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SUPPLY CHAIN MANAGEMENT PROBLEMS: FACTOR ANALYSIS SPECIAL REFERENCE TO AUTOMOBILE INDUSTRIES IN INDIA

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Abstract
Supply chain management (SCM) has a significant economic impact on business. It is the process of integrating supply and demand management within and between organizations. SCM links the entire manufacturing process, from raw material sourcing and procurement to efficient production, product delivery methods to distributors and customers, and even systems for returning unwanted or defective products. The purpose of this study was to look at the supply chain management issues that automotive industries in India face. Purposive sampling was used to choose 346 engineers, executives, and managers from 16 automotive and related companies for the study. According to the findings, four contributing elements to supply chain management system challenges in the automotive industry include technical and managerial support, supply chain activities, stock out, and payment mode.
Keywords: Supply chain management, technical and managerial support, supply chain activities, stock out, payment mode.

Introduction

In today's competitive market, companies are challenged with developing ways to fulfil ever-increasing customer demands at a reasonable cost and, supply chain management assumes a significant relevance and necessitates extensive research. To do so, businesses must first evaluate which parts of their supply chain aren't competitive, then determine which consumer needs aren't being met, set improvement goals, and make necessary adjustments promptly. Manufacturers used to be the supply chain's driving force, controlling the rate at which things were created and dispersed. Customers are now in charge, and manufacturers are scrambling to accommodate customer requests for more choices, styles, and features, as well as swift order fulfillment and delivery.

The supply chain is the network that connects a firm to its suppliers and customers, and it comprises all of the transactions that occur throughout the transformation of raw materials into a marketable product. Sales, sourcing, procurement, production, logistics, and customer support are among the functional teams participating in the company's network, which encompasses activities, people, technology, information, and resources.

The success of a corporation is dependent on supply chain management. Its goal is to boost the efficiency of each link in the chain as well as the processes involved. A well-managed supply chain can dramatically lower a company's operating costs, resulting in higher profits. From concept creation through final product promotion, this efficiency can be demonstrated across the entire process. The road from concept to finished product is long and winding, with many moving parts.

The success of a company's management of this process is directly proportionate to its sales. It refers to the coordination of the movement of goods and services, and it encompasses all processes that convert raw materials into completed items. It entails aggressively simplifying a company's supply-side activities in order to increase customer value and obtain a market competitive edge.

The automotive industry has a key place on the Indian economy's canvas. Due to its strong forward and backward ties with numerous key divisions of the economy, the automobile sector has a large multiplier effect and can be a driver of economic growth. The automotive industry, which includes the vehicle and auto component industries, is a vital driver of the national economy since it generates large amounts of employment and has a strong multiplier effect. This industry, which is one of India's largest, has experienced tremendous expansion during the previous two decades.

Supply Chain Management practises, according to Koh et al. (2007) and Mathur et al. (2018), are a set of actions that firms engage in to assist them better manage their supply chains. Furthermore, according to Tutuncu and Kucukusta (2008), Supply Chain Management causes structural changes in firms by integrating internal operations and linking them to the activities of suppliers, consumers, and other supply chain stakeholders.

Only by implementing the best supply chain methods, processes, and collaborative linkages throughout the supply chain can one fully realize the cost-cutting and revenue-boosting benefits. By evaluating disparities in practices, processes, and difficulties among the various agencies participating in the supply chain, it is hoped to gain a better understanding of the challenges that supply chain managers face (Spekman, et al 1998).

Best practices, processes, cross-functional integration, and marketing all play important roles in successful supply chain management. It's up to you to figure out how to make this happen (Lambert and Cooper, 2000). Supply chain management practices, processes, and issues are gaining more attention as a way to become or stay successful in a globally competitive world. What sets supply chain management apart from other forms of channel management? Traditional systems and supply chain management systems are distinguished by their effective and optimal usage of supply chain procedures and processes (Cooper and Ellfram, 1993).

Research Methodology

The Indian automotive industry is spread across the country, making it impossible to study supply chain management issues in every plant. As a result, the study was limited to a small area of India,

assuming it to be representative of the industry because most automobile companies have manufacturing plants in Delhi-NCR.

Research Objective

The purpose of this study is to look into the supply chain management issues that companies in the Indian automobile industry are facing.

Research Hypothesis

No hypothesis has been framed because the study is exploratory in nature and dependent on observation. After all, supply chain management difficulties in different sectors vary greatly.

Research Design

The current study was conducted on a sample of 346 engineers, executives, and managers from 16 automotive and auxiliary industries in Delhi-NCR who worked in various departments such as production, finance, maintenance, marketing, logistics, purchase, and stores. Respondents were chosen using the purposive sampling method. A self-made questionnaire with 26 statements and a 5-point rating system was used to collect data. 1 denotes strongly disagree and 5 denotes strongly agree.

Data Analysis

Reliability test:

Before moving further with the data analysis, it is crucial to verify the validity and reliability of the variables and data that were chosen for the research. As a result, the researcher conducted a reliability test. Reliability values of 0.70 or higher are regarded as the standards for proving internal consistency of new scales and established scales, respectively (Nunnally, 1978). The Cronbach alpha was calculated as well, and it was determined to be 0.762 (see Table-01). It shows that the scale is accurate in Indian conditions for Indian businesses.

Table-1: Internal Consistency

No. of items	Cronbach's α	McDonald's ω
26	0.762	0.764

Source: Created by researcher

Factor analysis:

The Kaiser-Meyer-Olkin (KMO) test was conducted to check the data suitability for Factor analysis. The KMO value 0.83 (see Table-02) indicates the validity of variables.

Table-2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.83
	Approx. Chi-Square	2629.201
Bartlett's Test of Sphericity	Diff	299
	Sign	0.000

Source: Created by researcher

The Eigen Values and Total Variance

The data on the four qualifying factors after applying the latent root criterion are presented in Table-03, together with information on their relative explanatory power as indicated by their eigen values. The rotations were stopped when the eigen value fell below 1 to generate these IV Factors after 8 iterations (One). Factors I and IV each had eigenvalues of 3.189 and 1.082. Each

of the four factors contributed to a different proportion of the overall trace explained (17.94%, 17.12%, 16.88%, and 15.74%), and the total common variance explained by the factors for various stakeholders was 67.673% (see Table-04). It is sufficient to conclude that the variables in this solution are somehow related because the index is more than 50%.

Table-3: The Eigen Values of Factors

Factors	**Eigenvalues**
1	3.189
2	1.832
3	1.302
4	1.082

Source: Created by researcher

Table-4: Showing Factor-wise Percent Total Variance

Factors	**% of Variance**
1	17.94
2	17.12
3	16.88

4	15.74
Total % of Variance	67.673

Source: Created by researcher

Factor analysis was performed on the data using the principal component approach with varimax rotations. With Eigenvalues of one or greater, all four components emerged as contributors. Significant contributing variables were included in the study if they had a factor loading of 0.6 or above, regardless of contribution direction (positive or negative). It was found that items 4,5, 8, 10, 11, 13, 16, 18, and 21 load significantly on factor 1, while items 1, 2, 3, 6, 7, 9, 12, 14, 15, 19, 20, 22, 24, 25, and 26 load significantly on factor 2. Similarly, item 17 load significantly on factor 3 while item 23 load significantly on factor 4. The four factors were labeled as

Factor 1: Technical and Managerial support,
Factor 2: Supply chain activities,
Factor 3: Stockout and
Factor 4: Payment modes. Variable affecting/contributing is given in the below table-5:

Table-5: Factors with Factor Loading Value

Technical and Managerial Support	**FL**
Organizational reputation is good	0.856
The system for determining payment terms are satisfactory	0.834
Organization margins are reasonable	0.809
The challenges in delivery are affecting the margins	0.801
Providing adequate support during stock-outs	0.789
Orders are being held up.	0.788
A timely resolution is essential in the event of a billing issue.	0.788
Small urgent orders are being fulfilled.	0.667
Follow up require with the company to ensure your stock.	-0.896
Supply Chain Activities	**FL**
Stockout hurts the organization's profit margin.	0.958
Overstocking reduces profit margins.	0.945
Settlement for a damaged shipment takes a small time.	0.762
The stock is kept more than required	0.724
Ordering's sake by SMS is recommended.	0.724
Website is functional for taking orders.	0.722
The company takes orders over the phone	0.72
The person arriving on time	0.712
Immediate assistance for urgent orders	0.707

The order needs to be overlooked.	0.669
On-time delivery is guaranteed by the company	0.653
The stock is received within the time	0.649
The profit margins are shrinking.	0.644
Companies are handling fluctuations in demand.	0.642
Orders must be accepted in person.	-0.85
Stockout	**FL**
Stock-outs are higher than expected.	0.784
Payment Modes	**FL**
Payment through different modes are accepted.	0.663

Source: Created by researcher

The first element, referred to as technical and managerial support for supply chain issues, was determined to be excellent. The first factor accounts for 62.757 percent of the variance, whereas the second element, supply chain activities, accounts for 13.207 percent of the variance. The problems of supply chain management linked to stock, purchase orders, purchase order follow-up, and shipment settlement issues are not adequately controlled in this factor, but other variables problems are properly managed. The other components account for 4.029 percent and 3.853 percent of the variations, respectively.

The output of the variables for problems findings appears as a general factor with numerous activities such as stock, orders, delivery, cost-effectiveness, payment terms, support system, dealing with market demand volatility, and so on. In general, respondents believe that difficulties linked with general supply chain activities are handled effectively and properly, and that the supply chain is well-managed, which increases the organization's efficiency and overall profitability.

Even while supplier distributor support is good, it is indicated that there is a greater need for additional support in the event of an emergency or urgent order. The same may be said for payment systems and transportation systems.

Conclusion

The present study has resulted in a broad framework for measuring the effectiveness of problems of supply chain management in automobile companies in India. The respondents feel that the use of supply chain best practices helps in solving the problems of supply chain management and improving the effectiveness of the supply chain of the automobile companies in the Delhi-NCR region. However, the problems of supply chain management related to following up with the company to receive stock, small urgent orders, challenges in delivery, settlement of issues settlement el a payment are not managed property If these activities are managed properly it will maximize the economics of scale, efficiency, and profitability of the automobile companies in

Delhi-NCR region.

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