The Impact of Inventory Management Practices on the Organizational Performance

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The Impact of Inventory Management Practices on Organizational Performance.

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Abstract

The thesis investigates the impact of different inventory management practices (Just-in-time (JIT), Economic Order Quantity (EOQ), Vendor Managed Inventory (VMI), and ABC Analysis) on the performance of the organization to enhance its organization's efficiency and effectiveness. Four independent variables (Just-in-Time JIT, Economic Order Quantity EOQ, Vendor Managed Inventory VMI, ABC Analysis) were taken and their impact on a single dependent variable (Organizational Performance OP) was kept under analysis. To study the impact, on the Aviation industries of Pakistan were targeted to collect data. To analyze the impact, a defined area of study was taken. The quantitative research method is used; as primary data is collected through an adaptive structured questionnaire based on the 5-Likert scale. The sampling size of this study was 117 responses, which were collected from different professionals having expertise in the Supply Chain area or in inventory management. The collected responses were imported into the IBM SPSS Software to run multiple statistical tests like (Descriptive frequencies of demographics and variables, Regression Analysis, Correlation Analysis, and Reliability tests). the results show positive results towards the variable and the reliability were enriched. The conclusion and recommendation are also explained based on the analysis.

Keywords: Just-in-Time (JIT), Economic Order Quantity (EOQ), Vendor Managed Inventory (VMI), ABC Analysis, Organizational Performance (OP)

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Chapter 1 – INTRODUCTION

1.1 Introduction

In rising economies, micro and small enterprises play a significant strategic role, contributing to national income, employment, exports, and entrepreneurship growth. The expansion of MSEs is key to the industrial development strategy. As a result, the performance of MSEs in any country's development process is based on competitiveness, productivity, and efficiency, and they will play an important role in the economy. Using formal inventory management practices, according to the literature, is one approach to increasing efficiency and effectiveness. To have a positive way forward and to enhance the efficiency and effectiveness of the organization, the organization needs to implement inventory management strategies or practices

The term inventory involves both the raw materials utilized in production and the finished products that are ready for sale. A company's inventory is one of its most valuable assets since inventory turnover is one of the key sources of revenue creation and subsequent profitability for the company's shareholders. It refers to the raw material, work in progress, and finished goods held by a company, while stock refers to the finished goods that are available for earning profits for the company/organization

Inventory management is essential to the success of firms in a variety of industries. Businesses can get various benefits from efficiently controlling inventory levels, including improved operations and overall performance.

Inventory management of the firm ensures that the firm can meet the needs of customers as soon as possible. Companies can fulfil orders more efficiently if they have the appropriate items in stock, decreasing the risk of stakeouts and backorders. This enhances the efficiency and effectiveness (performance) of the organization and ultimately increases customer retention and loyalty, which leads to repeated business and favourable word of mouth.

Previously, inventory control was not regarded to be necessary. Indeed, surplus inventories were considered as a sign of prosperity. Management saw overstocking as beneficial at the time. Corporations, on the other hand, are starting to embrace good inventory control. Managers need reliable and effective control today more than ever to reduce costs and

remain competitive. says that inventory control promotes profitability by minimizing material storage and handling expenses. Inventory is preserved for a variety of reasons. Too much stock can lead to a drop in finances, an increase in holding expenses, material deterioration, obsolescence, and theft. A lack of materials, on the other hand, may result in product delays, poor customer relations, and underutilized machines and equipment. Inventory management facilitates the reduction of inventory costs. Businesses can prevent unnecessary carrying costs such as storage, insurance, and obsolescence by properly managing stock levels. Overstocking, which locks up valuable resources and increases the possibility of waste or deterioration, is also reduced by effective inventory management. The lower the inventory management practices the higher the cost. These costs include the cost of capital, rental cost, transportation cost, utility costs, cost of deterioration and etc. and it ultimately reflects in the increased cost of goods sold. variation in the cost of goods sold is signified by the cost of carrying inventory up to 98%. (Onikoyi, 2017)

Many organizations around the world have faced numerous challenges in recent years, particularly in inventory management and control, which has harmed their operational effectiveness. Inventory overstocking that later became obsolete or outdated, understocking, a lack of stocktaking, worker theft of supplies, and material delivery delays inside organizations, to name a few instances. Working capital, which comprises inventory as well as accounts receivable and payments, is where many industrial companies invest more than half of their total assets (Akinlabi, 2021). On the other hand, Inventory management effectively optimizes business processes. It allows for improved coordination between production and procurement, reducing delays and guaranteeing a smooth operation. Businesses may minimize lead times, increase production cycles, and improve overall operational efficiency by having the correct materials and components on hand.

Inventory data that is accurate and up to date gives useful insights for decision-making processes. Inventory management systems offer data and analytics that assist firms in understanding product demand, identifying patterns, and forecasting future needs. This data-driven strategy enables intelligent purchasing, pricing, and inventory replenishment decisions, hence optimizing business strategies. Sound inventory management gives the complete facts and figures that allow the organization to analyze and make better decisions.

1.2 Problem Statement

With the advancement in research and development, companies in the Aviation industry are still using old-school strategies and conventional ways to count, control, and manage inventories. With such practices, companies face inefficiency and ineffectiveness in the flow of operations, and that ultimately leads to delay in response and lower performance.

1.3 Research Gap

The research is being conducted in an under-developing country, Pakistan. In this era of advancement, many industries and organizations are still working in an old-school and conventional way. Inventories are being managed on paper and working normally. A descriptive study is being conducted to find out the effect of different inventory management practices on the effectiveness and efficiency of the organization.

1.4 Research Objectives

The primary objective of this research is to investigate and analyze the effect of different inventory management practices on organizational performance (Efficiency & Effectiveness)

1.5 Research Questions

The primary research questions are as follows

1. What is the relation between inventory management practices and organizational performance?
2. How do different practices affect the performance of the organization?
3. Do the practices enhance the operational behaviour of the organization?

1.6 Significance of this Research

The captioned research title “The impact of inventory management practices on the organizational performance” has significance towards both areas theoretically as well as practically. The findings and the recommendations may have an impression in the theoretical area and in the practical field as well.

1.6.1 Theoretical Significance

This study is very valuable to research students since it provides them with a better grasp of how the implementation of various inventory management practices influences the

organization's success in Pakistan's aviation industry. Furthermore, this study assists supply chain management students in understanding the relationship between the research study's variables (ABC Analysis, JIT, EOQ, VIM, effectiveness, and efficiency). Meanwhile, this study is crucial in assisting research students and supply chain management students in broadening their understanding of the literature issue. Furthermore, this research has the potential to make a theoretical and operational contribution to the field of supply chain management and aviation industry

1.6.2 Practical Significance

This study provides vital guidance to Pakistani furniture firms. This study will provide project managers with the evidence they need to understand the relationship between core inventory management practices and organizational now performance (effectiveness and efficiency). Similarly, stakeholders of Pakistan's future enterprises would benefit greatly from this study, as it assists them in delving into the depth of the relationship between (ABC Analysis, JIT, EOQ, VIM, effectiveness, and efficiency.

2 Chapter 2 - Literature Review:

2.1 Inventory

The term inventory involves both the raw materials utilized in production and the finished products that are ready for sale. A company's inventory is one of its most valuable assets since inventory turnover is one of the key sources of revenue creation and subsequent profitability for the company's shareholders. It refers to the raw material, work in progress, and finished goods held by a company, while stock refers to the finished goods that are available for earning profits for the company/organization. Raw material, work in progress, and finished goods are different types of inventory. Knowing how to categorize the different items in all these types of inventory brings optimization to the processes and enhances the operational as well as production efficiency within the organization. To increase profitability, these stocks, which make up a sizable amount of the company's investment, must be carefully handled. Many businesses whose inventory management is poor cannot stay longer in the market. (Inventory Definitions and types, 27)

2.1.1 Raw Material and its Impact on Organizational Performance

Raw materials are fundamental elements that are utilized in the manufacturing of goods or services. They are the fundamental inputs needed in the manufacturing process and are turned into final goods at various stages of production. It is part of the inventory that has been shipped to the buyer’s warehouse from the supplier and it is not part of the production phase for the conversion into the final product Natural resources taken from the environment or materials received from suppliers can be used as raw materials.

Material efficiency contributes to lower industrial waste volumes, lower extraction and consumption of virgin raw materials, increased waste segregation, lower energy demand, and lower carbon emissions, all of which serve to reduce the environmental impact of the manufacturing industry. By reducing the volume of generated industrial waste, resource extraction and consumption, energy demand, and carbon emissions, improved material efficiency helps to reduce the overall environmental impact of global industry. improved material efficiency Increased waste segregation has the potential to benefit both the economy and the environment. Material efficiency gains will be aided by the determination

of various waste segments and their relative fractions, as well as the calculation of material efficiency performance metrics. (Shahbazi, 2018)

The selection and management of raw materials are key variables in determining a product's or service's quality, cost, and overall success. Raw materials are used extensively in industries such as manufacturing, building, agriculture, and energy. (Raw Materials, 2021)

Raw material plays a critical role in the performance and operations of the organization. It also affects critically on the success, profitability, product quality, innovation, and supply chain and logistics of the organization especially those companies whose core area is production, manufacturing, or extraction of resources.

Raw material price fluctuations have a direct impact on a company's profitability. Efficient raw material cost management is critical for sustaining profit margins. (Moazeni, 2018)

2.1.2 Work in Process and its Impact on the Organizational Performance

Work in process WIP is part of the inventory that has been converted from the raw material into the production area. Here is the main concern the working capital needs to be taken into account in order to shrink buffer stock, the production process, and the length of the entire production cycle. The amount of raw materials and finished goods in the production area must be kept to a minimum. The production time of the work-in-process inventory needs to be analyzed that how much time the production phase is taking to clear the product from production and gets it ready for sale. The quality control department normally focuses on this area and makes all the calculations. (Atnafu, 2018)

2.1.3 Finished Goods and its Impact on the Organizational Performance

The impact of the finished product on organizational performance is an essential variable that substantially impacts corporate success and competitiveness.

The finished goods from the production area are then shipped to the warehouse where it stays, also recorded as the holding cost of the inventory in the accounts book, till the purchase order is created and it is ready to deliver to the customer. Now it depends on how long the finished goods are kept as inventory in the warehouse before it turns into money. Following are some of the key variables that are affected by finished goods.

- **Customer Loyalty & Satisfaction:**

It implies that in order to create a loyal client, the end product must align with consumers' expectations. To keep loyal clients, organizations should maintain and improve their quality in order to fulfil consumer expectations. Apart from consumer contentment, product quality has a substantial impact on customer loyalty, either directly or indirectly through customer satisfaction. The direct influence of product quality on customer loyalty may be said that a delighted consumer expresses repurchase behaviour owing to a variety of positive aspects. The product quality of completed goods is determined by the quality of raw materials, the efficiency and precision of the manufacturing firm, that produces the goods, and provides a barrier to switching to another brand due to variables such as product quality, aesthetics, intensity to satisfy the requirement, and so on. (Albarq, 2023)

- **Market Competitiveness**

Finished goods are crucial in defining an organization's market competitiveness. The capacity to provide new, unique, and high-quality completed goods distinguishes organizations from rivals.

The firms providing high-quality finished goods are more likely to be attracted by the customers than other competitive firms. This may allow the organization to stand ahead in the market competition and have an eye-catching image in the eye of customers. This reflects in the repeated visiting and buying behaviour of the customer and increases the financial stability and profits. The product's attributes spread in the market and communities through the experiences of the users and through word-of-mouth. When clients evaluate finished goods as valuable and agree to pay a premium for them, revenue creation and profitability improve. Organizations that produce superior finished items can charge higher prices and generate greater financial results.

Some sections are in charge of ensuring that finished goods reach markets and customers in a timely and frictionless manner. Logistics and supply chain departments must collaborate in order to stay ahead of Marketing and Sales and ensure that when a product is advertised for sale by Marketing, it is available in every nook and cranny of the city, state, and country. A circumstance in which a customer walks to a sales counter to place an order and the product is not available cannot and should never occur. (Juneja, n.d.)

2.1.4 Buffer Stock

Buffer stock is the amount of inventory that is required in response to the sudden increase in the demand from the customer, it is also known as safety stock buffer and is often called as buffer safety stock. (BlueCart, n.d.)

Increasing the accuracy of inventory makes it cheaper to run a business or organization. It reduces outdated stock, and degraded items, and assists you to uphold the right amount of inventory in the warehouse, hence preventing the risk of loss and excess spending and storage (Innovation, 2022). The accuracy of the inventory also creates an effect on the administrative task of the organization.

2.2 Inventory Management

Inventory management is the control of inventory in the organization or at the warehouse, it includes all the aspects of controlling inventory like keeping a record of all the available stocks, analyzing the previous records to anticipate the future request, when to re-order, and how much to keep the stock. It is the method of arranging sufficient/extra stock to minimize the cost. Keeping track of the inventory relates to the effective inventory management. The organization providing high-quality services needs to have an effective inventory management system because it is an essential operational part of the business. An effective inventory management (availability of stock, as per the demand and extra stock) is important to meet the customer's need without any shortages which may lead to the dissatisfaction of the customer. Axsäter (2006) describes, in terms of capital commitments as well as operating and managing the inventory itself, inventories are expensive. It is argued that the interval between raising a request for ordering till the delivery of goods to replenish the inventory is known as lead time. The lead time may get a longer time to replenish the inventory whereas the customer demand is never completely known (Axsäter, 2006). Therefore, taking the lead time and volume of replenishment into consideration, the managers have to decide and plan the inventory to avoid any shortage of stock in high demand and have a balance between the cost and good customer service.

Adopting different techniques of inventory management helps the management of the organization to focus on other operational activities. The profitability of the organization also depends on the inventory management techniques that we use. Precise demand forecasting

leads to reducing the risk of excess or shortage of inventory, ultimately reducing the cost. Excess inventory is the inventory that you carry in your warehouse well above your demand, it reflects in increasing the capital investment, storage space cost, service cost, and other related costs adding up all to the carrying cost. It also increases the risk of getting damaged, misplaced, devalued or get expired. On the other hand, a shortage of inventory may lead to the loss of revenue, getting short of inventory means your forecasted demand is poor and the customer may shift from your organization to another, hence shrinking your market and losing the customer, which results in fewer sales in the future. Customer retention may decrease due to the shortage of inventory (Career Guide, n.d.). Upgrading the system with different inventory management practices may lead to reducing the risk of excess or shortage of inventory.

2.3 Inventory Management Practices:

2.3.1 ABC Analysis

ABC analysis is an inventory management approach that estimates the value of inventory items based on their relevance to the business. ABC rates products based on demand, cost, and risk data, and inventory managers categorize items according to those criteria. This supports company executives in determining which items or services are most vital to their organization's financial success. The most significant stock-keeping units (SKUs) in terms of either sales volume or profitability are "Class A" products, followed by Class B and Class C. Some businesses may use a categorization system that divides items into more than three categories. ABC analysis in cost accounting, also known as activity-based costing, is related to but distinct from ABC analysis in inventory management. In manufacturing, accountants use activity-based costing to assign indirect or overhead expenses such as utilities or wages to goods and services. (Jenkins, 2020)

The ABC technique of inventory control includes a system that manages inventory and is utilized for materials and distribution management. Selective inventory control, or SIC, is another name for it. The Pareto Principle underpins ABC inventory analysis. According to the Pareto Principle, the top 20% of goods create 80% of the sales volume. This suggests that the top 20% of the things will create 80% of the business's income. It is sometimes referred to as the 80/20 rule. This strategy is useful for identifying the top inventory categories that

generate a high proportion of yearly consumption. It enables managers to optimize inventory levels and make better use of stock management resources. (Acharya, 2021)

The ABC analysis in the inventory management control system helps the decision makers to reduce the working capital and decline the carrying cost. Carrying cost also reflects negatively on organizational and financial performance as well. The warehouse leader may control the 20% of the inventory which has a positive effect for more than 80%. This means that some parts of the inventory are slow and are not repeated as fluently as others and they are not required to re-order commonly. Their restock level is kept low. On the other hand, inventory that falls under A or B category is focused more. Their restock level is high and the on-hand quantity needs to be checked on a regular basis to avoid any kind of lag. They need to be re-ordered timely to improve the efficiency and optimization.

The firm is seeking to improve its time-based competitiveness. The time it takes to perform all order cycle operations is an essential aspect of customer service. Order processing accuracy and speed are hallmarks of high-quality service. Accurate and timely order processing is a sign of great service quality. Several academics define order fulfilment as the physical tasks of procuring things through stock retrieval, purchasing, or manufacturing; packaging products for consignments; arranging the consignment for delivery; and producing shipping documents. Typically, these tasks in the order-filling process need the utilization of warehouse space, making them an essential component of a company's logistics system. (Syed Abdul Rehman Khan*, 2017)

Most organizations have a large number of stock-keeping units (SKUs), yet they have not been able to considerably grow or expand their business. Businesses must deal with several more inventory management difficulties. Challenges may include a lack of stock information, a poor management procedure, trouble managing personnel, a lack of space, and so on. This problem can be solved via ABC analysis. It can help businesses streamline and optimize their inventory management. ABC analysis assists businesses in determining customer expectations and stocking goods accordingly. As a result, both products and capital waste are reduced. It enables you to obtain the best and most cheap prices from vendors. ABC analysis allows you to keep up with client needs and satisfy them by always having what they desire. Using ABC analysis, commodities are only manufactured based on client wants. This helps in saving companies more capital and resources. Specific commodities are counted more

frequently based on the category to which they belong. As a result of this successful analysis, you neither have an excess of goods in the warehouse nor do you run out of stock. Excess/overburdened goods increase the cost, run out of stock creates a delay that will ultimately affect the organizational performance, competitiveness, and customer satisfaction (Hans, n.d.)

2.3.2 Just-in-Time (JIT) Inventory

Just-in-Time (JIT) inventory is a method that tries to reduce inventory levels by obtaining items or materials just in time for manufacturing or customer demand. It assists in lowering carrying costs and eliminating the need for unnecessary stockholding. To achieve on-time deliveries, however, careful coordination with suppliers and a dependable supply chain is required.

Just-in-Time JIT did, in fact, boost business value through higher revenue. The main impact of Just-in-Time JIT is seen in the decrease in inventories. Inventory turnover increases in Just-in-Time JIT environments are well established and usually recognized as the most visible of its consequences. Other effects on quality, labour efficiency, morale, and so on are more difficult to detect and quantify, but they all contribute to the development of company value. Just-in-Time JIT does result in a reduction in the amount of labour required to attain a specific level of production. This can be interpreted as support for the reducing spirit. However, the benefits come not from eliminating manual jobs, but from enriching each work and replacing more time-consuming tasks with automated technology.

JIT manufacturing is favourable to a company's profitability in a variety of ways. Lower raw material and labour costs are associated with Sales-Dependent production. If a company does not intend to generate an inventory of goods for sale, it only has to acquire materials for things that have already been ordered, resulting in a decline in COGS. Labour costs are also lowered because the number of man-hours necessary to fulfil orders is likely to be less than that required for full-time production. On-call manufacturing implies fewer goods deteriorating in value if sales fall, and the risk of losing money if a product becomes obsolete is nearly avoided. While many businesses must put money in big warehouses to store things for sale, having a small inventory means essentially no warehouse expenses. Lowering these critical production and operational costs results in improved gross and operational profitability, which immediately brings healthier results in return. (BROWN, 2023)

The primary goal of the JIT technique is to achieve zero stock, not just within the confines of a single organization, but rather throughout the entire production network. It can be linked to any organization's manufacturing process, and it is also being modified within management organizations. The underlying rationale for JIT is to keep the appropriate amount of stock, whether raw materials or completed stock, on hand to fulfil the demands of your creative strategy and the demands of the enterprise's end clients. The less a company spends on storage and distribution, the less outmoded quality it needs to mark down. Finally, all of this adds up to real money saved for the organization. (Atnafu, 2018)

2.3.3 Economic Order Quantity (EOQ)

An EOQ is a formula-based strategy that determines the ideal order quantity in order to minimize total inventory costs. It considers things like ordering costs, carrying costs, and demand rates. Businesses can prevent excess inventory while guaranteeing adequate stock to fulfil demand by selecting the optimal order quantity.

Effective inventory control management is critical for successful businesses. As a result, the amount of economic order is an inventory strategy meant to discover and maintain the optimal balance between the cost of maintaining a stock and the cost of ordering goods. The Economic order quantity assists the organization in identifying the least possible point in ordering and transportation inventory charges.

Effective inventory control management is critical for successful businesses. As a result, the amount of economic order is an inventory strategy meant to discover and maintain the optimal balance between stock holding costs and inventory ordering costs. The objective is to ensure that customer orders are filled as soon as possible by the owner of the inventory. The formula defines this perfect equilibrium based on a few essential assumptions. The Economic order quantity assists the organization in identifying the least possible point in ordering and transportation inventory charges. The objective is to ensure that customer orders are filled as soon as possible by the owner of the inventory. The formula defines this perfect equilibrium based on a few essential assumptions. The availability of materials may also improve efficiency if things are delivered to the organization within the specified time frame. This minimizes lead time or waiting time, which eliminates numerous bottlenecks. (Kitheka, 2019)

Inventory management must be structured logically in order for the organization to know when to order and how much to order. This must be accomplished by determining the Economic Order Quantity (EOQ). Monetary demand amount engages correlation to plan their stock re-establishment on an ideal basis. For example, the plan can be set to occur on a monthly, quarterly, half-yearly, or yearly basis. As a result, enterprises can have low or nil-limit limit costs within their circulation centres. As a result, when organizations strive to improve stock administration, the EOQ and Re-Order Point (ROP) are critical tools that organizations can employ. (Atnafu, 2018)

2.3.4 Vendor-Managed Inventory (VMI)

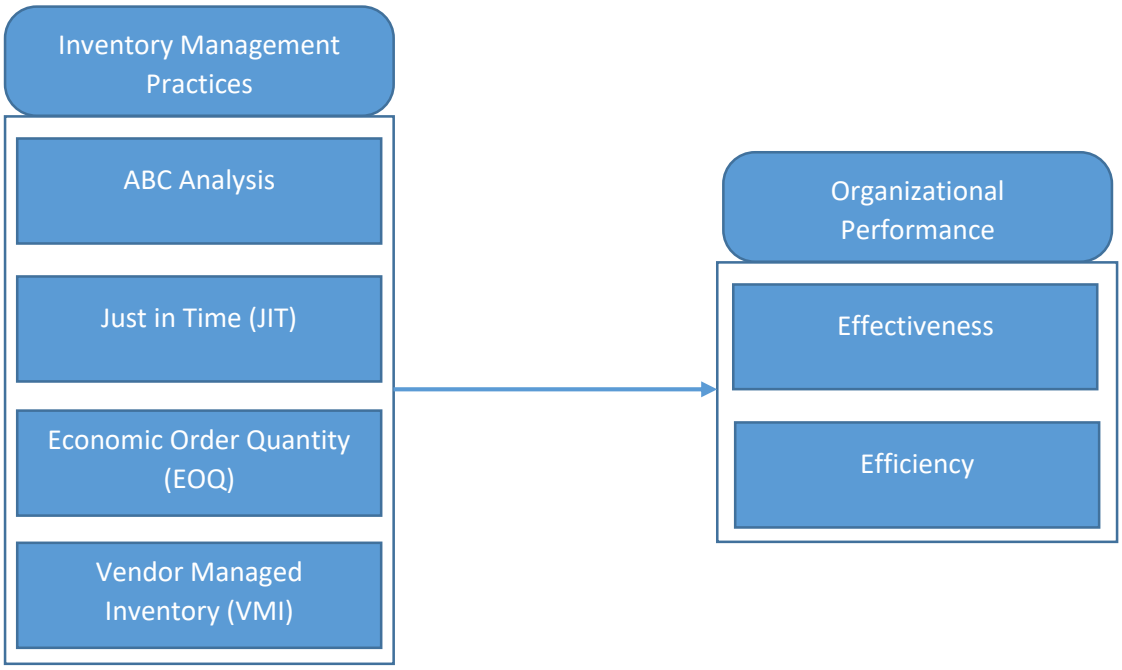
VMI is a collaborative strategy in which the supplier maintains the inventory levels at the customer's site. The supplier keeps track of stock levels, replaces inventory as needed, and is responsible for inventory accuracy and availability. VMI may help to streamline supply chain operations, boost efficiency, and develop strong supplier-customer relationships.

Vendor Managed Inventory is a streamlined approach to inventory management and requests fulfilment in which the merchant is totally in charge of stock replenishment in light of the most appropriate point of all data to the purchasers (retailer). This concept increases client responsiveness by closing the free market activity gap, thereby providing fulfilment to the end client by benefiting the desired item when needed. To select the regular destinations, store network partners must communicate their vision of interest, necessity, and requirement. The most important factor for the use of Vendor Management Inventory is the upstream information exchanged with suppliers, such as current stock level and specific deal assumptions. (Atnafu, 2018)

2.3.5 Safety stock

Safety stock is excess inventory stored as a reserve against unanticipated events such as unexpected surges in demand or supply delays. It serves as a precaution against stock outs and ensures client satisfaction. Safety stock levels vary depending on factors such as lead time, variations in demand, and desired service standards.

2.4 Theoretical Framework



2.5 Research Hypothesis

1. **Null Hypothesis (H_O):** There is no relation between the all the given inventory management practices and performance of the organization (Effectiveness and Efficiency).
2. **Hypothesis (H_1):** A Firm that implement effective inventory management practices will always have a positive performance over firms that lacks in practicing efficient inventory management.
3. **Hypothesis (H_2):** A firm that follows effective inventory management practices will always have a negative performance over firms that lacks in practicing efficient inventory management.
4. **Hypothesis (H_3):** The impact of inventory management practices might have a positive and negative effect on the firm that implements inventory management practices.

3 Chapter 3 - Methodology

3.1 Research Philosophy

Positivism refers to the trustworthiness of "factual" information obtained from observations. As a result, positivism is used in this study as the research philosophy. In positivist investigations, the researcher's role is limited to data collection and based on the collected data the researched make interpretations and withdraws analysis.

3.2 Research Design and Approach

The research design is the blueprint for gathering, measuring, and analyzing data to achieve a conclusion. In layman's words, research design refers to the process through which a researcher collects and analyses data in order to draw findings and make recommendations based on it. A research study can employ one of three methodologies: qualitative, quantitative, or blended procedures. The term qualitative methodology refers to a method of assessing a subject's emotions and sentiments. Meanwhile, quantitative methodology is defined as a way of investigating statistical differences between variables. However, the mixed methodology is defined as a methodology that not only investigates people's feelings but also analyses statistical differences across variables. Quantitative methodology is used in the present research because primary data is used to investigate the statistical relationship among ABC Analysis, JIT, EOQ, VIM, effectiveness, and efficiency. This is Basic replicable research.

3.3 Population and Sampling

3.3.1 Population

A population is a group of people that a researcher wants to study. Members from the domain of Supply chain from Pakistan's aviation company were chosen for questionnaire distribution and data gathering. The researcher considers supply chain participants working in Pakistan's aviation company to be the study's targeted demographic. It is practically impossible for a study to collect data from every person in the population. As a result, a sample of the complete population is picked. Meanwhile, several sources (such as the Sample Size Calculator, Morgan Table, and so on) are used to produce a reliable sample that is representative of the population.

3.3.2 Sampling

A research study cannot be completed unless an optimal sample is chosen, as the sample size is crucial for effective population (targeted audience) representation. Morgan's Table was used to finalize the sample of around 250 supply chain members from Pakistan's aviation industry. Meanwhile, a sample of around 250 people has been selected for data collection and analysis of the relationship between research factors.

3.4 Sampling Technique

In this study, the convenience sample approach is employed because it is the optimal sampling technique for a study where the exact population is unknown. This sampling strategy is used to reach out to individuals (from the population) who have expressed an interest in filling out the questionnaire and taking part in the survey. This sampling technique effectively addresses data collection difficulties, which has surely benefited in the smooth data collection operation. During this study, the researcher only interviewed people who showed up and volunteered to fill out questionnaires and take the survey. Since the survey went off without a hitch, convenience sampling has undoubtedly aided in the collection of vital data.

3.5 Study Setting

The current study uses a non-contrived setting since it collects data from consumers associated with Pakistan's aviation company through distributed surveys.

3.6 Time Horizon

The research study is a cross-sectional study, because it involves data collection from the defined population and at one specific point in time.

3.7 Unit of Analysis

The unit of analysis throughout the research would remain “individual” comprised of supply chain members associated with the aviation industry in Pakistan. It is the most common unit of analysis. It helps the researcher to analyze the data in detail. Possibility of collecting more data as compared to group or another unit of analysis.

3.8 Research Interference

The role of the researcher is necessary. In the current study, the researcher obtains data by distributing questionnaires. To assess the relationship between the variables in this study, calculations are performed using statistical tests. The researcher develops conclusions and gives recommendations at the end of the present investigation.

3.9 Procedure

The questionnaire will be designed on Google Forms and it will be shared via email, WhatsApp, and other social media platforms. The printed questionnaire may also be shared with some specific professionals to collect the data.

3.10 Research Analysis

Data collecting is followed by data analysis, in which survey respondents' responses are examined using statistical tests (descriptive frequency, correlation, and regression analysis). To explore the association between Just-in-time (JIT), Economic Order Quantity (EOQ), Vendor Managed Inventory (VMI), ABC Analysis, and the dependent variable, Organisational performance (OP), the SPSS software package is employed. The statistical tests (descriptive frequency, correlation, and regression analysis) show the relationship between the variables in this study.

3.11 Scale and Measures

To explain the goal of distribution and data collecting, the questionnaire is designed to be brief and easy. The questionnaire contains questions on demographics as well as questions about all of the variables in this study like Just-in-time (JIT), Economic Order Quantity (EOQ), Vendor Managed Inventory (VMI), ABC Analysis, and the dependent variable, Organizational performance (OP). all the variables of study are measured on the five point Likert scale. (1) Very Small Extent | 2) Small Extent | 3) Moderate Extent | 4) Large Extent | 5) Very Large Extent)

4 Chapter 4 Analysis and Interpretation

4.1 Introduction

A structured questionnaire is distributed to 118 respondents (supply chain members involved in procurement and inventory in Pakistan) in a survey. Survey data is analysed using SPSS Software (SPSS 26.0) and statistical tests (descriptive frequencies, correlation analysis, regression analysis, and so on)

4.2 Data Analysis

4.2.1 Descriptive Frequencies of Demographics

To distribute the data, multiple categories are generated within the questionnaire, as the classification of the questionnaire aids in data interpretation. The demographic section of the questionnaire is further subdivided into sub-sections such as Name, gender, age, and designation. The descriptive data of variable questions in the questionnaire is also withdrawn to analyze the frequency of each individual variable response. The collected descriptive data of both demographics and variables from respondents are represented down here in tables.

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	15 - 20	3	2.5	2.6	2.6
	20 - 25	57	48.3	48.7	51.3
	25 - 30	48	40.7	41.0	92.3
	30 - 35	7	5.9	6.0	98.3
	> 35	1	.8	.9	99.1
	43	1	.8	.9	100.0
	Total	117	99.2	100.0	
Missing	System	1	.8		
Total		118	100.0		

Below here is the descriptive analysis based on the Gender

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	100	84.7	85.5	85.5
	Female	17	14.4	14.5	100.0
	Total	117	99.2	100.0	
Missing	System	1	.8		
Total		118	100.0		

Education Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor's	14	11.9	12.0	12.0
	Masters	44	37.3	37.6	49.6
	PhD	56	47.5	47.9	97.4
	Diploma Holder	3	2.5	2.6	100.0
	Total	117	99.2	100.0	
Missing	System	1	.8		
Total		118	100.0		

Descriptive statistical table of education level

On the analysis of the above descriptive data of demographic, looking on the gender category, 85% (99 out of 118 respondents) are males and 15% (18 out of 118 respondents) are females. On the basis of age, 48% are in the age between 20 – 25, 41% are in the age between 25 – 30. These are the major ones and some are above 30 and some are couple of them are below 20. Now coming towards the education level, 12 percent have done only bachelors, (some) have completed their masters and () have done further higher studies to PhD. The responses mostly have been received from the highly educated individuals working at a responsible position.

4.2.2 Descriptive Frequencies of variables

Statistics

		JIT	EOQ	VMI	ABC	OP
N	Valid	117	117	117	117	117
	Missing	1	1	1	1	1
Mean		3.4889	3.6462	3.5321	3.7179	4.0655
Median		3.6000	3.6000	4.0000	4.0000	4.3333
Mode		4.20	2.80[a]	4.25	4.67	4.67
Std. Deviation		.86201	.55794	.86075	1.05283	.78691
Variance		.743	.311	.741	1.108	.619
Minimum		2.00	2.80	2.00	1.67	2.33
Maximum		4.80	4.60	4.75	5.00	5.00
Percentiles	25	2.6000	3.1000	3.0000	2.8333	3.6667
	50	3.6000	3.6000	4.0000	4.0000	4.3333
	75	4.2000	4.1000	4.2500	4.6667	4.6667

a. Multiple modes exist. The smallest value is shown

4.3 Regression Analysis

Regression is the study of the relationship between dependent and independent variables, as well as the magnitude of that relationship. The linear regression analysis findings are shown below

.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.412[a]	.169	.140	.72984	2.026

a. Predictors: (Constant), ABC, EOQ, JIT, VMI

b. Dependent Variable: OP

R square reflects the variation that predicting variables (Just-in-time (JIT), Economic Order Quantity (EOQ), Vendor Managed Inventory (VMI), ABC Analysis) cause in the dependent variable (Organizational Performance). Simply, R2 indicates the amount to which "Just-in-time (JIT), Economic Order Quantity (EOQ), Vendor Managed Inventory (VMI), ABC Analysis" can explain "Organizational Performance". According to the R Square value in the model, JIT, EOQ, VMI, ABC Analysis accounted for 16.9 percent of the variation in Organizational

Performance. The Durbin-Watson value should be in the range of 0 to 4. Durbin Watson has a value of (), which is extremely good. Adjusted R2, on the other hand, demonstrates the theoretical model's fitness. The adjusted R2 value is 14 percent, indicating that the theoretical model employed in this study is a 14 percent fit

4.3.1 ANOVA

ANOVA is a statistical test that employs variance to determine whether or not there is a statistically significant difference between two or more category groups. The splitting of the independent variable into two or more groups is another key feature of ANOVA. (Simkus, 2023)

ANOVAa

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.172	4	3.043	5.713	.000[b]
	Residual	59.659	112	.533		
	Total	71.831	116			

a. Dependent Variable: OP

b. Predictors: (Constant), ABC, EOQ, JIT, VMI

F is greater than 4 and the significance value is less than 0.05, according to the ANOVA results. As a result, the statistical relevance of the theoretical model is established. According to ANOVA, Just-in-Time (JIT), Economic Order Quantity (EOQ), Vendor Managed Inventory (VMI), and ABC Analysis have a significant impact on Organizational Performance.

4.3.2 Coefficients

Pearson's correlation coefficient is a test statistic used to determine the statistical link, or association, between two continuous variables. It is known as the best method for quantifying the relationship between variables of interest because it is based on the method of covariance. It reflects the magnitude of the link, or correlation, as well as the direction of the relationship. (Pearson's Correlation Coefficient, n.d.)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.779	.498		5.582	.000
	JIT	.278	.088	.305	3.147	.002
	EOQ	.014	.129	.010	.108	.914
	VMI	.212	.092	.232	2.309	.023
	ABC	-.130	.073	-.174	-1.784	.077

a. Dependent Variable: OP

Above table shows that Just-in-Time (JIT), Economic Order Quantity (EOQ), Vendor Managed Inventory (VMI), and ABC Analysis have significant impact on Organizational Performance with the contribution of 27.8%, 1.4%, 21.2%, 13% respectively. Whereas the significance level of 3.14, 0.1, 2.3, -1.7 respectively.

4.4 Correlation Analysis

The term "correlation" refers to the process of determining the relationship between two or more variables. Correlation is deemed high when there is a significant relationship between two or more variables. Correlation is deemed low when there is a weak link between two or more variables. A moderate correlation, on the other hand, is described as a moderate strength of the relationship between two or more variables. The Pearson correlation measures the strength of the linear relationship between two variables. It has a value between -1 to 1, with a value of -1 meaning a total negative linear correlation, 0 being no correlation, and + 1 meaning a total positive correlation (Williams, 2020). Pearson r is used to investigate the relationship between the variables in the study. The Sig(2-tailed) item in the output is the two-tailed p-value. The p-value is the evidence *against* a null hypothesis. The smaller the p-value, the strong the evidence that you should reject the null hypothesis. If you have a small p-value in this area then the test has a significant result (Sig(2-Tailed): , n.d.).

Correlations

		JIT	EOQ	VMI	ABC	OP
JIT	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	117				
EOQ	Pearson Correlation	.201*	1			
	Sig. (2-tailed)	.029				
	N	117	117			
VMI	Pearson Correlation	.416**	.269**	1		
	Sig. (2-tailed)	.000	.003			
	N	117	117	117		
ABC	Pearson Correlation	.337**	.288**	.399**	1	
	Sig. (2-tailed)	.000	.002	.000		
	N	117	117	117	117	
OP	Pearson Correlation	.345**	.083	.292**	.024	1
	Sig. (2-tailed)	.000	.371	.001	.800	
	N	117	117	117	117	117

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Analysing the correlation table, the result shows that there is significant positive relation between Just-in-Time and Economic Order Quantity with a magnitude of 0.201. Similarly, the relation between the two variables Just-in-Time and vendor managed inventory is positively significant with the magnitude of 0.416. Just-in-Time and ABC Analysis practices have also positive significance with magnitude of 0.337. the magnitude of correlation between Just-in-Time and Organizational Performance is 0.345 which also shows positive significance.

Analysing the Vendor managed inventory. The correlation shows that Vendor Managed Inventory has a positive significance with ABC Analysis, and organizational performance having a magnitude of 0.399 and 0.292 respectively

4.5 Reliability Analysis

A reliability analysis is performed to determine the dependability of the questionnaire used to collect data. In other words, reliability analysis (also known as the Cronbach's Alpha test) is used to assess a questionnaire's dependability. Lower changes in repeated interval measures imply that the questionnaire is trustworthy. The dependability, consistency, and

relevance of a questionnaire can all be used to determine its reliability. The reliability analysis produced the following findings.

Cronbach's alpha of Individual variables are as follows; this table shows that how much each variable is reliable

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	**Cronbach's Alpha if Item Deleted**
JIT	14.9617	4.607	.511	**.529**
EOQ	14.8044	6.064	.314	**.627**
VMI	14.9185	4.506	.545	**.510**
ABC	14.7326	4.419	.387	**.605**
OP	14.3850	5.645	.261	**.647**

Cronbach's alpha of summary of all the variable are down here, this shows how much questionnaire and data acquired by the questionnaire are reliable.

Reliability Statistics

Cronbach's Alpha	N of Items
.642	5

A coefficient of reliability near to one suggests that the questionnaire or the items contained inside the questionnaire are particularly dependable. Just-in-Time (JIT), Economic Order Quantity (EOQ), Vendor Managed Inventory (VMI), ABC Analysis, and Organizational Performance have respective reliabilities of 0.529, 0.627, 0.510, 0.605, 0.647. Cronbach's Alpha magnitudes (0.529, 0.627, 0.510, 0.605, 0.647) are positive, which means that questionnaire and data acquired by the questionnaire are reliable. The magnitude interprets that how much they are reliable. So, the magnitudes are near to 1 which means that questionnaire and data acquired by the questionnaire are highly reliable.

5 Chapter: 5 Conclusion and Recommendation

5.1 Discussion

The thesis investigates the impact of different inventory management practices on the performance of the organization to enhance its organization's efficiency and effectiveness. Four independent variables (Just-in-Time JIT, Economic Order Quantity EOQ, Vendor Managed Inventory VMI, ABC Analysis) were taken and their impact on a single dependent variable (Organizational Performance OP) was kept under analysis. To analyze the impact, a defined area of study was taken. The quantitative research method is used; as primary data is collected through an adaptive structured questionnaire based an on 5-Likert scale. A total of 117 responses were collected from different professionals having expertise in the Supply Chain area or in inventory management. The collected responses were imported into the IBM SPSS Software to run multiple statistical tests like (Descriptive frequencies of demographics and variables, Regression Analysis, Correlation Analysis, and Reliability tests). the results show positive results towards the variable and the reliability were enriched. After passing the collected data from multiples tests and analysis the results showed the positive relation of all the variable being used in the thesis, the questionnaire was also tested reliable and have relevancy. The analysis finally draws a significant relationship between the independent variables (Just-in-Time JIT, Economic Order Quantity EOQ, Vendor Managed Inventory VMI, ABC Analysis) and dependent variable (Organizational Performance OP). Enhanced effect on the organizational performance reflects in the efficiency and effectiveness of the organization. The conclusion and recommendation are also explained based on the analysis.

5.2 Research Limitations

A "limitation" is a constraint that a researcher confronts when performing research. In this study, the researcher faces just a few constraints, such as a short time period, a small sample size, and so on, while investigating the relationship between Just-in-Time JIT, Economic Order Quantity EOQ, Vendor Managed Inventory VMI, ABC Analysis, and Organisational Performance OP. The time frame available for conducting this research is highly limited, as more time is necessary to complete this research than is available. If more time is available, a more in-depth study incorporating responders from various backgrounds might be done. The researcher, on the other hand, should be given greater time to collect data from people from

varied backgrounds. As a result of including people from the public who were not deemed respondents due to the limited time available for data collection, the researcher will benefit from a longer time frame in terms of data gathering. Furthermore, a sample size of 117 respondents is insufficient for data collection from supply chain members related with the constrained Supply chain area. The sample size may be expanded to 500 respondents or more for conducting comprehensive research with a broader representation of supply chain members. Finally, most scholars and researchers have conducted cross-sectional studies on this literature issue and have forgotten to conduct longitudinal study, which is another restriction.

5.3 Findings and Conclusion

After a careful analysis and discussion over the data extracted from the respondent's feedback over a questionnaire, it has been found that the hypothesis 1 is true i.e. the implementation of inventory management practices in the aviation industry of Pakistan have a positive impact on the performance of the company, it enhances the effectiveness and efficiency in the flow of inventory with a chain. Whereas, hypothesis three depends on the inventory management practice that is been followed in the aviation industry. Some inventory management practices might have positive impact on higher side, and some practices might have positive impact on lower side. Concluding the whole thesis, chapter one has briefed the introduction of research title, it covered all the variable in detailed explaining each variable separately and its effect on the effectiveness and efficiency of the organization which is called as the performance of the organization. Different variable that has been discussed throughout the thesis is listed and defined in detail in the introduction stage. Variables that were selected to research on was Just-in-Time JIT, Economic Order Quantity EOQ, Vendor Managed Inventory VMI, ABC Analysis, and Organisational Performance OP. four variables Just-in-Time JIT, Economic Order Quantity EOQ, Vendor Managed Inventory VMI, ABC Analysis, are the different practices through which the inventory can be managed, kept as independent variable and dependent variable was organizational performance (effectiveness & Efficiency), means how these different types of inventory management practices can help the organization to boost other factors that ultimately reflects positively in the organizational performance. For that the survey questionnaire was designed and the data was collected by following the sampling technique, discussed in the methodology chapter.

Our target individual was supply chain professionals, individuals having strong grip on inventory management or warehousing, and teachers, having expertise in supply chain domain. The data was run through multiple statistical tests by using the IBM SPSS software. The result that has been drawn from the analysis concludes that independent variables (Just-in-Time JIT, Economic Order Quantity EOQ, Vendor Managed Inventory VMI, ABC Analysis) have significant positive relationship with organizational performance (Dependent variable). All the variables were found to be correlated and relevancy was high. It was also looked that all the variables are also interlinked. Organization may apply more than one inventory management practices to have enhanced organizational performance.

5.4 Recommendation & Future way forward.

The organization should focus on applying inventory management practices not in a traditional way, rather it would be best for going digital. Rather stocking papers, the organizations should innovate and implement software and system based working. Reducing papers and traditional way of working will have a positive impact on the organizational performance. Using a technology and system based working increases the flow of operations

Although this study addressed the majority of the issues, minor modifications could be made to make it even more effective and trustworthy. Minor changes to the time period, sector, sample size, study type, and so on can be made. The time frame may be extended to assist the researcher in conducting appropriate study. A proper time period supplied to the researcher may aid in the collecting of data from respondents from varied backgrounds and cultures. An extended time period may allow the researcher to encourage persons in the population (who were not included in the survey) to show interest by actively participating in the data collection process. Members of the population can be encouraged to be enthusiastic and encouraging, as excitement and encouragement will help to increase the sample size, which will improve the validity and reliability of the data collected and analysed.

Appendix

5.5 Questionnaire

5.5.1 Section A: Demographics

Name:

_____

Age:

a) 15 – 20
b) 20 – 25
c) 25 – 30
d) 30 – 35
e) > 35

Gender:

a) Male
b) Female

Study Level

a) Bachelors
b) Master
c) PhD
d) Diploma Holder

Your Designation at the Workplace:

_____

5.5.2 Section B: Inventory Management Practices

B-1: Questions related to the Just-in-Time (JIT)

Please indicate the extent to which you agree with the following statements on the Just-in-Time (JIT) used by your organization.

The scale below will be applicable: **1)** Very Small Extent **| 2)** Small Extent **| 3)** Moderate Extent **| 4)** Large Extent **| 5)** Very Large Extent

Question \ Scale	(1)	(2)	(3)	(4)	(5)
The company uses JIT to keep just enough material in precisely at the right place and exactly at the right time.					
Your company uses JIT to increase the institution's return on investment.					
Your company uses a just-in-time stock control system.					
The company uses the JIT technique to reduce raw material mistreatment.					
To eliminate waste, the organization employs the JIT system.					

B-2: Questions related to the Economic Order Quantity (EOQ)

Please indicate the extent to which you agree with the following statements on the Just-in-Time (JIT) used by your organization.

The scale below will be applicable: **1)** Very Small Extent **| 2)** Small Extent **| 3)** Moderate Extent **| 4)** Large Extent **| 5)** Very Large Extent

Question \ Scale	(1)	(2)	(3)	(4)	(5)
The organization implements EOQ to reduce storage and holding costs.					
EOQ is used by the organization to provide precise numbers specific to the company's inventory.					
EOQ is used in your firm as part of a continual inventory system evaluation.					
Does the company use EOQ to keep a minimum stock level?					
The Company employs EOQ to monitor stock replenishment on a regular basis.					

B-3: Questions related to the Vendor Managed Inventory (VMI)

Please indicate the extent to which you agree with the following statements on the Just-in-Time (JIT) used by your organization.

The scale below will be applicable: **1)** Very Small Extent **| 2)** Small Extent **| 3)** Moderate Extent **| 4)** Large Extent **| 5)** Very Large Extent

Question \ Scale	(1)	(2)	(3)	(4)	(5)
Vendor Management Inventory practices for supplier partnerships improve the performance of the organization.					
Vendors are responsible for ensuring that supplies are replenished on time.					
The vendors and purchasers are linked via the company's system.					
Based on information obtained from buyers via the system, the vendor replenishes inventory.					

B-4: Questions related to the ABC Analysis of Inventory

Please indicate the extent to which you agree with the following statements on the Just-in-Time (JIT) used by your organization.

The scale below will be applicable: **1)** Very Small Extent **| 2)** Small Extent **| 3)** Moderate Extent **| 4)** Large Extent **| 5)** Very Large Extent

Question \ Scale	(1)	(2)	(3)	(4)	(5)
ABC analysis is used by the corporation to classify products based on their stock value.					
ABC Analysis is used as an inventory management system by the company to manage the flow of inventories.					
The corporation uses ABC analysis to cut stock holding costs.					

B-5: Questions related to the Organizational Performance

Please indicate the extent to which you agree with the following statements on the Just-in-Time (JIT) used by your organization.

The scale below will be applicable: **1)** Very Small Extent **| 2)** Small Extent **| 3)** Moderate Extent **| 4)** Large Extent **| 5)** Very Large Extent

Question \ Scale	(1)	(2)	(3)	(4)	(5)
An effective organizational performance (as a result of an effective inventory system) enhances the possibility of new possibilities being created.					
Increased organizational performance leads to increased market share.					
Continuously upgrading Inventory Management practices always improves the organization's performance.					

5.6 Plagiarism Report

Final Thesis

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