

The Influence of Supply Chain Integration on Supply Chain Performance in Private Firms of Bangkok: Moderating Role of Leadership

Rungarun Khasasin^{#1}

^{#1}*Faculty of Business Administration, Thai-Nichi Institute of Technology 1771/1 Phatthanakan Rd, Suan Luang, Bangkok, Thailand*

Corresponding author: E-mail: lek_rungarun@yahoo.co.th, rungurun@tni.ac.th

Abstract-The performance of the supply chain is the necessary element for the success of the organization because it improves the business processes that could improve the business performance and also gain the intention of the regulators and researcher nowadays. Thus, present article aims to analyze the impact of supply chain integration such as internal integration, information integration and customer integration on the supply chain performance of the private firms in Bangkok, Thailand. The investigation of the moderating role of leadership among the nexus of supply chain integration and supply chain performance is also part of the purpose of the current study. The employees of private firms that are dealing with the process of the supply chain are the respondents from whom data has been gathered by using survey questionnaires. The effective statistical tool has been used for analysis purpose named as smart-PLS. The results indicated that positive along with significant association among the nexus of all the supply chain integrations and supply chain performance. The findings also exposed that the leadership has been significantly moderated among the nexus of supply chain information integration, supply chain customer integration and supply chain performance. These outcomes are suitable for the regulators who want to develop the regulations related to the performance of the supply chain that could increase the performance of the organization.

Keywords; *Supply chain integration, Supply chain performance, Customer integration, Information integration, Internal integration*

1. Background

The world has become a global village. The rapid technological developments in the world have results to remove the barriers between the countries. The customer with a single click can have it's required from all around the globe. The competition has also no boundaries. This technological transformation has a direct effect on business in the world. The competition in the business world has also increased day by day. In the modern world competition, the only way of survival is to attain a competitive advantage. The competitive advantage will

differentiate one's business with others in the market. The organization put their maximum efforts to attain a competitive advantage. Irrespective of the matter the organization is the product or the service-oriented the prime aim of all the organizations is to attain a competitive advantage. Whether the firm is a product or the service-oriented the concept of the supply chain can't be ignored. The performance of the supply also plays a vital role to improve the organization performance. There is an association between firm performance and the SCP.

In early ages, the supply chain was considered as only the transportation but with the passage of time, the concept of the organizations reverted regarding the supply chain. Literature from the supply chain witnessed that the importance of the supply chain is increasing at a rapid pace. The supply chain management process has an impact on the entire organization process. To improve the SCP it's necessary to improve the SCP. The SCP boot or reduce the entire organization performance. There is an association between the SCP and the firm production performance.

The supply chain specialists in the world are looking forward the ways to improve the SCP. With the passage of time, the literature on the SCP is increasing at a rapid pace. The supply chain professionals are showing their keen interest in the supply chain. In past, the term integration was not commonly used in the firms as well as in the firm's employees also. It's not considered good in the organization when its employees interact with the other one. With the passage of time, the term integration is also getting more importance.

As competition in the global economy grows, the question for better ways to profit from staying important or outsider in competition expands. This has encouraged supply chain management and experts to see convergence as a potential strategic approach for developing strategic relationships that can boost SCP and minimize costs and lead times. Types in most industrial companies, typically referred to as vertical inclinations, with the focus business being entirely or partly controlled by its product suppliers. However, businesses recognized this model's in performance and rigidity in reacting to increasing

consumer demands, which made them turn their models into a horizontal model in which alignment with other businesses to construct a high-value chain was pursued. The nature and engagement of elements inside a supply chain therefore have considerable importance [1].

The incorporation of the supply chain (SCI) is defined by the circumstance in which supply chain participants cooperate and function together to enhance performance and profitability while satisfying consumer requirements. Companies that incorporate their knowledge and inventory movements contribute to optimum supply chain management [5]. This means aligning corporate processes internally within an organization and with its supply chain stakeholders so that prices can be minimized, consumer satisfaction can be improved and the whole supply chain can be distributed to all partners [28].

While the literature has a significant impact on the benefits of SCI, the core design elements contributing to enhanced results have not been completely established. The findings also revealed differences as to whether convergence contributes to greater performance in the supply chain. The goal of this analysis is to make important insights such as identifying main success metrics for the evaluation of supply chain integration. This research describes four clients, vendor, internal and information development SC integration systems. Customer integration requires technical competences and companies to provide clients with the greatest available offerings by partnership building [28]. Supplier integration applies to the procedures and measures involved in knowledge exchange and collaborative preparation with main suppliers to meet specified targets and priorities with advantages of cost savings, consumer loyalty, and faster loading times [20]. Internal integration is the basis of other forms of integration and described as the connection of departmental business processes in an enterprise with a strategic fit for improved performance.

2. Hypotheses development

The increased degree of competition that exists between companies worldwide has led to more than just the formulation and execution of strategies, but also to pursue alliances with other firms which lead to a competitive advantage on the market [32]. Over the years, manufacturing businesses have been focusing on implementing plans to reach the much-needed degree of transformation and organizational performance of the business.

However, businesses have discovered that developing plans along with combining domestic services, vendors and consumers in a business partnership are the best way to gain a strategic advantage [16]. This created the SCI platform as a practice for businesses who aim to boost their firm performance by creating stronger connections between other links in the supply chain. The transition

brought organizations from their prior vertical integration initiatives into an alliance of businesses operating together to source, develop and deliver goods and services to their clients. As a definition, SCI discusses the coordination between the internal functions of a corporation and its external operations in the supply chain that contribute to organizational performance [3].

SCI has been found to enhance SCP. According to Gunasekaran, Patel [17], a report undertaken by 125 development companies in the United Kingdom showed that SCI and exchange of knowledge led to better performance in the supply chain. A study showed that communicating with the vendors and clients of a company along with the strategic approach of the business would contribute to stronger operating performance [4]. The interaction between consumer, retailer and internal business processes related to the supply chain was also studied [30].

They analyzed 122 production organizations based in the United States and noticed that internal integration is the key cost-saving technique in the supply chain, while supplier integration increases organizational performance. Some success metrics, such as customer experience growth, internal productivity, the resilience of demand and product production [8] are all measures that businesses are working to change and do so through SCI.

As this thesis focuses on SCI in the food business, where food quality and food protection are two important customer components [24]. This has prompted businesses to incorporate and expand the knowledge they have exchanged with their vendors to ensure that the entire supply chain is transparent to allow foodstuffs to be tracked [31]. Many businesses are seeking to penetrate new markets to improve their profitability. This prompted them to search for stronger strategic partnerships and give them a distribution forum for a broader consumer network. The businesses aim to build value-added operations that would minimize running expenses and improve profitability. Internal and external convergence of their systems will be important.

The world in which companies work is marked by rapidly evolving consumer demands, which force companies to enter into alliances to adapt to external factors [18]. Meeting consumer demand by promotions will also require the convergence of business processes to ensure the supply of goods [33]. Other drivers of globalization are foreign rivalry from other businesses, entrance into new markets and international law and regulations pushing the convergence of the supply chain among companies [38].

Supply Chain Incorporation Opportunities and Obstacles (SCI)

Many experiments have shown that the optimization of the supply chain contributes to greater financial results and profitability. By analyzing 195 companies in China

and realized that integration of the supply chain is a major contributor to their financial success, stressing the role of management in utilizing the strategic relationships of SCI to raise financial figures [9]. Studies also proposed that certain businesses with good internalization of business operations provide the company with appropriate criteria to boost its financial performance [29]. When participants of a supply chain are interconnected and contact flows are correctly applied, they can respond easily to certain business shifts, whether long or short term [11] and thereby increase their versatility. SCI was found to minimize lead times between processes and increase product availability [26]. SCI and collaborations entail the win-win scenario in which businesses, whether procurement, distribution or service costs, search for the right way to minimize expense across the supply chain, improving the viability of each component of the supply chain [35]. It is also obvious that SCI gives companies various advantages.

The willingness of a business to align its operations internally and externally through its supply chain partners allows it to satisfy the changing customer's demands. While businesses are confronted with significant obstacles in integrating their supply chains internally and with other supply chain partners [18], the hurdles will only help to boost their performance by improving their linkages within and beyond their market climate. If businesses do not trust their supplier suppliers, they hold an arm's length role in the supply chain with their relations and partners [10]. Integration is often strongly impeded by competing for supply chain priorities and desires. There are often competing priorities in business with separate teams having various priorities and targets, thus preventing a smooth coordinated system. Another significant danger to alignment with the supply chain is that trade secrets could be exposed and leaked to competitor firms, which certain organizations may be costly, such as knowledge. The threat of exposing and selling trade secrets to other businesses, which may be cost-intensive to some entities, is a significant concern associated with penetration into the supply chain, because this intelligence may be used to gain a comparative advantage [34]. An organization's culture is often a significant element and is a deterrent to inclusion in the supply chain. Organizations find it impossible to adjust their procedures and specific approaches to do it when they choose to work with other businesses in the supply chain [2]. In addition, internal constraints within an enterprise are generally the most significant variables preventing any future successful partnership building with other supply chain members [13]

Transactional leadership means the conduct depends on a mechanism through which the leaders recognizes or punishes subordinates depending on their contributions and success [27]. It can be described as leaders that

concentrate on executing objectives and fulfilling expectations; generally, they give no heed to the needs of the business. Transactional leadership has three characteristics. Next, transactional leaders collaborate with subordinates to strive to accomplish results. Secondly, these benefits are paid for jobs. Finally, representatives are open to the subordinates' self-interests. They are often an interaction or agreement that is an integral feature between superiors and subordinates.

Members have two essential characteristics: the transformational strategy and transactional government [25]. A bureaucratic leader is a transaction leader and a transition leader is a motivational leader. Both organizational models have an essential impact on the performance of the supply chain. Studies proposed the convergence between leadership style and behavioral transformation.

Productivity and sustainability of companies is a core consideration in the strategic approach of SCP [36]. Every day, supply chain management, research and growth becoming more and more relevant. Different approaches to supply chain management are apparent in the literature [15]. However, there is still a void, which needs to be filled to improve SCP, especially in UK companies. In the UK, a study showed that about 40% of the UK's gross domestic product (GDP) was used in the supply chains. Such results and trends also demonstrate a significant tangible effect on business properties and the UK economy from supply chain management.

Leadership often has a strong correlation with the success of the supply chain. For every organization, leadership is quite necessary [37]. Efficient leadership leads workers to allow efficient and productive usage of capital. It improves employee morale, which eventually has a beneficial impact on supply chain results. However, the right path is offered to two types of leadership: transformational leadership and transactional leadership [22]. Auditing standards and leadership are hence more essential to strengthen the performance of the supply chain.

The literature on the performance of the supply chain coping with various methods and techniques for effective supply chain management is very comprehensive [26]. However, in unusual circumstances, some research records the convergence of audit activities and leadership to enhance SCP [14].

The literature describes SCI's main steps as internal integration, product integration, consumer integration and knowledge integration. This research is therefore intended to examine their effect on the performance of the supply chain. Internal integration is the organized and systematic coordination of business processes and roles in an organization that guarantees optimal performance for the enterprise. According to [21], before external integration is sought, SCI initiates internal integration of the

numerous divisions and functions of an organization. In their study, [13] also showed that internal integration increases organizational performance by minimizing overhead and restricting teams' willingness to pursue decisions that might distort the organization's strategic objectives.

Supplier incorporation is a circumstance where vendors engage in the company's main decision-making processes with knowledge exchanged on market projections, supply plans and inventory levels. Focal businesses are collaborating with main vendors to optimize the advantages of partnerships such as improved lead times, creativity and quality [7]. The convergence mechanism between consumers and suppliers should be based on improving connections for all parties for their mutual benefit. The key push to align manufacturers with consumers should be ways to enhance or best support consumer service.

The incorporation of clients into the supply chain offers businesses the ability to provide an understanding of customer needs and to best represent them. The incorporation of consumers in the supply chain relies on drawing from consumer's knowledge such as their shopping pattern, their preferential place for goods and their willingness to acquire items that can be included in successful production or customer-sales decisions [40]. Through collaborating with their clients, businesses can react rapidly and effectively with their consumers through enhancing order fulfilment and visibility.

The sharing of knowledge was found to be a requirement for businesses aiming to connect with their clients and suppliers. However, information incorporation is not simply restricted to technological performance and implementation. It needs feedback and role-playing of individuals and technical processes to produce, sort, process and distribute knowledge in the appropriate position at the appropriate time for successful decision-making. Where data are transmitted throughout the supply chain, data may be gathered in real-time as stronger connections with other supply chain participants are then produced, which will result in better customer support and better demand forecasting.

Integration of the supply chain was shown to increase the chain's performance, but companies must have specific standards for what they want to test. Any basic metrics such as higher performance, inventory rates and better lead times are available. In describing the effects of the supply chain [24], the direct gain of evaluating supply chains such as rapid response times, on-time distribution, lowered transportation costs, as well as other indirect advantages, such as consumer loyalty and retention rates, are highlighted. The performance metrics can concentrate on the overall SCP taking into consideration financial factors, customer experience, and reliability and success indicators.

Development versatility is the capacity of manufacturing industries to alter production plans rapidly, responding to external challenges or opportunities. Output resilience has been seen to increase the performance of manufacturing companies and is also seen as the efforts of manufacturing companies to adapt with reduced costs to changes in the environment. Stock turns are often an essential indicator of the supply chain's performance. Companies continuously focus on optimally controlling their stock levels and ensuring that they boost inventory performance as it contributes to close to 50 percent of the overall valuation of business assets [11]. Meeting consumer expectations as advertised and on schedule contributes to faster delivery. Logistics prices are the most sought-after for indicators supply chain operators to concentrate on output assessment. The overall cost of logistics is the overall expense of each company's supply chain service. The study has shown that the end outcome is improved profitability by that logistics costs.

Many research's shown that convergence increases the performance of the supply chain, but several of these research neglect the effect on particular performance metrics of such individual variables. Many integration studies [8] neglect even the function of knowledge exchange as integration buildings. Our research aims to analyses the interaction between the four integration structures and the performance of the supply chain. The research also discusses other success metrics, such as organizational performance, inventory purchases, and order fulfilment pace, which were analyzed together in SCI studies.

H1: Supply chain internal integration has a positive association with supply chain performance.

H2: Supply chain customer integration has a positive association with supply chain performance.

H3: Supply chain information integration has a positive association with supply chain performance.

H4: Leadership moderates among the nexus of supply chain internal integration and supply chain performance.

H5: Leadership moderates among the relationships of supply chain customer integration and supply chain performance.

H6: Leadership moderates supply chain information integration and supply chain performance association.

3. Methodology

The purpose of the existing article is to analyze the impact of supply chain integration such as internal integration, information integration and customer integration on the supply chain performance of the private firms in Bangkok, Thailand. The investigation of the moderating role of leadership among the nexus of supply chain integration and supply chain performance is also part of the purpose of the current study. The

employees of private firms that are dealing with the process of the supply chain are the respondents from whom data has been gathered by using survey questionnaires. Purposive sampling has been adopted by the study to select the respondents while surveys were forwarded to them by personal visits. A total of 510 surveys were forwarded but received only 290 after fifteen days that has the rate of response about 56.86 per cent. The effective statistical tool has been used for analysis purpose named as smart-PLS due to the complex framework has been used by the study and the hypotheses testing is the goal of the study [19]. This study has adopted the supply chain performance (SCP) as a dependent variable that has six items while leadership (LS) has been taken as the moderating construct and has seven items. In addition, existing articles has used three predictors named as supply chain internal integration (IntI), supply chain information integration (Infl) and customer integration (CI) that has five, seven and five items respectively. These are highlighted in Figure 1.

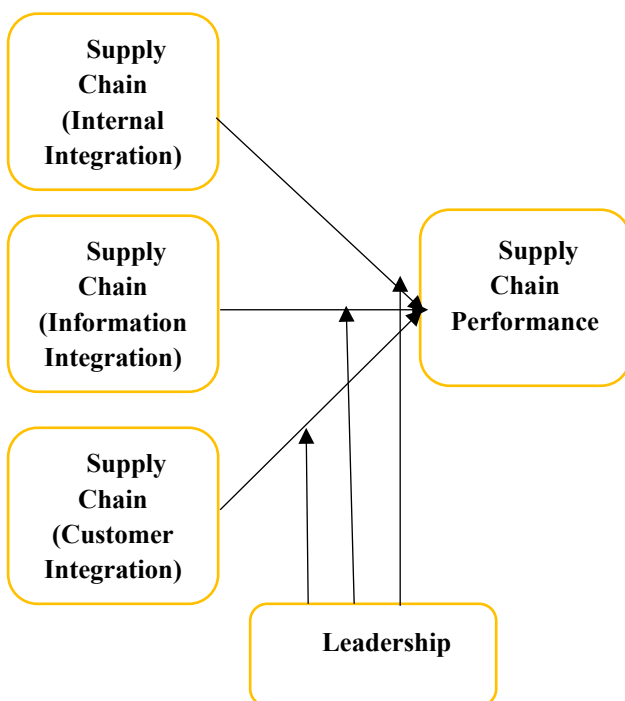


Figure 1. Theoretical model

4. Results

The finding section of the present article shows the measurement and structural model assessment. Firstly, it shows the measurement assessment model that includes the assessment of convergent and discriminant validity. Firstly, the current article deals with the convergent validity that shows the relationships of the items. The statistics exposed that CR and Alpha values are higher than standard such as 0.70 while loadings and AVE are also higher than the standards such as 0.50. These values

show valid convergent validity and high items relationships. These values have been shown in Table 1.

Table 1. Convergent validity

Items	Loadings	Alpha	CR	AVE
CI2	0.695	0.835	0.890	0.671
CI3	0.897			
CI4	0.769			
CI5	0.898			
Infl1	0.832	0.931	0.944	0.707
Infl2	0.863			
Infl3	0.845			
Infl4	0.811			
Infl5	0.876			
Infl6	0.861			
Infl7	0.794			
IntI1	0.938	0.944	0.958	0.820
IntI2	0.855			
IntI3	0.937			
IntI4	0.854			
IntI5	0.939			
LS1	0.556	0.895	0.909	0.600
LS2	0.897			
LS3	0.925			
LS4	0.558			
LS5	0.865			
LS6	0.924			
LS7	0.563			
SCP2	0.823	0.852	0.900	0.693
SCP3	0.831			
SCP5	0.854			
SCP6	0.821			

Secondly, the current article deals with the discriminant validity that shows the variables relationships and also the part of the measurement model assessment. Firstly, it checked by using cross-loadings and Fornell Larcker and the statistics exposed that values of linkage with variables itself are larger than the values of linkage with other variables. These values show valid discriminant validity and low relationships among variables. These values have been shown in Table 2 and Table 3.

Table 2. Fornell Larcker

	CI	Infl	IntI	LS	SCP
CI	0.819				
Infl	0.365	0.841			
IntI	0.414	0.404	0.905		
LS	0.432	0.558	0.492	0.775	
SCP	0.721	0.421	0.510	0.436	0.832

Table 3. Cross-loadings

	CI	Infl	IntI	LS	SCP
CI2	0.695	0.207	0.284	0.329	0.423
CI3	0.897	0.369	0.408	0.351	0.723
CI4	0.769	0.245	0.247	0.334	0.501
CI5	0.898	0.340	0.387	0.410	0.655
Infl1	0.308	0.832	0.298	0.451	0.330
Infl2	0.286	0.863	0.346	0.482	0.353
Infl3	0.279	0.845	0.311	0.444	0.321
Infl4	0.238	0.811	0.359	0.492	0.302
Infl5	0.323	0.876	0.364	0.486	0.389
Infl6	0.378	0.861	0.376	0.476	0.417
Infl7	0.314	0.794	0.312	0.451	0.342
IntI1	0.365	0.344	0.938	0.449	0.465
IntI2	0.398	0.395	0.855	0.440	0.459
IntI3	0.363	0.345	0.937	0.450	0.468
IntI4	0.394	0.399	0.854	0.442	0.453
IntI5	0.352	0.344	0.939	0.444	0.463
LS1	0.145	0.671	0.191	0.556	0.162
LS2	0.408	0.419	0.465	0.897	0.417
LS3	0.443	0.375	0.473	0.925	0.421
LS4	0.152	0.670	0.190	0.558	0.177
LS5	0.381	0.399	0.470	0.865	0.407
LS6	0.443	0.375	0.470	0.924	0.419
LS7	0.151	0.671	0.201	0.563	0.178
SCP2	0.598	0.324	0.381	0.291	0.823
SCP3	0.625	0.346	0.494	0.387	0.831
SCP5	0.606	0.365	0.450	0.430	0.854
SCP6	0.569	0.366	0.364	0.338	0.821

The current article has also been checked by using Heterotrait Monotrait ratio (HTMT) and the statistics exposed that values of linkage with variables itself are larger than the values of linkage with other variables due to the lower than 0.90 values of HTMT ratio. These values show valid discriminant validity and low relationships among variables. These values have been shown in Table 4.

Table 4. Heterotrait Monotrait ratio

	CI	Infl	IntI	LS	SCP
CI					
Infl	0.398				
IntI	0.457	0.429			
LS	0.447	0.717	0.488		
SCP	0.833	0.468	0.566	0.454	

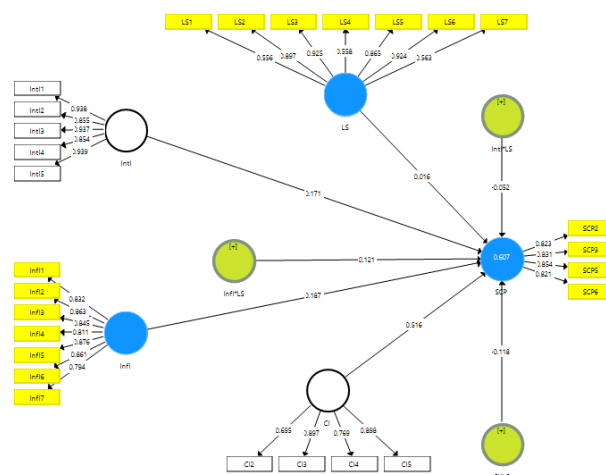


Figure 2. Measurement assessment model

The path analysis also shows by the study for the assessment of the structural model and the results indicated that positive along with significant association among the nexus of all the supply chain integrations and supply chain performance and accept H1, H2 and H3. The findings also exposed that the leadership has been significantly moderated among the nexus of supply chain information integration, supply chain customer integration and supply chain performance and accept H5 and H6. However, the findings also exposed that the leadership has been insignificantly moderated among the nexus of supply chain internal integration, and supply chain performance and reject H4. These links are shown in Table 5.

Table 5. Path analysis

Relationships	Beta	S.D.	t-statistics	p-values
CI -> SCP	0.516	0.042	12.191	0.000
CI*LS -> SCP	-0.118	0.044	2.672	0.010
Infl -> SCP	0.187	0.060	3.122	0.003
Infl*LS -> SCP	0.121	0.054	2.233	0.030
IntI -> SCP	0.171	0.048	3.605	0.001
IntI*LS -> SCP	-0.052	0.044	1.185	0.241

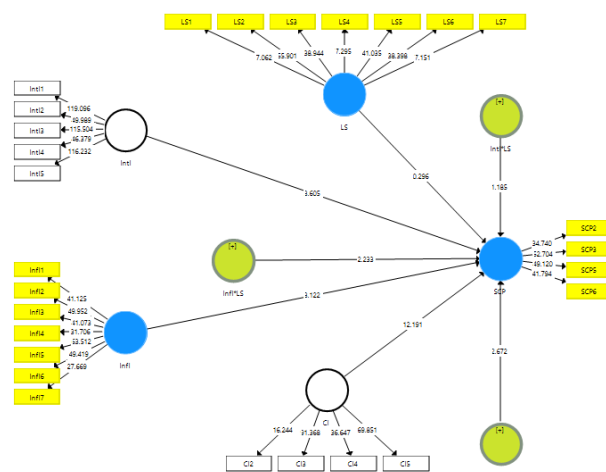
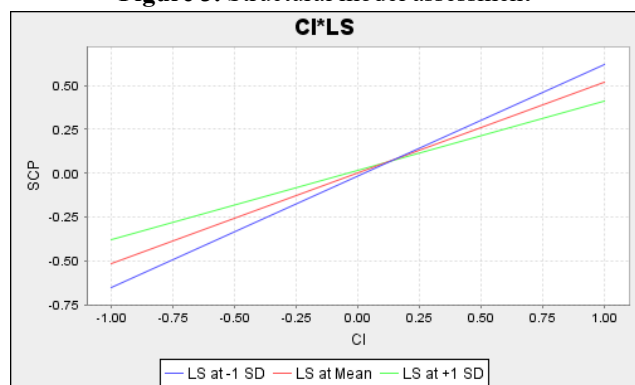
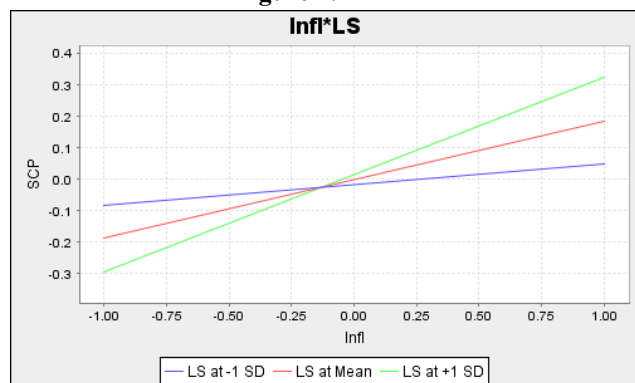
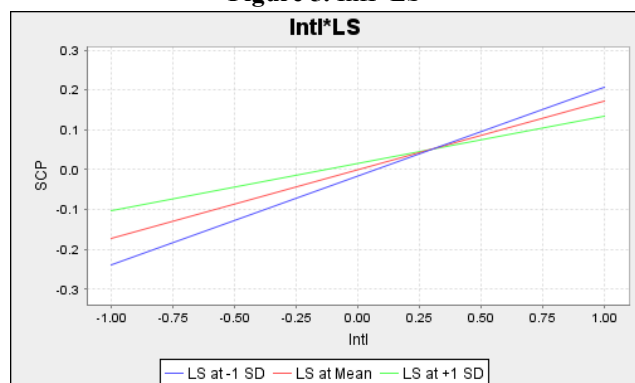


Figure 3. Structural model assessment**Figure 4. CI*LS****Figure 5. Infl*LS****Figure 6. Intl*LS**

5. Discussion and conclusion

The findings exposed that supply chain internal integration has a positive association with the supply chain performance and these outputs are similar to the output of Du, Zhang [12] who also exposed that internal integration of supply chain could improve the supply chain performance. In addition, the results also 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 [39] who also examined that the information integration of supply chain has enhanced the performance of supply chain. Moreover, the findings show that supply chain customer integration has a positive association with the supply chain performance and these outputs are in line with the output of Jajja, Chatha [23] who also indicated that supply chain performance depends on the effective customer

integration of supply chain. Finally, the present study indicated that leadership moderates among the nexus of supply chain integration and supply chain performance and this is same as the results of Birasnav and Bienstock [6] who also investigated that leadership could enhance the supply chain integration role of the supply chain performance. Thus, the present study concluded that the private organizations that are currently operated in Bangkok have implemented the best practices of supply chain integration that is the reason for high supply chain performance. These outcomes are suitable for the regulators who want to develop the regulations related to the performance of the supply chain that could increase the performance of the organization.

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