



Procurement Process in Supply Chain Management: An Empirical Study of ERP-Enabled Procurement Practices in an IT Solutions Organization

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ABSTRACT

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Procurement is an essential element of supply chain management which aims to procure inputs, goods, services, and resources at the right time, from reliable suppliers, at competitive prices, and of the best quality. This study focuses on the procurement process followed in Femtosoft Technologies, an enterprise resource planning (ERP) software development company based in Chennai, India, and ERP's role in enhancing procurement practices. The descriptive research design was adopted, and the data were collected from 53 respondents, working in procurement, inventory, warehousing, finance, logistics, and operations through a questionnaire. Analysis of the primary and secondary data revealed that Femtosoft follows a systematic and well-planned procurement process, wherein purchase planning, selection of suppliers based on the set criteria, and effective interrelated coordination of procurement, warehousing, finance, and production activities take place. The study also found that ERP helps in making procurement efficient, timely, and accurate, while reducing paperwork and ensuring effective supplier relationship management (SRM), purchase order management, and informed decision-making based on real-time information. The findings also revealed the need for improving procurement practices by addressing issues that include lack of staff training, delays in the purchase approval process, and underutilizing the potential of ERP in procurement.

KEYWORDS

Procurement Process; Supply Chain Management; Enterprise Resource Planning (ERP); Supplier Relationship Management; Digital Procurement; Purchase Order Management; IT Industry

INTRODUCTION

Procurement is one of the most vital functions performed in supply chain management, as it facilitates the timely procurement of materials, goods, services, and resources needed for production or operations while adding value to the firm. Traditionally, procurement was viewed as a mere purchasing function, but currently, it has evolved as a strategic function contributing towards lowering costs, improving quality of products/services, managing risks, and enhancing supply chain performance. The procurement process typically consists of purchase requisition, supplier identification, quotation collection, supplier evaluation and selection, purchase order placement, delivery, inspection and goods receipt, invoice verification, and payment. With the adoption of enterprise resource planning (ERP) systems, e-procurement platforms, and data analytics, modern-day procurements are characterized by a high degree of digitization, resulting in



reduced paperwork and improved transparency and accuracy of purchase information, enabling faster and more informed purchasing decisions. The IT sector, which is at the forefront of developing ERP systems, presents a unique insight into the role of ERP-enabled procurement in supply chain management, as IT firms both design and use ERP systems for their procurement requirements.

The present study was conducted at Femtosoft Technologies, a software development organization which provides enterprise resource planning and logistics solutions to its clients, and which has been developing logistics and ERP software since 2005. The company offers integrated software solutions for purchase, warehouse receipt, invoicing, finance, human resource management, sales, and transportation management for its clients, and uses the same ERP software to perform its own procurement operations. The current study focuses on the procurement function of Femtosoft Technologies to examine how the company utilizes the ERP system to manage its procurement process, as such research is limited, with most studies focusing on manufacturing and retail organizations. The research objectives include examining the procurement system of the organization, determining how the ERP system aids in planning and managing procurement, observing the procurement cycle, analyzing the supplier selection processes and supplier relationship management, evaluating how the ERP system connects procurement with inventory, warehousing, and finance, establishing how the organization benefits from the ERP-enabled procurement, determining the problems in the procurement process and recommending solutions, and reviewing the concepts of procurement, supply chain management, ERP, and their impact on supply chain management.

OBJECTIVES OF THE STUDY

The primary objective of the current study is to determine how procurement takes place at Femtosoft Technologies and how the company benefits from using the ERP system in its procurement practices to improve supply chain performance. The specific objectives of the study include:

- To study the procurement system followed by Femtosoft Technologies.
- To examine the role of ERP in the planning and management of procurement at the organization.
- To understand the procurement cycle – beginning with purchase requisition and ending with the payment to suppliers – at Femtosoft Technologies.
- To observe how suppliers are selected at the organization and how it manages its suppliers.
- To examine the linkages between procurement, inventory, warehousing, finance, and production at the organization through ERP.
- To establish how ERP has helped the organization in making procurement efficient and cost-effective.
- To identify the problems in the procurement process and recommend solutions.
- To review the concepts of procurement and supply chain management, ERP, and their impact on supply chain performance.

CONCEPTUAL FRAMEWORK AND REVIEW OF LITERATURE

As a part of supply chain management, procurement facilitates the sourcing of products, services, and materials from external suppliers. ERP systems offer integrated software solutions that help in managing and automating the procurement processes, along with inventory management, warehousing, finance, and other operations. The conceptual framework of the current study is based on the premise that ERP-enabled procurement helps in improving supply chain performance by automating processes, reducing paperwork, linking procurement information with inventory and financial information, and facilitating informed decision-making in selecting suppliers and making purchase decisions.

Several researchers have demonstrated the importance of procurement in supply chain performance, as well as the role of ERP in modern-day procurement practices. Shivajee, Singh, and Rastogi (2023) examined procurement systems for building supply chain resilience, and established the importance of effective procurement in supply chain performance,



particularly during the COVID-19 pandemic. Jain, Priyadarshini, and Gupta (2023) explored the concept of Procurement 4.0 and its linkages with digitalization, big data, and logistics. Miandar, Johnsen, and Caniato (2024) reviewed the role of purchasing and supply chain management in promoting sustainability in supply networks. Spreitzenbarth, Bode, and Stuckenschmidt (2024) reviewed the role of artificial intelligence and machine learning in purchasing and supply management, including cost estimation and supplier sustainability analysis. Govindan, Jain, Singh, and Mishra (2024) explored the role of blockchain technology in Procurement 4.0. Jain and Gupta (2024) studied digital procurement and its rising significance. Balkan and Akyuz (2025) reviewed the role of AI and machine learning in purchasing and procurement decision-support systems.

Collectively, the studies cited above demonstrate the rising importance of studying supplier selection, procurement planning, inventory management, cost reduction, supplier relationship management (SRM), and the role of ERP in procurement. However, the extant literature provides limited information regarding the role of ERP in procurement in the IT industry. In fact, most of the studies have focused on manufacturing and retail organizations, and the role of procurement in improving supply chain performance in service sector organizations, specifically IT companies, is understudied. The current study aims to address this gap in the literature by examining the procurement process and practices of Femtosoft Technologies, an IT-based ERP software developing organization based in India.

RESEARCH METHODOLOGY

Research Design

The descriptive research design was adopted for the current study, as it enables the researcher to describe the characteristics of the procurement process followed at Femtosoft Technologies, including its linkages with other functions, the role of ERP in procurement, and the overall effectiveness of procurement in contributing towards the firm's supply chain performance. The study focuses on analyzing how ERP aids in making purchase planning efficient, how supplier selection takes place, and how the ERP system helps in making purchasing decisions, along with the benefits and problems associated with the procurement system.

Sample Size and Sampling Technique

The study was conducted among 53 respondents, who worked in procurement, inventory, warehousing, finance, operations, and logistics at the organization, directly or indirectly involved in the procurement process. The convenience sampling technique was used for the study, as the time and resources for data collection were limited, and the sampling technique is suitable for situations when the researcher has limited time and cannot contact every member of the population. Thus, the respondents that were contacted for the study were conveniently available to provide information on the procurement process followed at the organization.

Data Collection

The research data were collected using a questionnaire, which was distributed among the respondents, and through interviews and observations during the period of the internship. The primary data collected from the respondents included information on their personal profile, including gender, age, educational background, years of experience, and work department, and their views on the procurement process, use of ERP in procurement, supplier selection, and related aspects. The secondary data were collected from the company's website, reports, documents, and articles published on procurement, supply chain management, and ERP.

Analytical Tools

The percentage analysis was used to analyze the data, primarily to determine the respondents' agreement or disagreement with the statements provided in the questionnaire. The analysis was done using Microsoft Excel. The Kraljic Matrix, which is a supplier classification matrix that considers the business impact of procurement and supplier risk, was used for the analysis of the procurement process followed at the organization, to classify the items procured into appropriate categories.



Analysis and Discussion

Demographic Profile of Respondents

Table 1 below presents the demographic profile of the respondents, based on gender, age, educational background, and years of experience. In terms of gender, 84.91% of the respondents were male, whereas 15.09% were female. In terms of age, the majority of the respondents (39.62%) were within the age bracket of 25–35 years. In terms of educational background, 49.06% of the respondents were postgraduates, whereas 47.17% were undergraduates. In terms of work experience, most of the respondents (47.17%) had two to five years of work experience, and 26.42% of the respondents worked in the procurement department (see Table 1).

Demographic Variable	Category	Percentage
Gender	Male	84.91%
	Female	15.09%
Age	25–35 years (largest group)	39.62%
Education	Postgraduate	49.06%
	Undergraduate	47.17%
Work Experience	2–5 years (largest group)	47.17%
Department	Procurement (highest share)	26.42%

Perceptions of the Procurement Process

Table 2 below presents the data analysis, based on the respondents' agreement with the statements provided in the questionnaire, including statements on the procurement process, supplier selection, use of ERP in purchase order management, and integration of procurement with other functions. According to the data, 90.56% of the respondents agreed or strongly agreed that the procurement process at the organization was well planned and systematic, and around 84.9% of the respondents agreed or strongly agreed that purchase requisitions were prepared accurately before issuing purchase orders. In addition, 88.68% of the respondents agreed or strongly agreed that the purchase approval process took place without any unnecessary delays.

Survey Statement	Agreement (Agree + Strongly Agree)
Procurement process is well planned and systematic	90.56%
Purchase requisitions are prepared accurately before ordering	84.90%
Purchase approval process is completed without unnecessary delay	88.68%



Suppliers are selected based on quality, price and reliability	79.25%
Vendor performance is evaluated regularly	81.14%
Purchase orders are issued on time	81.13%
Goods received are inspected before acceptance	81.14%
ERP software improves the efficiency of procurement activities	88.68%
ERP system helps reduce errors in the procurement process	84.91%
Materials are delivered by suppliers on time	84.90%
Procurement is well integrated with inventory management	83.02%
Procurement is effectively coordinated with the finance department	88.68%
Timely procurement helps prevent stock shortages	81.13%
Overall satisfaction with the procurement process	83.02%

With respect to supplier selection, 79.25% of the respondents agreed or strongly agreed that suppliers were selected based on quality, price, and reliability, while 81.14% of the respondents agreed or strongly agreed that the performance of the suppliers was monitored on a regular basis. In terms of purchase orders, 81.13% of the respondents agreed or strongly agreed that purchase orders were issued in a timely manner, whereas 81.14% of the respondents agreed or strongly agreed that the received goods were inspected before they were accepted.

Role of ERP in Procurement

The data presented in Table 2 indicate a positive view of the role of the ERP system in the procurement process. Specifically, 88.68% of the respondents agreed or strongly agreed that the ERP system improved the efficiency of procurement, while 84.91% of the respondents agreed or strongly agreed that the system helped in reducing errors in the procurement process. Moreover, the respondents had a positive perception of the integration of procurement with inventory management and finance, with 83.02% of the respondents agreeing or strongly agreeing that procurement was well integrated with inventory management, and 88.68% of the respondents agreeing or strongly agreeing that procurement was well integrated with finance. This suggests that the ERP system helped in ensuring that the procurement process took place in an integrated manner, with procurement decisions being informed by inventory information and linked with the financial information of the firm, thus fulfilling the conceptual framework of ERP-enabled procurement.

Supply Chain Outcomes

According to the data presented in Table 2, 81.13% of the respondents agreed or strongly agreed that timely procurement helped in avoiding stock shortages. In addition, 84.90% of the respondents agreed or strongly agreed that the suppliers delivered the materials on time. Combined with the finding that 83.02% of the respondents were overall satisfied with the procurement process, this suggests that ERP-enabled procurement helped in ensuring that the materials were procured in a timely manner and that the procurement process was well-integrated with inventory, thus contributing



towards the avoidance of stock shortages. Nevertheless, it should be noted that around 10–20% of the respondents had a negative or neutral view of most of the statements, suggesting that the procurement process still had several issues that needed to be addressed to improve supply chain performance.

Kraljic Matrix Analysis of Procurement Inputs

Table 3 below presents the findings of the study on the different inputs procured by the organization, analyzed using the Kraljic Matrix. The matrix helps classify the procured items into four categories, based on their business impact and supplier risk. According to the matrix, the items procured by the organization could be classified into the following categories:

- **Strategic items** – These are items that have a high business impact and high supplier risk and require continuous analysis, evaluation, and close scrutiny. Such items include cloud server/infrastructure, custom software and ERP, and cybersecurity and backup.
- **Leverage items** – These are items that have a high business impact but a moderate or low supplier risk and include databases (MySQL/PostgreSQL), networking equipment, and licenses/subscriptions.
- **Bottleneck items** – These are items that have a moderate or low business impact but a high supplier risk and require maintaining alternative suppliers. Such items include Tally/GST/TMS/payment gateway/API integrations and reporting and analytics tools.
- **Non-critical items** – These are items that have a low business impact and a low supplier risk and can be standardized or automated. Such items include data migration (Excel/CSV).

Procurement Input	Business Impact	Supplier Risk	Kraljic Category
Cloud Server / Infrastructure	High	High	Strategic Item
Database (MySQL/PostgreSQL)	High	Medium	Leverage Item
Custom Software & ERP Integration	High	High	Strategic Item
Tally, GST, TMS, Payment Gateway & API Integrations	Medium	Medium	Bottleneck Item
Data Migration (Excel/CSV)	Low	Low	Non-Critical Item
Cybersecurity & Backup Solutions	High	High	Strategic Item
Networking Equipment	High	Medium	Leverage Item
Licenses & Subscriptions	High	Low	Leverage Item
Training & Support Services	Medium	High	Leverage Item
Reporting & Analytics Tools	Medium	Medium	Bottleneck Item



FINDINGS AND SUGGESTIONS

Findings

Based on the analysis, several findings can be reported, including the following:

- The procurement process followed at the organization is systematic and well planned and consists of a series of activities, ranging from identifying needs to making payments to the suppliers.
- Purchase planning plays a significant role in the procurement process, as it helps in avoiding delays in production due to the unavailability of materials, thereby supporting the smooth flow of operations at the organization.
- The organization selects its suppliers based on several criteria, including the suppliers' ability to provide goods and services of the best quality, at competitive prices, with timely delivery, reliability, and customer service.
- The organization utilizes the ERP system to ensure that the procurement process is efficient, as the system enables the organization to update the purchase requisition and purchase order and update the inventory on the consumption of materials. In addition, the system helps in matching the invoice with the purchase order and generates reports on procurement.
- The procurement process is well integrated with other functions, including warehousing, stores, production, and finance, resulting in effective coordination among them and facilitating the smooth flow of operations at the organization.
- The organization ensures that the purchase documentation, purchase orders, and goods received notes are properly prepared and maintained. In addition, it facilitates maintaining good supplier relationships by engaging in regular communication with the suppliers and meeting the financial obligations by making timely payments to them.
- The organization compares quotations and negotiates with the suppliers, which helps in minimizing costs and ensuring that the organization gets the best value for the money spent on its purchases.
- The ERP system helps in providing the information needed for faster and more informed purchasing and inventory decisions.
- The procurement process followed at the organization enables it to ensure that materials are available when they are needed, thereby preventing delays in production.

Suggestions

Based on the findings, several recommendations can be made, including the following:

- The organization should conduct regular training sessions for its employees on the procurement process and the features of the ERP system that can be used in purchasing.
- It should establish effective mechanisms for reviewing the performance of its suppliers on a regular basis, with the focus on areas such as quality, lead time of deliveries, pricing, and responsiveness.
- The organization should streamline the purchase approval process and reduce the number of levels of approvals to shorten the duration of the procurement cycle.
- It should consider digitizing the procurement process to minimize paperwork and always make purchase documents accessible to the relevant personnel.
- It should utilize the full potential of the features available in the ERP system, including those related to purchase planning, forecasting of stock levels, supplier relationship management, and report generation.
- The organization should enhance coordination with other departments, including warehousing, inventory, finance, and production.



- It should establish long-term relationships with reliable suppliers, which will enable it to get access to competitive prices and consistent quality of goods and services.
- It should track the performance of its procurement function using Key Purchasing Metrics, including the purchase cycle time, cost reduction, supplier performance, inventory turnover, and accuracy of purchase orders.
- The organization should identify alternative suppliers, particularly for items that are classified as strategic and bottleneck items, to ensure continuous supply and avoid disruptions in its operations.
- It should revise its procurement policy on a regular basis to ensure that it remains relevant to the changing needs of the organization.

CONCLUSION

The current study demonstrated the importance of procurement, particularly in terms of its role in ensuring the timely availability of materials for production while minimizing costs and ensuring quality. The study was conducted at Femtosoft Technologies, an IT-based organization that follows a systematic procurement process, wherein purchase planning takes place to ensure that the materials needed for operations are available when they are needed, suppliers are selected based on several criteria, and the procurement process is well integrated with other functions. The analysis of the procurement process revealed that the process was well planned, the role of ERP was significant, as it helped in making the procurement efficient and accurate, and the organization maintained good supplier relationships, which facilitated timely delivery of materials on time and consistent pricing. A well-planned and well-integrated procurement process helps ensure that the materials are available when they are needed, thus facilitating the smooth flow of operations at the organization while minimizing its costs and maximizing its efficiency.

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