

Investigation on the Combined Effect of Information Exchange and Supply Chain Integration (SCI) on Supply Chain Performance

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Abstract

In recent years due to advancement in Science and Technology, Information systems have acquired an inevitable place in the overall operational management. Successful Supply chain management also includes the activity of maintaining the supplier buyer relationship. In the competitive global arena, Supply chain management becomes an USP for the companies in achieving a differential edge over competitors. To survive in today's tough core competition, supply chain partners need to improve their competitive advantages by information exchange. From the previous studies, it is proved that information exchange for process integration between key suppliers and buyers in the chain can reduce operational cost and enhance the value addition process. It is thereby creating a differential advantage for the producer and increases the end value obtained by the customer. This paper attempts to explore the level of combined effect on the supply chain performance. The final results indicate that Information exchange is positively related to supply chain integration and it is a vital factor to improvise the supplier buyer relationship. Likewise, the findings on Supply chain integration show that SCI is positively related to the Supply chain performance and escalates the level of the firm to a different level.

Key-words: Information Exchange, Supply Chain Integration, Supplier-Buyer Relationship, Suppliers' Performance.

1. Introduction

It is well known that, India has opened its doors to welcome the global investors since 1991. Opportunities to expand the local market to international and then to global level flowed with great rush. Along came the ruthless competition among the local players as well as global players.

Company's focus took a great shift from providing quality product to their customer to maintaining a good relationship with the suppliers.

Companies started investing in maintaining a profitable bond with the supplier. This is because it helps them to gain a competitive advantage and also retain best suppliers to exterminate the competitors from the market. Continuing the bond with the suppliers in turn facilitate the companies to add value for their customers which helps to expand the market range and increase the market share.

Exchange of information has come to be viewed as a vital aspect with respect to overall e supply chain integration. Exchange of information among the supply chain partners helps in reaping many advantages for any firm like for example it would help in ensuring the product offered is in line with the consumer's requirements. It would also help in having more information with respect to changes taking place in the market. The adoption of very many technologies with respect to exchange of information such as the Electronic Data Interchange (EDI) and Web technologies have helped firms to a great extent.

The process of supply chain management includes raw materials for production, information exchange between the all the supply chain partners and money flow across the entire supply chain. Two key aspects related to exchange of information include the content of such shared information and the quality of information being shared. Content with respect to Information relates to the information shared between supply chain partners and information quality relates to the quality of information shared between such partners.

According to Marshall and Bly, information when shared among such supply chain partners helps in building and strengthening the relationships and social ties among the giver and receiver of information. This article aims to explore the combine effects of information exchange and supply chain integration on supply chain performance.

2. Theoretical Framework

Min et al. represent information exchange as the heart of supply chain collaboration. This means that more attention needs to be given to information exchange.

Supplier relationship management involved strengthening the bond between the suppliers and the company through effective information exchange. Supplier Chain Integration supports this strengthening activity by ensuring free flow of information between the members in the chain and proving profitable through reducing the cost of operations for the company.

3. Hypothesis Development and Conceptual Model

As already seen, Information exchange plays key role in maintaining successful relationship with the supplier.

Information exchange is greatly influenced by the Organizational Culture. The strong culture to share information among the members determines the type of relationship that is going to develop among them. Information exchange is need of the day for preserving a cordial bond with the supplier. Communication plays a pivotal role in building a strong bond between the provider and the receiver. Information transparency is required for the supplier and buyer to join hands and pool their efforts to reduce cost and increase efficiency. Within a limited boundary Information exchange makes the supplier and the buyer interdependent.

The hypothesis is framed in order to verify the existence of interdependency and also the level of relationship between the information exchange and the supplier buyer relationship.

Information Exchange aids both side members to take strategic decisions and delegate the functions for the successful implementation of the planning. This in turn may affect the firm's long-term survival and success in the supply chain context.

H1: Information exchange positively related to supplier - buyer relationship

H2: Information exchange positively influences supply chain integration

H3: Information exchange is positively related to supply chain performance

Supply chain integration boosts the supply chain performance by facilitating a centralized management through information exchange extended to the network formed by the suppliers and buyer. Based on this the following hypotheses were framed.

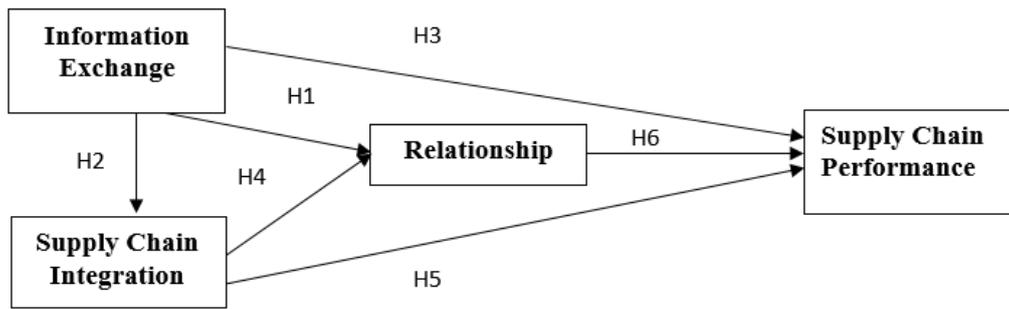
H4: Supply chain integration positively related to supplier - buyer relationship

H5: Supply chain integration positively influences supply chain performance

Strong supplier buyer relationship is essential for a firm's survival and to gain a competitive advantage to win in the ruthless competition. It is the trust in the relationship which matters as the supply chain partners are interdependent. Information exchange and supply chain integration help in increasing the dependency between partners and also improving the relationship. Therefore, in line with the above the following hypothesis is framed.

H6: Supplier- buyer relationship is positively correlated to suppliers' performance.

Fig. 1 - Conceptual Model



4. Research Methodology

This article attempts to examine the influence of information exchange and supply chain integration on the supply chain performance by using variables validated by previous research work. The survey method was adopted for the study and collected from varied industries around Chennai city. All the measures were examined based on respondents’ evaluation on a five-point Likert scale. Around 200 firms were targeted and questionnaire was circulated and 123 were usable.

Supply Chain Performance has been assessed using various metrics such as On-time delivery, Perfect order fulfillment rate, Delivery reliability/dependability, Quality (e.g., ability to meet specifications, Speed of response, Manufacturing capability (e.g., capacity), Cost reduction, Perfect planning and execution, etc.

5. Data Analysis and Results

Table 1 Shows Mean and SD of the items included in the survey. The mean values range from 3.33 to 5.40. Similarly, the SD values range from 0.770 to 2.079.

Table 1 - Mean and SD

	Survey Questions	Mean	S. D.
1. Information Exchange			
With Supplier	IFSS1	4.24	1.489
	IFSS2	4.13	1.570
	IFSS3	4.73	1.639
	IFSS4	4.60	1.545
	IFSS5	4.80	1.400
	IFSS6	4.73	1.721
	IFSS7	5.13	1.074
	IFSS8	4.77	1.431
With Customer	IFSC1	3.33	1.709
	IFSC2	3.77	1.223

	IFSC3	5.03	1.245
	IFSC4	4.17	1.315
	IFSC5	5.23	0.898
	IFSC6	5.34	1.724
	IFSC7	4.87	1.465
	IFSC8	5.04	1.711
Inter-Functional	IFSIF1	4.18	1.501
	IFSIF2	4.37	1.389
	IFSIF3	5.06	1.702
	IFSIF4	5.23	1.721
	IFSIF5	4.81	1.412
	IFSIF6	4.73	1.254
	IFSIF7	5.12	1.384
2. Supply chain Integration			
Integration with Suppliers (INSU)	INSU1	4.32	1.428
	INSU2	4.13	1.570
	INSU3	4.80	1.400
	INSU4	4.73	1.721
	INSU5	4.87	1.465
	INSU6	3.37	1.689
Internal Integration (ININ)	ININ1	5.03	1.245
	ININ2	5.14	1.624
	ININ3	4.74	1.445
	ININ4	4.13	1.565
	ININ5	4.65	1.842
	ININ6	3.95	1.752
	ININ7	3.33	1.648
Integration with Customers (INCU)	INCU1	4.09	1.528
	INCU2	4.13	1.555
	INCU3	5.40	1.741
	INCU4	4.78	1.455
3. Relationship (supplier and customer perspective)			
Supplier	RS1	5.43	1.223
	RS2	5.23	1.612
	RS3	5.53	1.196
	RS4	5.57	1.331
	RS5	4.90	2.295
Customer	RC1	5.27	1.530
	RC2	5.97	1.217
	RC3	5.73	1.048
	RC4	5.77	1.251
	RC5	4.87	2.030
4. Supply chain performance	SCP1	5.40	0.770
	SCP2	5.17	1.053
	SCP3	5.30	1.149
	SCP4	5.67	0.922
	SCP5	5.43	0.858
	SCP6	5.53	1.167
	SCP7	5.61	0.821
	SCP8	5.58	0.946
	SCP9	5.38	0.855

The results for Cronbach's Alpha, CR, and the AVE indicate sufficient convergent validity for all constructs. Lower limit is 0.842 and the upper limit is 0.883.

Table 2 - Cronbach's Alpha, CR, and the AVE

Variables	Composite Reliability	AVE	Cronbach's Alpha
Information Exchange	0.908	0.767	0.848
Supply Chain Integration	0.913	0.778	0.856
Relationship (supplier and customer perspective)	0.906	0.724	0.842
Supply Chain Performance	0.914	0.681	0.883

The results for Correlation analysis is shown in Table 3.

Table 3 - Correlation Table

Variables	Information Exchange	Supply chain Integration	Relationship (supplier and customer perspective)	Supply chain performance
Information Exchange	****			
Supply Chain Integration	0.574**	****		
Relationship (supplier and customer perspective)	0.405**	0.639*	****	
Supply Chain Performance	0.456*	0.557*	0.587**	****

Note: * $P < 0.05$, ** $P < 0.01$.

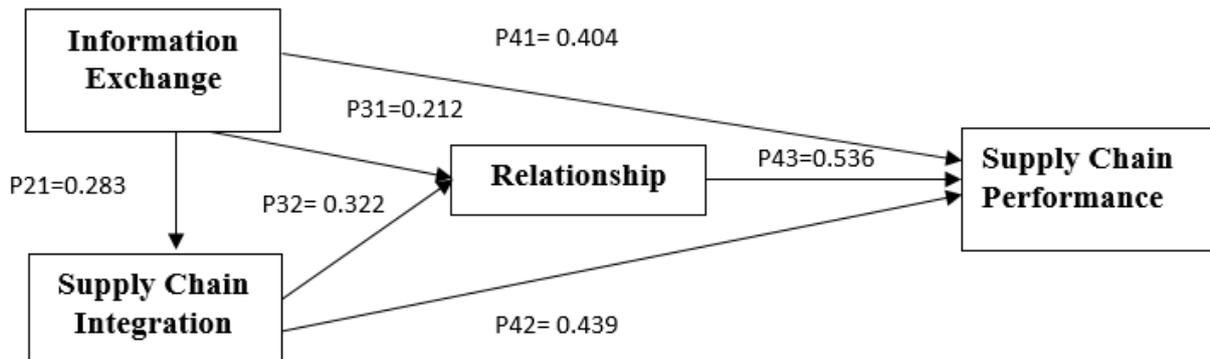
From the correlation analysis, it is observed that strong correlation exists between supplier chain performance and relationship perspective of both supplier and customer. Information exchange has strong correlation with supply chain integration. Supply Chain integration and Relationship perspective share strongest correlation in the analysis.

Table 4 - Results of Hypothesis Testing

Hypothesis	Path coefficients	t-value	Result
H1: Information Exchange → Relationship	0.212	1.984*	Accepted
H2: Information Exchange → SCI	0.283	2.776**	Accepted
H3: Information Exchange → SCP	0.404	1.964*	Accepted
H4: SCI → Relationship	0.322	2.986**	Accepted
H5: SCI → SCP	0.439	4.823**	Accepted
H6: Relationship → SCP	0.536	2.687*	Accepted

Note: * $P < 0.05$, ** $P < 0.01$.

Figure 2 - Path Coefficients



6. Findings

- Information exchange positively is positively related to supplier - buyer relationship, supply chain integration and supply chain performance.
- Supply Chain Integration positively related to supplier - buyer relationship and to supply chain performance.
- Buyer-supplier partnership relationship has positive influence on Suppliers performance.

The R^2 values for the two dependent variables –information exchange and SCP– are 0.442 and 0.506 respectively. Information exchange is positively related to supply chain Integration explain the 44.2% of variance in SCI. Relationship perspective of both supplier and customer strongly influences the supplier performance explain the 49.5% of variance of SCP. The results indicate that SCI and information exchange together, explain the 50.6% of variance in SCP

7. Conclusion

In this competitive era, it has become significant for the companies to tap the potential benefits that can be obtained from information exchange and supply chain integration. The relationship that is exhibited as a result of the above said factors influences the supply chain performance. The study findings explain the combined impact of information exchange on supply chain integration and supply chain performance. The aim of this study has been thus verified which has tried to examine the combined effect of information exchange and supply chain integration on the relationship in two different perspectives (both supplier and customer).

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