory movement must be supported by delivery notes, weighing reports, and goods receipt documentation.

##### e. Structured Reporting of Inventory Losses and Damage

The company has implemented periodic stock opname procedures and verification mechanisms involving independent teams and operational management. Losses resulting from negligence are investigated through internal audit procedures and may be charged to responsible employees.

#### 4.1.3 Key Findings

The key empirical findings of this study are summarized as follows:

**Table 2. Empirical Findings**

No	Key Findings	Description
1	Real-time integration	ERP enables centralized and real-time inventory recording across all operational plants

2	Operational efficiency	ERP reduces duplicate recording and administrative workload
3	Improved transparency	Digital transaction records support monitoring and auditing processes
4	Human resource challenges	User discipline in data entry remains a significant issue
5	Technical constraints	Network instability and incomplete system integration affect ERP performance
6	Stronger internal control	ERP supports structured inventory loss reporting and accountability mechanisms

Source: Author (2025)

#### 4.1.5 Visual Presentation of Results

**Table 3. Main Improvements After ERP Implementation**

Operational Aspect	Before ERP	After ERP
Inventory recording	Manual and separate	Integrated and automated
Data accessibility	Delayed reporting	Real-time monitoring
Stock control	Limited visibility	Centralized control
Error potential	High human error	Reduced input errors
Audit process	Manual tracing	Digital traceability
Procurement decisions	Slower response	Faster decision-making

Source: Author (2025)

**Table 4. Main Challenges in ERP Implementation**

Challenges	Impact on Operations
Slow network performance	Delays in system access
System freezing	Temporary interruption of operational activities
Incomplete integration with VIS WEB	Additional manual input required
User discipline issues	Discrepancies between physical and system stock
Dependency on infrastructure	ERP performance influenced by server stability

Source: Author (2025)

## 4.2 Research Discussion

### 4.2.1 Interpretation of Key Findings

#### a. The Impact of ERP System Implementation

The interview results indicate that the implementation of the Sunfish ERP system has had a significant impact on raw material inventory recording. Based on observations, improvements were evident in the systematization of recording procedures and stock management, which became more structured following ERP implementation. Prior to ERP adoption, inventory recording was conducted manually and separately within each work unit, resulting in unsynchronized data and delays in reporting. After ERP implementation, recording became centralized and automated, enabling all plants under PT VUB to be integrated within a single system. For example, previously warehouse staff manually received cement, verified

its volume, and recorded it manually. Currently, cement receipt is processed through a weighbridge system, where the data are automatically entered into the Sunfish ERP system without waiting for physical reports.

These improvements include the integration of incoming and outgoing goods recording with other operational systems, such as the weighbridge and purchasing modules. The Sunfish ERP system automatically records data from weighing equipment when materials such as sand and aggregates are received or dispatched, thereby reducing reliance on manual recording and minimizing human error. In addition, the system provides notifications when stock levels fall below the minimum threshold, assisting the procurement team in making timely and accurate purchasing decisions.

At PT VUB, systematization includes a more structured workflow for inventory recording. Every inventory transaction—from raw material receipt to issuance for production—must be recorded through a standardized system flow. Each entry must be supported by documentation such as delivery notes, weighing reports, and goods receipt evidence. ERP also simplifies the audit process, as all transaction histories are digitally stored and easily traceable. These findings are consistent with Krisnawati et al. (2023), who stated that ERP reduces recording errors and enhances real-time stock control. Informant 3 stated:

“Yes, it really helps. It’s more automatic now because it simplifies the recording of inventory receipts and issuances across all VUB plants in Indonesia.”

This statement confirms that the Sunfish ERP system has successfully integrated data across work units and improved efficiency in inventory recording. Similarly, Informant 2 explained that ERP simplifies operations by consolidating data into one integrated system with real-time capabilities. However, technical constraints were also noted, including slow system performance, occasional freezing, and issues during database transitions. To address these challenges, improvements in network infrastructure and servers, as well as stronger integration with external systems such as VIS WEB, were suggested. These findings align with Yustian and Vendy (2023), who demonstrated that ERP systems such as SAP improve efficiency and reduce administrative burdens in procurement and inventory recording.

Informant 1 further explained that prior to Sunfish ERP implementation, the company operated a double-recording system, and inventory data could only be accessed the following day. He stated:

“Previously, we still used a double system, and inventory data from the previous day could only be viewed later. Now, with Sunfish ERP, all recording is real-time.”

Overall, the findings confirm that ERP implementation has effectively improved efficiency and accuracy in inventory recording. Previously, warehouse staff manually recorded raw material receipts using printed forms and forwarded them to accounting via email or physical documents, which was time-consuming and prone to human error.

With Sunfish ERP, when materials are weighed at the weighbridge, the weight and material type are automatically entered into the system and directly updated in stock records. Furthermore, procurement managers at the head office can monitor aggregate stock levels in specific plants (e.g., Plant Gresik) in real time to plan inter-location distribution, thereby avoiding stock shortages or overstocking. This not only accelerates decision-making but also minimizes input errors common in manual processes.

### **b. Challenges in ERP Implementation**

Although ERP implementation has provided positive impacts, several technical challenges remain. One major issue relates to network connectivity and system performance, particularly regarding speed and responsiveness. According to Informant 2, slow system performance or system hangs are primarily caused by suboptimal network infrastructure rather than the ERP program itself.

User discipline also presents a challenge. Although the system is largely automated, certain stages still require timely and accurate manual input. In practice, cases were found where employees delayed entering data for incoming or outgoing goods. For example, raw materials received in the field were sometimes recorded in the system one or two days later, causing discrepancies between physical stock and ERP data. This issue demonstrates that ERP success depends not only on technological sophistication but also on user commitment and discipline. Informant 1 emphasized that employee discipline in data entry still needs improvement, as the potential for human error remains.

Another challenge involves the incomplete integration between Sunfish ERP and external systems such as VIS WEB. For instance, weighing data from VIS WEB were not always automatically synchronized with the inventory module in Sunfish ERP, requiring manual entry by procurement staff. This increased administrative workload and the risk of input errors. Therefore, the development of middleware or an Application Programming Interface (API) is recommended to enable automatic and real-time data exchange (Nafi et al., 2025).

To address these challenges, several solutions are proposed: improving network infrastructure

through bandwidth upgrades and reliable network devices; implementing continuous training and socialization programs; applying reward and punishment mechanisms to encourage user accountability; and strengthening system integration through API development and collaboration between internal IT teams and ERP vendors.

### c. Reporting System for Inventory Loss or Damage

To manage potential loss or damage of raw materials, PT Varia Usaha Beton (PT VUB) has implemented a structured reporting system. One key mechanism is periodic stock opname (physical inventory counts), documented through official reports before data adjustments are made. Informant 2 explained:

“If there is a loss of raw materials, it must be reported, approved, and adjusted.”

Losses are categorized as “loss” in operational terms. The procedures include:

- 1) Monthly reporting of losses by each plant.
- 2) Re-verification by an independent team from the head office.
- 3) Review by the Head of Operations to assess accountability.
- 4) If justifiable (e.g., procedural or unintentional administrative errors), adjustments are made within management authorization limits.
- 5) If unjustifiable (e.g., theft or serious negligence), internal audit investigations are conducted.

If employee negligence is proven, losses may be charged directly to the responsible individual through an employee receivable account. Examples of negligence include delayed data entry, leaving warehouse areas unsecured, inaccurate quantity recording during receipt, or failure to report damaged materials. If no individual negligence is identified, the loss is recorded as a company expense (loss surplus).

This procedure reflects strong internal control aligned with risk-based control approaches. The findings support Apriyono and Hwihanus (2023), who highlighted that ERP-based reporting systems enhance recording accuracy and transparency across departments. Similarly, the results align with Yustian and Vendy (2023), who found that ERP systems such as SAP reduce input errors and improve administrative efficiency.

### d. Strategic Recommendations

Based on the evaluation of Sunfish ERP implementation at PT VUB, several strategic recommendations are proposed:

- 1) **IT Infrastructure Improvement** – Upgrade network bandwidth, enhance server capacity, and implement redundancy systems to ensure ERP stability.
- 2) **System Integration Optimization** – Develop middleware or APIs to improve integration between Sunfish ERP and VIS WEB, enabling real-time data exchange.
- 3) **Human Resource Development** – Conduct continuous ERP training and implement performance-based reward and punishment systems to enhance discipline and accountability.
- 4) **Digital Transformation Strategy** – Position ERP as a strategic component of digital transformation, integrating it with supply chain management and production planning to strengthen competitiveness and cost efficiency.

In conclusion, ERP implementation has significantly improved inventory recording accuracy and efficiency at PT VUB. With continuous improvements in infrastructure, integration, and human resource readiness, ERP can serve as a strong foundation for enhancing operational excellence and sustaining competitive advantage in the digital era.

#### 4.2.2 Comparison with Previous Studies

The findings are consistent with Krisnawati et al. (2023), who found that ERP systems improve real-time stock control and reduce inventory recording errors. Similarly, the results support Yustian and Vendy (2023), who demonstrated that ERP implementation enhances administrative efficiency and minimizes operational burdens in procurement and inventory management processes.

Furthermore, the findings align with Apriyono and Hwihanus (2023), who emphasized that ERP-based reporting systems improve transparency and accountability across organizational departments. However, unlike previous studies that primarily focused on manufacturing sectors, this research contributes empirical evidence from the construction industry context, particularly in raw material inventory management.

The study also extends previous findings by identifying operational challenges associated with incomplete integration between ERP and external systems such as VIS WEB. This highlights the importance of interoperability and system connectivity in achieving optimal ERP performance.

#### 4.1.3 Theoretical Contributions

This study contributes to the literature on ERP implementation by reinforcing the perspective that ERP functions not only as an operational information system but also as a strategic accounting information system that enhances coordination, transparency, and internal control effectiveness.

The findings extend existing ERP literature by demonstrating that successful ERP implementation in construction-related industries depends on the interaction between technological integration, organizational discipline, and infrastructure readiness. The study also supports socio-technical system perspectives, which emphasize that organizational performance improvements result from the alignment between technology, people, and operational processes.

Additionally, this research addresses the limited empirical discussion regarding ERP implementation in the construction sector, particularly in the context of inventory-intensive operations.

#### 4.1.4 Practical and Policy Implications

From a managerial perspective, the findings highlight the importance of maintaining reliable network infrastructure and ensuring continuous system integration improvements. Organizations implementing ERP systems should prioritize server capacity enhancement, bandwidth upgrades, and real-time interoperability between internal and external platforms.

The findings also emphasize the importance of employee discipline and continuous ERP training programs. Companies should implement structured monitoring systems and performance-based accountability mechanisms to ensure accurate and timely data entry.

From a policy perspective, organizations are encouraged to strengthen internal audit procedures and inventory verification mechanisms to support

transparency and minimize operational risks. ERP systems should also be positioned as strategic components of broader digital transformation initiatives within the organization.

#### 4.1.5 Integration with the Research Gap

This study addresses the research gap related to the limited discussion of ERP implementation within the construction industry, particularly regarding inventory recording and operational integration. Previous ERP studies predominantly focused on manufacturing and service industries, while this research provides evidence from a construction material company with complex inventory flows and multi-plant operations.

The findings also fill the gap concerning the interaction between ERP implementation and organizational control mechanisms, especially in managing inventory losses, operational accountability, and real-time reporting systems.

#### 4.1.6 Acknowledgement of Study Limitations

Although the findings provide valuable insights into ERP implementation at PT VUB, the discussion remains limited to a single organizational context. Therefore, the interpretation of the findings may not fully represent ERP implementation conditions across different industries or organizational structures.

In addition, the findings primarily focus on operational and procedural dimensions of ERP implementation. Broader behavioral, cultural, and strategic organizational factors influencing ERP adoption may require further exploration to provide a more comprehensive understanding of sustainable ERP implementation.

## 5. Conclusion

### 5.1 Summary of Key Findings

This study aimed to evaluate the implementation of the Sunfish Enterprise Resource Planning (ERP) system in inventory recording at PT Varia Usaha Beton (PT VUB). The findings indicate that ERP implementation has significantly improved the efficiency, accuracy, and transparency of inventory management processes.

The system enables real-time data integration across operational units, minimizes manual recording errors, and enhances reporting reliability. Furthermore, the structured reporting mechanism

for inventory loss and damage, supported by internal audit procedures, strengthens internal control and risk management practices within the company.

However, several operational challenges were identified, including network instability, inconsistent user discipline in data entry, and limited integration with external platforms such as VIS WEB. These issues indicate that technological implementation alone is insufficient without strong organizational support and system optimization.

## 5.2 Theoretical Contributions

This study contributes to the literature on ERP implementation in the construction sector, which remains relatively underexplored compared to manufacturing and service industries. The findings support the perspective that ERP systems enhance information quality and internal control effectiveness when properly integrated into operational workflows.

Additionally, this research reinforces the role of ERP as a strategic accounting information system that not only facilitates transactional recording but also supports organizational coordination and transparency.

## 5.3 Practical and Policy Implications

From a managerial perspective, the results highlight the importance of continuous system monitoring, user training, and infrastructure stability to maximize ERP benefits. Companies implementing ERP in inventory-intensive industries should ensure:

- a. Strong user compliance in data entry procedures
- b. Reliable network infrastructure
- c. Continuous evaluation of system integration with external platforms
- d. Strengthened internal audit mechanisms

These factors are essential to ensure that ERP systems function optimally and support strategic decision-making in procurement and inventory management.

## 5.4 Limitations of the Study

This research is limited to one division within a single company, which restricts the generalizability of the findings. Moreover, the study focuses primarily on procedural and operational aspects without conducting a deeper qualitative exploration

of organizational culture and behavioral dimensions influencing ERP adoption.

The reliance on a qualitative case study approach also limits the ability to statistically measure system performance improvements.

## 5.5 Directions for Future Research

Future research is recommended to expand the scope of analysis by including multiple divisions or companies within the construction industry to enhance generalizability. Subsequent studies may also adopt mixed-method approaches to quantitatively measure ERP performance impacts on inventory turnover, cost efficiency, and financial performance.

Further investigation into organizational readiness, change management strategies, and the effectiveness of internal control policies supporting ERP implementation would provide deeper insight into sustainable ERP adoption. With broader coverage and a more comprehensive methodological approach, future research can offer stronger empirical contributions to the development of adaptive and effective ERP systems in the construction sector.

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