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# Implementation of Business Process Improvement (BPI) to Enhance Stock Opname and Purchasing Efficiency at XYZ Coffee

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**Abstract**

This study analyzes the implementation of Business Process Improvement (BPI) through the adoption of a Point of Sale (POS) system and organizational restructuring to enhance the efficiency of stock opname and purchasing processes at XYZ Coffee. The research applies the DMAIC (Define, Measure, Analyze, Improve, Control) methodology to evaluate and improve business processes.

The results show a reduction in purchasing process time by 70%, from 4 hours 25 minutes – 5 hours 30 minutes to 1 hour 16 minutes – 2 hours 22 minutes per week. The adoption of the POS system facilitates real-time stock monitoring, minimizes manual errors, and accelerates the procurement process. Additionally, the Cost of Goods Sold (COGS) decreased from 54.9% in November to 38.2% in January, and Operating Expenses (OPEX) were reduced from 34.6% to 16.4%, indicating increased cost efficiency.

Organizational restructuring, including the establishment of a Finance & Purchasing division, reduced purchase approval time from 10 minutes to 3 minutes. This change contributed to faster decision-making and improved transparency. The data indicate that integrating technology and process optimization leads to measurable improvements in operational efficiency and cost management.

## A. Introduction

In the increasingly competitive Food & Beverage (F&B) industry,, effective supply chain management is a key factor in maintaining smooth operations and business profitability [1]. One critical element of the supply chain is inventory and purchasing management. Poor management in these areas can lead to stock imbalances, operational inefficiencies, and increased storage costs. XYZ Coffee faces challenges in both aspects, risking overstocking or stockouts, which directly impact business efficiency and customer satisfaction [2].

Currently, XYZ Coffee has implemented several core business processes, including order recording, inventory checks, inventory management, and financial reporting. However, in practice, several obstacles hinder operational effectiveness. One major issue is the irregularity of stock opname recording, leading to discrepancies between physical stock and bookkeeping records [3]. These discrepancies affect the accuracy of financial reports and complicate strategic decision-making [4]. Without systematic and regular recording, the company loses control over available stock, increasing the risk of overstocking or stockouts, which disrupts daily operations.

Additionally, the absence of standard operating procedures (SOP) for stock opname results in inconsistencies in inventory recording and verification [5]. Ambiguous SOPs increase the likelihood of recording errors, hinder transparency in internal audits, and reduce the accuracy of data used for business planning and decision-making [6]. Well-documented SOPs have been proven to improve inventory recording efficiency and reduce human error in stock management.

Another challenge lies in the difficulty of planning raw material purchasing, which is affected by inaccurate stock opname records. This inaccuracy makes it challenging to forecast raw material needs, increasing the risk of restocking delays or over-purchasing, which in turn raises operational costs and reduces profitability [7]. Accurate, data-driven purchasing planning has been shown to improve supply chain efficiency and minimize raw material waste [8].

To address these issues, a systematic, data-driven approach is required to improve efficiency and optimize inventory and purchasing management. Business Process Improvement (BPI) is a proven method for enhancing operational efficiency through continuous evaluation and improvement [9]. Harrington (1991) stated that BPI focuses on simplifying and optimizing business processes to improve quality, productivity, and competitiveness. A study by Imam et al. (2022) demonstrated that BPI implementation in restaurant raw material procurement in tourist areas successfully reduced recording errors and optimized working capital [10]. Small-scale culinary SMEs facing similar challenges also experienced increased efficiency after implementing a structured BPI-based recording system [11]. Recent research applies the seven-waste framework—traditionally used in manufacturing—to office work within the BPI methodology. A case study in a manufacturing supply chain showed that integrating information technology reduced process steps by 55%, processing time by 64%, and manual tasks by 59% [12].

Based on the identified problems, this study aims to analyze the implementation of BPI to optimize the stock opname and purchasing processes at XYZ Coffee. Through this approach, the study will identify key challenges in current

business processes, design more efficient improvement solutions, and measure the impact of these changes on operational effectiveness. The findings of this study are expected to provide practical and applicable recommendations for other F&B businesses seeking to improve operational efficiency through Business Process Improvement strategies.

## B. Research Method

This study aims to optimize the Stock Opname and Purchasing processes at XYZ Coffee using the Business Process Improvement (BPI) approach. The method follows the systematic BPI framework to design and improve business processes. The methodology consists of several key stages, as illustrated in Figure 1. Research Flowchart.

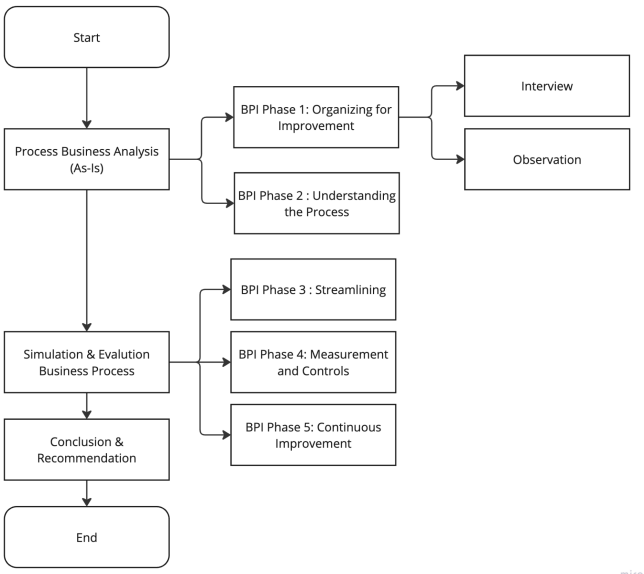


**Figure 1.** Research Flowchart.

### Current Business Process Analysis (As-Is)

The initial step involves identifying key challenges in the Stock Opname and Purchasing processes through interviews and observations with the XYZ Coffee Manager and outlet baristas. This approach aims to understand major obstacles, such as the lack of system integration and inefficiencies in manual processes. Further analysis uses the Business Process Modeling and Notation (BPMN) approach to visualize workflows and identify non-value-added activities.

1. BPI Phase 1: Organizing for Improvement
   This phase focuses on organizing improvement needs, specifically targeting inefficiencies in Stock Opname and Purchasing processes.
2. BPI Phase 2: Understanding the Process
   Business process modeling is conducted to map current activities and identify operational inefficiencies.

### Business Process Simulation and Evaluation

Based on the analysis, improvement recommendations are implemented to streamline processes using the following approach:

3. BPI Phase 3: Streamlining
   This phase refers to Harrington's 12 streamlining tools (1991) [9], which include eliminating bureaucracy, reducing duplication, value-added assessment, simplification, cycle time reduction, error prevention, system enhancement, using simple language, standardization, partnering with suppliers, comprehensive improvement, and automation and mechanization. This approach aims to reduce inefficient activities and enhance operational effectiveness. Agility System emphasizes that these tools can be applied flexibly with minimal technical effort to significantly improve process efficiency [13].
4. BPI Phase 4: Measurement and Controls
   Process improvements are applied continuously and iteratively to ensure long-term effectiveness. According to Harrington (1991), continuous improvement enables companies to maintain competitiveness and sustain productivity growth [9]. Six Sigma US affirms that BPI is a systematic approach to enhancing business efficiency and effectiveness, allowing organizations to achieve sustainable operational excellence [14].
5. BPI Phase 5: Continuous Improvement
   Ongoing process improvements are implemented to maintain long-term effectiveness. Harrington (1991) highlights that continuous enhancement helps businesses sustain competitive advantage and improve productivity [10]. Six Sigma US reinforces that BPI provides a systematic approach to boosting operational efficiency and achieving long-term business excellence [14].

This systematic approach provides a clear framework to improve the efficiency of Stock Opname and Purchasing processes at XYZ Coffee. Ultimately, these improvements enhance stakeholder satisfaction and increase the company's operational competitiveness.

## C. Result and Discussion

### 1. Current Business Process Analysis (As-Is)

#### Organizational Identification

XYZ Coffee has a well-defined and structured organizational framework with clear divisions of responsibility. This is crucial because an effective organizational structure enhances communication and coordination within business processes (Daft, *Management*, 2021). With distinct roles assigned to the owner, manager, marketing team, and operational staff (baristas and XYZ Express), XYZ Coffee demonstrates a systematic approach to business management, as illustrated in Figure 2 and Table 1.

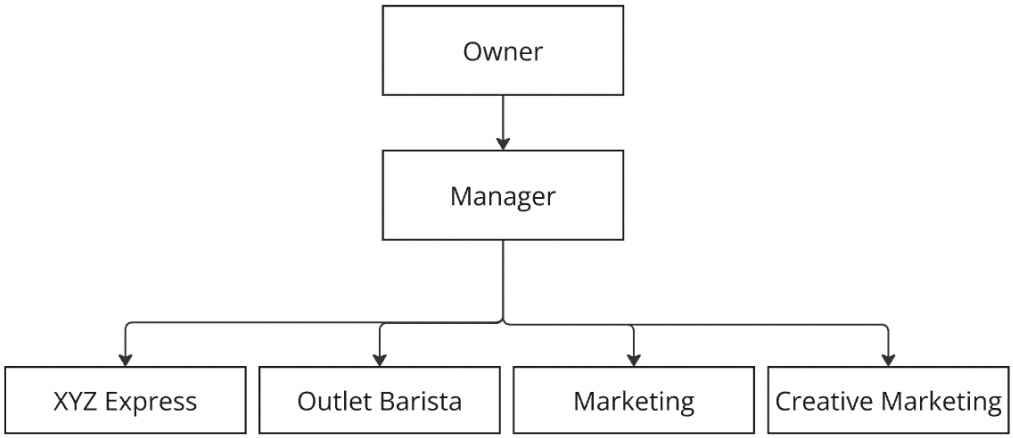


**Figure 2.** XYZ Organization Structure

**Table 1.** Organizational Roles and Responsibilities at XYZ Coffee

| No | Position | Responsibilities |
|---|---|---|
| 1 | Owner | Evaluates weekly performance, provides business strategy directions to the manager, and audits financial records. |
| 2 | Manager | Leads weekly meetings, executes business strategies, conducts coaching sessions, manages work schedules, finance & accounting, monitors inventory, and ensures product quality and asset maintenance. |
| 3 | Marketing | Develops marketing calendars, organizes promotional activities, builds partnerships, enhances digital visibility through advertisements and live streaming, manages customer feedback, CRM strategies, and collaborates with Key Opinion Leaders (KOL). |
| 4 | Marketing Creative | Focuses on creating social media content, managing customer interactions, conducting live streaming, updating promotions on online platforms, and supporting graphic design. |
| 5 | XYZ Express | Prepares products according to SOP, maintains cleanliness, and participates in human resource development sessions. |
| 6 | Outlet Barista | Prepares products according to SOP, maintains cleanliness, and participates in human resource development sessions. |

## Identifying Critical Business Processes

To determine which business processes require improvement, an analysis using Critical Success Factors (CSF) was conducted. CSF helps identify the aspects that most significantly impact the success of a business process [15]. In the case of XYZ Coffee, three key factors were identified as part of the CSF analysis:

- (K1) Well-maintained data – related to the accurate recording of transactions and business documentation.

- (K2) Simplicity of operations – related to the ease with which employees can execute business processes.
- (K3) Speed of execution – related to the time efficiency in performing business processes.

CSF represents key elements that determine business success and should be used as a foundation for developing improvement strategies [15]. According to Andersen (2007) in *Business Process Improvement Toolbox*, CSF can be utilized to prioritize business process improvements and ensure better operational efficiency [17]. Table 2 below presents the results of the critical business process analysis at XYZ Coffee.

**Table 2.** Critical Business Process Analysis of XYZ Coffee

| PB | Business Process | K1 | K2 | K3 | Total |
|---|---|---|---|---|---|
| | **Weight** | **3** | **2** | **3** | |
| 01 | Ordering and Payment | 3 | 2 | 2 | 19 |
| 02 | Order Preparation | 1 | 2 | 3 | 16 |
| 03 | Order Serving | 1 | 2 | 3 | 16 |
| 04 | Stock Opname | 3 | 2 | 3 | 21 |
| 05 | Purchasing | 3 | 2 | 3 | 21 |
| 06 | Cleaning and Equipment Maintenance | 1 | 1 | 2 | 11 |
| 07 | Financial Recording and Management | 3 | 1 | 2 | 17 |
| 08 | Promotion and Marketing | 2 | 2 | 3 | 19 |

Based on the CSF analysis, the two business processes with the highest scores are stock opname and purchasing, each receiving a score of 21. This indicates that these processes have a significant impact on business operations and should be prioritized for improvement. Furthermore, previous research on the implementation of Business Process Modeling Notation (BPMN) for business process improvement suggests that stock opname and purchasing processes often become operational bottlenecks, especially when there is no proper recording system [16]. With the appropriate improvements, business efficiency can be significantly enhanced.

## Current Business Process Simulation (As-Is)

The business process for stock opname and purchasing at XYZ Coffee begins with raw material checks conducted manually by the requesting division (Outlet Barista or XYZ Express) at the end of each shift. This manual checking increases the likelihood of recording errors and the risk of missing items. If any raw materials are found to be low or out of stock, a report is sent through the daily communication group (WhatsApp Group).

Once the report is received, the Manager is responsible for evaluating the raw material needs. If the request is deemed unnecessary, the process is halted. However, if approved, the Manager proceeds to compile a purchase list for the vendor. This recording system is reactive, meaning purchases are made only after a stock shortage is reported, increasing the risk of delayed raw material fulfillment.
At the payment stage, there are two options available. Once the transaction is completed, the Manager records the payment in the administrative system. The purchased items are then received by the requesting division, marking the completion of the raw material procurement process. The business process modeling and simulation are presented in Figure 4 and Table 4.

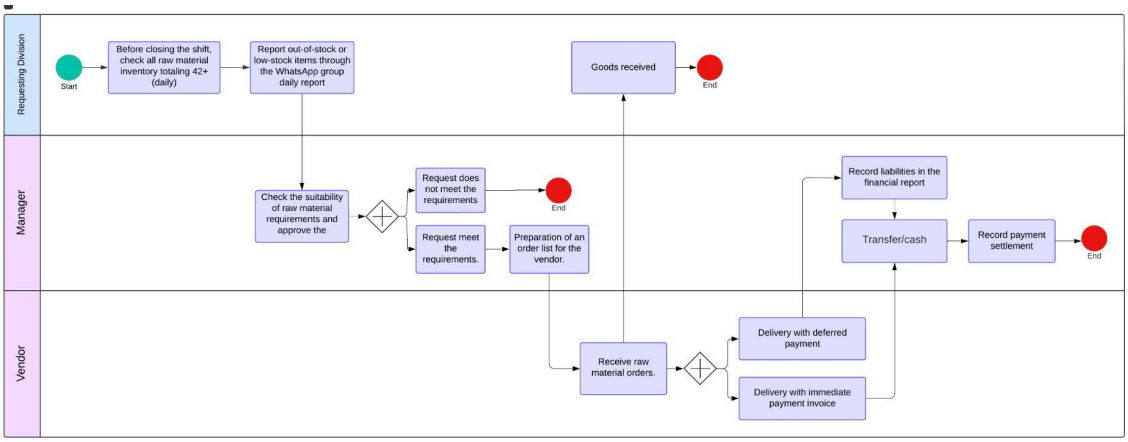


**Figure 4.** Business Process Modeling (As-Is)

**Table 4.** Business Process Simulation (As-Is)

| Action Item | Actor | Time (Menit) | Frequency |
|---|---|---|---|
| Checking the inventory of 42+ raw materials manually before the end of each shift | Requesting Division (Outlet Bar/Express) | 10 | Daily/Nightly |
| Reporting low or out-of-stock items via WhatsApp Group | Requesting Division (Outlet Bar/Express) | 5 | Daily/Nightly |
| Verifying raw material needs and approving purchases | Manager | 10 | Daily |
| Creating purchase orders for vendors | Manager | 15 | 3-5 times per week |
| Recording accounts payable or payment | Manager | 15 | 3-5 times per week |

| | | | |
|---|---|---|---|
| completion in financial records | | | |
| Processing payment (via transfer/cash) | Manager | 5 | Once per week |
| Receiving purchased goods | Requesting Division (Outlet Bar/Express) | 0 | 3-5 times per week |
| **Total Time/Week** | | | **4 hours 25 minutes – 5 hours 30 minutes** |

**Identifying Issues in the Current Business Process (As-Is)**

The purchasing process at XYZ Coffee takes approximately 4 to 5 hours per week. The primary weakness lies in the manual recording system, which increases the risk of human error in stock identification, leading to delays in raw material procurement [19]. Additionally, the reactive system—where stock checks are conducted at the end of each shift—slows the response to urgent needs and increases the risk of overstocking or stockouts, directly affecting operational efficiency [18].

The process also heavily relies on manual evaluation by the Manager, which, if delayed, postpones the ordering process [20]. Furthermore, inconsistent recording of accounts payable, performed 3-5 times a week, creates discrepancies in financial reports and complicates cash flow monitoring [18].

These weaknesses significantly impact costs and operational efficiency. The Cost of Goods Sold (COGS), which averages 44.2%, surged to 54.9% in November, likely due to last-minute raw material purchases [18]. Moreover, delays in record-keeping have caused fluctuations in Operating Expenses (OPEX), ranging from 15.8% to 34.6% throughout the year, indicating cash flow instability. As a result, the slow and error-prone process can lead to production delays, reduced customer satisfaction, and lost revenue opportunities due to the inability to meet demand on time [18]–[20].

**Table 5.** Operational Costs of XYZ Coffee (As-Is)

| OPERATIONAL COST (%) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **No** | **Cost** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** | **Oct** | **Nov** | **Average** |
| 1 | COGS | 27.81 | 51.1 | 45 | 47.3 | 44.3 | 43.2 | 42.4 | 42.5 | 54.9 | 44.2 |
| 2 | OPEX | 22.3 | 31.5 | 25.3 | 20.6 | 26.2 | 15.8 | 19.5 | 34.6 | 22.9 | 24.3 |
| 3 | Marketing | 7.35 | 5.3 | 13.8 | 5.7 | 8.1 | 7.8 | 5.3 | 6.3 | 9.1 | 7.6 |
| 4 | Back Office | 1.6 | 3.2 | 3.2 | 4.6 | 6.9 | 7.2 | 7.5 | 8 | 5.8 | 5.3 |

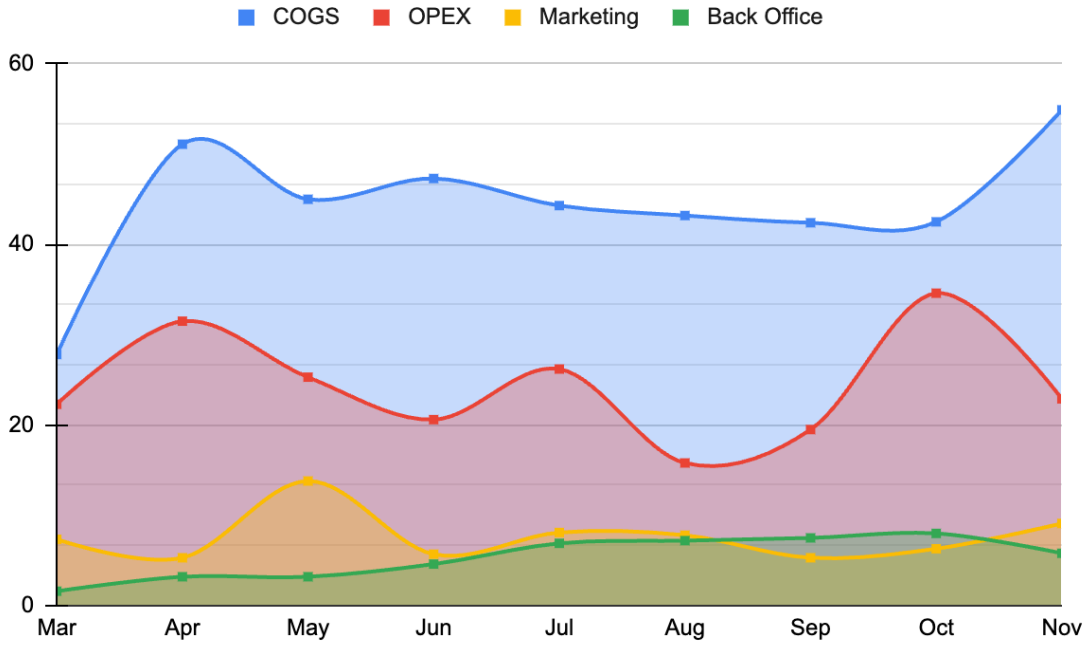


**Figure 5.** Visualization of XYZ Coffee's Operational Costs (As-Is)

### 3.2 Proposed Business Process (To-Be)

To address the research problems, the current business processes are analyzed, and improvement recommendations are provided to enhance their effectiveness. The Business Process Improvement (BPI) method is used to design improvements within these processes. In the implementation, streamlining tools that are easy to apply and have a significant impact on process improvement are selected.

The selection of these tools is tailored to the specific issues observed in the research object, ensuring that the proposed solutions are more relevant and optimal in improving business efficiency. The recommendations, streamlining methods, and BPMN modeling are presented in Table 6 and Figure 6, respectively.

**Table 6.** Business Process Improvement Recommendations

| Initial Business Process | Recommended Business Process | Type of Streamlining |
|---|---|---|
| Manually checking raw material inventory daily | Using a POS system to monitor raw material availability | Automation and/or Mechanization, Error Proofing |
| Reporting out-of-stock items via WhatsApp Group | POS system automatically displays stock status | Automation and/or Mechanization, Bureaucracy Elimination |
| Purchase approval by Manager (10 minutes) | Accelerating purchase approval to 3 minutes | Process Cycle-Time Reduction |
| | Raw material forecasts prepared by the Finance & Purchasing division | Standardization |
| Recording accounts payable 3-5 times per week | Streamlining accounts payable recording to 2-4 times per week | Process Cycle-Time Reduction, Standardization |

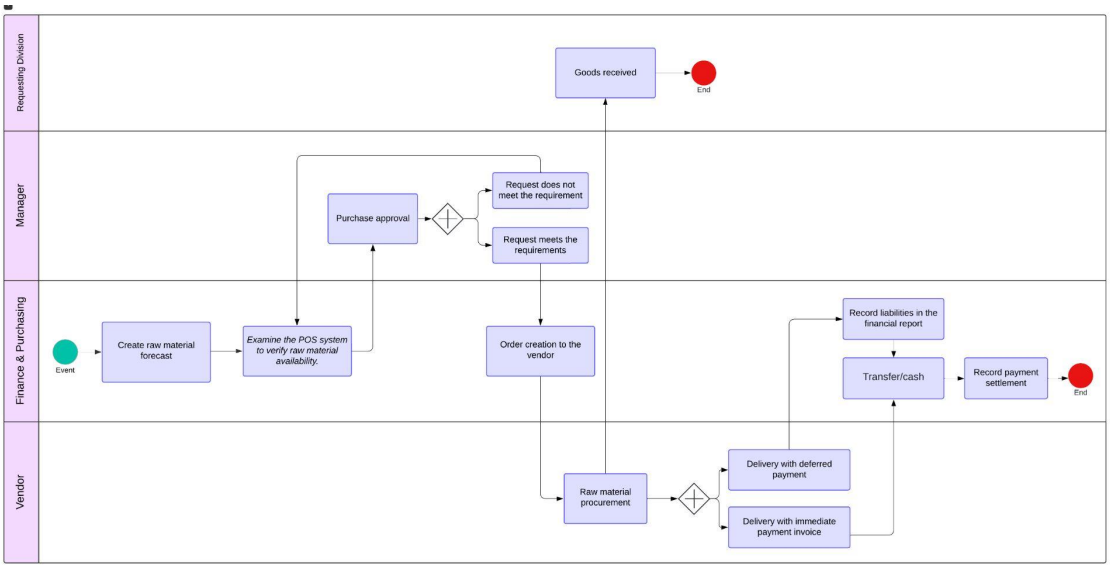


**Figure 6.** New Business Process Model (To-Be)

### 3.3 Implementation and Impact

Since December, XYZ Coffee has begun implementing the proposed business process (To-Be) as a strategic measure to address various issues in the stock opname and purchasing processes. The detailed improvements in the business process are presented in Table 7.

Previously, stock checks were conducted manually, which was prone to errors and delays. The improvement involved implementing a Point of Sale (POS) system to replace the manual stock-checking process. The POS system enables real-time stock monitoring and provides automatic notifications when inventory approaches the minimum threshold. Studies show that POS-based automation significantly enhances recording accuracy and accelerates the procurement process [21], [24].

In addition to POS system implementation, XYZ Coffee also carried out organizational restructuring to improve efficiency and accountability in inventory management. A new division, Finance & Purchasing, was established under the Manager to centralize responsibilities related to raw material forecasting, stock monitoring, and accounts payable recording. Previously, the purchase approval process was solely dependent on the Manager, causing delays. Research indicates that clear and efficient organizational restructuring can improve decision-making speed and reduce bureaucratic delays in operations [22]. Figure 7 illustrates the new organizational structure.

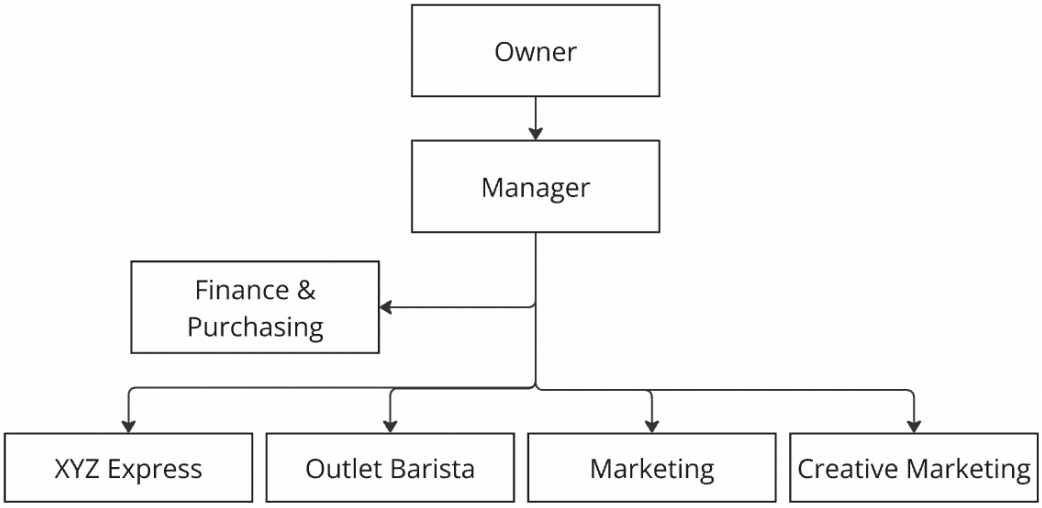


**Figure 7.** New Organizational Structure.

The next step is the implementation of data-driven raw material forecasting using historical information from the POS system. With this method, the Finance & Purchasing division can project weekly raw material needs and submit requests proactively before stock is depleted. This approach differs from the previous reactive system, where purchases were only made after stock shortages were reported.

Data-driven forecasting has been shown to reduce emergency purchases, which are often more expensive, and maintain cash flow stability [23].

**Table 7.** New Business Process Simulation

| Action Item | Actor | Time (Minute) | Frequency |
|---|---|---|---|
| Creating raw material forecasts | Finance & Purchasing | 5 | Once per week |
| Checking the POS system for raw material availability | Finance & Purchasing | 5 | 2 - 4 times per week |
| Purchase approval | Manager | 3 | 2 - 4 times per week |
| Creating purchase orders for vendors | Finance & Purchasing | 10 | 2 - 4 times per week |
| Recording accounts payable/payment completion | Manager | 15 | 2 - 4 times per week |
| Processing payment (via transfer/cash) | Manager | 5 | Once per week |
| Receiving purchased goods | Requesting Division (Outlet Bar/Express) | 0 | 2 - 4 times per week |
| **Total Time/Week** | | | **1 hour 16 minutes – 2 hours 22** |

**Comparison of Current Business Process Simulation (As-Is) and New Process (To-Be)**

The implementation of this new system has also had a significant impact on operational time. One of the main factors contributing to this efficiency is the automation of stock checking and purchase approval processes. Additionally, the use of the POS system enables the Manager and the Finance & Purchasing teams to monitor the flow of goods in real-time without waiting for manual reports, which previously often experienced delays. Table 7 below presents a comparison of the time spent on business processes before and after the improvements.

**Table 8.** Comparison of As-Is and To-Be Process Times

| Action Item | As-Is (Before Improvement) | To-Be (After Improvement) | Time Efficiency |
|---|---|---|---|
| Checking raw material inventory | 10 minutes/day | 5 minutes/week | ↓ 75% |
| Reporting stock shortages | 5 minutes/day | 0 minutes (automated) | ↓ 100% |
| Purchase approval | 10 minutes | 3 minutes | ↓ 70% |
| Creating order lists | 15 minutes | 10 minutes | ↓ 33% |
| Recording accounts payable | 15 menit | 10 minutes | ↓ 33% |
| **Total Time per Week** | **4 hours 25 minutes – 5 hours 30 minutes** | **1 hour 16 minutes – 2 hours 22 minutes** | **↓ 60-70%** |

Moreover, beyond time efficiency, the data in Table 9 and Figure 8 indicate a significant decrease in the Cost of Goods Sold (COGS), from 54.9% in November to 39.2% in December, and further to 38.2% in January. This decline reflects the success of the POS system in minimizing sudden purchases and improving the accuracy of raw material procurement. Additionally, Operating Expenses (OPEX) also showed a consistent decrease, from 34.6% in November to 16.4% in January, indicating improved efficiency across various operational areas. This reduction in operating costs aligns with previous research suggesting that integrated information systems can directly enhance business process efficiency and reduce fixed costs [21], [23].

**Table 9.** Operating Costs of XYZ Coffee (To-Be)

| OPERATIONAL COST (%) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **No** | **Biaya** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** | **Oct** | **Nov** | **Dec** | **Jan** | **Average** |
| 1 | COGS | 27.81 | 51.1 | 45 | 47.3 | 44.3 | 43.2 | 42.4 | 42.5 | 54.9 | 39.2 | 38.2 | 43.2 |
| 2 | OPEX | 22.3 | 31.5 | 25.3 | 20.6 | 26.2 | 15.8 | 19.5 | 34.6 | 22.9 | 16.9 | 16.4 | 22.9 |
| 3 | Marketing | 7.35 | 5.3 | 13.8 | 5.7 | 8.1 | 7.8 | 5.3 | 6.3 | 9.1 | 13.3 | 19.7 | 9.25 |
| 4 | Back Office | 1.6 | 3.2 | 3.2 | 4.6 | 6.9 | 7.2 | 7.5 | 8 | 5.8 | 10.3 | 11.8 | 6.37 |

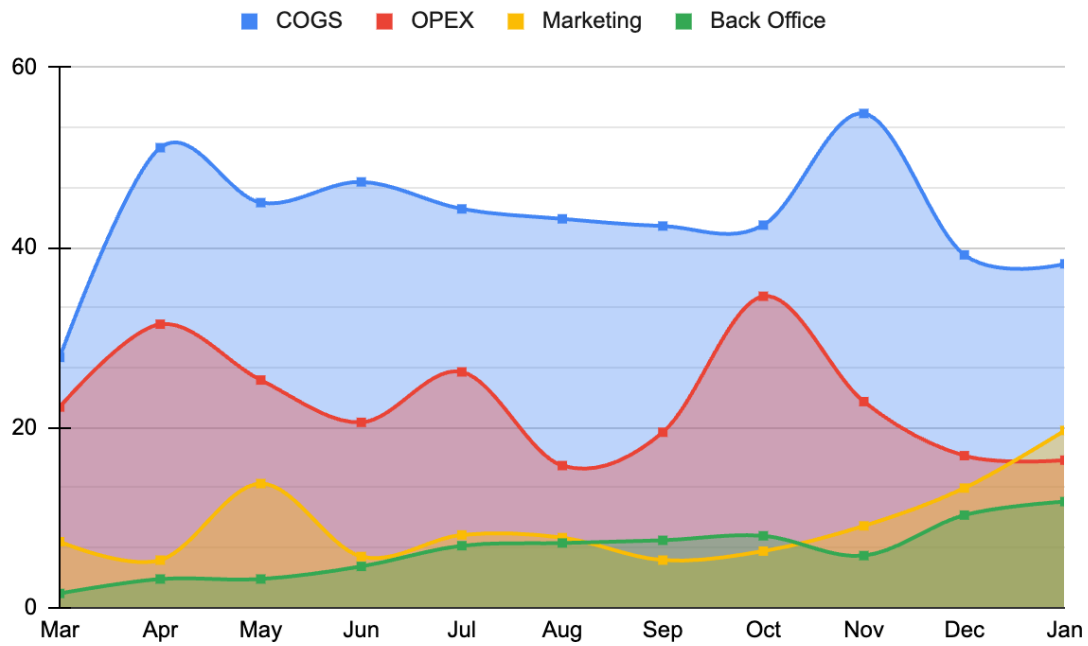


**Figure 8.** Visualization of XYZ Coffee's Operating Costs (As-Is)

Although the implementation successfully improved efficiency, several challenges emerged during the transition process. One of the main challenges was the need to train employees to understand the use of the POS system and new procedures. The initial adaptation required time, especially for divisions accustomed to manual systems. Additionally, the accuracy of raw material forecasting needs to be periodically validated to ensure precise estimates under various conditions, particularly during peak seasons. However, with regular monitoring and continuous evaluation, these challenges can be gradually addressed, ensuring the new system operates optimally and sustainably.

Overall, the implementation of the proposed business processes at XYZ Coffee since December has shown highly positive results in improving operational efficiency and reducing costs. By leveraging technology through the POS system, organizational restructuring, and data-driven forecasting, XYZ Coffee has accelerated process times, improved record accuracy, and significantly reduced operational expenses. This success aligns with research indicating that the combination of automation and standardization in business processes can create sustainable efficiency and support long-term business growth [21]–[24].

## D. Conclusion

The implementation of the POS system and organizational restructuring at XYZ Coffee since December has significantly improved operational efficiency. Purchasing process time was reduced by 70%, from 4 hours 25 minutes – 5 hours 30 minutes to 1 hour 16 minutes – 2 hours 22 minutes per week. Additionally, the Cost of Goods Sold (COGS) decreased from 54.9% in November to 38.2% in January, while Operating Expenses (OPEX) dropped from 34.6% to 16.4%, indicating a significant cost reduction. The POS system also enhanced record accuracy through real-time stock monitoring, minimizing manual errors in inventory checks and

procurement. Organizational restructuring, by establishing the Finance & Purchasing division, reduced purchase approval time from 10 minutes to 3 minutes, improving responsiveness and transparency. These overall improvements demonstrate that implementing Business Process Improvement (BPI) can enhance time efficiency, reduce costs, and support sustainable business growth.

## E. Acknowledgment

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