The effect of strategic external integration on financial performance with mediating role of manufacturing flexibility: Evidence from bottled drinking industry in Indonesia

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CHRONICLE	ABSTRACT
	Manufacturing flexibility is critical for businesses in adapting to the unstable conditions created by environmental influences such as consumer demand complexities, raw material disruptions, and industrial policy changes. In order to analyze the way of improving manufacturing flexibility, this study suggests that strategic supplier integration (SSI) and strategic customer integration (SCI) lead to the flexibilities in production process, resulting in high financial performance. This research measures the analysis of structural equation modelling based on empirical data obtained from 139 manufacturers in Indonesia. The study aims to shed light into how manufacturing flexibility mediates the impact of strategic external integration on financial performance within the bottled drinking industry in Indonesia. The study reveals that both SSI and SCI had a major impact on financial performance, while they indirectly increase the financial performance through manufacturing flexibility.

1. Introduction

Supply networks at present cross multiple geographic areas that leverage the vulnerability of local manufactures to operational risk and face greater demand uncertainty. For example, the demand for bottled drinking in Indonesia shows high volatility because of some factors such as weather, special events, and lifestyle consumers. Besides, the bottled water industry is big, complicated, and influenced by economic, social, and financial issues. The managing of market dynamics must be prioritized by the drinking water industries to mitigate the uncertainty from downstream and upstream supply chain. Besides, beverage supply chains get more vulnerable when disturbance occurs due to these features of supply chain (Tse et al., 2016). Manufactures face the challenge of creating complex sourcing operations which can adjust the needs of both suppliers and customers. Bottled drinking industries in Indonesia encounter difficulties in fulfilling the raw materials such as cup, bottle, and gallon because most of their packaging is made by plastic pellets that their price is really depended on volatile exchange rates and crude oil prices (Sugeng et al., 2010). The impact of the product price would be more expensive due to the determinants of upstream disruption risk (Ellis et al., 2010) where most of the production costs are absorbed by the material packaging costs. The characteristics of the bottled water market generate significant challenges for downstream parties by growing unpredictable demand. Furthermore, news and speculations related to price spikes can influence customer demand and thus have a significant impact on the number to fulfil inventory requirements across the supply chain (Chen et al., 2000), thus reducing customer satisfaction. When there is a disruption in demand, the current projecting plan becomes misleading and the main selling corporation might not be responsive to market conditions (Germain et al., 2008). As the consequence of failing to

achieve customer demand, the firm could suffer drop in sales ending in financial performance declines as a result of excess stock being remained. Solution to increasing effective supply chain is how to integrate operational activities and strategic policies among externally span corporates (Narasimhan et al., 2010; Ralston et al., 2015). Maintaining relationships in a supply chain needs cooperation from company business processes with accuracy levels of information exchanging, close partnerships and organizational alignment (Leuschner et al., 2013). Developing on that framework, supply chain integration is looked as a process that a company obtains, exchanges and consolidates strategic knowledge and information internally within the company and externally with supply chain relationships and their customers (Swink et al., 2007).

Moreover, implementing the external integration among firms has many obstacles. For instance, the implementation of supplier integration has no influence to improve the company's performance leading to lack of collaboration and inaccurate scheduling accuracy information with the suppliers (Alfalla-Luque et al., 2015; Tse et al., 2016; Prajogo et al., 2016; Huo et al., 2016; Qi et al., 2017; Hamali et al., 2020), whereas many research studies showed that supplier integration levels up performance business in industries (Yu et al., 2013; Zhang & Hou, 2013; He et al., 2014; Ku et al., 2015; Cheng et al., 2016; Wiengarten et al., 2014; Huo et al., 2016; Al-Shboul et al., 2017; Chen et al., 2018; Lu et al., 2018; Subburaj et al., 2020). Besides, the customer integration decreases performance business in some industries (Yu et al., 2013; Alfalla-Luque et al., 2015; Wiengarten et al., 2014; Tse et al., 2016; Qi et al., 2017; Hamali et al., 2020) because of deficiency in understanding the wants and needs of clients which by lowering in customer satisfaction, although many empirical studies stated that customer integration escalated up performance business in industries (Zhang & Hou, 2012; He et al., 2014; Ku et al., 2015; Huo et al., 2016; Al-Shboul et al., 2017; Cheng et al., 2016; Um, 2017; Lu et al., 2018; Chen et al., 2018; Subburaj et al., 2020). Hence, this in conclusion attempts to fill this research gap by analyzing the impact of strategic supplier integration, and strategic customer integration on financial performance of bottled drinking industries in Indonesia.

Subsequently, the dynamic capability view (DCV) is built to rapidly respond to an unpredictable environment that can also be seen as an aspect of flexibility in collaboration (Teece et al., 1997). The DCV suggests industries need to build new organizational skills to recognize market opportunities and react quickly to succeed in complex and dynamic conditions (Eisenhardt & Martin, 2000). Dynamic core competencies can enable firms remain agile and be able to adapt quickly to the unpredicted and often unforeseen environmental changes (Hitt et al., 1998). Adopting manufacturing flexibility is to anticipate the instability of business situation due to external changes without reducing operational performance as a response in certain market and environmental conditions (Boyle, 2006).

To address this gap, this study examines how strategic supplier integration and strategic customer integration affect the manufacturing flexibility and the resulting firm performance. The manufacturing flexibility research also states that the role of manufacturing flexibility is conditional on the market environment. Especially, the information technologies era makes supplier quest more effective and empowers the direct collaboration with customers (Roh et al., 2011). Thus, manufacturing flexibility of firms is the key of success for industry activities that tailor its supply chain to cope in client necessity and customization (Roh et al., 2014). Hence customer information can increase the flexibility through the supply chain, many industries have encouraged to improve their customer information sources and to coordinate with their supply chain partners related to taking raw material.

Moreover, this paper attempts to make the following contributions in order to initiate such empirical research: First, a firm integrates partnerships in its supply chain as a way of reducing risk by removing the potential sources of supply chain bottlenecks and disruptions. Second, a firm synchronizes customer demands using point of sale information at the right time with the right product in the right place. Third, a firm increases flexibility in production process to meet evolving customer requirements by simplifying and reorganizing the supply chain planning strategies when facing the supply disruption risk. In this paper, the researchers will examine how strategic supplier integration and strategic customer integration significantly affect manufacturing flexibility and financial performance, and further examine how manufacturing flexibility mediates the relationship between strategic supplier/customer integrations and financial performance.

2. Literature Review

2.1 Theory of Dynamic Capabilities View (DCV)

Dynamic capabilities state the ability of a firm to develop, adapt to change and grow in a manner that is customer-friendly and unfavourable to its rivals (Teece et al., 2016). Dynamic capability is described as a practiced and consistent trend of collective operation through which the organization systematically provides and adjusts its operating routines in order to pursue the enhanced effectiveness (Zollo & Winter, 2002). A firm's dynamic capability should control how it incorporates, develops and reconfigures internal and external competences to meet changing economic conditions (Winter, 2003). Companies should have strong dynamic capacities to handle uncertainty (Teece et al., 2016). The objective of competitiveness in the modern market world has changed from individual firms to supply chains.

Drawing upon the DCV, this study therefore identifies strategic supplier integration and strategic customer integration as a dynamic capability, and manufacturing flexibility as a core dynamic capability, and examines their impacts on financial performance.

2.2 Relationship between Strategic Supplier Integration and Manufacturing Flexibility

Manufacturing flexibility in producing would rely on key supplier's responsiveness and sensitivity (Narasimhan et al., 2004). In many other words, the supplier's response as one source of dynamic generating power firms will make a major impact on how quickly business will respond to new market environments. A powerful supplier relationship is the key to shipping and flexibility by providing more reliable and current demand and supply details, plans and more comprehensive predictions of output and prospects and future directions (Flynn et al., 2010; He et al., 2014). Through supplier-connected information networks, the supply chain visibility is high so that manufacturers can more effectively identify fluctuations in supplier output performance, product quality, inventory rates and shipping capability. Furthermore, strategic alliance with main supply chain partners enhances a firm's sensitivity of market dynamics (Holweg et al., 2005). Manufacturing firms can only cope with market conditions when complemented by their suppliers, thereby allowing them greater flexibility to cope with different market conditions (Jayaram et al., 2011; Roh et al., 2014). By giving accurate information to suppliers with their own schedule changes, manufacturers often enable their suppliers to react more quickly to these changes, which can in turn boost manufacturers' flexibility (Wang et al., 2006; Jajja et al., 2018). Increased integration shows an intense exchange of information with the supplier, a continuation of productive new product creation and product adjustment (Yan & Dooley, 2013). Such results support the argument that the increased supplier integration provides a firm with methods to achieve the manufacturing flexibility. Thus, the following is the proposed hypothesis:

H_1: Strategic Supplier Integration has a positive impact on manufacturing flexibility.

2.3 Relationship between Strategic Customer Integration and Manufacturing Flexibility

Integrating customers on the basis of creating end-user wealth would lead to a form of information sharing between businesses and respond quickly to customer requirements (Esper et al., 2010; Birasnav & Bienstock, 2019). Approaching between customer and manufacturer interactions give opportunities to establish reciprocal benevolence and enhance information quality and process efficiency (Flynn et al., 2010). Strategic customer integration helps manufacture to understand consumer expectations and anticipate how those expectations will change in volatile market (Swink et al., 2007). Integrative practices may create mutual information, a first-hand explanation of consumer needs, collaboration in addressing potential issues and coordination of practices intended to minimize instances of glitches such as rework, wastage, project delays, and inefficient usage of resources which cause lower market success (Koufteros et al., 2010).

Integration with customers helps overcome competing goals and further encourages collaborative efforts to minimize costs and inventories, increase quality and create new products, resulting in improved time-based results, such as consistency in distribution and flexible process in manufacturing (Rosenzweig et al., 2003; Wong et al., 2011). Therefore, firms depend more on internal manufacturing flexibility because of external resource shortages in intensely competitive industries (Mahapatra et al., 2012). Intense competition leverages external resources and cost instability. The manufacturers seek to obtain alternative resources internally to reduce the possibility of resource shortages by fulfilling customer requirement. Exchanging the customer's demand details decreases the volatility in the forecast, which in effect simplifies production planning and increases the efficiency of suppliers and internal distribution (Jajja et al., 2018). Manufacturing flexibility makes it easier to redevelop combinations of existing tools to include an alternative basis (Mendes & Machado, 2015). It involves manpower, equipment, material handling, routing and mix flexibility (Zhang et al., 2003) and enables the recombination of resources, expands the reach of use of limited resources, lowers switching costs, enhances the recombination of resources and encourages synergy formation (Seebacher & Winkler, 2014). Based on these arguments, the proposed hypothesis is:

H_2: Strategic Customer Integration has a positive impact on Manufacturing flexibility.

2.4 Relationship between Strategic Supplier Integration and Financial Performance

Strategic Supplier Integration (SSI) is defined as a process to obtain and share operational, technical and financial information as well knowledge that strategically integrates partnership between manufacture and supplier to drive improvement and generate added value for customers (Swink et al., 2007; Ku et al., 2015). The alignment of the buying company's internal resources with the resources and skills of selected main suppliers by integrating inter-company business processes to gain a competitive advantage (Katunzi, 2011). Firms can integrate with external supply chain partners to streamline business processes by fulfilling customer demand and to anticipate availability of raw material in volatile market (Flynn et al., 2010; Narasimhan et al., 2010; Lu et al., 2018).

Integration process and knowledge exchange with supply chain partners in the form of trust, similar work and cooperation to reduce the volatility of external market conditions and further minimize waste, increase operating quality, indirectly improving the financial results of the organization such as profitability, market share (Huo et al., 2016). Exchange information with major suppliers such as forecasts, development schedules, order monitoring, inventory rates and joint strategies in as long-term collaboration, adjustment processes and quality improvements directly enhance industrial operating efficiency in the form of flexibility, quality, and capability to respond to demand (Ralston et al., 2015; Cheng et al., 2016). Strategic supplier collaborations improve the manufacturer's cost, efficiency, flexibility and distribution capabilities through product and process

design collaboration, and joint production planning and coordination that leverage external resources to achieve better financial performance (Zhang & Huo, 2012; Wiengarten et al., 2014). Strategic supplier integration helps businesses to achieve financial performance to the DCV as a dynamic capability. Therefore, the following is the proposed hypothesis:

H_3: Strategic Supplier Integration is positively related to financial performance.

2.5 Relationship between Strategic Customer Integration and Financial Performance

Strategic Customer Integration (SCI) is described as sharing of knowledge related to the forecasts and collaboration on product design growth, shipping, procurement, production planning and logistics, as well as joint product quality-related problem solving that strategically interconnected relationship between manufacture and customer (Wong et al., 2011; Ku et al., 2015). Learning and consumer interaction in the context of knowledge sharing, design and product distribution help firms understand consumer tastes and needs better which as organizational competences for producing innovative goods or services (Stank et al., 2001; Lai et al., 2012). Consumers have a keen interest in product creation to ensure that the manufacturer can hear advice and feedback on the latest product design which offers the ability to build long term consumer relationships (Koufteros et al., 2005; Koufteros et al., 2010). Integration exercises will generate information together, have a clear understanding of customer needs, work together to address potential issues and organize processes that are intended to mitigate uncertainty risk such as the shipping of product delays.

Strong collaboration between consumers and manufactures provides incentives to increase the quality of the information product demand, which decreases the product design of the supplier and the time production preparation and damage arising from the warehouse storage inventory, as well as making it more sensitive to consumer requirements (He et al., 2014; Ralston et al., 2015). Manufacturers should penetrate deep into consumer activities so that they can respond appropriately to customer needs and anticipate supply issues that can adversely affect customer demand. Because of the additional source of materials and parts, customer integration allows greater market access to manufacturers in which they can expedite lead time of product manufacturing (Lai et al., 2012). Improved customer integration can be effective in enhancing the brand identity and organizational market positioning that is important in helping manufacturers not only know about consumer expectations, but also gain a greater understanding of consumer interests and wishes (Swink & Nair, 2007). A strategic partnership between consumers and manufacturer provides incentives to increase the accuracy of demand details, which decreases the time and inventory obsolescence of manufacturer's product design and production planning, making it more responsive to consumer expectations that all enhances the overall financial performance (Zhang & Huo, 2012). Therefore, the following is the hypothesis proposed:

H_4: Strategic Customer Integration is positively related to financial performance.

2.6 Relationship between Manufacturing Flexibility and Financial Performance

Manufacturing flexibility can be seen as a company ability to take new action overcoming fluctuated conditions needs throughout its production process phase and to successfully maintain the production process through market fluctuations situation (Upton, 1994). Consisting of mix, volume and delivery time are flexibility types that will directly affect the competitive position of a company in market (Koste & Malhotra, 1999). Manufacturing flexibility is characterized as the ability of a business to make new products, manage a mix of products, and effectively adapt production to demands (Krathu et al., 2014), that can speedily improve the efficiency of a manufacturer in meeting its end-user requirements by conveying several areas where flexibleness will directly affect the ability of the manufacturer to satisfy its customers. Flexibility may give businesses greater control to adjust or overcome market instability. Manufacturing flexibility is a key source of stability (Klibi et al., 2010) that allows the manufacturing system to manage uncertainty resulting from internal changes without drop in performance (D'Souza & Williams, 2000). Manufacture frequently fails to adapt to system instability when there is a shortage of resources to fill a resource shortfall, but manufacturing flexibility offers a resource shortage buffer and helps to retain robustness by providing alternate production options without additional time and expense (Wei et al., 2017). The manufacturer with a strong manufacturing flexibility can easily and efficiently change its operations to serve customer needs which boost the company's competitive position, such as increasing market share (Javier et al., 2014). Therefore, the following hypothesis is proposed:

H_5: Manufacturing flexibility has a positive impact on financial performance.

2.7 The role of Manufacturing Flexibility in mediating the impacts of Strategic Supplier Integration and Strategic Customer Integration on Financial Performance

The DCV argues that industries need dynamic capabilities to respond to rapidly evolving conditions and form their ecosystems (Eisenhardt and Martin, 2000). Dynamic capabilities enable manufactures to renew their skills to meet evolving business demands, including the ability to combine and reconfigure internal and external organizational skills and resources (Teece et al., 1997). The DCV is used to explore how to provide the tangible and intangible resources of the organization to turn into

manufacturing flexibility as dynamic capabilities that are likely to build competitive advantages (Hasegan, Nudurupati, & Childe, 2018). Manufacturing flexibility includes labor flexibility, machine flexibility, material handling flexibility and mix flexibility, to provide alternate production options without additional time and expense (Wei et al., 2017). The fundamental reason to link flexibility in manufacturing with environmental instability is evident because economic situation impacts the manufacturing strategy of a company and its subsequent design, affecting its manufacturing capabilities. Manufacturers can overcome dynamic market conditions when supported with its main suppliers, thus allowing more flexibility in overcoming uncertainty of product demand (Jayaram et al., 2011; Roh et al., 2014). Providing accurate information to suppliers with the schedule changes, the manufacturer makes sure the main supplier is in order to respond more quickly to these changes, which is immediately can increase the flexibility in the production process (Jajja et al., 2018). This increased degree of integration would allow suppliers to detect changes more quickly and efficiently. Customer integration helps manufactures to reduce the cost of storing finished products (Wong et al., 2011), that ensures organizational operations fulfill consumer expectations (Koufteros et al., 2005). Higher manufacturing flexibility will reduce the business uncertainty generated by internal changes and close the lack of existing resources by maintaining production stability by offering choices in the form of production unit transfers with no additional work time and costs (Wei et al., 2017).

It is believed that manufacturing flexibility has a significant role in mediating the total effect of strategic supplier integration and strategic customer integration on financial performance. Thus, the hypotheses proposed is:

H_A: Manufacturing flexibility mediates the impact of strategic supplier integration on financial performance.

H_B: Manufacturing flexibility mediates the impact of strategic customer integration on financial performance.

2.8 Conceptual Design

Based on the literature review, it is found that both the strategic supplier integration and strategic customer integration improve the financial performance with manufacturing flexibility as the mediating role. The proposed conceptual model is presented in Fig. 1.
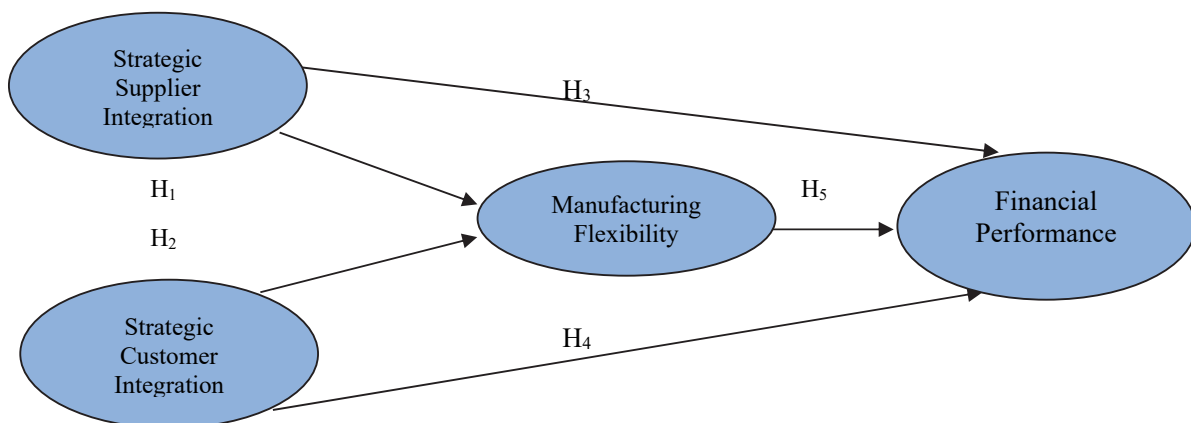

Fig. 1. Conceptual Model of the Study

3. Methodology

3.1 Data Collection and Sample

Data for the main study were received from the bottled drinking industries in Indonesia. The sampling framework consisted manufacturing companies which are members of the association of packaged drinking water companies. These companies are disseminated in 34 different provinces. The participating firms for this study were chosen using a random sampling method. A random sample of 34 regions was chosen, consisting of 212 manufacturing firms, and this analysis was aimed at owners, chief executive officers, managing directors or general manager and operations manager employed in a manufacturing plant. In collecting the data, e-mailing questionnaire was distributed to gather the responses from manufacturing companies. There are about 212 firms participating in this study. For this report, 139 usable answers were obtained from the manufacturing companies. The researchers faced some difficulties in collection the data including access barriers, companies which are not based in the addresses listed in the database, senior executives related to their busy schedules, insufficient responsibilities of the persons involved, and incomplete responses, which decreased the response rate. Resulting data were gathered from 139 owner/CEO and operations manager combinations that portrayed 139 manufacturing companies.

3.2 Instrument Development

Based on the literature review, the researcher has identified three variables (strategic supplier integration, strategic customer integration, manufacturing flexibility) contributing to financial performance. For instance, respondents were asked to state the importance of strategic supplier integration and strategic customer integration to achieve their financial performance, using a five-point scale with endpoints "Strongly disagree" (1) and "strongly agree" (5). Strategic supplier integration was measured by six items which cover improvement of quality product, involving supplier in product design, sharing real-time inventory information with supplier, sharing the production schedule with supplier, vendor managed inventory and solving problems together (Zhang and Huo, 2012; Qi et al., 2017; Jajja et al., 2018).

Strategic customer integration was measured by six items including providing special production capacity, evaluating customer satisfaction, sharing real-time inventory information with customer, sharing the production schedule with customer, consignment product and solving problems together (Ku et al., 2015; Huo et al., 2018; Qi et al., 2017; Jajja et al., 2018). Manufacturing flexibility was measured by six items. They are performing manufacturing task by cross-trained workers, operating various machines by workers, workers transferred easily to other organizational units, quickly changing over material handling, performing many types of tasks by a typical machine, and producing variety products (Wei et al., 2017). Financial performance was measured by five items. They are returned on investment (ROI), growth net profit, return on sales (ROS), production cost, and growth in market share (Gligor et al., 2015; Qi et al., 2017). To provide a broader view of the supply chain managers, each indicator of financial performance mentioned above was measured over the span of three years on the company's major competitors. The questionnaire was derived from previous studies with validated measurement scales that analyzed the constructs in a query in the present study.

4. Results

In order to understand the direct and indirect impact of strategic supplier integration and strategic customer integration on financial performance with the mediating influence of manufacturing flexibility at bottled water industry in Indonesia, a statistical SmartPLS software package was used for PLS-SEM (Partial Least Square Structure Equation Modeling) data analysis.

4.1 Convergent Validity

The convergent validity of the assessment is generally calculated by analyzing the loadings, the average extracted variance (AVE) and also the composite reliability (Rahman *et al.*, 2015). The loadings were all higher than 0.708, the composite reliabilities were all higher than 0.7 and the AVE of all constructs was also higher than 0.5 as indicated in the literature (see Table 1).

Table 1

Convergent Validity

Constructs	Items	Loadings Factor	Cronbach	rhoA	Composite Reliability	AVE
Strategic Supplier Integration (SSI)	SSI1	0,938				
	SSI2	0,951	0,974	0,975	0,978	0,883
	SSI3	0,920				
	SSI4	0,923				
	SSI5	0,941				
	SSI6	0,964				
Strategic Customer Integration (SCI)	SCI1	0,918				
	SCI2	0,935	0,967	0,968	0,974	0,860
	SCI3	0,917				
	SCI4	0,931				
	SCI5	0,940				
	SCI6	0,923				
Manufacturing flexibility (MF)	MF1	0,965				
	MF2	0,966	0,984	0,983	0,987	0,926
	MF3	0,980				
	MF4	0,943				
	MF5	0,942				
	MF6	0,976				
Financial Performance (FP)	FP1	0,946				
	FP2	0,959	0,972	0,973	0,978	0,899
	FP3	0,950				
	FP4	0,931				
	FP5	0,955				

Table 1 above shows that both Composite Reliability (0.7) and Convergent Validity methods have been used and it shows that the Average Variance Extracted values (0.5) are higher than the standard rates for all constructs. It supports the Composite Reliability and convergent validity of the constructs.

4.2 Discriminant Validity

This new suggested approach was also used to check the discriminant validity in the form of Heterotrait-Monotrait ratio of correlations and the results are shown in Table 2. If the $HTMT_{0.90}$ surpassed the value of 0.90 (Gold *et al.,* 2001), then there is problem of discriminant validity. As all the values are less than the $HTMT_{0.90}$ (Gold *et al*., 2001) shown in Table 2 that discriminant validity has been identified.

Table 2
Discriminant Validity (HTMT Ratio)

	FP	MF	SCI	SSI
FP				
MF	0.629			
SCI	0.609	0.430		
SSI	0.577	0.576	0.516	

4.3 Hypothesis Testing Results

Before testing the model, the fit model was tested first using two fitting parameters: Standardized Root Mean Square Residual (SRMR), and the Normed Fit Index (NFI). The SRMR is represented as the difference between the correlation observed and the association matrix implied by the model, whereby values below 0.08 (Hu & Bentler, 1998) are considered a good fit. Henseler *et al.* (2014) enforced the SRMR as a fit test for PLS-SEM that can be used to prevent inaccurately-specifications of models. The second fit index is a Normed Fit Index (NFI), an accumulative fit measure that calculates the proposed model's Chi-square value and compares it to an useful criterion (Bentler and Bonett, 1980). Usually NFI values above 0.9 contain acceptable fit. The data fits of model is well because the SRMR value was 0.029 (< 0.08) and the NFI was 0.908 (> 0.90). A multi-collinearity test was performed to ensure that a strong correlation between the dimensions of each variable is not present. Multi-collinearity test indicated that there is no abnormal correlation between variables dimensions (see Table 3).

The research shown in Table 3 portrays standardized path coefficients of the study model (beta coefficients in which the results are obtained from a regression analysis). Table 3 and Figure 2 describe that the path coefficients from Strategic Supplier Integration to Manufacturing Flexibility was also positive and significant (Standardized coefficient = 0.474; p < 0.01), the path coefficients from Strategic Customer Integration to Manufacturing Flexibility was also positive and significant (Standardized coefficient = 0.182; p < 0.01). Therefore, both H1 and H2 are supported. The path coefficient from Strategic Supplier Integration to Financial Performance was positive and significant (Standardized coefficient = 0.139; p < 0.05), and the path coefficient from Strategic Customer Integration to Financial Performance was positive and significant (Standardized coefficient = 0.228; p < 0.01). Thus, there is enough evidence to support H3 and H4. The path coefficient from Manufacturing Flexibility to Financial Performance was positive and significant (Standardized coefficient = 0.333; p < 0.01) that the result supports H5.

The indirect effects of Strategic Supplier Integration (SSI) on Financial Performance (FP) through Manufacturing Flexibility (MF) as mediator was also positive and significant (indirect standardized coefficient = 0.158; p < 0.05), that H_A is supported. Then, the indirect effects of Strategic Customer Integration (SCI) on Financial Performance through Manufacturing Flexibility as mediator was also positive and significant (indirect standardized coefficient = 0.061; p < 0.05), that state H_B is supported. Therefore, the results supported all hypothesis.

Table 3
Results of the Hypothesis Testing

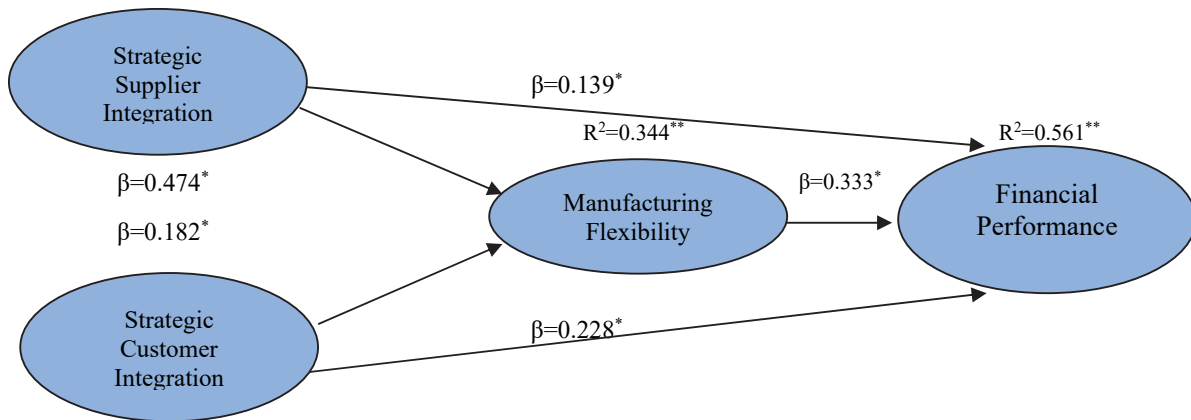| Hypothesis	Relationship	Standard Coefficients	Test Result	VIF
H_1	SSI $\Rightarrow$ MF	0,474 *	Supported	1,335
H_2	SCI $\Rightarrow$ MF	0,182 *	Supported	1,336
H_3	SSI $\Rightarrow$ FP	0,139 **	Supported	1,763
H_4	SCI $\Rightarrow$ FP	0,228 *	Supported	1,936
H_5	MF $\Rightarrow$ FP	0,333 *	Supported	1,578
H_A	SSI $\Rightarrow$ MF $\Rightarrow$ FP	0,158 **	Supported	
H_B	SCI $\Rightarrow$ MF $\Rightarrow$ FP	0,061 **	Supported	

Note: *p<0,01; **p<0,05

Fig. 2. Result of Path Analysis

Fig. 2 displays the determination coefficient (R^2) (the portion of the variance in the dependent variable that is predictable from the independent variable ranges from 0 to 1 the higher the better). Values R^2 which are presented in Figure 2 show that the Strategic Supplier Integration and Strategic Customer Integration accounts for 34.4 percent of the Manufacturing Flexibility variance; the Strategic Supplier Integration, Strategic Customer Integration and Manufacturing Flexibility accounts for 56.1 percent of variance in Financial Performance.

5. Discussion

The results of the present study conclude that the Strategic Supplier Integration (SSI) significantly influence the financial performance of the bottled water industry in Indonesia. SSI will simplify business processes to be quicker and more reliable in order to maximize customer demand and to predict the availability of raw materials in volatile markets (Lu *et al.*, 2018). This study also shows that the sharing of information on production planning schedules, and in real-time inventory with supplier would benefit manufacturers in the form of additional order quotas to increase the optimal production. In line with this, manufacturers can reduce the cost of storing raw materials which influences efficient production, the availability of sustainable finished goods, and growing market turnover.

Furthermore, the results of this study confirm the findings of Zhang and Huo (2012); Wiengarten et al. (2016); Subburaj et al. (2020), which shows that implementing SSI increases financial performance by increasing profitability, new market share, and sales. Whereas Strategic Customer Integration (SCI) collaborates with consumer on storing, production planning and logistics, as well as addressing product quality issues, that increases market productivity, and cost efficiency for the storing products (Payne and Frow, 2005; Wong et al., 2011; Ku et al., 2015). This partnership provides strong benefits for customers and manufacturers in improving the quality of product-related information, accuracy of order request, and in planning time for production by making them more receptive to customer needs. The results of this study also confirm the findings of Zhang and Huo (2012); Koufteros et al., (2010); Subburaj et al., (2020). It indicates that the implementation of SCI such as consignment of products in the customer's warehouse will continually raise operational revenue while in order to reduce the cost of renting warehouses and the level of availability of finished products at safety stock as well as maintain current market share from other rivals.

These findings show that manufacturing flexibility is a mediator between SSI and financial performance. The strong integration with the supplier emphasizes on the planning and sharing production schedules for information concerning inventory of raw materials that must be synchronized with the timetable from manufacture. The flexibility in providing details on demand and supply must be comprehensive and forecasted correctly, so that manufacturers can identify fluctuations more effectively in supplier performance, quality product, inventory, and shipping capability (He *et al*., 2014). Strategic alliances with major suppliers increase the sensitivity of manufactures in anticipating the rapid changing markets. For example, bottled water manufactures often face difficulties obtaining the raw material of a cup or bottle packaging from the supplier because of the availability of raw material for plastic pellets that must be imported from abroad.

Therefore, information related to production schedule planning and availability supporting materials from bottled water producers to the main suppliers, impact on responsive suppliers to explain if there are delays in production so that the producer can exercise flexibility in the production process such as rescheduling manufacturing from glass products to bottled products. Manufacturers can overcome the conditions of dynamic market when supported by its main suppliers, so it allows more flexibility in dealing with demand of the uncertainty products (Jayaram et al., 2011; Roh et al., 2014). By giving accurate information to suppliers with changes in schedule, the manufacturer ensures the main supplier to respond faster to these changes, which can directly improve the production flexibility (Wang et al., 2006; Jajja et al., 2018). Manufacturing flexibility

as the key capability to develop new goods, handling product mixes and adapting output effectively to consumer demand (Krathu et al., 2014), quickly improve efficiency for manufactures in improving financial performance. The key effort is to change or resolve consumer demand for volatility, flexibility in the production process will provide strength. The implementation of manufacturing flexibility will reduce the market uncertainty generated by internal adjustments and cover the shortage of existing resources by retaining production stability by providing alternatives in the form of production unit transfers without increased work time and additional costs (D'Souza and Williams, 2000; Wei et al., 2017).

These findings further show that the manufacturing flexibility is a mediator between SCI and financial performance. Implementing SCI enhances manufacture to collaborate with major customer to minimize the cost of storing bottle products because turnover products are fast from factory to consumer warehouse (Wong et al., 2011). Exchanging information between customer and manufacture about availability of products can adjust production planning, and distribution more efficient (Jajja et al., 2018). For instance, the customer makes the purchasing order products to manufacturers in a relatively small quantity, so that impact on the increasing in high production costs. Therefore, sharing information about production schedule between manufacture and customer help suppliers distribute raw material just-in-time that the firms implement manufacturing flexibility in the production process such as one shift production team that can produce mix of packaging products because of small quantity demand which indirectly increase production efficiency. Thus, manufacturers must adopt high flexibility in production to fulfil consumer demand suddenly, for example by switching bottle machine staff and equipment to rotation gallons, so that the purchasing order can be completed in timing agreed, which leverage sales of the goods to be optimum and market share of the consumer is preserved (Javier et al., 2014).

6. Main Implications

Theoretically, this study supports the theory of dynamic capabilities view for leveraged financial performance of drinking bottled industries under manufacturing flexibility, with proper strategic supplier integration, and strategic customer integration, so that the threat of unpredictability can be transformed into a competitive edge through higher flexibility levels. The manufacturing flexibility is positioned as a mediator, this becomes the construct of the new model addresses the research gap of the relationship between strategic customer integration and strategic supplier integration on financial performance. This study provides finding that manufacturing flexibility is higher order dynamic capabilities that allows the industry to reorganize production capacity resources in a timely and flexible manner to adapt with changes in supply and demand as well as market and economy structure, leads to improved financial performance.

The research also has some substantial practical implications to managers for the supply chain management. To survive under this competitive environment, which needs manufacturing flexibility adjustment to processes such as material handling flexibility, labour flexibility, machine flexibility, and mix flexibility, it is important to enhance the capabilities of firms. To accomplish this, synchronization of both strategic supplier integration and strategic supplier integration can be improved. Companies will improve information exchange with external stakeholders through the implementation of a monitoring system to connect with their channel participants, which further improves firm operational efficiency. Drinking bottled industries need to pursue ways to increase customer and supplier partner trust. Strong strategic alliances with key suppliers and major customers will boost firms' ability to respond to dynamic market, which in effect improves financial performance. Various kinds of manufacturing flexibility as adaptive capabilities are also very impactful in many industries where the degree of environmental uncertainty is high. Therefore, managers in these industries should put more emphasis to dynamic changes and develop their capacity to adapt logistics and supply chain activities reactively by engaging with channel partners in information sharing.

7. Conclusions

The findings of this study have delivered some significantly useful evidences of the role of strategic supplier integration and strategic customer integration to improve financial performance in the drinking bottled industries in Indonesia. Thus, the study suggests that approaching of strategic customer integration has stronger influence than strategic supplier integration to achieve the financial performance. However, manufacturing flexibility mediates the influence of strategic supplier integration, and strategic customer integration on financial performance. There are limitations to the present study indicating some future research directions. This study uses a cross-sectional design, so a longitudinal study that will also contribute to the understanding of the impact of strategic supplier integration, and strategic customer integration on manufacturing flexibility, which also improves performance, may be applied for the next research. Finally, the study is taken from a single sector, i.e. the drinking bottled industry, and it is highly beneficial to obtain data from other industries or countries to provide additional results verification.

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