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The Study On Enhance Global Supply Chain Visibility And Efficiency In Mss Logistics, Coimbatore

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ABSTRACT

This study explores strategies to enhance global supply chain visibility and efficiency in MSS Logistics, Coimbatore. It examines the challenges faced in tracking, monitoring, and optimizing logistics operations, focusing on real-time data integration, advanced technologies like IoT and AI, and process automation. The research highlights the impact of improved visibility on reducing operational costs, enhancing decision-making, and ensuring seamless supply chain coordination. By analysing industry best practices and case studies, the study provides actionable recommendations to strengthen supply chain resilience and responsiveness.

Keywords: Supply Chain Visibility, Logistics Efficiency, MSS Logistics, Real-time Tracking, IoT, AI, Process Automation, Operational Optimization, Supply Chain Resilience.

INTRODUCTION

Supply chain is a set of firms that pass materials forward. Normally, several independent firms are involved in manufacturing a product and placing it in the hands of the end user in a supply chain—raw material and component producers, product assemblers, wholesalers, retailer merchants and transportation companies are all members of a supply chain. In other words, a supply chain consists of multiple firms, both upstream (i.e., supply) and downstream (i.e., distribution), and the ultimate consumer.

An extended supply chain includes suppliers of the immediate supplier and customers of the immediate

customer, all involved in the upstream and/or downstream flows of products, services, finances, and/or information. An ultimate supply chain includes all the organizations involved in all the upstream and downstream flows of products, services, finances, and information from the ultimate supplier to the ultimate customer.

FIGURE 1

TYPES OF CHANNEL RELATIONSHIPS

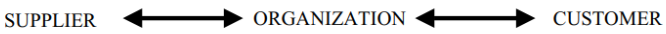

FIGURE 1a - DIRECT SUPPLY CHAIN

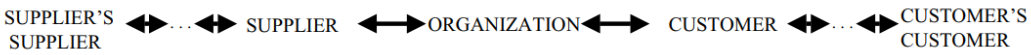

FIGURE 1b - EXTENDED SUPPLY CHAIN

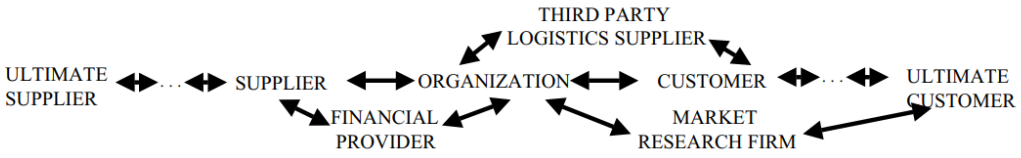

FIGURE 1c - ULTIMATE SUPPLY CHAIN

OBJECTIVES OF THE STUDY

- To identify the key factors impacting visibility and efficiency in the global supply chain of the well-known syndicate.
- To evaluate the current systems and practices used for supply chain management within the organization.
- To explore advanced technologies such as AI, IoT, and blockchain for enhancing supply chain visibility and decision-making.
- To analyze the potential of integrating real-time data and predictive analytics in improving supply chain efficiency.
- To propose strategic recommendations for enhancing global supply chain visibility and efficiency in the syndicate.

REVIEW OF LITERATURE

1. **Subbiah (2024),** 1oCUs on production and distribution activities. The proposed Asl consists of four cyclones, suppliers of raw milk, production sites, distribution centres and customers integrate the raw milk purchase plan, the production plan, and Ae transport plan of the finished products. They propose a linear programming model Linear programming) with a single objective function integrating the various costs of the supply chain, which includes plant production and transport costs.

2. **Bélissent (2023)** represents that the requirements for smart city projects around the world, current transportation or logistics systems need to adopt a high degree of smart supply chain activities. For instance, some cities have already been initiating practices, such as rerouting public buses depending on real-time traffic or applying mobile-enabled payments for public parking. Supply chain managers in a firm should properly leverage their supply chain system and the needed IT infrastructure to operate such novel smart supply chain applications.
3. **Christopher (2022)** defines that the supply chain as the network of organizations host are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services in the hands of the ultimate customer SCM is the strategic and systematic coordination of the traditional business functions and the tactics across these business functions within a particular firm and across businesses within a supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole.
4. **Ganeshan (2021)** states that supply chain is a network of facilities and distribution options that performs the functions of procurement of materials, transformation of these materials intermediate and finished products, and the distribution of these finished products customers. SCM is an integrative philosophy to manage the total flow of distribution channel from the supplier to ultimate user.
5. **Lee Corry (2020)** states that SCM consists of the integration activities taking place among the networks of facilities that procure raw material., transform them into intermediate goods and then final products, & deliver products to customers through a distribution system. don the relatively recent development of the supply chain literature, it is not surprising that there has been much debate as to a specific SCM definition.

RESEARCH METHODOLOGY

SAMPLING TECHNIQUES

Sampling Techniques can be broadly classified in to two types:

- Probability Sampling,
- Non-Probability Sampling.

METHODS OF DATA COLLECTION TESTING OF QUESTIONNAIRE:

Primary Data:

Primary data is basically the live data which I collected on field while doing cold calls with the customers and I show them list of question for which I had required their responses.

Secondary Data:

Secondary data for the base of the project I collected from intranet of the hotels and from internet, magazines, newspapers etc.

TOOLS AND TECHNIQUES OF ANALYSIS

Tools for analysis

- Simple percentage analysis
- Frequency analysis
- Chi Square tests
- Correlation analysis

SAMPLE SIZE:

122 responses were collected.

DATA ANALYSIS AND INTERPRETATION

SIMPLE PERCENTAGE ANALYSIS

GENDER OF THE RESPONDENTS

GENDER	NO. OF RESPONDENTS	PERCENTAGE
Male	80	65.6
Female	42	34.4
TOTAL	122	100

SOURCE: Primary data

INTERPRETATION:

From the above table, it is informed that 65.6 % of the respondents are male, 34.4 % of the respondents are female.

OCCUPATION OF THE RESPONDENTS

OCCUPATION	NO. OF RESPONDENTS	PERCENTAGE
Supply chain Manager	15	12.2
Logistics Coordinator	54	43.9
Operation Manager	41	33.3
Other (Please specify)	13	10.6
TOTAL	122	100

SOURCE: Primary data

INTERPRETATION:

From the above table, it is informed that 12.2 % of the respondents are Supply chain Manager, 43.9 % of the respondents are Logistics Coordinator, 33.3 % of the respondents are Operation Manager, 10.6 % of the respondents have chosen other option.

CHI-SQUARE TEST

COMPARISON BETWEEN OCCUPATION AND SYSTEM/TOOLS USED IN THE ORGANIZATION FOR SCM

Null Hypothesis (H_0): There is no significant association between occupation and the system/tools used in the organization for supply chain management (SCM).

Alternative Hypothesis (H_1): There is a significant association between occupation and the system/tools used in the organization for SCM.

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Occupation * 4. Which of the following system/tools does your organization currently use for SCM?	122	100.0%	0	0.0%	122	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	33.179[a]	9	.000
Likelihood Ratio	26.925	9	.001
N of Valid Cases	122		

a. 8 cells (50.0%) have expected count less than 5. The minimum expected count is .10.

Interpretation: The Pearson Chi-Square test result ($\chi^2 = 33.179$, df = 9, p = 0.000) indicates a statistically significant relationship between occupation and the SCM system/tools used, as the p-value is less than 0.05. This means we reject the null hypothesis, suggesting that the choice of SCM tools is influenced by the occupation of the respondents. However, since 50% of the cells have an expected count less than 5, the reliability of the test might be compromised, and results should be interpreted with caution.

COMPARISON BETWEEN OCCUPATION AND METHOD USED TO TRACK SHIPMENT AND ORDER SUPPLY CHAIN

Null Hypothesis (H_0): There is no significant association between occupation and the method used to track shipment and order across the supply chain.

Alternative Hypothesis (H_1): There is a significant association between occupation and the method used to track shipment and order across the supply chain.

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Occupation * 5. How do you current track shipment and order across your supply chain?	122	100.0%	0	0.0%	122	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	22.991[a]	9	.006
Likelihood Ratio	20.384	9	.016
N of Valid Cases	122		

a. 7 cells (43.8%) have expected count less than 5. The minimum expected count is .30.

Interpretation: The chi-square test results indicate a statistically significant association between occupation and the method used to track shipments and orders across the supply chain ($\chi^2 = 22.991$, df = 9, p = 0.006). Since the p-value is less than the conventional significance level of 0.05, we reject the null hypothesis (H_0) and conclude that occupation does influence the method chosen for tracking shipments and orders. However, 43.8% of the cells have an expected count less than 5, suggesting that some categories have low frequencies, which may affect the reliability of the chi-square test. Despite this limitation, the overall results support the existence of a relationship between these two variables.

COMPARISON BETWEEN OCCUPATION AND FUTURE INITIATIVES IS YOUR ORGANIZATION PLANNING TO IMPROVE SUPPLY CHAIN VISIBILITY AND EFFICIENCY, THE MOST IMPORTANT FACTOR FOR IMPROVING GAL SUPPLY CHAIN VISIBILITY AND EFFICIENCY

Null Hypothesis (H_0): There is no significant correlation between occupation and future initiatives for improving supply chain visibility and efficiency, nor between occupation and the perceived most important factor for improving supply chain visibility and efficiency.

Alternative Hypothesis (H_1): There is a significant correlation between occupation and future initiatives for improving supply chain visibility and efficiency, as well as between occupation and the perceived most important factor for improving supply chain visibility and efficiency.

CORRELATION ANALYSIS

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Occupation * 9.Your future initiatives is your organization planning to improve supply chain visibility and efficiency?	122	100.0%	0	0.0%	122	100.0%
Occupation * 12.What do you think is the most important factor for improving gal supply chain visibility and efficiency?	122	100.0%	0	0.0%	122	100.0%

Symmetric Measures

		Value	Asymptotic Standard Error[a]	Approximate T[b]	Approximate Significance
Interval by Interval	Pearson's R	-.089	.117	-.975	.332[c]
Ordinal by Ordinal	Spearman Correlation	-.091	.110	-.999	.320[c]
N of Valid Cases		122			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.
c. Based on normal approximation.

Symmetric Measures					
		Value	Asymptotic Standard Error[a]	Approximate T[b]	Approximate Significance
Interval by Interval	Pearson's R	-.144	.100	-1.591	.114[c]
Ordinal by Ordinal	Spearman Correlation	-.099	.099	-1.086	.280[c]
N of Valid Cases		122			
a. Not assuming the null hypothesis.					
b. Using the asymptotic standard error assuming the null hypothesis.					
c. Based on normal approximation.					

Interpretation: The correlation analysis results indicate weak and statistically insignificant relationships between occupation and both future initiatives and the most important factor for supply chain visibility improvement. The Pearson's R values (-.089 and -.144) and Spearman's correlation values (-.091 and -.099) are low, with high p-values (.332 and .114 for Pearson's R, .320 and .280 for Spearman), indicating no meaningful correlation. Since none of the p-values are below the typical significance threshold of 0.05, we fail to reject the null hypothesis, suggesting that occupation does not significantly influence an organization's future plans for supply chain improvement or the perceived key factors for achieving better supply chain visibility and efficiency.

FINDINGS

1. The majority of respondents (65.6%) are male, while 34.4% are female.
2. The largest group of respondents (43.9%) are Logistics Coordinators. 33.3% are Operation Managers, 12.2% are Supply Chain Managers, and 10.6% belong to other job roles.
3. A statistically significant relationship exists between occupation and the SCM tools used ($\chi^2 = 33.179$, $p = 0.000$). However, the reliability of the test is somewhat compromised due to 50% of the cells having an expected count of less than 5.
4. A significant association was found between occupation and the method used to track shipments ($\chi^2 = 22.991$, $p = 0.006$). Similar to the previous chi-square test, some categories had low frequencies, affecting reliability.
5. No significant correlation was found between occupation and future initiatives to improve supply chain visibility (Pearson's R = -0.089, p = 0.332). No significant correlation between occupation and perceived important factors for supply chain improvement (Pearson's R = -0.144, p = 0.114).

SUGGESTIONS

1. Since certain categories had low expected counts in chi-square tests, future studies should aim for a more balanced sample distribution across occupations.
2. Since occupation significantly influences the choice of SCM tools, organizations should assess whether all job roles have access to the most effective tools and provide necessary training.
3. Given that occupation also affects tracking methods, companies should consider adopting a standardized shipment tracking system for consistency and efficiency.
4. As no significant correlation was found between occupation and future supply chain initiatives, it is advisable for organizations to ensure that all roles contribute to strategic decisions, rather than a select few influencing policies.
5. Additional qualitative insights from employees may help understand why certain trends exist and how SCM strategies can be optimized across different roles.

CONCLUSION

The analysis reveals that occupation significantly influences the choice of SCM tools and shipment tracking methods. However, occupation does not appear to impact future supply chain initiatives or the perceived key factors for improving visibility. While the chi-square tests indicate significant associations, the reliability of the results is somewhat limited due to low expected counts in certain cells. Organizations should focus on standardizing SCM tools, tracking systems, and involving a wider range of employees in strategic decision-making to enhance overall supply chain efficiency.

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