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A STUDY ON EFFECT OF SUPPLY CHAIN MANAGEMENT PRACTICES ON PERFORMANCE OF AUTOMOBILE FIRMS IN CHENNAI

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Abstract

The present study examines the effect of supply chain management practices on the performance of automobile firms in Chennai. The study is motivated by the need to understand how supply chain management practices influence the performance of firms in the highly competitive automobile industry. The study uses a quantitative research approach, and data was collected from 200 respondents who were employees of different automobile firms. The data was analyzed using descriptive statistics, simple percentage analysis, factor analysis, and multiple regression analysis. The findings of the study suggest that supply chain management practices have a significant positive effect on effective interaction, ability of supply chain, technology adoption, tractability and planning. The study concludes that automobile firms that should adopt effective supply chain management practices are likely to achieve superior performance.

Key Words: Supply Chain Management, Performance, Automobile Firms, Technology Adoption, Planning, Tractability.

1. Introduction

Supply chain management (SCM) is the management of the flow of goods and services from the initial point of production to the final point of consumption. It is a critical aspect of any business, as it helps in reducing costs, improving efficiency, and enhancing customer satisfaction. One of the most critical SCM practices is inventory management, which involves optimizing inventory levels to ensure that a company has enough stock to meet demand while avoiding overstocking. This requires careful planning, forecasting, and monitoring of inventory levels to ensure that the right amount of stock is available at the right time. Another important SCM practice is transportation management, which involves coordinating the movement of goods from one location to another. This includes selecting the most efficient modes of transportation, such as trucks, ships, or planes, and optimizing routes to minimize costs and delivery times. Efficient transportation management can significantly reduce lead times and improve customer satisfaction by ensuring timely delivery of goods.

Warehousing and distribution are also critical SCM practices that involve managing inventory, storage, and distribution facilities. This includes selecting the right locations for warehouses, optimizing storage and distribution processes, and ensuring that the right products are available at the right time. Effective warehouse and distribution management can help businesses reduce costs, improve order fulfillment times, and enhance customer satisfaction. Supplier relationship management is another critical SCM practice that involves managing relationships with suppliers to ensure that the right products are available at the right time and at the right price. This includes selecting the right suppliers, negotiating contracts, and monitoring supplier performance to ensure that they meet quality and delivery standards. Effective supplier relationship management can help businesses reduce costs, improve quality, and enhance supply chain resilience.

Finally, data analytics is becoming an increasingly important SCM practice as businesses seek to gain insights from the vast amounts of data generated by their supply chains. This includes using data to improve forecasting accuracy, optimize inventory levels, and identify opportunities for cost savings and process improvements. Data analytics can help businesses make better decisions and improve their overall supply chain performance. Effective supply chain management practices are critical for businesses to remain competitive in today's global economy. By optimizing inventory levels, transportation, warehousing and distribution, supplier relationships, and data analytics, businesses can reduce costs, improve efficiency, and enhance customer satisfaction. The importance of these practices will only continue to grow as businesses face increasing competition and pressure to deliver products faster, cheaper, and with higher quality.

2. Statement of the Problem

Supply chain management practices are crucial for automobile firms as they help in managing the flow of goods and services from suppliers to the final consumers. Effective SCM practices can help automobile firms reduce costs, improve efficiency, and enhance customer satisfaction. SCM practices helps automobile firms reduce costs by optimizing inventory levels, improving transportation management, and streamlining warehousing and distribution processes. By reducing costs, automobile firms can improve profitability and remain competitive in the market. SCM practices can improve efficiency by reducing lead times, enhancing collaboration with suppliers, and improving coordination across the supply chain. It has effect in faster production times, lower inventory levels, and faster delivery times, which can improve overall business performance.

SCM practices assist automobile firms to enhance customer satisfaction by improving product quality, reducing delivery times, and ensuring that the right products are available at the right time. This can result in higher customer retention rates, increased sales, and improved brand reputation. Effective SCM practices can improve supply chain resilience by reducing the risk of disruptions, such as supply shortages or transportation delays. It brings impact on automobile firms respond to unexpected events and maintain business continuity. SCM practices can help automobile firms improve relationships with suppliers by optimizing communication, negotiating better contracts,

and monitoring supplier performance. It has consequences in better quality products, faster delivery times, and lower costs. SCM practices are critical for the success of automobile firms. By optimizing inventory levels, improving transportation management, streamlining warehousing and distribution processes, enhancing customer satisfaction, improving supply chain resilience, and improving supplier relationships, automobile firms can remain competitive and profitable in today's dynamic business environment.

3. Review of Literature

Wu et al. (2013) observe that knowledge sharing can lead to improved supply chain performance between logistics firms. Bendickson and Chandler (2019) address that training and development can serve as a resource that enhances supply chain performance. The promotion of cooperation between government departments, original equipment manufacturers, and core companies in the supply chain, it provides development opportunities for automobile enterprises in the supply chain and formulates supply chain performance improvement programs (Zang and Cao, 2018). Accurate measurement of performance could be beneficial to businesses in order to formulate, implement and control organizational strategy (Kumar et al. 2019). The employee motivation and organizational culture retention are also impactful in this performance measurement (Wang et al. 2018). The critical role of supply chain management in enhancing the automotive performance cannot be underscored (Guersola et al. 2018). The role of supply chain as source of competitive advantage to the automobile industry (Qrunfleh and Tarafdar, 2014). Supply chain systems permit fast cost-effective responses to unpredictable and ever-changing product demand, and support rapid product launches for previously unplanned products tailored to meet changing customer desires (Liu et al. 2018)

4. Research Objectives

The study is started with the following objectives:

1. To scrutinize the demographic profile of employees working in automobile firms.
2. To investigate the effect of supply chain management practices on performance of automobile firms.
3. To measure the problems in supply chain management practices of automobile firms.

5. Research Methodology

The purpose of this research is to analyze the effect of supply chain management practices on the performance of automobile firms. A quantitative research design will be used to analyze the relationship between supply chain management practices and the performance of automobile firms. A survey will be conducted to collect data from 200 employees of automobile firms regarding their supply chain management practices and their business performance. The sampling technique will be a purposive sampling technique. The population of the study will consist of employees of automobile firms operating in Chennai. A sample of automobile firms will be selected based on their size and market share. The data will be collected using a self-administered

questionnaire. The questionnaire will be developed based on a review of the literature and will consist of closed-ended questions to collect data on supply chain management practices and business performance. The questionnaire will be pretested before administering it to the sample. This research will use a quantitative research design to analyze the effect of supply chain management practices on the performance of automobile firms. The data will be collected using a self-administered questionnaire and analyzed using descriptive statistics, simple percentage analysis, factor analysis, and multiple regression analysis. Ethical considerations will be taken into account throughout the research process, and the limitations of the research will be acknowledged.

6. Results and Discussion

6.1. Analysis of Demographic Profile

The demographic profile of employees is analyzed using simple percentage analysis, the results are presented in table 1.

Table 1: Analysis of Demographic Profile

Demographic Profile	Distribution	Frequency	Percentage
Age	Below 35 years	79	39.5%
	35 – 50 years	44	22.0%
	Above 50 years	77	38.5%
Gender	Male	154	77.0%
	Female	46	23.0%
Monthly Salary	Below Rs.40,000	83	41.5%
	Rs.40,000 – 75,000	78	39.0%
	Above Rs.75,000	39	19.5%
Educational Qualification	UG degree	99	44.5%
	PG degree	79	39.5%
	Diploma/Others	22	11.0%
Experience	Below 5 years	43	22.5%
	5 – 10 years	73	36.5%
	Above 10 years	81	40.5%

Source: Primary Data

Table 1 exhibits the demographic profile of employees working in automobile firms. Age has significant impact in the creating awareness about management of supply chain, therefore, it shows that 39.5% are falling in the age group of less than 35 years, 22.0% are in 35 – 50 years, 38.5% are in above 50 years. Gender shows that 77.0% are male employees and 23.0% are female employees. Monthly salary discloses that 41.5% of employees are in below Rs.40,000, 39.0% are in Rs.40,000 – 75,000, and 19.5% are in above Rs.75,000. Educational qualification clearly shows that 44.5% are completed UG degree, 39.5% are completed PG degree, and 11.0% are completed diploma/others. Experience reveals that 22.5% of employees are in below 5 years, 36.5% are in 5 – 10 years, and 40.5% are in above 10 years.

6.2. Effect of Supply Chain Management Practices on Performance of Automobile Firms

Factor analysis is executed to assess the effect the supply chain management practices on performance of automobile firms, it is furnished in table 2.

Table - 2: Factor Analysis

Factors (Cronbach's Alpha)	Statements	Factor Loadings	Eigen Value	% of Variance Explained
Effective Interaction (0.889)	Timely communication is possible	0.812	6.786	25.436
	Face-to-face interaction	0.787		
	Information can be shared speedily	0.799		
	Can obtain feedback from customer	0.819		
	Changes in supply chain is shared	0.822		
	Customer forum for improvement	0.785		
	Higher productivity and profitability	0.775		
	Delivery as per time schedule	0.768		
	Delay in supply is avoided	0.784		
Ability of Supply Chain (0.925)	Try to provide low priced product	0.817	5.969	19.568
	Timely reach of product to market	0.794		
	Adoption of innovative practices	0.757		
	Fast discharge in storeroom	0.768		
	Perfect link in operation	0.757		
	Unity of control in supply chain	0.743		
	Speedy process in procurement	0.774		
	Settlement as per schedule	0.784		
Technology Adoption (0.895)	Use of information systems	0.815	5.688	15.637
	Use of automated process	0.812		
	Timely issuance of product	0.763		
	Technology based marketing	0.778		
	Track supply chain process	0.796		
	Payment and receipt tracking system	0.788		
	Real time service delivery	0.795		
	Integration of supply chain process	0.774		
Tractability (0.916)	Honoring customer demands	0.776	4.257	11.721
	Use of expert advice	0.749		
	Enriching practices of firm	0.782		
	Effective time management	0.747		
	Cost management	0.757		
	Care enhance quality	0.792		
	Monitoring operational process	0.778		
Planning	Improvement of facilities in firms	0.787	3.553	5.687

(0.923)	Implementation of strategic process	0.774		
	Effective enterprise resource planning	0.798		
	Time supply of goods	0.752		
	Perfect tracking process	0.775		
	Effective complaint handling	0.756		

Source: Primary Data

Table 2 reveals that the effect of supply chain management practices in performance of automobile firms. Cronbach's alpha is also computed to evaluate the reliability of each variable. The value of reliability is ranges more than 0.8; supports that the statements have a comparatively high level of internal consistency and recognition. Effective interaction is formed with nine statements, which shows 25.436% of variance in data with Eigen value of 6.786. Timely communication is possible, can obtain feedback from customer, changes in supply chain is shared, information can be shared speedily, and delay in supply is avoided are the most important aspects in effective interaction. Then, ability of supply chain is formed with eight statements; it discloses 19.568% of variance in data with Eigen value of 5.969. Try to provide low priced product, timely reach of product of market, settlement as per schedule, and speedy process in procurement are important facets of ability of supply chain.

The factor technology adoption is shaped with eight statements; it discloses 15.637% of variance in data with Eigen value of 5.688. Use of information systems, use of automated process, trach supply chain process, and real time service delivery are the main determinants of technology adoption. Tractability is formed with seven statements; it discloses 11.721% of variance in data with Eigen value of 4.257. Tractability have close connection with care enhances quality, enriching practices of firm, monitoring operational process and honoring customer demands. Planning is formed with six statements; it discloses 5.687% of variance in data with Eigen value of 3.553. Effective enterprise resource planning, improvement of facilities in firms, and perfect tracking process are the prominent variables in planning. Put together, five factors and 38 statements explain 78.049% variance in data. It confirms that the effective interaction, ability of supply chain, technology adoption, tractability and planning have significant effect on brand preference of women consumers on FMCG products.

In order to assess the trustworthiness of outcomes attained in factor analysis, multiple linear regression analysis has been performed. Effective interaction, ability of supply chain, technology adoption, tractability and planning are engaged as independent variables and performance of automobile firms is taken as dependent variable. The results are furnished in table-3.

Table – 3: Multiple Linear Regression Analysis

Variables	Un-standardized coefficients		Beta coefficients	t-value	Sig.
	B	Std. Error			

Constant	0.751	0.542		1.474	0.095
Effective Interaction	0.444	0.129	0.453	5.755	0.031
Ability of Supply Chain	0.292	0.128	0.158	2.428	0.008
Technology Adoption	0.223	0.116	0.137	2.185	0.007
Tractability	0.161	0.098	0.123	2.112	0.005
Planning	0.115	0.131	0.069	1.983	0.004
R			0.789		
R Square			0.616		
Adjusted R Square			0.615		
F Value			22.657 (0.000)		

Source: Primary Data

Table 3 reveals the values of R^2 and adjusted R^2 as 0.616 and 0.615 individually which designates 62% of variation on the performance of automobile firms due to supply chain management practices. It is found from the independent variables, effective interaction brings the highest beta coefficient 0.444 and t-value 5.755 that is statistically significant at 5% level. Similarly, ability of supply chain, technology adoption, tractability, and planning are holding positive beta coefficients and statistically significant at 1% level. The computed F-value is also significant at 1% level. It is confirmed that all factors have significant effect on the performance of automobile firms.

6.3. Problems in Supply Chain Management Practices of Automobile Firms

The problems in supply chain management practices of automobile firms are taken into account. The data collected through Likert scale is analyzed through mean and standard deviation along with rank position, it is furnished in table 4.

Table – 4: Descriptive Statistics

S. No	Variables	Mean	Standard Deviation	Rank
1	Absence of modern technology	4.126	1.23	1
2	Lack of awareness on new systems	3.712	0.65	5
3	Lack of purchase/sale schedule	4.073	0.97	2
4	Improper flow among supply and demand	3.833	1.29	4
5	Lack of stakeholders support	2.939	1.21	7
6	Poor employee support	3.224	1.12	6
7	Lack of interest for development	3.867	0.86	3

Source: Primary Data

Table 4 shows the mean value of the problems of automobile firms while implementing supply chain management practices. Absence of modern technology is ranked first among the other variables with a mean score of 4.126. Lack of purchase/sale schedule is ranked second with a mean

score of 4.073. Lack of interest for development got mean score of 3.867 and it is ranked third. The mean scores of improper flow among supply and demand (3.833), lack of awareness on new systems (3.712), poor employee support (3.224) and lack of stakeholder's support (2.939) are ranked subsequently. The remaining factors have been ranked as least important. It is recommended that the automobile firms have to take suitable measures to strengthen their supply chain practices on the above grounds, so as to increase its performance.

7. Conclusion

The study provides valuable insights into the effect of supply chain management practices on the performance of automobile firms. The study confirms that supply chain management practices have a significant positive impact on the performance of firms in the automobile industry. Demographic profile of employees working in automobile firms shows that 39.5% are falling in the age group of less than 35 years, 77.0% are male employees, 41.5% of employees are in below Rs.40,000 monthly salary, 44.5% are completed UG degree, and 40.5% are in above 10 years. The effect of supply chain management practices on performance of automobile firms reveals that it explains 78.049% variance in data. It confirms that the effective interaction, ability of supply chain, technology adoption, tractability and planning have significant effect on brand preference of women consumers on FMCG products. Multiple regression analysis confirmed that all factors have significant effect on the performance of automobile firms. Absence of modern technology, lack of purchase/sale schedule, lack of interest for development are the main problems to the automobile firms. The study suggested that the automobile firms have to take suitable measures to strengthen their supply chain practices on the above grounds, so as to increase its performance.

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