



A Study on Analysing the Strategic Supply Chain Optimization Of R.N. Pulverisers Pvt Ltd

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ABSTRACT:

"This research investigates the strategic optimization of the supply chain within R.N. Pulverisers Private Limited, focusing on its operations from procuring resources to exporting products. The main aim is to examine the company's supply chain strategies, with secondary goals including assessing their efficacy and pinpointing areas for enhancement. Utilizing a survey-based methodology, data was gathered from employees, uncovering insights into organizational demographics, supplier partnerships, technology usage, perceived effectiveness of supply chain management techniques, encountered challenges, and attitudes toward prospective strategies such as Just in Time systems and data analytics. The results highlight opportunities for improving efficiency in production, inventory management, distribution networks, and integrating technologies for supply chain enhancement. Overall, this study provides insights into the current state and potential improvements of supply chain management practices at R.N. Pulverisers Private Limited.

Keywords: Supply chain optimization, Resource procurement, Challenges, Effectiveness, Suppliers, Inventory, Technologies

I. INTRODUCTION

Supply chain management (SCM) refers to the coordination of interconnected firms within a network to deliver product and service packages to end customers. This involves the transportation and storage of raw materials, work-in-process inventory, and finished goods from origin to consumption. SCM encompasses the design, planning, execution, control, and monitoring of supply chain activities, aiming to create net value, establish a competitive infrastructure, leverage worldwide logistics, synchronize supply with demand, and measure performance globally. SCM integrates strategies from operations management, logistics, procurement, and

information technology. Transitioning from overseeing discrete tasks to incorporating them into essential supply chain procedures is crucial for effective management. For instance, in a hypothetical scenario, the purchasing department places orders once needs are determined, while the marketing division collaborates with distributors and retailers to meet consumer demand. Process integration is essential for supply chain partners to fully utilize the information they provide. Integration of supply chain business processes involves cooperative efforts between purchasers and vendors, collaborative product creation, shared data, and systems. An ongoing information flow is crucial for the operation of an integrated supply chain. Many businesses recognize the necessity of implementing a process approach to optimize product flow. Essential supply chain processes include relationship management with customers and suppliers, customer service management, demand management, order fulfillment, manufacturing flow management, new product creation and marketing, return management, and demand forecasting at the customer level.

Businesses excelling in their class share common traits such as internal and external collaboration, efforts to shorten lead times, more precise input from consumers and market demand, and customer-level forecasting.

II. LITERATURE REVIEW

(Abu Bakar Abdul Hamid and Inda Sukati 2012) the relationship between supply chain integration and competitive advantage is investigated. Additionally, the impact of supply chain responsiveness on firm competitive advantage is assessed. A survey method was employed to gather data from 400 managers in the manufacturing sector of Malaysia. Of these surveys, 50% were deemed usable, yielding a response rate of 62%. Convenience sampling was utilized for sample selection. Data analysis



involved calculating the mean, standard deviation, and correlation between independent and dependent variables. Statistical techniques such as multiple regressions, as well as reliability and validity tests, were employed in the analysis. The research findings support the hypothesis that supply chain integration positively influences both supply chain responsiveness and competitive advantage. Furthermore, the study reveals a positive association between supply chain responsiveness and firm competitive advantage.

(Sebastian Kot, Adnan Ul Haque, and Akhtar Baloch 2019) This research examines supply chain management (SCM) practices in Small and Medium Enterprises (SMEs) on a global scale. Authors explore challenges faced by SMEs, including limited resources and market variations, and discuss key SCM aspects such as procurement, logistics, and inventory management. They analyze strategies employed by successful SMEs to enhance supply chain performance, emphasizing technology, collaboration, and innovation. The global perspective allows for identification of trends and solutions applicable across regions and industries. The work provides valuable insights for SME owners, practitioners, and policymakers seeking to improve SCM in the global SME landscape.

STATEMENT OF THE PROBLEM

The effective management of supply chains is crucial for companies seeking a competitive advantage and seeking to mitigate risks associated with sourcing raw materials and delivering products and services. By implementing supply chain management tools, businesses can systematically reduce waste, overhead costs, and delivery delays, thereby improving factors such as order turnaround times and product quality. Evaluating and updating existing supply chain management practices is essential for maintaining an efficient system and ensuring the organization remains competitive in the market.

Consequently, the primary objective of businesses is to minimize the risks and expenses associated with inventory management. Effective supply chain management plays a pivotal role in the success of businesses, particularly in the retail sector. The organization aims to design, validate, and evaluate its supply chain system to address this issue effectively. Therefore, this study seeks to analyze the strategic supply chain optimization of R.N. Pulverisers Pvt Ltd.

OBJECTIVE OF THE STUDY

Primary objective :

To a study on analyzing the strategic supply chain optimization of R.N. Pulverisers Private limited.

Secondary objective :

- This study's objective is to investigate the supply chain of R.N. Pulverisers Private Limited in order to identify the strategies the business uses and assess its effectiveness.
- This research aims to analyze an efficient and effective supply chain process, from resource procurement to finished product export to other countries,
- To evaluate the effectiveness of supply chain management practices
- Identify what strategies are needed to improve supply chain performance of R.N. Pulverisers Private Limited.

III. RESEARCH METHODOLOGY

The primary research approach used for this study was descriptive, with the goal of providing R.N. Pulverisers Pvt Ltd with supply chain optimization. The necessary data was gathered by using primary data sources. Formal interviews were used to gather primary data. The purpose of these interviews was to get detailed information on the issues faced by employees, technology integration, managing relationships with suppliers, inventory management procedures, increasing production operations efficiency, the procurement of raw materials, etc. The interviews contained both closed-ended questions, which included multiple choice, dichotomous, and ranking questions along with a rating scale, and open-ended questions, which allowed respondents to express their opinions and provide in-depth information outside the parameters of the questionnaire. The study's geographic focus was on R.N. Pulverisers Pvt Ltd. personnel, and fieldwork was done over a three-month period. To choose participants, a multi-stage process was used, guaranteeing that the sample represented a range of supply chain roles. 106 respondents were selected as the sample size, which was determined to have a 5% margin of error and a 95% confidence level. The all-encompassing methodology furnished a sturdy structure for comprehending R.N. Pulverisers supply chain optimization and furnished staff members with well-informed suggestions for enhancements .



METHOD OF DATA COLLECTION:

Primary data :

Primary data are unique and recently gathered by the researcher. Primary data for this study were gathered via questionnaires. Using a questionnaire is a common way to get primary data. A list of questions for oneself is called a questionnaire.

The commonly used statistical tools for analysis of collected data are,

- Percentage analysis
- Chi-square test
- Correlation analysis

PERCENTAGE ANALYSIS:

In the chapter on analysis and interpretation, it is claimed that the percentage approach was widely employed to locate numerous details. This is how it can be calculated.

= No .of Respondents favorable / Total Respondents x100

CHI-SQUARE ANALYSIS :

In statistics, chi-square analysis is used to assess the goodness of fit between the observed data distribution and the theoretical distribution that is assumed. As such, it is a metric for analyzing the difference between actual and predicted frequencies. Regarding the population being sampled, no assumptions are made by it. The amount known as chi-square, or χ^2 , is used to express how much theory and observation disagree. When if χ^2 equals 0, it indicates perfect coincidence between the observed and predicted frequencies. The difference between the expected and actual frequencies would be larger the larger the value of χ^2 .

The following is the formula to calculate Chi-Square (χ^2).

$$\chi^2 = \sum \{(O - E) ^ 2 / E\}$$

The computed value χ^2 is compared to the item table for the specified degrees of freedom at the designated significance level. Considerable

divergence exists between theory and observation if the computed value of χ^2 is higher than the value in the table. On the other hand, the discrepancy between theory and observation is not regarded as significant if the computed value of χ^2 is less than the table value. Where 'n' is the number of observed frequencies, the degrees of freedom are (n - 1)

CORRELATION :

Correlation analysis is another statistical method used to understand the relationship between two variables. Unlike regression analysis, which looks at how changes in one variable affect changes in another variable, correlation analysis simply measures the strength and direction of the association between two variables. The result of correlation analysis is called the correlation coefficient, often denoted as "r." This coefficient ranges from -1 to 1.

LIMITATIONS :

- Information that staff members can recall is provided. It's possible that the data supplied by the sample employees is not accurate.
- The data collected from workers is qualitative in character.
- Only 145 people took part in the research. The study's sample size of 106 was small when compared to the overall workforce of the organization.
- In surveys and interviews, response bias could occur as a result of participants giving socially acceptable answers or withholding information because they feel uncomfortable or worried about privacy.
- Unexpected events (such natural disasters or economic downturns) or changes in regulations may have an impact on supply chain procedures and results during the study period. These circumstances are outside the researcher's control.



IV. DATA ANALYSIS AND INTERPRETATION

CHI-SQUARE TEST :

Null hypothesis (H0) : There is no significance difference between the educational qualification of the respondents and type of system that currently supporting supply chain management in the company .

Alternative hypothesis (H1) : There is some significance difference between the educational qualification of the respondents and currently supporting supply chain management in the company.

Level of significance at 5%

Case Processing Summary						
	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
educational qualification of the respondent * systems support supply chain management	106	100.0%	0	0.0%	106	100.0%

Educational qualification of the respondent * systems support supply chain management Cross tabulation						
Count						
		systems support supply chain management				Total
		Material requirement planning	Warehouse management system	Customer relationships management	Others	
educational qualification of the respondent	Higher Secondary	3	2	0	1	6
	Graduate	21	39	2	6	68
	Post Graduate	5	9	1	1	16
	Others	7	6	0	3	16
Total		36	56	3	11	106

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.590 ^a	9	.780
Likelihood Ratio	5.897	9	.750
Linear-by-Linear Association	.034	1	.853
N of Valid Cases	106		

INTERPRETATION :

Null hypothesis is accepted (0.780>0.05) The Pearson Chi-Square test yielded a value of 5.590 with 9 degrees of freedom, resulting in an asymptotic significance of 0.780. there is, No significant relationship between variables educational qualification of the respondents and systems supporting supply chain management .



CORRELATION :

The table shows that relationship between current inventory management practices at company and overall ,strategic focus on supply chain optimization within organization

CORRELATIONS

		current inventory management practices at our company	Overall, strategic focus on supply chain optimization within organization
current inventory management practices at our company	Pearson Correlation	1	.217*
	Sig. (2-tailed)		.025
	N	106	106
Overall, strategic focus on supply chain optimization within organization	Pearson Correlation	.217*	1
	Sig. (2-tailed)	.025	
	N	106	106

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

INTERPRETATION :

The correlation analysis between the current inventory management practices at our company and the overall strategic focus on supply chain optimization within the organization revealed a statistically significant positive correlation of 0.217 at the 0.05 level (2-tailed), indicating that as the company's inventory management practices improve, there is a corresponding enhancement in the strategic focus on supply chain optimization, highlighting the interconnectedness and mutual reinforcement between efficient inventory management and strategic supply chain initiatives, which are crucial for achieving operational excellence and competitive advantage in today's dynamic business environment.

**V.FINDINGS, SUGGESTION AND CONCLUSION
 FINDINGS**

- 40.6% of respondents are between the ages of 26 and 35.
- 76.3 percent of those surveyed are men.
- 64.2% of those surveyed have a degree.
- 53.8% of the participants oversee close collaborations with suppliers.
- 54.7% of the participants use their mobile devices as a communication tool for supply chain management.
- 67.9% of the participants reported having trouble utilizing supply chain management.
- 68.9% of those surveyed stated that supply chain systems will adopt just-in-time systems in the future.
- The procurement method for raw materials is now efficient, according to 64.2% of respondents.
- 89.6% of the participants expressed agreement with opportunities aimed at enhancing the efficiency of industrial operations.
- 53.8% of the participants stated that the present methods of inventory management are neutral.

- 54.7% of the respondents are says that data analytics to forecast demand and plan production schedules are adequately.
- 53.85% of the respondents tells that overall all strategic focus on supply chain optimization within organization is moderate.

SUGGESTIONS

- The close relationships with suppliers must be ensured by the supply chain management system.
- In order to satisfy everyone who has concerns about the companies, it must guarantee close collaboration with clients and JIT supply.
 - The business must efficiently oversee its supply chain.
 - The system must aid in cost reduction and maximize profits for the company.
 - The employee must have the training to follow and adopt the present supply chain management systems.
 - To have an efficient supply chain management system, the organization needs to have good information technology.



➤ Information sharing between the company and its supply chain partners should go seamlessly.

CONCLUSION

➤ In order to drive operational excellence, enhance efficiency, reduce costs, improve customer satisfaction, foster innovation, mitigate risks, and ensure supply chain flexibility, organizations must take a proactive and holistic approach to supply chain management.

➤ This is highlighted in R.N. Pulverisers strategic supply chain optimization analysis, which also highlights the complex interactions between technology integration, cooperative partnerships, and continuous improvement initiatives.

➤ My investigation revealed certain inefficiencies in their supply chain, which they must address. It causes them to boost their profit and production.

➤ Supply chain optimization is a crucial consideration for them, as their supply network presents certain challenges that impact the entire organization. According to my study, these modifications are necessary to make their supply chain more efficient and productive.

➤ The organization needs to have a well-defined logistics strategy plan that is communicated to the staff for efficient implementation.

➤ Ultimately, this helps the company position itself for sustained growth and competitiveness in a rapidly evolving business landscape marked by dynamic market demands, emerging trends, disruptive technologies, and increased global competition

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