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The Influence of Supply Chain Integration on Information Sharing and Supply Chain Performance: A Case Study of Tunisian Enterprises

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***Abstract*— Supply chain integration has become a potentially valuable way of securing shared information and improving supply chain performance since competition is no longer between organizations, but among supply chains.**
This research conceptualizes and develops three dimensions of supply chain integration (integration with customers, integration with suppliers, and the interorganizational integration) and tests the relationships between supply chain integration, information sharing, and supply chain performance.
Furthermore, the four types of information sharing namely; information sharing with customers, information sharing with suppliers, inter-functional information sharing, and intra-organizational information sharing; and the four constructs of Supply Chain Performance represents expenses of costs, asset utilization, supply chain reliability, and supply chain flexibility and responsiveness.
The constructs are measured by well-supported measures in the literature. Data for the study were collected from 140 organizations in Tunisia and the relationships proposed in the framework were tested using structural equation modeling.
The results indicate that higher levels of supply chain integration can lead to enhanced shared information and improved supply chain performance. Also, sharing information can have a positive impact on supply chain performance.
Thus, the results fully support the three hypotheses. It is found that information sharing is positively influenced by supply chain integration, which is the H1. Moreover, the empirical testing on the impact of supply chain integration on supply chain performance revealed that supply chain integration has a positive influence on supply chain performance and also information sharing positively impacts supply chain performance, therefore supporting H2 and H3.

Keywords: Supply Chain Integration; Information Sharing; Supply Chain Performance.

I. INTRODUCTION

Today, Globalization and world-wide competition along with technological advancements create an entirely new business environment for the organizations.
As markets have become more global and the challenges associated with getting a product and service to the right place at the right time at the lowest cost. Organizations began to realize that it is not enough to improve efficiencies within an organization, but their whole supply chain has to be made competitive.
In recent years, supply chain management and information technology management have attracted much attention from both practitioners and researchers. As information technology evolves, firms tend to become more integrated. Therefore, integrating the supply chain with effective information sharing becomes critical for improving supply chain performance.

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Hence, the understanding and practicing of supply chain management (SCM) has become an essential prerequisite for staying competitive in the global race and for enhancing profitably, Childhouse P. Towill D. R., (2003).
SCM (supply chain management) has become a hot topic in economics and business throughout the world. There has been much interest among managers and academics in research on SCM and SCI (supply chain integration).The term Supply chain management (SCM) includes a set of approaches and practices to effectively integrate suppliers, manufacturers, distributors and customers for improving the long-term performance of the individual firms and the supply chain as a whole in a cohesive and high-performing business model (Chopra and Meindl, 2001).
Moreover, Integration is defined as the merging of parts into a whole, and supply chain integration, at its normative ideal, refers to the adoption and use of collaborative and coordinating structures, processes, technologies and practices among supply chain partners for building and maintaining a seamless conduit for the precise and timely flow of information, materials and finished goods.
Several studies and authors have emphasized the importance of sharing information between customers and suppliers in supply chains, (Kelle and Akbulut, 2005; Christopher and Towill, 2000; Cachon and Fisher, 2000; Lee et al., 1997).
Through the establishment of both internal and external linkages aligned compatible with system-wide objectives (Yu M-M, Ting S-C, Chen M-C, 2010), organizations shift from arm's length to an integrated continuum of possible relationships (Barlow A., and Lee F., , 2005) , thus creating a seamlessly coordinated supply chain that is a potential source of competitive advantage.
Each business transaction requires a minimum of information exchange (i.e., placing an order, sending an invoice). Information exchanged between organizations that exceed the minimum information is referred to as information sharing.
Information sharing is, however, by its nature an interorganizational activity that depends not only on one's own intention to participate, but also on trading partners' willingness and ability. Information sharing in organizations causes better decisions, capacity allocation, production and materials planning through increased transparency, demand, supply and inventory
Moreover, Information sharing significantly contributes in reducing supply chain costs (Ding H, Guo B., and Liu Z., (2011); Barrett S., and Konsynski B., (1982)), increasing material flow (Lee HL., So KC., Tang CS., 2000) , enabling faster delivery (Zhou H., and Benton WC.,2007), improving order fulfillment rate thus contributing to customer satisfaction (Li S., and Lin B., 2006), and facilitating the achievement of competitive advantage (Chandra C., Grabis J., and Tumanyan A., (2007)).
Many researchers agree that information sharing acts as a key component in achieving a supply chain performance by speeding up the information flow, shortening the response time to customer needs, and providing enhanced coordination and collaboration. (Li S., and Lin B., (2006))
However, although recent studies ((Guo Z., Fang F., and Whinston, AB., (2006); Li J, Sikora R, Shaw MJ, and Woo TG., (2006); Zhou H., and Benton WC.,(2007)) have focused on the benefits associated with information sharing for organizations in the SC context, few studies are focused on how the different combinations of information sharing specifically affect the performance of a supply chain.Provided that the entities of supply chain are aware about how they can benefit from the information sharing, they are more willing to share the necessary information.
Moreover, despite the fact that researchers (Cheng J-H., 2011) concentrate on the actors enhancing information sharing within SC networks, limited attention has been paid to the role of SCI as an antecedent of information sharing.
Thus, SCM seeks to enhance competitive advantage (Kim SW., 2009), through mutually beneficial integrated relationships among supply chain members and arranging resources, perspectives and objectives of different supply chain partners according to a common set of objectives.
According to Stein and Sweat (1998), supply chain partners who exchange information regularly are able to work as a single entity. Lalonde(1998) considers sharing of information as one of five building blocks that characterize a solid supply chain relationship.
The article proceeds in the following manner. In the first section, we briefly present the literature comprising supply chain management (SCM), information sharing, supply chain integration(SCI) and supply chain performance (SCP) respectively. We develop related hypotheses concerning the effect of SCI on information sharing and the effect of information sharing on SCM. Next the hypotheses are tested through the data collected from 140 firms in Tunisia. The data collection and method of analysis are explained in detail. Finally, the research findings are presented and discussed with managerial implications.

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II. RESEARCH FRAMEWORK

Fig. 1 presents the Supply chain framework developed in this research. The framework proposes that SCI will have an impact on supply chain performance both directly and also indirectly through information sharing. SCI is conceptualized as a four-dimensional construct.

A detailed description of the development of the SCI construct is provided in the following paragraphs. Information sharing and supply chain performance are concepts that have been operationalized in the existing literature (Kim SW., 2009; Lee HL., 2000). Using literature support, the expected relationships among supply chain integration, information sharing, and supply chain performance are discussed, and hypotheses relating these variables are developed.

Council of Logistics Management (CLM) defines SCM as the systemic, strategic coordination of the traditional business functions and tactics across these businesses functions within a particular organization and across businesses within the supply chain for the purposes of improving the long-term performance of the individual organizations and the supply chain as a whole.

The benefit of such SC integration can be attained through efficient linkage among various SC activities, and the linkage should be subject to the effective construction and utilization of various SC practices for integrated supply chain. For the achievement of this supplementary management; material, financial, and information flows are managed as decisions are made at strategic, tactical, and operational levels throughout the supply chain.

Thus, it is reasonable to argue that the level and effectiveness of SC integration may influence how successful firms are achieving the intended results.

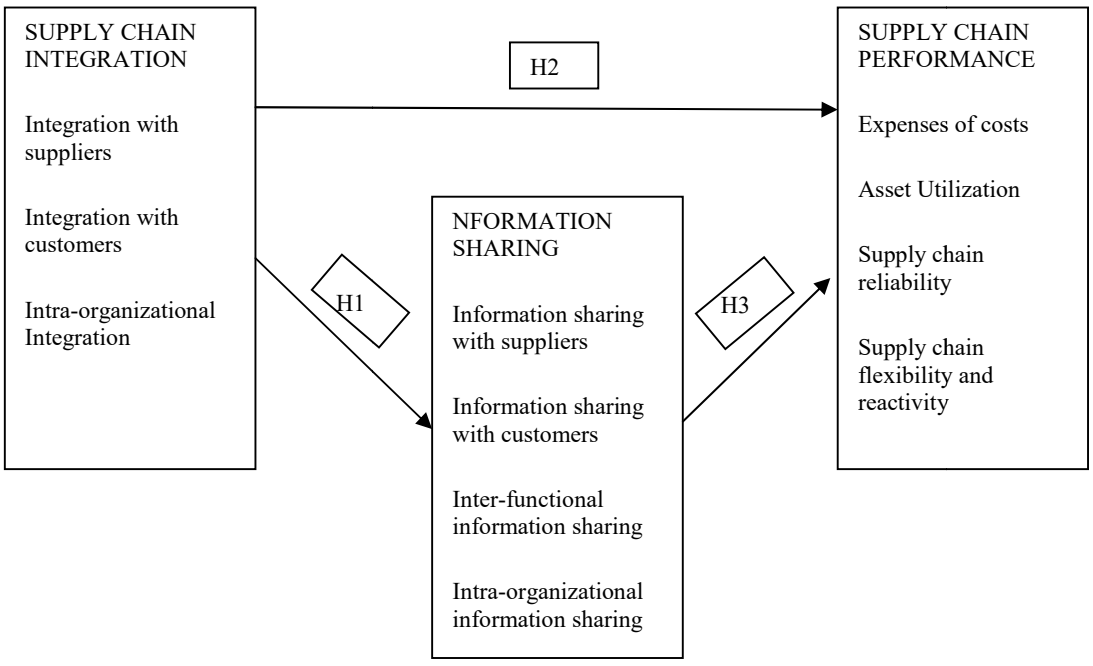

Fig 1. Conceptual Model

A. *The relationship between Supply Chain Integration and Information Sharing*

Although there is a growing body of literature encapsulating definitions regarding SCM, the concept SCM implemented to achieve superior supply chain performance (cost, quality, flexibility and time performance) require internal cross-functional integration within a firm and external integration with suppliers or customers to be successful (Narasimhan, 1997; Swink and Narasimhan, R., 2007; Fuente et al., 2008; Nurmilaakso, 2008; Van der Vaart and Van Donk, 2008).

The theoretical foundation of SCI traces back to Porter's (1985) value chain model, emphasizing the value creating linkages among the members of the chain (Li G., Yang H., Sun L., Sohal, AS.,(2009)). Yet, contemporarily the growing popularity of SCI during the last decade, revealed that linking all supply chain members and aligning partner's objectives to approach a shared system of values is crucial for firms to deliver superior value to the customers. (Cousins PD., and Menguc B.,(2006)).

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The effective SCM is not achievable by any single enterprise, but instead requires a virtual entity by faithfully integrating all involved partners, who should come up with the insightful commitment of real-time information sharing and collaborative management.
The argument above implies that SCI may play a role as an infrastructure for the intensification of information sharing between supply chain members.
SCI directs all relevant parties towards an expanded resource base, to combine core elements from heterogeneous sources of information into a common platform and achieve the sharing of information (Yeung JHY, Selen W, Zhang M, and Huo B., (2009)). In fact, a seamless/hidden map of information flow can be generated by the involvement of various parties of different expertise and competences enabled through the connectedness which SCI promotes. Cheng J-H., (2011).
The research of Roihatul Musyafi, Hamidah Nayati Utami, and Arik Prasetya (2020) was conducted to study the effect of information sharing and information quality toward supply chain integration and farmer business performance (using path analysis method with SPSS 23).
The results of this research indicate that the quality of information is not significant to the integration of supply chain and farmer business performance.
Information sharing has a positive and significant effect toward supply chain integration and farmer business performance, supply chain integration has a positive and significant effect toward farmer business performance.

While the supply chain integration (SCI) varies widely across firms, many companies reported limited success integrating with their immediate trading partners, either suppliers or customers through the sharing of information (Frohlich and Westbrook , 2001).

The above arguments lead to:

H1. Supply chain integration positively influences information sharing.

B. The relationship between Supply Chain Integration and Supply Chain Performance

Previous studies have come to a consensus that SCI improves firm performance (Kim SW., 2009), and competitive advantage (Li G, Yang H, Sun L, and Sohal, AS., (2009)), lowers transaction costs (Zhao BH, Flynn BB, Yeung J., (2008)), enhances flexibility and reduce inventories, (Clark TH, Lee HG,(2000)).
In a recent literature review, Fabbe-Costes and Jahre (2008) report that half of their respondents concluded that supply chain integration was positively related to supply chain performance, i.e., firms with wider SCI enjoyed higher bottom line performance.
Therefore, buyer–supplier relationship architecture can be expected to exert a direct positive effect on formation of a strategic alliance. Moreover, enhanced supply chain coordination by means with supply chain partners, in turn, can positively influence supply chain performance.
The SCI framework developed in this study proposes that SCI has a direct impact on the SCP. For example, SCM practice is expected to increase an organization's market share, return on investment (Shin H, Collier DA, and Wilson DD., 2000), and improve overall competitive position as well as SCP(Carr AS., and Person JN.,(1999) ; Stanley LL, Wisner JD., (2001)).
Of the same, strategic supplier partnership can improve supplier performance and increase the level of responsiveness of the supply chain,(Power DJ, Sohal A, Rahman SU. ,(2001)).
Feng et al.,(2017) offer an inventive experimental examination of the influence of SCI on the performance of automobile manufacturing firms in China.
As an energetic competence, SCI positively links to operational performance. Li, N.,(2015) also discloses the effect of SCI on the operational performance of manufacturers in diverse countries.
The research of Wissawa Aunyawong, Preecha Wararatchai, and Chattrarat Hotrwaisaya (2020) have aimed to study the effect of supply chain integration (SCI) on supply chain performance (SCP) by reflecting the mediation effects of supply chain collaboration (SCC) and logistics flexibility (LGF). The research design was based on quantitative explanatory study. Using a confirmatory factor analysis, the study examined interactive dimensions of SCP, SCC, LGF, and SCI. The results supported that SCI enabled auto-parts manufacturing firms to improve SCP successfully, and that SCC and LGF played an important role in mediating the effect of SCI on SCP.
Therefore, this study explicitly investigates the influence of collaborative and cooperative, trust based relationships enabled through the SCI, to achieve higher SCP. A positive relationship between supply chain integration and supply chain performance can be proposed:

H2. Supply chain integration positively influences supply chain performance.

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C. The relationship between Information Sharing and Supply Chain Performance

The flow of information between parties in a supply chain is crucial for carrying out an effective and efficient transition of consignments. To support the flow of information, diverse communication systems exist.
Information sharing can significantly improve the performance of a supply chain. Additionally, companies can redesign their supply chain strategies through information sharing to increase profit.
Many studies demonstrate the positive impact of information sharing on a supply chain performance. Cachon and Fisher (2000) and Lee et al. (2000) analyze the benefits of sharing real time information on demand and/or inventory levels between suppliers and customers. Lee, So, and Tang (2000) analyze the benefits of demand-side information sharing with a two-echelon supply chain. They suggest that this kind of information sharing alone could provide significant inventory reduction and cost savings to the manufacturer.
Among the information sharing outcomes; increased coordination (Kwon WG, Suh T., (2004)), reduced uncertainty (Li S, Lin B.,(2006)) faster material flow, higher order fulfilment (Lin F, Huang S, Lin S.(2002)).
Therefore, Information sharing means supply chain companies' willingness to give accurate, timely, related and common information to each other in order to create harmony at all levels of the supply chain.
The results of research of Haitham M. Alzoubia and Ramakrishna Yanamandrab (2020) have provided some very interesting insights about the role of information sharing in agile supply chain to achieve a better supply chain performance in medium sized manufacturing companies in UAE (United Arab Emirates).
In addition, the results of Rungarun Khasasinalso (2020) exposed that supply chain information integration has a positive association with the supply chain performance and these outputs are matched with the output of Wei, Ke (2020) who also examined that the information integration of supply chain has enhanced the performance of supply chain.
However, some studies (Sezen, 2008), implicitly suggest information sharing as a predicting factor of increased supply chain performance, but few studies explicitly examine the impact of information sharing on SCP.

Hence, according to this theoretical framework we propose the following hypothesis:
H3. Information sharing positively influences supply chain performance

III. RESEARCH METHODOLOGY

The methodology initially involves the establishment of the construct's domain through a literature review followed by the identification of a pool of items to measure the constructs forming the research model. Rigorous statistical analysis was used to determine the validity and reliability of the supply chain integration; information sharing and supply chain performance. The research framework in Fig. 1 and the associated hypotheses were then tested using structural equation modelling.

A. The sample and the data collection tool

The data needed for field search has been collected through survey research method, which is described and analyzed in more detail in the following sections.

The sample frame of the study consisted of a range of industries including; telecommunications, computer and electronics, communication, software, manufacturing and machinery, service technologies, food, and material industries.Further, the data used to test the hypotheses are drawn from a varied spectrum of Tunisia's industries.

The sample consisted of 140 medium and large sized firms in total, residing in Tunisia. This study sought to choose respondents who can be expected to have the best knowledge about the operation and management of the supply chain in his/her organization.
Based on literature and recommendations from practitioners, it was decided to choose logistics managers who are at higher managerial levels as respondents for the current study.
The general managers of the firms or logistics managers were contacted by telephone as a pre-notification of the survey and were announced about the imminent arrival of the survey as well as the aim of the study. Hence this involved the assurance of confidentiality and the anonymity of the responses.

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B. Measures

The basic requirement for a good measurement is content validity, which means that the measurement items in an instrument cover the major content of a construct (Churchill GA., 1979). Content validity is usually achieved through a comprehensive literature review and interviews with practitioners and academicians.
The items for SCM practice were generated based on previous SCM literature. KIM(2009).In fact, SCI is considered in three levels in this study following the study of Kim (2009): integration with customers, integration with suppliers and inter-organizational integration.
In order to evaluate the integration with suppliers six items are placed in the survey, covering the partnership level, collaboration, participation, and involvement of suppliers throughout the supply chain activities of the firm.
For the measurement of integration with customers we utilized seven questions focusing on the communication level, automation and feedback systems, and network linkages to achieve information flow from and to the customers.
Regarding intra-organizational integration, eight questions are asked encapsulating the functional systematic integration level within the organization, the access to real time data among departments, and the scheduling of inter-functional meetings and plans.
Consequently, we developed a scale of twenty two items categorized in four dimensions adapted from the studies of Sezen(2008) and Eng(2006). The four categories are; information sharing with customers, information sharing with suppliers, inter-functional information sharing and intra-organizational information sharing.
The scale consists of five items for the measurement of information sharing with suppliers which include the flow of information regarding demand forecasts, capacity planning, order processing and manufacturing plans with suppliers. For the measurement of information sharing with customers we asked five questions focusing on the sharing of demand forecasts, capacity planning, order processing and manufacturing plans with customers.
Moreover, based on the study of Eng(2006), we asked seven questions regarding the inter-functional information sharing addressing to what extent functions within the organization share information on new products, and processes developed the possibility of departmental managers in accessing supply chain information, the alternative strategies for improved coordination among departments.
Finally, with regard to intra-organizational information sharing we asked five questions encapsulating the degree of communication efforts and procedures for sharing supply chain experiences and skills across departments.
Accordingly SCP is categorized under four dimensions from the research of Liu (2009), namely expenses of costs (8 items), utilization of assets (6 items), supply chain reliability (7 items) and responsiveness and flexibility (5 items).
All the measurement constructs were estimated through respondents' perceptual evaluation on a seven-point Likert scale, which was anchored by the end points of "strongly disagree" (1) to "strongly agree" (5).

C. Data Analysis and Results

The following section will discuss statistical analysis used to determine the validity and reliability of each construct.

C.1 The Exploratory Factor Analysis

Before applying a Principal Component Analysis on the items making up each variable, it is necessary to test the normality of the distribution. This step presents one of the conditions inherent to the application of the Principal Component Analysis.

An examination of the asymmetry and concentration coefficients shows that all the items measuring the three variables follow the normal distribution. Indeed, the Symmetry coefficient (Skewness) is ≤ / 3 / and the flattening coefficient (Kurtosis) is ≤ / 8 / for the variables supply chain integration, information sharing and supply chain performance. The items were subject to exploratory factor analysis in SPSS 21.00. The best fit of data was obtained with a principal component analysis utilizing varimax rotation.

For SCI, a factor analysis was conducted using the 21 items that measure the 3 dimensions.
For simplicity, only loadings above 0,50 are displayed. However, all elements loaded on their respective factors have loads above 0,50. Therefore, no item is to be eliminated.

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The sharing information construct was initially represented by 4 dimensions and 22 items. A factor analysis indicated that four items had a crossload of less than 0,5.
Moreover, When the SCP was factor analyzed; five factors emerged with a non-significant cross loading.
These items have been eliminated and factor analysis was performed on the remaining items.A total of 9 items are removed, and the results of the factor analysis revealed that the remaining items are naturally gathered in eleven factors of which three belong to SCI, four are part of information sharing and the final four constitute SCP.
We created a correlation matrix as shown in Table 1. Moreover, Cronbach's Alpha values representing reliability of each variable are given by spss 21.00. These values are shown on the diagonal of table 1.
The reliability values for all constructs are all greater than 0.70, which are considered acceptable (Nunnally J., 1978).The correlation analysis that all of the constructs each differing from each other as a factor, are significantly related to each other when one to-one correlations are considered; and the relatively low-to-moderate correlations provide further evidence of discriminant validity.
According to these analyses, the factors of the variables are sufficiently valid and reliable to test hypotheses.

Table 1. Correlation Coefficients and Cronbach's Alpha values

Corrélations

	integrationfrs	integrationcl	integration	infofr	infocl	infointer	infointra	cout	actif	fiab	reac
integrationfrs	α=0,995										
integrationcl	,475**	α=0,998									
integration	,259**	,232**	α=0,994								
infofr	,328**	,659**	,357**	α=0,992							
infocl	,500**	,922**	,152	,776**	α=0,971						
infointer	,500**	,922**	,152	,660**	,959**	α=0,743					
infointra	,318**	,330**	,172*	,081	,150	,150	α=0,995				
cout	,193*	,060	-,067	,037	,054	,037	,293**	α=0,985			
actif	-,057	-,078	-,059	-,101	-,108	-,108	,012	,059	α=0,920		
fiab	,017	,080	-,050	,036	,020	-,003	,279**	,359**	,704**	α=0,742	
reac	,227**	,060	-,028	,076	,053	,017	,334**	,884**	,123	,488**	α=0,910

**. the correlation is significant at the 0.01 level (bilateral).
*. the correlation is significant at the 0.05 level (bilateral)..

C.2 Convergent and discriminant validity

The reliability and average variance extracted (AVE) of the second-order factors namely; supply chain integration (SCI), information sharing and supply chain performance (SCP) are represented in Table 3.
All values highlight the fact that the second-order factors are above the required value which is suggested in the literature. In fact, all values exceed the threshold of 0,5 (Fornell and Larker, 1981).

Table 2. Reliability Table of Second Order Factor Analysis

Variable	Average variance extracted (AVE)
CL (SCI)	**0,512**
PI(IS)	**0,783**
PCL(SCP)	**0,607**

Concerning the discriminant validity, the square roots of average variance extracted are inscribed in the diagonals; the other values are the correlations between the dimensions. These outputs are listed in Table 3.

Table3. The Discriminant Analysis

	SCI (CL)	IS (PI)	SCP(PCL)
SCI(CL)	**0,715**		
IS(PI)	**0,299**	**0,884**	
SCP(PCL)	**0,091**	**0,058**	**0,779**

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We can conclude that the discriminant validity is satisfactory (the square root of AVE of each dimension is greater than the correlation coefficients displayed with the other dimensions). This implies that the constructs and their measures can be adequately discriminated against.

C.3 Results for the structural model

The theoretical framework illustrated in fig. 1 has three hypothesized relationships among the variables sci, information sharing, and supply chain performance.
Fig. 2 displays the path diagram resulting from the structural modeling analysis using AMOS.

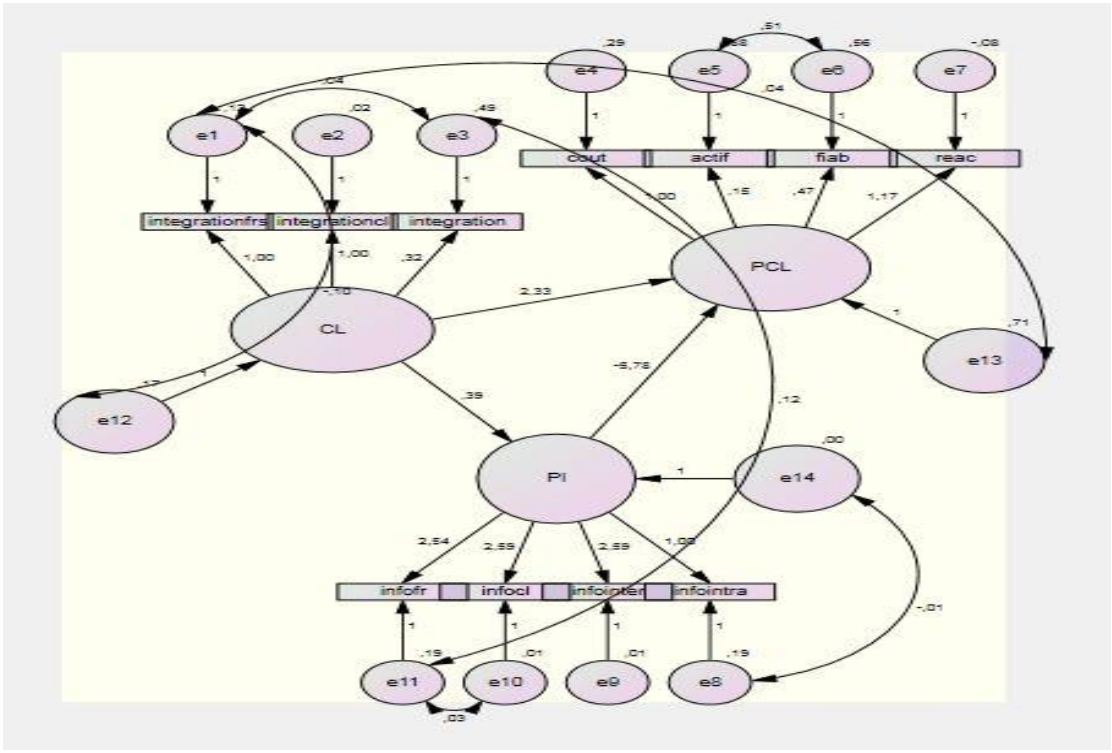

Fig 2. Proposed models of Supply chain integration (CL), Information Sharing (PI), and supply chain performance(PCL).

The results in table 4 exhibit that all the measurements have significant loadings to their corresponding second-order construct. Overall, the model is satisfactory with GFI =0,824, AGFI = 0,694, NFI=0,853 and CFI=0,874. The RMR is only 0,042, which is very good.

Table4. Presentation of adjustment indices of the global model

Indices	CMIN/DF	GFI	AGFI	RMR	CFI	NFI
values	5,413	0,824	0,694	0,042	0,874	0,853

The results of the proposed structural equation models analysis in Table 5 indicating support for all the hypotheses. The results support Hypothesis 1, which states that Supply chain integration positively influences information sharing.
The standardized coefficient is 0,31 which is statistically significant at P <0,05 (t = 3,11>1,96). The statistical significance of Hypothesis 1 confirms that SCI can have a bottom-line influence on the information sharing. The implementation of SC may directly improve the transfer of reliable information in real time both through partners in the supply chain outside and in the functions of the individual organization.
Hypothesis 2 is also supported which indicates that supply chain integration has a direct impact on supply chain performance.

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The standardized coefficient is 1,05 which is statistically significant at P <0,05(t = 2,14>1,96). The implementation of various SCM practices, such as strategic supplier partnership, customer relationship building, may provide the organization a competitive advantage on cost, quality, dependability, flexibility, and time-to-market dimensions.
Therefore, the implementation of a supply chain can directly improve the reliability, responsiveness, speed, quality, cost and flexibility of delivery in the long-term supply chain.
The results also indicate that higher levels of information sharing may lead to improved supply chain performance, thus confirming Hypothesis 3. The standardized coefficient is 4,53 which is statistically significant at P <0,05 (t = 2,01>1,96).
The results also show that supply chain performance is more influenced by information sharing (B = 4,53) than by supply chain integration (B =1,05).
This indicates that SCI produces an information sharing environment to the organization in the first place, and information sharing will, in turn, lead to improved supply chain performance.
In literature, supply chain integration, mostly, has been linked directly to supply chain performance. The findings of this research indicate the presence of an intermediate measure of information sharing between supply chain integration and supply chain performance.
The study focuses on the causal relationships between SCI, information sharing and supply chain performance and ignores the possible recursive relationships.

It is possible that enhanced information sharing and increased performance could have improved the levels of SCM practice. The increased competitiveness of a firm may enable a firm to implement a higher level of SCM practice due to the need to outperform its competitors constantly and keep its competitive position in today's dynamic business world.

Table5. Results for proposed structural equation model

Relationship	Student Test	statistical significance	Hypothesis
H1: CL→ PI	**3,11**	**0,000.***	**Supported**
H2 : CL→ PCL	**2,14**	**0,000.***	**Supported**
H3 : PI → PCL	**2,01**	**0,000.***	**Supported**
*** : P < 0,05**			

IV. Discussion and Conclusion

It can be seen that all three hypotheses are supported, resulting in a positive triangular relationship between SCI, information sharing and SCP. The, literature has implicitly indicated that integrative relationships between supply chain members are an important unit of analysis for explaining the flow of information and its patterns (Cousins PD, and Menguc B.,(2006); Barlow A, and Lee F., (2005); Jayaram J, Tan KC, and Nachiappan SP., (2010); Sezen B.,(2008)), as well as improvements on supply chain performance (Flynn BB, Huo B, and Zhao X.(2010); Iyer KNS, Germain R, and Claycomb C.(2009); Kim SW.,(2009)).

Moreover, Green and Shaw expressed that an important strategy for managing an integrated supply chain is information sharing between trading partners. One of the main benefits of information sharing is inventory reduction.In the same context, Koçoglu et al (2011) suggested Information sharing significantly reduce supply chain costs, improve communication with partners, increase the flow of materials, fast delivery, order fulfillment, and ultimately improve customer satisfaction, improve coordination and facilitate access to the competitive position.

Therein, the results constitute an indication towards supporting the suggested relationships.

SCI exert a significant impact on the performance measures market share, return on assets, the delivery reliability, responsiveness, speed, quality, cost and flexibility of the supply chain. The results suggest that JIT considerations, specifically buyer–supplier relationship architecture, can improve the capability to form strategic alliances and thereby improve key performance measures of a supply chain.
Therefore, Information sharing can significantly improve the performance of the supply chain.
The results show that integration with suppliers and customers strengthens confidence-based relationships, examines demand forecasts and decisions to replenish stocks by retailers and establishes long-term contractual

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arrangements.On the other hand,the intra-organizational integration creates a systematic approach to process the information gathered from outside and a division of labor among the organization' employees thus facilitating the flow of information throughout the organization.
Our research reveals the following suggestions regarding the improvement of supply chain performance (SCP) through supply chain integration (SCI) and information sharing;

- Taking into account the forecasted demand and accordingly making the manufacturing and distribution plans,
- Providing a IT infrastructure which enables the real time diffusion of information within the organization,
- Arranging internal and external meetings which concentrate on the latest situation of supply chain activities and relationships.

V. RESEARCH IMPLICATIONS AND LIMITATIONS

Our study is not without limitations. First, the study also suffers from the common limitations related to methodological choices, including the problem of sample size issues and the use of a single respondent from each firm. This, however, presents an opportunity for further research.
Second, there was not an industrial separation while evaluating data; results may differ for different industries. Despite these limitations this study provides important implications in the context of a developing country from theoretical and practical perspectives.
The findings of this research support the view that SCI has a discernible impact on information sharing and supply chain performance.
It should be noted that the SCM practices may be influenced by contextual factors, such as the type of industry, firm size, a firm's position in the supply chain, supply chain length, and the type of a supply chain.
For example, the level of information quality may be influenced negatively by the length of a supply chain. Information suffers from delay and distortion as it travels along the supply chain, the shorter the supply chain, the less chance it will get distorted.
While our study relied on arguments for sharing information, other studies could examine alternative theoretical frameworks to study this important phenomenon to further contribute to theory-building in supply chain management.
Future research should revalidate measurement scales developed through this research. Future research can expand the domain of SCI by considering additional dimensions such as geographical proximity, cross-functional coordination and logistics integration which have been ignored from this study.
In addition, Future studies can also examine the proposed relationships by bringing some contextual variables into the model, such as organizational size and supply chain structure. For example, it will be intriguing to investigate how SCM practice differs across organization size.
Finally, to determine if the model in Fig. 1 has the best fit, alternative models can be proposed in other future research by cutting one of the links between the constructions at a time. More precisely, we consider SCI and information sharing as independent constructions; the indirect link between SCI and the performance of the logistics chain will be abandoned and the direct link between information sharing and the performance of the logistics chain will be eliminated.

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