SUPPLY CHAIN AND MARKETING FUNCTIONS INTERFACE FOR COMPETITIVENESS

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ABSTRACT

The paper deals with the interface between marketing and supply chain functions. The emphasis is on managing the interaction to improve service and lower costs. It draws insight and inferences regarding various marketing and supply chain sub-functions. This paper deals with a theoretical framework for such interactions and discusses managerial implications, specifically at the pipeline interaction level.

Keywords: Marketing, Supply Chain Management, Interface, Logistics.

INTRODUCTION

In the current scenario, most businesses have adopted complex network-based models. Players in this network interact with other players. The network's interaction must be seen at the level of business partners and the functional level. One such functional interaction is between the supply chain and marketing. This interaction is best considered to be strategic. As per (Kotler & Armstrong, 2007), marketing decisions are concerned with market segmentation, targeting, positioning, etc. (Mentzer et al., 2001) stated that the supply chain is concerned with optimizing and close interaction with in-company marketing and sales processes. In (Martin & Grbac 2003) suggested that addressing the interface between marketing and supply chain will lead to the mutual benefit of close alignments. As firms have market-oriented strategies, if supply chain strategies are not aligned, it may lead to decreased services or increased costs. The supply chain marketing interface (SCMI) is fundamental in augmenting customer value and organizational efficacy. Contemporary scholarly investigations underscore the imperative for a systematic methodology to amalgamate marketing and supply chain processes, capitalizing on digital technologies and experiential learning. This paper tries to determine the relationship regarding the degree to which the marketing function affects the supply chain function.

LITERATURE REVIEW

Franceschetto advocates for a framework that prioritizes closed-loop customer feedback to synchronize marketing and supply chain initiatives, ultimately enhancing customer value (Franceschetto et al., 2023). This framework accentuates the criticality of tailoring strategies to distinct organizational contexts. Investigate the significance of digital technologies, including the Internet of Things and cloud computing, in facilitating SCMI. Their patent analysis indicates that these technological advancements are essential for efficacious integration, promoting real-time data dissemination and superior decision-making. Noci examines the dynamic evolution of the SCMI, emphasizing that marketing strategies must adapt to service-dominant logic and market-driven frameworks, which demand substantial organizational transformations (Noci, 2019). Underscores the significance of experiential learning in comprehending the SCMI, particularly within small enterprises, as this approach can cultivate critical thinking and facilitate knowledge transfer among students.

Citation Information: Giri, S. (2025). Supply Chain and Marketing Functions Interface for Competitiveness. *Academy of Marketing Studies Journal, 29*(2), 1-6.

Kristaung and Riorini elucidate the intricacy of mediation and moderation models within SCMI research, positing that precision in statistical tools is paramount for practical analysis (Kristaung & Riorini, 2020). While the amalgamation of marketing and supply chain functions is increasingly acknowledged as essential for competitive advantage, obstacles persist in standardizing practices across varied organizational contexts. The supply chain marketing interface constitutes a pivotal element of contemporary business operations, fostering communication and collaboration between marketing and supply chain functions. This interface is indispensable for augmenting efficiency (Gulati, 1998), responsiveness, and customer satisfaction. Efficient supply chain marketing interfaces employ systems that exhibit logistics information, facilitating real-time monitoring of distribution resources and timing between entities. The convergence of marketing strategies with supply chain logistics can result in enhanced demand forecasting and inventory management, which are critical for just-in-time manufacturing methodologies. The rise of network organizations highlights the significance of collaborative relationships within supply chains, wherein marketing strategies must be harmonized with logistics capabilities to effectively fulfill customer requirements (Peck & Jüttner, 2000). A well-articulated relationship strategy can augment the interface between marketing and supply chain management, culminating in improved alignment of objectives and enhanced performance (Peck & Jüttner, 2000). The deployment of graphical user interfaces in supply chain management facilitates streamlined proposal reporting and component selection, thereby enhancing the functionality of the marketing interface. XML-based data interchange has surfaced as a viable alternative for the integration of marketing and supply chain applications, thereby addressing the limitations inherent in traditional EDI systems. While the integration of marketing and supply chain functions offers myriad advantages, challenges persist, particularly in establishing uniform standards and ensuring seamless communication across diverse platforms. A meticulously constructed supply chain marketing interface can play a pivotal role in diminishing a corporation's environmental footprint and social ramifications. By embedding sustainability into supply chain management practices, organizations can synchronize their operations with ecological and societal objectives, fortifying their competitive market stance. Although incorporating sustainability into supply chains poses challenges, such as reconciling economic aspirations with environmental and social goals, the prospective advantages regarding diminished impact and augmented corporate accountability are considerable.

The literature suggests that logistics and marketing depend on each other through the elements of the marketing mix (Mentzer et al. 2001). One of the studies suggests that logistics is one of the main elements contributing to customer service, so there is a visible interface between marketing and logistical activities, leading to better delivery of customer service and customer satisfaction. Another study suggests that to obtain an outstanding service level, there should be prevailing inter-functional coordination between the supply chain/logistics and the various marketing functions (Kapoor & Ellinger, 2004). Most research studies inquire about the marketing and logistics of delivering goods for better customer service. Very few studies try to discover the internal factors responsible for customer service. One of the studies suggested that inter-functional interface and the overall performance of logistics, marketing, and production development lead to the organization's benefit. With better coordination between the different operational functions, efficiency continues to improve. Based on the literature, the identified supply chain and marketing factors were analyzed with the help of statistical analysis, the results of which are given below. To assess the impact of marketing functions/ activities on the supply chain functions/ activities, seventy-four attributes were identified, and a model was developed after applying factor analysis to these attributes; in this model, the marketing attributes were modeled as independent variables, and supply chain functions were attributed as dependent variables i.e.

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Supply Chain functions = f (Marketing functions) +μ (constant) Eq-1

Supply chain functions include order processing, distribution, response time, and green logistics practices, while marketing functions include sales promotion, publicity and advertising, customer service, and customer relationship management. So, the first step of the analysis included calculating the reliability of the primary data collected, which was checked by Cronbach's Alpha method. Under the reliability test, the Cronbach alpha score was 0.733. This elucidates the reliability statistics, which indicate that the data amassed is sufficiently robust to facilitate subsequent analytical procedures. The table illustrates that the computed value of Cronbach's Alpha is 0.733. Since this value exceeds the threshold of 0.5, the data gathered has satisfactory reliability. Cronbach's Alpha can assume any value within the range of less than or equal to 1, including negative values; however, only positive values are deemed meaningful. Elevated values of alpha are generally regarded as more advantageous Table 1.

Table1
KMO STATISTICS

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.708
Bartlett's Test of Sphericity	Approx. Chi-Square	391.639
	df	66
	Sig.	0.000

Table 1 Consequently, a principal component analysis is suitable for the present dataset. An exploratory factor analysis, employing principal component analysis with varimax rotation, was executed. Various statistical assessments, including the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity, were utilized to evaluate the suitability of the factor analysis, with results indicating an acceptable level of appropriateness (Bartlett's test is significant at the 0.000 level and KMO exceeds 0.5).

Table 2 illustrates the communalities for the attributes under consideration; commonalities reflect the proportion of variance attributable to each attribute. Initial communalities represent estimates of the variance in each variable that can be attributed to all components or factors. Extraction commonalities provide estimates of the variance in each variable that can be explicitly attributed to the factors (or components) identified in the factor solution. Typically, values below 0.4 denote variables or attributes that do not align well with the factor solution and may warrant removal from the analysis; however, table 2 indicates that no values were identified below this threshold. Subsequently, in the next phase of the factor analysis, data reduction is executed through principal component analysis, whereby the numerous attributes have been condensed and categorized into eight principal factors Table 2.

Table 2
ROTATED COMPONENT MATRIX

SP_1=Sales Promotion	0.93							
SP_2= Advertising communication	0.92							
SP_3=Public Relations	0.91							
SP_4=Customer relationship management	0.91							
SP_5= Advertising	0.89							
SP_6=Public sales offers	0.89							
PUB_1=Publicity		0.87						
PUB_2=Online promotion		0.87						
PUB_3=Advertising creates demand		0.85						

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PUB $_4$=CRM helps in the proper demand estimation		0.85						
PUB $_5$=Special Offers affect the supply chain		0.84						
SER $_1$=Better services offered			0.84					
SER $_2$=Public Relations			0.83					
SER $_3$=WOMC			0.83					
SER $_4$ =ADV			0.82					
Cr AC_6				0.816				
Cr AC_7				0.813				
Cr AC_2				0.812				
Cr AC_1				0.811				
OP1 = Orders you process					0.810			
OP_2 = Customer service level					0.8			
$DIST_1$= Physical distribution of goods						0.8		
DIST $_2$=Various quality standards practices						0.8		
DIST $_3$=Bullwhip effect management						0.8		
$DIST_4$=Logistics						0.79		
DIST $_5$=Warehousing						0.79		
$DIST_6$= SCM initiatives						0.79		
RES_1= Reducing response time							0.783	
RES_2=Ontime delivery							0.773	
RES_3= Formal information sharing agreements							0.76	
GLO_1=Use of green logistics								0.758
GLO $_2$= Supply chain strategies needs to be in concordance								0.734
GLO $_3$= Bullwhip effect supply distortions leads								0.731
GLO $_4$ = Better communication with customer								0.727
GLO $_5$= Long lead time leads to customer dissatisfaction								0.717

The factor analysis extracted the various variables with the help of principal component analysis as shown below: -

1. Sales Promotion= f (SP_1, SP_2, SP_3, SP_4, SP_5, SP_6)
2. Publicity= f (PUB_1, PUB_2, PUB_3, PUB_4, PUB_5)
3. Customer service= f (SER_1, SER_2, SER_3, SER_4)
4. Customer Relationship Activities= f (CR $_{AC1}$, CR $_{AC2}$, CR $_{AC6}$, CR $_{AC7}$)
5. Order processing=f (OP_1, OP_2)
6. Distribution = f (DIST $_1$, $DIST_2$, $DIST_3$, $DIST_4$, $DIST_5$, $DIST_6$)
7. Response Time= f (RES $_1$, RES $_2$, RES $_3$)
8. Green Logistics = f (GLO $_1$, GLO $_2$, GLO $_3$, GLO $_4$, GLO $_5$)

With the help of the rotated component matrix, all the attributes are now grouped under the eight key factors. Four of these extracted eight factors belong to the marketing function, and the rest belong to the supply chain functions. The following hypothesis was tested to test the interface among the variables confirmed from the factor analysis.

H_{01}: *There exists no interface between marketing and supply chain functions.*

H_{02}: *An interface exists between marketing and supply chain functions.*

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The results of hypothesis testing in Table 3 show that the calculated "F= 9.200" is greater than the tabulated "F=2.767" value, which leads to accepting the alternate hypothesis, i.e., "There exists an interface between marketing and supply chain functions Table 3."

Table 3
F- VALUE TABLE

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.785	2	.892	9.200	.000
	Residual	15.713	162	.097		
	Total	17.498	164			

In the next step, multiple regression was carried out to ascertain and quantify the relationship between the marketing and supply chain functions. Multiple regression analysis was used to examine the relative impact of the overall marketing functions (independent variables) on the supply chain functions (dependent variables).

The calculated regression model yielded an R-value of 0.859 and an R^2 value of 0.737, as delineated. The R-value represents the multiple correlation coefficient between the independent variables (marketing functions) and the dependent (supply chain functions) variables. This coefficient is notably high at 0.859, indicating a positive correlation between the independent and dependent variables. The R^2 value in the model is 0.737, serving as an indicator of the proportion of variability in the dependent variable that the independent variables can explain. Consequently, the independent variables collectively explain 73.7% of the variation observed in supply chain functions.

The result of multiple regression suggests a very high degree of goodness of fit of the model; to quantify a linear relationship between marketing and supply chain functions, we need to have the results, which shows the β-value of the independent variable and constant term. Thus, the model is estimated in Equation 2:

Effect On Supply Chain Functions = 0.348(Marketing Functions) +4.169-------- (4.1) Eq-2

Marketing functions, as expected, are positively affecting SCM functions. Here, the coefficient of marketing functions is 0.348* (with std. error of 0.078 and t-value of 4.4482), which means if there is a 100 % change in marketing functions variables, it will lead to approximately 34.8 % change in supply chain functions. The result concurs with the study conducted, which suggests that marketing strategy alignment positively affects the supply chain performance of the organization. The supply chain and marketing function must be aligned and orchestrated. An emphasis may be placed on co-creation, considering both functions. Strategies like Collaborative Planning Forecasting and Replenishment (CPFR) may be adopted to get maximum benefits. As marketing may plan innovative offerings for the customers, a responsive and flexible supply chain is required to reap benefits.

Managerial Implications

The framework confirms the interactions and their impact on the supply chain. It is evident that real-time information regarding marketing plans and strategies may be available to supply chain managers. It also suggests that both functional areas should not work in isolation but must create a collaborative plan. It is not the integration that is important; it is the nature of interaction that is important.

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Received: 25-Oct-2024, Manuscript No. AMSJ-24-15371; **Editor assigned:** 26-Oct-2024, PreQC No. AMSJ-24-15371(PQ); **Reviewed:** 26-Nov-2024, QC No. AMSJ-24-15371; **Revised:** 26-Dec-2024, Manuscript No. AMSJ-24-15371(R); **Published:** 17-Jan-2025

Citation Information: Giri, S. (2025). Supply Chain and Marketing Functions Interface for Competitiveness. *Academy of Marketing Studies Journal, 29*(2), 1-6.