The Influence of Supply Chain Integration on Organizational Performance: From the Point of View of Organizational Capability in Indonesia

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Abstract- **The current research intends to analyze the implications of three aspects of supply chain integration (SCI) on three types of firm performance (FP) from the organizational capability (OC) context. The analysis examines the associations between internal integration (II), consumer integration (CI), supplier integration (SI), supplier-oriented performance (SOP), market-oriented performance (MOP), and financial condition from the organizational capacity point of view, based on the data of 670 firms in Indonesia. The structural equation model is used to carry out the analysis. The findings suggest that internal integration strengthens external integration and explicitly and implicitly increases FP through internal and external collaboration. Furthermore, complete or partial meditation between supply chain integration and FP are revealed and thus demonstrate the contradictory results regarding SCI on FP in earlier investigations.**

Keywords; *Supply chain integration (SCI), Firm performance (FP), Organizational capability (OC), Supply Chains (SCs)*

1. Introduction

The SC management is getting considerable attention from both professionals as well as scholars. SCM involves the organized and tactical integration of conventional operations of an entity. Additionally, SCM reflects the movement of goods, services, knowledge and funds within a particular enterprise, and also around the companies from producers to distributors to consumers in the supply chain to increase the long-term FP [1]. SCI is among the most significant dimensions of supply chain management and researched comprehensively [2-12]. In addition, SCI can also be characterized as an extent by which a company can coordinate tactically with its SC stakeholders as well as intra- and inter-organizational functions in a collaborative method in order to obtain consistent and competitive movements of goods, services to deliver the optimum value at low cost and high speed to the end-user [4, 13, 14].

SCI is identified as a significant factor for an organization and supply chain performance [5]. Nevertheless, regarding its significance, supply chain integration is only a recent attempt on the statisticians ' agenda. There exist no generally recognized supply chain integration sub-dimensions, and the relations among various SCI aspects are defined in earlier researches [9]. Moreover, there seems to be little concrete finding as to how varying SCI measurements impact various types of FP at the same time. Many researches explain the primary functions of SI or CI in improved progress as integration with supplier or customer is treated individually [8, 15, 16], whereas the earlier focus of the research is on the implications of II on FP [3, 17, 18]. Several new studies even include and correlate II, external integration (IE) with FP [3, 10, 15]. Many empirical researches, nevertheless, concentrate only on one or two aspects of FP and their findings are contradictory. In addition, there was a lack of interest on the associations among various performance levels and the mediating impacts between numerous SCI forms and performance levels.

Many of the past researches dealing with the association among SCI and FP are explained without any theoretical foundation to address this association. In the background of organizational capability (OC) few researches evaluate such an association. The organizational capacity interpretation is linked to the resource-based view (RBV) that discusses how assets and

strengths gain a comparative advantage [19-22]. SCI can, therefore, be regarded as direct and indirect behavioral abilities leading explicitly or implicitly to the FP. Furthermore, mainly studies associated with SCI is carried out in the USA, therefore, it is compulsory, whether, the results in the USA are valid for other countries, especially developing countries such as Indonesia, that is the context of the current study. The research is of considerable value for both SCI literature form the context of a developing country, utilizing information gathered from manufacturing firms of Indonesia. The research precisely answers two main research queries:

1 *What were the sub-dimensions of SCI and the associations between these sub-dimensions?*
2 *How various aspects of SCI affect the numerous forms of FP?*

The current research in many contexts extends literary works on SCI and OC. Firstly, it evaluates the internal and external integration and their associations with OC. Secondly, the research demonstrates the effects of internal integration of customers and suppliers on COP, SOP, and FP from OC's point of view. Thirdly, the research investigates OC concept in SCM by distinguishing II and EI abilities and their association with FP.

2. Literature review

2.1. SCI

In the literature, different forms of integration have been suggested, such as II, CI, SI, innovation and plan, evaluation and assimilation of relationships [23], and strategic integration [24]. It is essential to acknowledge the complexity of SCI to comprehend how it impacts performance and how they impact one another. Whereas several researches suggests that SCI as a one-dimensional design [24], some subdivided SCI into II and EI [9, 10, 16, 25], others specify additional parameters [6, 7, 15, 23]. Whereas every dimension constitutes a significant feature of SCI, there has been substantial similarity among them. In the context of supply chain management, from distributors to producers to consumers, it is suggested that the various aspects of SCI can eventually be simplified to three primary measures: internal integration, supplier integration, and customer integration. supplier integration, and customer integration may additionally be categorized as external integration.

II pertains to the extent that a company may shape its administrative policies, operations and behavior patterns into participatory, coordinated and controllable systems to meet the demands of its clients [23]. Several researches concentrate mostly on II, and not on EI [3, 9]. [26], represents the significance of II. Additionally, EI applies to an extent that a business can engage with its primary SC participants (supplier as well as customer) in order to construct its inter-organizational policies, activities, operations and behavioral patterns into participatory, coordinated and controllable functions to meet the demands of its clients [4, 8, 16, 23, 27].

2.2. OC and SCI

Organizational culture is characterized as "the capacity to continuously execute a valuable process that directly or indirectly contributes to the competence of a company to create value by converting inputs into outputs" [28]. This is the desired competitive performance of a firm or its organizational capabilities in organizational management [20]. In the literary works multiple OCs are defined, e.g., [29] elaborated three types of OCs: capabilities in the internal, structural and operational areas. [29] assessed eight organizational capabilities: global, senior managers, goods/service, merchandising, IT, the fulfillment of required order and EI ability. Skills in learning and information management are also valuable OCs [28]. [30] The "core" versus "dynamic" paradigm was utilized to describe organizational capabilities. Whereas core capacities ascribe to distinguishable individual competency units in exceptionally sustainable conditions, vibrant capabilities adhere to the capacity to incorporate, develop, composition, and reorganize internal and external competencies to fulfil evolving environment needs to produce competitive skills in diverse, unpredictable, or precarious situations at the same [20, 30-33]. Internal capabilities are thus essentially fundamental skills, and artistic and system competencies are primarily diverse abilities.

Integrated operations are deemed as organizational capacity [28, 30, 31, 33, 34]. Internal and external integration comprise, both, a firm's internal and external primary competitive strengths [28, 31]. Every other supply chain integration aspect incorporates three significant skills [13]: Local expertise include IT [2, 30], information systems (IS) [29], and human and financial assets [19], conceptual capacities include bilateral structure of products and cross-functional groups [32]; and operation attributes include the exchange of data [32], communication [31, 32], and inter-company partnerships [34]. The internal and external integrative ability distinction, therefore, agrees with the findings of [35]. The author stated that external integrative abilities comprise information sharing, integrative approaches, occupational development, incorporation of operations, restructuring of enterprises.

2.3. Firm Performance

Financial Performance (FP) has been frequently adopted as a fundamental principle of corporate success. However, other researchers [36] have revealed the constraints of depending exclusively on FP in the supply chain. [37] suggested that when choosing performance constructs, it should be a balanced approach.

A methodology, using a mix of (if possible) qualitative and quantitative parameters for a deeper understanding of the performance framework, is essential in order to provide a clear image of corporate success, as recommended by several scholars [6, 36]. Furthermore, several SCI researches still are using either operational or financial performance [23, 25]. Therefore, this study has used both types of performance measures (Financial and operational performance).

2.4. Development of hypotheses

In the context of organizational capacity, it is stated that if an organization has a better level of organizational information sharing and teamwork skills, it will be more successful in obtaining a high degree of external integration. In addition, when a firm has a high degree of absorbent ability, it will be more inclined to learn from strategic participants and comprehend their enterprises to encourage external integration. Thus, II defines an absorbent learning capacity from external stakeholders, and an internal crisis management capacity for external cooperation [23].

As the OC concept indicates, II firm abilities (i.e. information system and human capital) may explicitly enhance EI firm abilities because they can utilize organizational information system and human capital as a premise for developing external information system and human capital. Likewise, internal integrative model abilities (e.g. data sharing, networking, inter-company relations) can also significantly improve external integrative model abilities, as data sharing and collaborative culture will extend inside the firm to externally and to the entire supply chain. Certain stage theories have revealed that internal integration is a precursor for IE and a series of modern research findings have established a favorable relationship among the internal and external integration [9, 12, 15, 37]. Therefore, we suggest:

Hypothesis 1(a) CI and II have a positive association.

Likewise, II strengthens distributors ' comprehension of the firm's demands, in particular with relation to the industry standards of raw materials and other elements. Furthermore, internal integration may enhance the information sharing, business relationships, mutual planning and design and development with manufacturers. Therefore, we suggest:

Hypothesis 1 (b): SI and II have a positive association.

2.5. How SCI effects the FP?

SCI abilities are the drivers of FP according to RBV and OCs concepts [19, 32]. [35] suggested that integrative capacities both II and EI strengthen procedural and product efficiency. Nevertheless, [35] had not examined the associations objectively. SCI has been provided with a considerable importance for maximizing organizational efficiency [21, 23, 24], and financial performance [3-5, 7, 10, 16]. Some researchers discovered no direct association II and FP, others revealed a positive association among II and FP [2] price, and distribution [2, 17], creativity [17] production chain effectiveness [28], time-based performance [7] and efficiency of the transportation facilities [23, 25]. Additionally, internal integration enables the development of better products through coordination between research and development. It can also effectively enhance shipment quality, adaptability and customer care. Therefore, we suggest:

Hypothesis 2(a): II and COP have a positive association.

We suggest that coordination within organizational operations, in particular between procurement, production and promotional activities, may promote the organizational success of distributors in assisting firms. Therefore, we suggest:

Hypothesis 2(b): II and SOP have a positive association.

[25] defined II as one of the most important differentiators of overall FP and the relation between II and financial performance has been explained in several other researches [2, 3, 10]. [7] discovered that financial output is associated with both internal and external integration. [3] observed that strategy integration and process of SCI have a substantial effect on FP. Therefore, we suggest:

Hypothesis 2(c): II and FP have a positive association.

From the transaction cost theory and OC context, External Integration allows companies to reduce deceitful attitudes, to decrease manufacturing and acquisition expenses and maximize their potential to acquire assets. Concept of corporate learning also implies that companies achieve a competitive edge by gaining outside information [28]. The integration enables information sharing among SC stakeholders, and thus facilitates them to deal with environmental unpredictability.

Past studies indicate that supplier integration yields suppliers ' operational efficiency [4]. For instance, [4] Observed that supplier integration could explicitly strengthen the information sharing efficiency of the suppliers. [25] concluded that SI has an impact on logistic performance. [4] stated that the most widely integrated firms attain the maximum level of operational quality improvement. [24] discovered that higher integration along the supply chain leads to operational efficiency. Therefore, we suggest:

Hypothesis 3(a): SI to SOP has a positive association.

[4] It has been discovered that firms with the highest extent of integration attain the maximum level of profit margins. [23] discovered that the supply chain integration severity had a substantial impact on the financial output. [5] and [8] also concluded that supplier

integration maximizes financial performance. Therefore, we suggest:

Hypothesis 3(b): SI to FP has a positive association.

Likewise, we contend that CI increases the profitability of the organization. For instance, strong relationships between consumers and suppliers increase information reliability, and stronger customer data precision could accelerate product development, enhance manufacturing efficiency, minimize stock obsolescence, and make processing firms more competitive and adaptive to the demands of their consumers. Although [27] had not located that CI had a substantial effect on operating performance, several past investigations revealed that a substantial association between customer integration and operating performance. [7] observed that CI and SI could specifically optimize market time, time-to-product and sensitivity. [10] noticed CI increasing operational efficiency and [15] observed that CI contributes favorably to reliability and efficiency in innovation. [4] discovered that product co-development with consumers usually increases the value of the good or service. Therefore, we suggest:

Hypothesis 4(a): CI and COP have a positive association.

CI has an incomprehensible effect on FP. Moreover, [10] were unable to find any statistical relations between CI and FP, some like, [15] and [5], revealed the positive impact of CI on FP. [7] observed that CI and SI are worthy of growing market share and FP. Therefore, we suggest:

Hypothesis 4(b): CI and FP have a positive association.

2.6. Relationships between Operational Performance and Financial Performance

Both hypotheses and corporation scenarios usually concur that operational professionalism contributes to the performance of the company. Furthermore, COP can directly cut expenses, increase revenue and enhance market share. For instance, new product design and consumer expectation sensitivity can help firms satisfy consumer needs, leading to increased market shares. Therefore, we suggest:

Hypothesis 5(a): COP and FP have a positive association.

Likewise, SOP will increase FP directly. Unique product design and demand attentiveness, e.g., allow distributors to fulfill producers ' expectations, leading to higher-quality goods and higher market share. Effective distribution, reliability and consumer care will increase the FP of firms with respect to materials and supplies. Most significantly, all SCM firms are consumer-facing and accountable for the marketplace and end-users in the SCM perspective. Therefore, we suggest:

Hypothesis 5(b): SOP and FP have a positive association.

3. Research Design

After evaluation, the literary works and then opted the relevant scale SCI and enterprise efficiency. The determinants were all evaluated utilizing a Likert scale of seven points, which offers more option for survey participants than the Likert scale of five points and is frequently utilized in SCM experiments. The objects for internal integration have been incorporated by the study of [5]. Some of the items had been utilized by [12] and [6]. Customer Integration products are introduced by the investigations of [5] and [4]. Several of these objects have also been included by [27], [12], and [13] and [26]. Supplier Integration objects had been introduced through [5], and [4]. Few of these objects had also been utilized by [27], [12], [14], and [8]. These supply chain integration objects were evaluated by making use of a Likert scale comprised of seven points from "1" ("not at all") to "7" ("comprehensively"). Performance indicators are taken from the scales given by the [4, 25, 37]. Customer and Supplier oriented performances are therefore calculated by operating performance indicators, and financial performance is assessed by financial indicators. The five customer and supplier oriented performance objects had been selected by [5] and [26]. Many of those objects have also been utilized by [27] and [7]. Five Financial Performance objects have been incorporated by [5], and [6]. Many of those elements have also been utilized by [7] and [26]. The questionnaire is attached in appendix 1.

4. Sample

One of the difficulties in this investigation was to extract appropriate information. While discussing with supply chain officials, we established that the most effective approach was to access a primary source who usually had a position, such as SC executive, chief executive officers or directors, and was associated with the supply chain procedures of the firm. In this context, the selection of a single source to save time and/or resources in the collection of data is appropriate. A sample of 1,370 survey questions was circulated in 2000 Indonesian manufacturing firms, and 650 available survey questions were received afterwards. We investigated non-response bias by evaluating the early and late participants utilizing a t-test for all factors [25].

5. Results and discussion

The analysis of this method is based on structural equation modeling and the methodology of highest probability evaluation to measure the theoretical framework. A two-step model methodology was adopted

[38], and the results are revealed as expected results in the support of nine hypotheses.

Table 1. Reliability analysis

Construct	No. of questions	Cronbach's alpha	CITC range of the underlying items
Internal integration	9	0.952	0.651-0.822
Customer integration	11	0.927	0.572-0.718
Supplier integration	13	0.972	0.597-0.859
Customer-oriented performance	6	0.887	0.624-0.736
Supplier-oriented performance	6	0.924	0.656-0.785
Financial performance	5	0.932	0.509-0.753

The nine primary path vectors affirm our nine assumptions. The results are given in Table 2 regarding the direct and indirect effects. The mediating impacts of customer-oriented performance and supplier oriented performance on the correlations among consumer integration and firm performance, as well as between supplier integration and firm performance, accordingly, the partial mediating impacts of consumer integration and supplier integration on the associations among internal integration and customer-oriented performance and among internal integration and supplier oriented performance, and the partial mediating impacts of customer-oriented performance and supplier oriented performance on the association among internal integration and firms performance, accordingly, were also observed.

5.1. Internal Integration and performance

Among all three aspects of SCI, internal integration has a substantial effect on FP. Its effect is extremely important, along with having a strong effect on CI and SI. These results are consistent in the literature [9, 12, 37]. If a firm has not a higher degree of internal integration, then cooperation with outside supply chain partners will be challenging for the firm. Additionally, the firm must acquire external integration (EI) capacities through internal integration (II) before it can produce benefits for the firm.

We then observed that internal integration (II) influences customer-oriented performance (COP) indirectly by manipulating customer integration (CI), that facilitates customer care. Furthermore, internal integration (II) has, directly and indirectly, influences the financial performance (FP), therefore, it has a substantial cumulative impact. The observation reveals how significant internal integration (II) is for increasing financial performance (FP). The widespread consensus for this statement enables us to conclude comfortably that it is one of the very important factors for securing better financial performance (FP). This observation, however, is compatible with the classical theory of management that internal activities enable employees to work collectively to achieve financial performance (FP).

All these results also illustrate that internal integration (II) can enhance COP and supplier-oriented performance (SOP) directly or through the substantial moderating impact of customer integration (CI) and supplier integration (SI). It implies that internal integrative skills and external integrative skills may produce the maximum degree of operational efficiency. Likewise, COP and SOP also enable internal integration (II) to increase its financial performance (FP). The interpretation applies the prevailing internal integration theory – performance according to previous supply chain integration research, that explores mostly the direct influence of internal integration on firm performance, to the theoretical foundation of internal integration.

Table 2. Direct and indirect effects among SCI and performance

	COP	SOP	FP
II	DI: 0.154	DI: 0.134	DI: 0.340
	IDI: 0.278	IDI: 0.144	IDI: 0.082
	TI: 0.433	TI: 0.278	TI: 0.422
CI	DI: 0.433		DI: 20.600
			IDI: 0.0515
			TI: 0.0515
SI	–	DI: 0.268	DI: 20.630
			IDI: 0.031
			TI: 0.00
COP	–	–	DI: 0.113
SOP	–	–	DI: 0.134
Notes: DI: direct impact; IDI: indirect impact: TI: total impact; –: no relationship			

5.2. EI and performance

Customer integration has substantially positive effects on COP. This suggests sharing data, correspondence and

feedback from the consumer can lead to organizational success in satisfying consumers. Customer Integration has no substantial impact on FP, but it affects financial performance indirectly by customer-oriented performance. That implies that customer integration should be incorporated into the customer-oriented performance before it can deliver a competitive edge. [15] revealed that CI can strengthen FP by means of quality and creativity. Kim [5] identified SCI to impact FP indirectly through customer satisfaction as a primary factor. Since CI demands resources, such as information technology, consumer relationship monitoring, process planning of human resources, this can contribute to weak FP.

But it has an indirect effect on performance. The severity of this adverse effect in comparison to CI is comparatively limited. One plausible interpretation for this outcome is that the manufacturers we interviewed might have given their consumers more priority than their distributors. This is a logical observation, as consumers are increasingly important between the two in many other sectors. As a consequence, CI performs a significant role in obtaining SC efficiency, while supplier integration role is minimized, and supplier integration is not as vital as customer integration to financial performance. According to [8], concluded that SI ensures stronger FP with respect to quality, value, distribution and output versatility. Moreover, [15] investigated that SI has a negative impact on FP by means of quality and innovation.

Neither customer integration nor supplier integration affects firm performance specifically but can strengthen the latter through the mediated function of customer-oriented performance and supplier-oriented performance, collectively. Customer and supplier integration, additionally, demand separate resources that could lead to weak financial performance. Moreover, CI and SI reflect the strengths of firms that ought to be included to produce financial values. Furthermore, though their SCI standards are higher in contexts of information networks, they are not experiencing the better financial performance. These observations illustrate the essential role that SCM performs in evaluating the performance of a firm indicating SCM's attributes of cooperation.

6. Conclusions

Research researchers analyzed the relations between internal, customer, supplier integration, customer-oriented, supplier oriented and firm's performance in the context of organizational culture in Indonesian manufacturing sector. Some past reports examined the different forms of supply chain integration and various performance indicators in a unified model. Our work, however, incorporates past studies by connecting internal, customer, supplier integration, with operating and financial performance. We also identified absolute and partial mediated impacts in the associations between various SCI and various performance types. It is therefore beneficial for us to recognize the conflicting outcomes of past research about the correlations between the various aspects of SCI and performance. This research aids to organizational culture theory in the supply chain management context because it defines II and EI abilities and demonstrates that the former can strengthen the latter and that II abilities are the primary factors for firm success. The research also refers to SCI activities and provides management with recommendations for controlling their SCI initiatives to attain better performance.

Nonetheless, there exist certain drawbacks and incentives for future investigations. Notwithstanding our supply chain integration performance method being more rigorous than many scholars applied in past studies, there is a chance that significant integration variables may still be missing. While understanding the relations between SCI and FP in Indonesia is valuable, whereas, we used the data from Indonesia only. Additional statistical analysis can use cross-sectional or longitudinal data to evaluate with more variables in many other regions to determine its applicability. Future investigations should address these concerns.

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Appendix 1

	Factor loading
Internal integration	
Data integration among internal functions	0.62
Enterprise application integration among internal functions	0.63
Integrative inventory management	0.72
Real-time searching of the level of inventory	0.74
Real-time searching of logistics-related operating data	0.74
The utilization of periodic interdepartmental meetings among internal functions	0.81
The use of cross functional teams in process improvement	0.88
The use of cross functional teams in new product development	0.85
Real-time integration and connection among all internal functions from raw material management through	
production, shipping, and sales	0.71
Customer integration	
The level of linkage with major customer through information network	0.54
The level of computerization for our major customer ordering	0.54
The level of sharing of market information from our major customer	0.71
The level of communication with our major customer	0.71
The establishment of quick ordering system with our major customer	0.68
Follow-up with our major customer for feedback	0.64
The frequency of periodical contacts with our major customer	0.69
Our major customer shares point of sales (POS) information with us	0.69
Our major customer shares demand forecast with us	0.71
We share our available inventory with our major customer	0.71
We share our production plan with our major customer	0.71
Supplier integration	
The level of information exchange with our major supplier through information network	0.57
The establishment of quick ordering system with our major supplier	0.55
The level of strategic partnership with our major supplier	0.65
Stable procurement through network with our major supplier	0.61
The participation level of our major supplier in the process of procurement and production	0.75
The participation level of our major supplier in the design stage	0.75
Our major supplier shares their production schedule with us	0.87
Our major supplier shares their production capacity with us	0.86
Our major supplier shares available inventory with us	0.86
We share our production plan with our major supplier	0.88
We share our demand forecast with our major supplier	0.79
We share our inventory level with our major supplier	0.83
We help our major supplier to improve their process to better meet our needs	0.70
Customer-oriented performance	
Our company can quickly modify products to meet our major customer's requirements	0.72
Our company can quickly introduce new products into the markets	0.56
Our company can quickly respond to changes in market demand	0.68
Our company has an outstanding on-time delivery record to our major customer	0.79
The lead time for fulfilling customers' orders (the time which elapses between the receipt of customer's order	
and the delivery of the goods) is short	0.76
Our company provides high level of customer service to our major customer	0.72
Supplier-oriented performance	

Our major supplier can quickly modify products to meet our company's requirements	0.74
Our major supplier can quickly introduce new products into the markets	0.56
Our major supplier can quickly respond to changes in market demand	0.69
Our supplier has an outstanding on-time delivery record to our company	0.87
The supplier's lead time for fulfilling our company's orders (the time which elapses between the receipt of	
our order and the delivery of the goods) is short	0.85
Our major supplier provides high level of customer service to our company	0.82

	Factor loading
Financial performance	
Growth in sales	0.75
Growth in profit	0.85
Growth in market share	0.77
Growth in return on investment	0.86
Growth in return on sales	0.82