The Effect of Supply Chain Quality Integration on Supply Chain Management Practice to Achieve Supply Chain Performance

Monika Kussetya Ciptani
monique@president.ac.id
Accounting Program Study, Faculty of Business
Universitas Presiden, Cikarang, Indonesia

Yunica Wahyu Dewantari
yunicadewantari@gmail.com
Accounting Program Study, Faculty of Business
Universitas Presiden, Cikarang, Indonesia

Abstract

In manufacturing company, quality of product could become their competitive advantage to compete in the market. To achieve good quality of products and activities, company need to have system or strategy to manage their supply chain activity and make it more effective and efficient flow of production and improve the quality of information sharing, production time, and products, so the company can improve their performance. This study conducted to find out the mediating effect of supply chain quality integration on supply chain management practices to achieve performance. Researcher was using PLS Structural Equation Modelling (PLS-SEM) to analyze data. The sample of this research was consumer goods manufacturing in Indonesia and using primary data with questionnaire as data collection method. After analysis using PLS-SEM, researcher was found that supply chain management practices affect operational performance; and supply chain quality integration has mediating effect on the effect of supply chain management practices on operational performance of company.

Keywords: *supply chain management practices, supply chain quality integration, supply chain performance, just-in-time capability, postponement*

Intisari

Di perusahaan manufaktur, kualitas produk dapat menjadi kompetitif advantage untuk bersaing di pasar. Untuk mendapatkan kualitas aktifitas dan produk yang baik, perusahaan perlu memiliki sistem atau strategi untuk mengatur aktifitas rantai pasokan meningkatkan efektifitas dan efisiensi proses produksi dan meningkatkan kualitas persebaran informasi, waktu produksi, dan produk, sehingga perusahaan dapat meningkatkan performa mereka. Penelitian ini dilakukan guna mengetahui pengaruh mediasi dari kualitas integrasi rantai pasokan terhadap pengaruh praktik manajemen rantai pasokan untuk mencapai performa rantai pasokan yang lebih baik. Peneliti menggunakan PLS Structural Equation Modelling (PLS-SEM) dalam menganalisis primary data yang diperoleh melalui questionnaire terhadap perusahaan manufaktur barang konsumsi di Indonesia sebagai sampel penelitian. Setelah melakukan analisis data, peneliti menemukan bahwa praktik manajemen rantai pasokan dapat mempengaruhi performa operasional rantai pasokan dalam perusahaan ; dan kualitas integrasi rantai pasokan dapat memediasi pengaruh praktik manajemen rantai pasokan terhadap performa operasional rantai pasokan.

Kata Kunci: *praktik manajement rantai pasokan, kualitas integrasi rantai pasokan, performa rantai pasokan,kemampuan just-in-time, postponement*

INTRODUCTION

Supply Chain Management is important for the company. Supply chain management was defined as a set of strategy that was taken by the company to improve the effectiveness of supply chain (Li et al., 2005). The main objective of the supply chain management practice was to reduce the cycle and inventory time and increase product quality and productivity at the same time. In the long term period, supply chain management hopefully can improve the profit, market share, also customer satisfaction of company (Wisner, 2003). Supply chain management also has the ability to promote company integration in order to increase company collaboration (Ajmera & Cook, 2009; Sundram et al., 2016).

In some manufacturing companies, they use *just-in-time* management practices on the production process. The *just-in-time* concept could improve quality control; reduce the lead time; improving the performance of the vendor; and waste elimination (Vokurka & Lummus, 2000). In some conditions, manufacturing also decides to use the postponement management practice, or they delay the production for a period of time. They decide to do this activity to give the value added to their products and improve customer satisfaction (Sundram et al., 2016). For companies, it is important to manage their supply chain because applying an effective supply chain management could boost their customer satisfaction, reduce the operating cost and improve the quality of products, efficiency of production process, competitive advantages, and their financial position (Al-Shboul et al., 2017). But an effective supply chain management would improve the performance depends on how the management commitment and willingness to train their employee and improve the information quality among supply chain member, external or internal members.

With a good cooperative integration among supply chain members, the company can improve the performance by helping the company to solve the quality problem, reduce quality defects, and improve process and efficiency of production (Yu & Huo, 2018). But, to be more competitive in the market, the company does not only need to have and manage good integration in supply chain activity, but they also need to have good supply chain quality integration. With managing good supply chain quality integration, the company can improve the efficiency and effectiveness of flow of production and quality sharing to improve the quality and value of the product, quality of production time, and low-cost product (Flynn et al., 2010; Huo et al., 2016).

Some company realized the importance of supply chain management for their supply chain activity, but usually they does not know what supply chain management practices they should implement (Sundram et al., 2016; Li et al., 2005); and although quality becoming the important things in a company that would gave them competitive advantage to compete in the market, company does not realize the importance of implementing supply chain quality integration in improving the quality of their supply chain activity and products (Huo et al., 2016; Yu and Huo, 2018). This could happen due to lack understanding of what constitutes a comprehensive set of supply chain management practices and what is supply chain quality integration and why it is important for the company.

Although previous researchers were given a clear understanding of how supply chain management affects the supply chain performance, or how supply chain management affects the supply chain integration, there are limited sources about supply chain quality integration and its role in mediating the effects of supply chain management practice to achieve better performance both operational and financial. Previous research has only examined the indirect effect of supply chain integration on supply chain practices and performances (Sundram et al., 2016); and the effects of supply chain quality integration on operational performance (Huo et al., 2016; Yu and Huo, 2018)). Consider the explanation above, the researcher

interested to do the research with the title "*The effect of Supply Chain Quality Integration on Supply Chain Management Practices to achieve Supply Chain Performance*".

Researcher in this study will discuss two questions related to supply chain management. First is about the effect of supply chain management practices on supply chain performance. Second, the effect of supply chain quality integration in supply chain management practice to achieve supply chain performance.

In this study, the researcher will focus on two types of supply chain management which includes *just-in-time* capability and postponement. *Just-in-time* capability relates to the management practices to purchasing the materials based on the materials needed for production, producing the product at the time they receive the order from customers, and delivering the product to customers (Vokurka & Lummus, 2000). While, postponement refers to the management practices when they need to delay or postpone the production process in order to improve the quality of product and meet customer satisfaction (Sundram et al., 2016). In manufacturing company, especially in consumer goods manufacturing company, *just-in-time* capability and postponement is the supply chain management practices that commonly used; but their supply chain management practices are not effectively improve the performance of the company because they does not know how to make the *just-in-time* capability and postponement to be effective for their condition in the company.

The researcher will analyze the impact of *just-in-time* capability and postponement management practice on the supply chain performance of the company either operationally (such as supplier-oriented performance and customer oriented performance), or financially (financial performance). The researcher also will analyze the effect of supply chain quality integration on supply chain management practices in improving the supply chain performance of the company.

To reduce the heterogeneity data, the researcher will do the research on consumer goods manufacturing company that was listed on the Indonesia Stock Exchange (IDX). The selection of consumer goods manufacturing industry was based on the company's production and sales activity.

LITERATURE REVIEW

Supply Chain Management Practice

Supply chain management practice refers to the practice or actions that were taken by the company in order to make effective and efficient management in supply chain activity (Gorane & Kant, 2016). A good supply chain management should in line with our business strategy and management; in line with our customer needs; in line with our position and influence to supplier and customer; it also should be adaptive with the market condition and market change (Cohen & Roussel, 2005). Supply chain management practice in a company has several objectives: (Wisner, 2003)

      a.   Short term objectives include Quality and productivity improvement while reducing inventory and cycle time;

      b.   Long term objectives include: Increase the customer satisfaction, increase the market share, also increase in profit of all networks in the supply chain.

In manufacturing company, supply chain management practice is important in order to: (Council of Supply Chain Management Professionals (CSCMP), n.d)

      a.   Boost customer service by delivering the correct product variance and quantity; locate the product in the right location, deliver product at the right time, and giving a right after sale support;

     b.   Reduce operating costs by decreasing the cost of purchasing, decreasing the cost of production, and decreasing the cost of the total supply chain;

     c.   Improve the financial position by increasing the profit leverage, decrease the fixed asset, and increase the cash flow.

To make a good supply chain management and achieve the objectives of supply chain management practices, the company was adopted several kinds of supply chain management practices such as *just-in-time* capability and/or postponement. *Just-in-time* (JIT) capability refers to the system to synchronized the producing time so the company can produce appropriate items inappropriate amount of product inappropriate time (Gorane & Kant, 2016). Several elements that *just-in-time* (JIT) management should have such as (Vokurka & Lummus, 2000) including: quality control improvement; lead time reduction; improvement of vendor performance; improvement of total preventative maintenance; and elimination of waste.

Postponement management refers to the postpone or delay the producing process of a product to later point of time in order to improve the product, give the added value, and increase the customer satisfaction (Sundram et al., 2016). In a company, adopting postponement management will be appropriating in several conditions: innovative product, high monetary density product, high specialization, and wide range product, long delivery time product market, low frequency of delivery product, and high demand uncertainty (Li et al., 2005). Sometimes, the company needs to postpone their production because they want to improve their quality of the product or reducing the production cost cause of the high monetary density or low frequency of product that was ordered by customer.

Supply Chain Quality Integration

Supply chain quality integration is the combination of supply chain integration and quality management. Supply chain integration refers to the degree to which company collaborates and integrates the internal organization (divisions and staffs in the company) and external organization (supplier and customer) in order to make more effective and efficient flow of product and information sharing to improve the product value, time of production, with a low cost of production (Flynn et al, 2010). While, quality management focused on quality of products and services delivered to the customer (Huo et al., 2016). Based on description above, supply chain quality integration can be defined as the degree to which company collaborates and synchronize the internal organization with external organization parties in order to improve the efficiency and effectiveness of flow of production and quality of information sharing to improve the quality and value of product, quality of time production, and low cost product. There are two kinds of supply chain quality integration, which are internal and external quality integration.

Internal quality integration refers to the degree to which the company set the strategy, practice, and procedures for the internal parties in order to collaborate and synchronized the production process and quality of information sharing to fulfill the quality of customer requirements (Huo et al., 2016). While the external quality integration set the strategies for the external parties of the organization. External quality integration refers to the degree, to which organization integrates with the external parties to set the strategic, procedure, and practice to collaborate and synchronized the production process and quality of information sharing to improve the quality of customer requirements (Yu & Huo, 2018). External quality integration could be separated into two types: *supplier quality integration* which refers to the degree of integration among company with their supplier; and *customer quality integration* which refers to the quality integration among company with their customers.

Supply Chain Performance

Supply chain performance was referred to the systematic process to measure the effective and efficient supply chain activity in their company (Sundram et al., 2016). Supply chain performance could measure company's supply chain activity and management whether it has already achieved or not. There are two kinds of performance: *operational performance* and *financial performance*

Operational performance refers to the performance of the production process and quality in the manufacturing and distribution process to deliver the product in a timely and effective manner (Huo et al., 2014), which has two types of classifications: *supplier-oriented performance* and *customer oriented performance*. Supplier oriented performance relates to the manufacture perception about how their key supplier serves the manufacture with the quality, flexibility, and delivery of products. While, customer oriented performance relates to how the company will serve their customer with the quality, flexibility, and delivery of the product.

Financial performance will focus on evaluating financial aspects on performance such as sales growth, profitability and market share growth of the company.
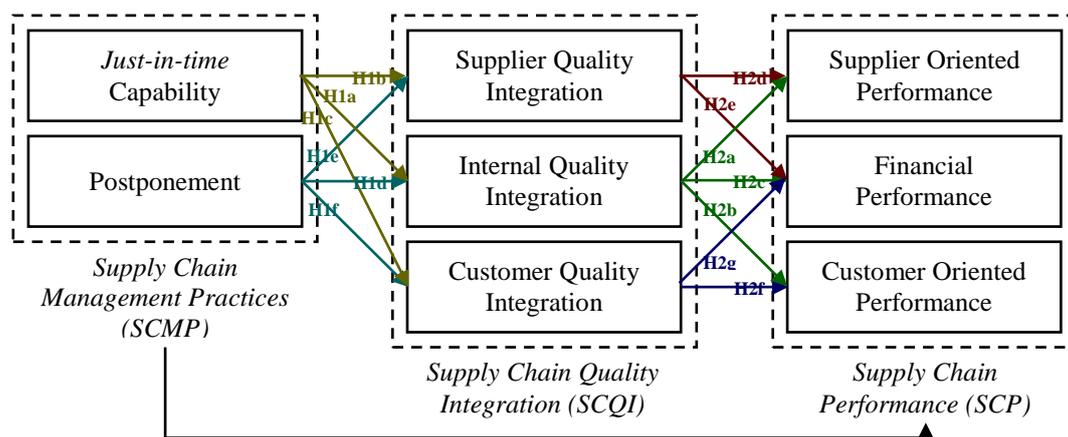
Hypothesis Development

Figure 2.1 Research Model
(Adopted from Sundram et al. (2016), Huo et al. (2016) and Yu and Huo (2018))

The Effect of Supply Chain Management Practice on Supply Chain Quality Integration

Just-in-time (JIT) capability refers to how a company produces the appropriate items, with an appropriate amount, in an appropriate time (Gorane & Kant, 2016). We can well manage this management system only when we can well manage the internal quality integration and external quality integration in the company. When we use *just-in-time* in the supply chain, we need to have good communication and information sharing with internal or external parties. If our integrations are not good enough, then our production process will face some problem cause of miscommunication or late information sharing. As the result, our production will be delayed or postponed. So, to make them *just-in-time* (JIT) management success, we also need to improve the supply chain quality integration. Thus, we proposed following hypothesis

H1a: The level of just-in-time capability has positive effect on the level of internal quality integration

H1b: The level of just-in-time capability has positive effect on the level of supplier quality integration

H1c: The level of just-in-time capability has positive effect on the level of customer quality integration

Postponement management system refers to the system which we delayed or postponed the production in order to improve the quality of the product, give the value added, and give more innovation. In applying this management system, we need to improve our quality integration. The success postponement management depends on how management could be integrated internally and externally. For example, when the company needs to postpone product A for a couple month, so they do not need to order more raw materials and they also need to tell the reasons to the customer so they can reduce the cost of production and their customer will not be unsatisfied. Thus we proposed the following hypothesis:

H1d: The level of postponement has positive effect on the level of internal quality integration

H1e: The level of postponement has positive effect on the level of supplier quality integration

H1f: The level of postponement has positive effect on the level of customer quality integration (H1f)

The Impact of Supply Chain Quality Integration on Supply Chain Performance

Internal quality integration relates to the integration among the internal parties of the company. When their internal integration such as quality of information sharing and communication were improved, they also could improve their performance. When their quality of information sharing and information improved – such as real-time information sharing, accurate information, etc – their production process will be improved so the delivery time and quality of the product will also improve. Their financial performance will also be improved since they could reduce the cost of production from unnecessary raw materials purchased. Thus researcher was proposed following hypothesis

H2a: The level of internal quality integration has positive effect on the level of supplier oriented performance

H2b: The level of internal quality integration has positive effect on the level of customer oriented performance

H2c: The level of internal quality integration has positive effect on the level of financial performance

Supplier quality integration relates to the performance of the company. When the company can improve their integration with the supplier, they will have a close relationship with their supplier; as a result, our supplier will serve us better in quality, delivery, and flexibility of the product. So we could get the product we need on time and it also could reduce the cost of production. Thus researcher was proposed following hypothesis

H2d: The level of supplier quality integration has positive effect on the level of supplier oriented performance

H2e: The level of supplier quality integration has positive effect on the level of financial performance

Customer integration relates to the organization performance. If our customer integration improved, then we will serve our customer better. When it improved, we could better understanding about what the need and what they want, so we could serve better quality,

delivery, and flexibility of the product to fulfill customer needs. Thus researcher was proposed following hypothesis

H2f: The level of customer quality integration has positive effect on the level of customer oriented performance

H2g: The level of customer quality integration has positive effect on the level of financial performance (H2g)

The Effect of Supply Chain Management Practice on Supply Chain Performance

Supply chain management practice was referring to set of tools that were taken by the management of the company to improve the efficiency and effectiveness of supply chain activity in the company (Gorane & Kant, 2016). Good supply chain management practice could reflect the performance of the company. The objective of supply chain management was to improve the performance of the company both operational and financial (Al-Shboul et al., 2017; Wisner, 2003). Therefore, the researcher formulated the following hypothesis:

H3a: The level of just-in-time capability has positive effect on the level of supplier oriented performance

H3b: The level of just-in-time capability has positive effect on the level of customer oriented performance

H3c: The level of just-in-time capability has positive effect on the level of financial performance

H3d: The level of postponement has positive effect on the level of supplier oriented performance

H3e: The level of postponement has positive effect on the level of customer oriented performance

H3f: The level of postponement has positive effect on the level of financial performance

Mediating Effect of Supply Chain Quality Integration

The effect of supply chain management practice on the performance will not be direct and universal. This relationship will depend on how the supply chain quality integration that was set and applied in the company (Sundram et al, 2016). When their supply chain management practice was good but their supply chain quality integration not good, it may affect the performance (it may be good or bad). It depends on how integrative capabilities of the organization across the supply chain. Based on this, we proposed:

H4:   Supply chain quality integration will mediate the supply chain management practice in achieving supply chain performance

RESEARCH METHOD

To test the hypothesis, researcher collected the data from consumer goods manufacturing industry listed on Indonesia Stock Exchange (IDX), especially in consumer goods industry. The reasons for only focus on manufacturing industry; first, to minimize the heterogeneous data. Second, the manufacturing industry is one type of business which has a complete supply chain activity. It does not mean that other industry does not have a supply chain activity, but supply chain activity in the manufacturing industry is more complete and clear to analyze rather than another type of industry. Third, compared to another two sub-sector in the manufacturing sector, consumer goods industry is one of the most active sub-sector in trading their share in Indonesia Stock Exchange (IDX). The survey questionnaire was separated into

a total of 51 consumer goods manufacturer that was randomly selected from the Indonesian Stock Exchange (IDX). The survey was conducted over a span of 4 months. As a result, a total of 22 were collected and the final response rate was 43.14 percent.

In collecting data, researcher was using primary data. Researcher collecting the primary data by doing the survey questionnaire which divided into four main sections of the survey questionnaire: respondent profile, supply chain management practice, supply chain quality integration, and supply chain performance.

RESULT ANALYSIS, DISCUSSION, AND IMPLICATION

Sample Profile
After conducting the research for four months (start from September 2018 until January 2019) and distributing the research questionnaire to 51 consumer goods manufacturing in Indonesia, researcher was collected responses from 22 firms with final response rate 43.14 percent. The respondent firms were from several sectors in consumer goods manufacturing industry that was listed on Indonesian Stock Exchange (IDX), which are: food and beverage (50.00 percent), pharmaceutical (18.18 percent), cosmetic and household (13.64 percent), tobacco manufactures (9.09 percent), and house-ware (9.09 percent).

Table 4.1 Respondents Firm Profile

Sector in Consumer Goods Manufacture		Number of Employees	
Food and Beverages	50.00%	< 5,000 employees	45.45%
Tobacco Manufacturer	9.09%	5,000 - 10,000 employees	27.27%
Pharmaceuticals	18.18%	10,000 - 15,000 employees	9.09%
Cosmetics and Household	13.64%	15,000 - 20,000 employees	4.55%
House-ware	9.09%	20,000 - 25,000 employees	0.00%
Others	0.00%	> 25,000 employees	13.64%
Annual Sales		Operating Experience	
< 1 billions rupiah	18.18%	< 20 years	9.09%
1 - 20 billions rupiah	50.00%	20 - 40 years	40.91%
20 - 40 billions rupiah	18.18%	40 - 60 years	36.36%
40 - 60 billions rupiah	4.55%	60 - 80 years	0.00%
60 - 80 billions rupiah	4.55%	80 - 100 years	9.09%
> 80 billions rupiah	4.55%	> 100 years	4.55%

Reliability and Validity
To verify the reliability and validity of the model, researcher used internal consistency reliability, convergent validity, and discriminant validity as the criteria of evaluation measurement model. Composite reliability (ρc) and Cronbach's alpha (α) were used to analyze the internal consistency reliability. In testing convergent validity, researcher used loadings factor and average variance extracted (AVE). Fornell-Larcker criterion to test the discriminant validity.

Internal consistency reliability was achieved when the composite reliability (ρc) and Cronbach's alpha (α) were fulfilled the criteria. Based on Ghozali (2008), to fulfill the criteria of reliability data, Cronbach's alpha (α) should be greater than 0.70; and composite reliability will be fulfilled at point 0.70 or greater, but 0.60 and 0.50 still can be supported. As shown in Table 4.2, the value of Cronbach's alpha (α) and the composite reliability (ρc) was greater than 0.70 which shows that the model fulfill the criteria of internal consistency reliability.

Convergent validity was tested using loadings factor and average variance extracted (AVE). In fulfilling the criteria of convergent validity, loading factors should be at/more than 0.50; and average variance extracted (AVE) should be more than 0.50. Table 4.2 shows that loadings factor and average variance extracted (AVE) was exceeded 0.50; and the research model fulfilled the criteria of convergent validity.

Table 4.2 Internal Consistency Reliability and Convergent Validity

		Loading
Supply chain Management Practices		
Just-in-time Capability	JIT01	0.759
(ρc = 0.914; α = 0.900; AVE = 0.582)	JIT02	0.743
	JIT03	0.832
	JIT04	0.801
	JIT05	0.885
	JIT06	0.841
	JIT07	0.756
	JIT08	0.511
Postponement	POS01	0.769
(ρc = 0.847; α = 0.766; AVE = 0.582)	POS02	0.729
	POS03	0.792
	POS04	0.742
Supply Chain Quality Integration		
Internal Quality Integration	IQI01	0.782
(ρc = 0.943; α = 0.934; AVE = 0.626)	IQI02	0.835
	IQI03	0.720
	IQI04	0.848
	IQI05	0.830
	IQI06	0.828
	IQI07	0.777
	IQI08	0.688
	IQI09	0.718
Supplier Quality Integration	SQI01	0.628
(ρc = 0.901; α = 0.875; AVE = 0.509)	SQI02	0.731
	SQI03	0.712
	SQI04	0.735
	SQI05	0.608
	SQI06	0.851
	SQI07	0.822
	SQI08	0.703
	SQI09	0.541
Customer Quality Integration	CQI01	0.314

(ρc = 0.897; α = 0.869; AVE = 0.509)	CQI02	0.346
	CQI03	0.805
	CQI04	0.393
	CQI05	0.774
	CQI06	0.783

Supply Chain Performance

Supplier Oriented Performance	SOP01	0.682
(ρc = 0.911; α = 0.920; AVE = 0.634)	SOP02	0.840
	SOP03	0.914
	SOP04	0.703
	SOP05	0.818
	SOP06	0.819
Customer Oriented Performance	COP01	0.656
(ρc = 0.920; α = 0.894; AVE = 0.661)	COP02	0.744
	COP03	0.953
	COP04	0.759
	COP05	0.932
	COP06	0.800
Financial Performance	FP01	0.793
(ρc = 0.960; α = 0.955; AVE = 0.729)	FP02	0.728
	FP03	0.842
	FP04	0.771
	FP05	0.912
	FP06	0.921
	FP07	0.880
	FP08	0.893

Note: Composite reliability (ρc) ≥ 0.70; Cronbach's alpha (α) ≥ 0.70; Average variance extracted (AVE) ≥ 0.50; Loading factor ≥ 0.50

To test the discriminant validity of the data, researcher used Fornell-Lercker criterion. In Fornell-Lercker criterion, the square root of average variance extracted (AVE) should be higher than constructs correlations with other constructs in the model. Table 4.3 shows that the square root average variance extracted (AVE) in the diagonal elements were higher than other constructs correlations. Other criteria of discriminant validity is the cross loadings of intended factors should be greater than loadings of other factors. Appendix C shows that cross loadings factor of intended factors was higher than loadings factor of other constructs. Based on Fornell-Larcker criteria and Cross Loadings factor, these research model was fulfilled the criteria of discriminant validity.

Table 4.3 Discriminant Validity

	JIT	POS	IQI	SQI	CQI	SOP	COP	FP
Just-in-time Capability	**0.763**							
Posponement	0.280	**0.763**						
Internal Quality Intg	0.394	0.156	**0.791**					
Supplier Quality Intg	0.500	0.238	0.811	**0.714**				
Customer Quality Intg	0.453	0.514	0.552	0.753	**0.714**			
Supplier Oriented Perf	0.593	0.501	0.445	0.631	0.511	**0.797**		
Customer Oriented Perf	0.446	0.498	0.656	0.687	0.709	0.674	**0.813**	

Financial Performance	0.180	0.146	0.600	0.444	0.114	0.341	0.449	**0.854**
Mean	0.893	0.754	0.936	0.875	0.860	0.870	0.885	0.956
Standard Deviation	0.042	0.079	0.022	0.037	0.038	0.060	0.028	0.013

Note: Diagonal items are square root of AVE
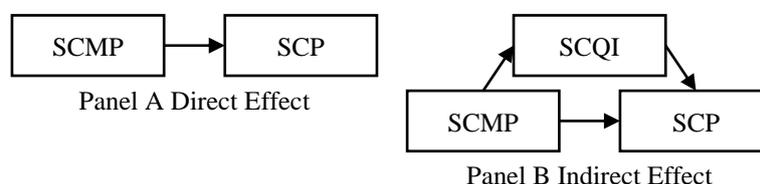
Structural Model

Figure 4.1 Direct and Indirect Effect of Supply Chain Management Practice on Performance

In assessing the multicollinearity, researcher used variance inflation factors (VIF) that should be greater than 10. As showed in Appendix B, research model in this research, variance inflation factors (VIF) was below 10, thus fulfilled collinearity criteria.

In structural modelling, researcher used path coefficient (β), p-value, and T-value to test the effect and significant level between two variables. Path coefficient defines as value of effect/relation of latent variable. To determine the effect of one variable to other variable, researcher was used P-value with significant at $p \leq 0.05$. T-value will analyse the variable have significant effect to another variable or no significant effect. When T-value were greater than T-tables (in this research = 1.96 ($\alpha = 0.05$; two tailed)).

Table 4.4 Result of Hypothesis Test

	β	T-Value		Hypothesis
JIT Capability → IQI	0.380**	1.967	H1a	Supported
JIT Capability → SQI	0.470*	2.580	H1b	Supported
JIT Capability → CQI	0.335***	1.954	H1c	Supported
POS → IQI	0.068	0.238	H1d	Not Supported
POS → SQI	0.171	0.692	H1e	Not Supported
POS → CQI	0.531***	1.952	H1f	Supported
IQI → SOP	-0.136	0.441	H2a	Not Supported
IQI → COP	0.491**	2.097	H2b	Supported
IQI → FP	0.608***	1.960	H2c	Supported
SQI → SOP	0.773*	2.889	H2d	Supported
SQI → FP	0.435	1.004	H2e	Not Supported
CQI → COP	0.541**	2.531	H2f	Supported
CQI → FP	-0.482	1.470	H2g	Not Supported
JIT → SOP	0.520*	2.612	H3a	Supported
JIT → COP	0.316***	1.679	H3b	Supported
JIT → FP	0.214	0.961	H3c	Not Supported
POS → SOP	0.322	1.501	H3d	Not Supported
POS → COP	0.429**	2.196	H3e	Supported
POS → FP	0.141	0.556	H3f	Not Supported

Note: Significant at *$p < 0.01$; **$p < 0.05$; and ***$p < 0.1$
Significant when T-Values was greater than T-Table (confidence level 0.05; two tailed (1.96))

Based on the criteria and result of hypothesis testing, the following result was concluded to answer the research questions. In this research, it was found that *just-in-time* capability in supply chain management practices have significant and positive effect on internal quality integration ($\beta = 0.380$; $p \leq 0.05$; $t \geq 1.96$) and supplier quality integration ($\beta = 0.470$; $p \leq 0.05$; $t \geq 1.96$). Postponement in supply chain management practices has no effect on internal quality integration and supplier quality integration. Customer quality integration was positively affected by *just-in-time* capability ($\beta = 0.335$; $p \leq 0.1$; $t \leq 1.96$) and postponement ($\beta = 0.531$; $p \leq 0.1$; $t \leq 1.96$) but not significant. Thus, results of hypothesis H1a, H1b, H1c, and H1f are supported; while hypothesis H1d and H1e are not supported.

Internal quality integration in supply chain quality integrations was found to have positive significant effect on customer oriented performance ($\beta = 0.491$; $p \leq 0.05$; $t \geq 1.96$); not significant positive effect to financial performance ($\beta = 0.608$; $p \leq 0.1$; $t \leq 1.96$); and internal quality integration has no effect on supplier oriented performance. External quality integrations were found to have positive and significant effect on operational performance (supplier ($\beta = 0.773$; $p \leq 0.05$; $t \geq 1.96$) and customer ($\beta = 0.541$; $p \leq 0.05$; $t \geq 1.96$) oriented performance), and it has no effect on financial performance. It results supported for hypothesis H2b, H2c, H2d, and H2f; and not supported hypothesis H2a, H2e, and H2g.

In line with previous research, *just-in-time* capability was found to have positive and significant direct effect on supplier oriented performance ($\beta = 0.520$; $p \leq 0.05$; $t \geq 1.96$). *Just-in-time* also found to have not significant positive direct effect on customer oriented performance ($\beta = 0.316$; $p \leq 0.1$; $t \leq 1.96$). Postponement found to have positive and significant direct effect on customer oriented performance ($\beta = 0.429$; $p \leq 0.05$; $t \geq 1.96$), and found to have no effect on supplier oriented performance. Financial performance was not affected by supply chain management practice either *just-in-time* capability or postponement. This result was supported hypothesis H3a, H3b, and H3e; and rejected hypothesis H3c, H3d, and H3f.

Mediating Effect Testing

In testing the mediating effects of supply chain quality integration on supply chain management practices to achieve performance, researcher adopted mediation analysis procedure from Hair et al. (2017). First, researcher tested the significance level of indirect effect via mediating variable. If there is no significance level of indirect effect, it means that there is only direct effect (if there is significant level of direct effect) or no effect (if there is no significance level of direct effect). If there is significance level of indirect effect, researcher continued to next step of mediation analysis procedure.
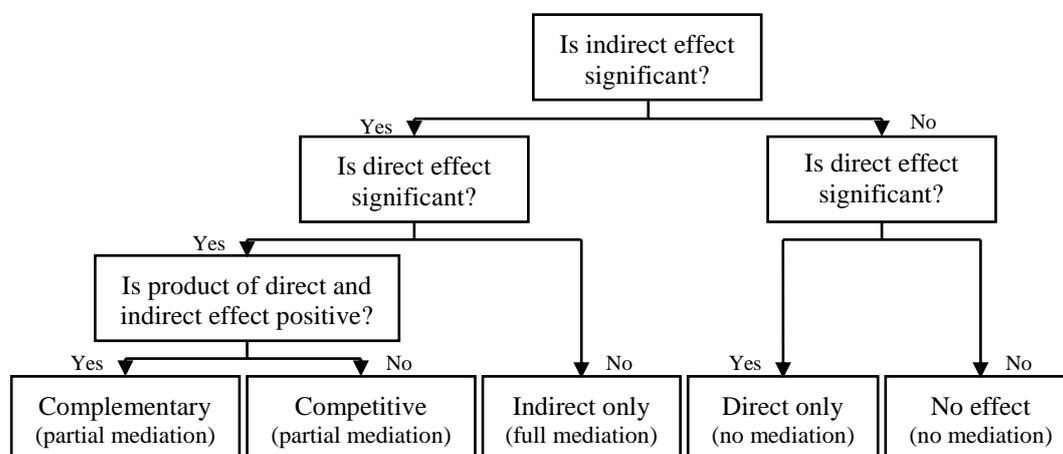

Figure 4.2 Mediating Analysis Procedure

Second, researcher tested the significance level of direct effect. If there is no significant level of direct effect, it means the mediating variable was fully mediated the effect of independent and dependent variable. If there is significant level of direct effect, researcher continued to next step of mediation procedure.

Third, researcher tested the positive and negative product of direct and indirect effect. Positive product of direct and indirect effect means that the indirect path has same direction as direct path. While, negative product of direct and indirect effect means that indirect path has opposite direction as direct path. If the products of direct and indirect effects are positive, it means that the mediating variable has complementary partial mediating effect on dependent and independent variable. If the products of direct and indirect effects are negative, it means that the mediating variable has competitive partial mediating effect on dependent and independent variable. Figure 4.2 was clearly shows us the procedure of mediating analysis from Hair et al. (2017).

Table 4.5 Mediating Analysis

	Indirect		Direct		Mediate	Product
	B	T-Value	B	T-Value		
JIT → SOP	0.295**	2.349	0.520*	2.612	Yes	Positive
JIT → COP	0.301**	2.412	0.316***	1.679	Yes	Positive
JIT → FP	0.222	1.267	0.214	0.961	No	Positive
POS → SOP	0.074	0.449	0.322	1.501	No	Positive
POS → COP	0.229	1.053	0.429**	2.196	No	Positive
POS → FP	-0.120	0.574	0.141	0.556	No	Negative

Note: Significant at $*p < 0.01$; $**p < 0.05$; and $***p < 0.1$
Significant when T-Values was greater than T-Table (confidence level 0.05; two tailed (1.96))

Based on criteria of mediating analysis procedure by Hair et al. (2017), researcher found that supply chain quality integration as mediating variable was partially mediate the effect of *just-in-time* capability on operational performance (supplier ($\beta = 0.295$; $p \leq 0.05$; $t \geq 1.96$) and customer oriented performance ($\beta = 0.301$; $p \leq 0.05$; $t \geq 1.96$)). Supply chain quality integration was not found to mediate the effect of *just-in-time* capability on financial performance; and also the effect of postponement on supply chain performance. Thus the result was supported by hypothesis H4.

Discussion and Theory Implications

After conducting research in consumer goods manufacturing industry listed in Indonesian Stock Exchange (IDX), researcher found several information regard "*the effect of supply chain quality integration on supply chain management practice to achieve supply chain performance*".

The Effect of Supply Chain Management Practices on Supply Chain Quality Integration

Supply chain quality integration refers to the degree to which company synchronized and collaborates internal and external organization functions in order to improve the effectiveness and efficiency flow of production and quality of information sharing in order to improve the quality and value of product, quality of time production, and low cost product (Flynn et al., 2010; Huo et al., 2016). *Just-in-time* (JIT) capability refers to how a firm produces the appropriate items, with an appropriate amount, in an appropriate time (Gorane & Kant,

2016). When firms applying *just-in-time* capability in their supply chain management practices and well managing their *just-in-time* capability, it will result the positive effects on their supply chain quality integration.

Researcher found that *just-in-time* capability has positive effect on internal quality integration, supplier quality integration, and customer quality integration. It reflects that by well managing their *just-in-time* capability in supply chain management practices, firms can improve their quality integration within internal functions and external functions of supply chain members. When the quality integration within internal functions improve, they can improve their efficiency and effectiveness of production process by improving the quality of information sharing (accuracy and real time information sharing), improving communication in problem solving, and coordination activities. When the quality integration with supplier improve, the company can manage the close relationship with supplier in order to help supplier improve their quality of product, communicate the design changes to meet our criteria of product quality. By applying *just-in-time* capability, company quality integration with customer will be improved by managing close relationship with customer in order to well understand customer demands, improve quality of products, and solve the problems with customer.

Postponement in supply chain management practice referred to the activities of delay or postpone the production process to later point of time in order to improve the products quality, give added value, and increase customer satisfaction (Sundram et al., 2016). By applying and well managing postponement in supply chain management, company quality integration with customer will be improved also. Postponement management practices allow company to delay or postpone their production process to later point of time, then company can give value added to their products, or customer can give input to the company about the quality of product development.

The Effect of Supply Chain Quality Integration on Supply Chain Performance

Supply chain quality integration was divided into two types which are: internal quality integration and external quality integration. By applying supply chain quality integration, company could improve their performance of supply chain activity. Result in this study found that supply chain quality integration has positive effect on performance of operational activities in company. By applying supply chain quality integration, company can quickly modify the products to meet criteria of customer quality of products needed. Company also can introduce their new product faster, improve the lead time production which resulted on time delivery product of customer, and improve customer satisfaction. Supplier of company also can improve their performance by reducing the lead time of production, introduced new product faster, and quickly modified the products. But, by applying supply chain quality integration, the financial performance of the company would not be affected, which means that the sales and profit with and without supply chain quality integration will not change.

The Effect of Supply Chain Management Practices on Supply Chain Performance

Operational performance (supplier oriented performance and customer oriented performance) were affected by *just-in-time* capability and postponement. With *just-in-time* capability in supply chain management practice, company can improve their operational performance. It is because when company applied *just-in-time* capability, they would produce their product in appropriate time with appropriate amount, and it resulted the efficient and effective of production process. If company can improve the efficiency and effectiveness of production process, company can reduce the lead time of production process and deliver the products on time. With postponement in supply chain management practice, company can quickly respond the changes of market demands, quickly modify their products, and quickly

introduced the new products to the market. This result was confirmed previous research from Dong et al (2001) that high level *just-in-time* capability in company supply chain management practices would improve the performance of the company. Also, the high level postponement would improve the performance of the company (Sundram et al., 2016).

Financial performance of the company would not affect by supply chain management practice either *just-in-time* capability and postponement. It is because by applying *just-in-time* capability and postponement, financial performance of the company such as sales and profit will not changes.

The Mediating Effect of Supply Chain Quality Integration on Supply Chain Management Practices to achieve Supply Chain Performance

Supply chain quality integration found that it has partial mediating effect on supply chain management practice in achieving supply chain performance. *Just-in-time* capability would directly affect and improve the supply chain performance of company. The effect of *just-in-time* capability to supply chain performance would be affected by supply chain quality integration. By applying supply chain quality integration, their *just-in-time* capability in supply chain management practice would be more effective and efficient to achieve supply chain performance.

The effect of postponement in supply chain management practice to achieve supply chain performance would not be affected by supply chain quality integration. Postponement only has direct effect to supply chain performance. It means that the effect of postponement to supply chain performance with/without supply chain quality integration will not be changes.

CONCLUSION, LIMITATIONS, AND SUGGESTIONS

Conclusion

Result in this study found that supply chain management practices would positively affect supply chain quality integration and operational performance in supply chain performance of the company. By applying and well managing the supply chain management practices, company can improve their effectiveness and efficiency of production and quality of information sharing and improve the quality integration within internal functions of the company, and between company and external functions of company. Supply chain management practice would improve the performance of the company by reducing the lead time of production, quickly modify the product and introduced the new product to the market. Company also can analyze quickly and understand the changes in demand on the market.

Supply chain quality integration has positive effect on supply chain performance of the company. Supply chain quality integration would help company to set strategy and procedure to improve the effective and efficient production process and quality of information sharing. With good quality integration on supply chain management practice, company can understand the changes on the demand of market better, quickly introduced new product on the market, and quickly modify the product to meet customer criteria of product and achieve customer satisfaction.

This research also found that Supply chain quality integration has mediating effect on the effect of supply chain management practice to achieve operational performance in company. By applying supply chain quality integration, the supply chain management practices on the company would improve and the supply chain performance also would be improved.

Limitations

Several limitations related to the data analysis and data collection is that this study only focused on one sector of the manufacturing industry which has the most activities in

production and selling in order to minimize the heterogeneity of the data resulted from this research. The result of this study might be different with the conditions of other sector in manufacturing industry or business. Second, the researcher only took the small amount of sample according to the data of consumer goods manufacturing industry that only was listed in Indonesia Stock Exchange (IDX). So, if researcher takes the bigger population such as all consumer goods manufacturing in Indonesia both listed or not listed in IDX it could reflect the different result also. Third, this research was held in a limited point of time (4 months). It might not see the changes or trends of how supply chain management practices would affect supply chain performance in different period of time. Last, researcher in this research was only focus on two types of supply chain management practice which are *just-in-time* capability and postponement.

Suggestions

Future research can be applied in a different sector of the company and held a long time period of research, so that the trends in supply chain activity can be analyzed. Future research also can find another combination of the supply chain management practice – besides *just-in-time* capability and postponement such as agreed vision and goals and/or risk and reward sharing – that will influence the supply chain performance with supply chain quality integration. Besides, finding the new combination of supply chain quality integration or finding another measurement that would influence the supply chain management practice will have different result for supply chain performance.

REFERENCES

Ajmera, A. & Cook, J. (2009). A multi-phase framework for supply chain integration. *SAM Advanced Management Journal*, *74*(1), 37-49.

Al-Shboul, M. A. R., Barber, K. D., Garza-Reyes, J. A., Kumar, V., & Abdi, M. R. (2017) The effect of supply chain management practices on supply chain and manufacturing firms' performance. *Journal of Manufacturing Technology Management*, *28* (5), 577-609. https://doi.org/10.1108/JMTM-11-2016-0154

Cohen, S. & Roussel J. (2005). *Strategic supply chain management: The five disciplines for top performance*. USA: McGraw-Hill. DOI: 10.1036/0071454497

Dong, Y., Carter, C. R., & Dresner, M. E. (2001). JIT purchasing and performance: an exploratory analysis of buyer and supplier perspectives. *Journal of Operations Management*, *19* (4), 471-483. https://doi.org/10.1016/S0272-6963(00)00066-8

Flynn, B. B., Huo, B., & Zhao, X. (2010). The impact of supply chain integration on performance: A contingency and configuration approach. *Journal of Operations Management*, *28* (1), 58-71. https://doi.org/10.1016/j.jom.2009.06.001

Ghozali, I. (2008). *Structural Equation Modeling metode alternatif dengan Partial Least Square* (2nd ed.). Indonesia: Badan Penerbit Universitas Diponegoro. ISBN: 9797042509

Gorane, S. J. & Kant, R., (2016). Supply chain practices: An implementation status in Indian manufacturing organizations. *Benchmarking: An International Journal*, *23* (5), 1076-1110. https://doi.org/10.1108/BIJ-06-2014-0059

Hair, J. F. Jr., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). A primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) (2nd ed.). Los Angeles: SAGE Publications, Inc. ISBN: 9781483377445

Huo, B., Zhao, X., & Lai, F. (2014). Supply chain quality integration: antecedents and consequences. *IEEE Transactions on Engineering Management*, *61* (1), 38 – 51. DOI: 10.1109/TEM.2013.2278543

Huo, B., Ye, Y., Zhao, X., & Zhu, K. (2016). Supply chain quality integration: A taxonomy perspective. *International Journal of Production Economics*, *207*, 236–246. https://doi.org/10.1016/j.ijpe.2016.05.004

Huo, B. (2012). The impact of supply chain integration on company performance: An organizational capability perspective. *Supply Chain Management: An International Journal*, *17* (6), 596–610. http://dx.doi.org/10.1108/13598541211269210

Li, S., Rao, S. S., Ragu-Nathan, T. S., & Ragu-Nathan, B. (2005). Development and validation of a measurement instrument for studying supply chain management practices. *Journal of Operations Management*, *23* (6), 618-641. https://doi.org/10.1016/j.jom.2005.01.002

Mentzer, J. T., DeWitt, W., Keebler, J. S., Min, S., Nix, N. W., Smith, C. D., & Zacharia, Z. G. (2001). Defining supply chain management. *Journal of Business Logistics*, *22* (2), 1-25. DOI: 10.1002/j.2158-1592.2001.tb00001.x

Sundram, V. P. K., Chandran, V. G. R., & Bhatti, M. A., (2016). Supply chain practices and performance: The indirect effects of supply chain integration. *Benchmarking: An International Journal*, *23* (6), 1445-1471. https://doi.org/10.1108/BIJ-03-2015-0023

The importance of supply chain management (n.d). In *Council of Supply Chain Management Professionals* (*CSCMP*). Retrieved February 1, 2019, from https://cscmp.org/CSCMP/Develop/Starting_Your_SCM_Career/Importance_of_SCM/ CSCMP/Develop/Starting_Your_Career/Importance_of_Supply_Chain_Management.a spx?hkey=cf46c59c-d454-4bd5-8b06-4bf7a285fc65

Vokurka, R. J. & Lummus, R. R. (2000). The role of just-in-time in supply chain management. *The International Journal of Logistics Management*, *11* (1), 89-98. http://dx.doi.org/10.1108/09574090010806092

Vollmann, T. E., Cordon, C., & Heikkila, J. (2000). Teaching supply chain management to business executives. *Production and Operations Management*, 9 (1), 81-90. https://doi.org/10.1111/j.1937-5956.2000.tb00325.x

Wisner, J. D. (2003). A structural equation model of supply chain management strategies and firm performance. *Journal of Business Logistics*, *24* (1), 1-26.

Yu, Y., & Huo, B. (2018) Supply chain quality integration: relational antecedents and operational consequences. *Supply Chain Management: An International Journal*, *23* (3), 188-206. https://doi.org/10.1108/SCM-08-2017-0280

APPENDIX

A.1   Appendix A: Research Measurement Items

Measurement Items
Supply Chain Management Practices

Just-in-time Capability

To what extent has this customer and supplier used the following JIT programs with you?

JIT01	Order size reduction
JIT02	Negotiation process simplification
JIT03	Open-order status paperwork reduction
JIT04	Expediting, receiving count, and inspection cost reduction
JIT05	Order lead time reduction
JIT06	Quality assurance program
JIT07	Formal supplier evaluation and selection program

JIT08   Sole sourcing

Postponement
Please indicate the extent to which you agree or disagree with each of these statements about your company

POS01   Our products are designed for modular assembly

POS02   Our production process modules can be re-arranged so that customization can be carried out later at distribution centers

POS03   We delay final product assembly activities until customer orders have actually been received

POS04   We delay final product assembly activities until the last possible position (or nearest to customers) in the supply chain

Supply Chain Quality Integration

Internal Quality Integration
Please indicate the extent to which you agree or disagree with each of these statements about your company

IQI01   The functions in our company work well together

IQI02   The functions in our company cooperate to solve conflicts between them when they arise

IQI03   Our company's functions coordinate their activities

IQI04   Our company's functions work interactively with each other

IQI05   During problem solving sessions, we make an effort to get all team members' opinions and ideas before making a decision

IQI06   Our company forms teams to solve problems

IQI07   In the past 5 years, many problems have been solved through small group sessions

IQI08   Real-time searching of quality-related operating data

IQI09   The utilization of periodic inter-functional quality meetings among internal functions

Supplier Quality Integration
Please indicate the extent to which you agree or disagree with each of these statements about your company

SQI01   We maintain cooperative relationships with our major supplier

SQI02   We help our major supplier to improve their quality

SQI03   We maintain close communications with our major supplier about quality considerations and design changes

SQI04   Our major supplier provides input into our product development projects for quality control

SQI05   Our major supplier is involved in our new product development processes for quality management

SQI06   We engage our major supplier in our quality improvement efforts

SQI07   We help our major supplier to improve its processes to better meet our quality requirements

SQI08   We share our quality requirements with our major supplier

SQI09   We jointly resolve quality problems with our major supplier

Customer Quality Integration
Please indicate the extent to which you agree or disagree with each of these statements about your company

CQI01   We are frequently in close contact with our major customer in

	quality management
CQI02	Our major customer gives us feedback on our quality and delivery performance
CQI03	Our major customer provides input into quality control during our product design process
CQI04	Our processes are certified, or qualified, by our major customer
CQI05	Our major customer is involved in quality management during our new product development process
CQI06	We engage major customer in our quality improvement efforts

Supply Chain Performance

Supplier Oriented Performance

Please indicate the extent to which you agree or disagree with each of these statements about your company

SOP01	Our major supplier can quickly modify products to meet our company's requirements
SOP02	Our major supplier can quickly introduce new products into the markets
SOP03	Our major supplier can quickly respond to changes in market demand
SOP04	Our supplier has an outstanding on-time delivery record to our company
SOP05	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
SOP06	Our major supplier provide high level of customer service to our company

Customer Oriented Performance

Please indicate the extent to which you agree or disagree with each of these statements about your company

COP01	Our company can quickly modify products to meet our major customer's requirements
COP02	Our company can quickly introduce new products into the markets
COP03	Our company can quickly respond to changes in market demand
COP04	Our company has an outstanding on-time delivery record to our major customer
COP05	The lead time for fulfilling customer orders (the time which elapses between the receipt of customer's order and the delivery of the goods) is short
COP06	Our company provides high level of customer service to our major customer

Financial Performance

How does your company perform compared with your major competitors?

FP01	Sales
FP02	Growth in sales
FP03	Profit
FP04	Growth in profit

FP05	Return on investment (ROI)
FP06	Return on sales (ROS)
FP07	Market share
FP08	Growth in market share

A.2   Appendix B: *Item Pengukuran Penelitian*

Item Pengukuran

Supply Chain Management Practices

Just-in-time Capability

Sejauh mana pemasok dan pelanggan anda menerapkan program - program Just-in-time (JIT) berikut bersama anda?

JIT01	*Pengurangan ukuran pesanan*
JIT02	*Penyederhanaan proses negosiasi*
JIT03	*Pengurangan dokumen status open-order*
JIT04	*Pengurangan ekspedisi, jumlah penerimaan, dan biaya pemeriksaan*
JIT05	*Pengurangan lead time pesanan*
JIT06	*Program jaminan kualitas*
JIT07	*Program evaluasi dan pemilihan supplier resmi*
JIT08	*Sumber tunggal*

Postponement

Berdasarkan kondisi di perusahaan anda, apakah anda setuju atau tidak setuju dengan pernyataan berikut?

POS01	*Produk kami telah dirancang untuk perakitan modular*
POS02	*Modul proses produksi kami dapat disusun ulang sehingga proses kustomisasi dapat dilakukan nanti di pusat distribusi*
POS03	*Kami menunda kegiatan perakitan produk akhir hingga pesanan pelanggan benar – benar diterima*
POS04	*Kami menunda proses perakitan produk akhir hingga posisi akhir yang memungkinkan (atau paling dekat dengan pelanggan) dalam supply chain*

Supply Chain Quality Integration

Internal Quality Integration

Berdasarkan kondisi di perusahaan anda, apakah anda setuju atau tidak setuju dengan pernyataan berikut?

IQI01	*Fungsi di perusahaan kami bekerjabersama dengan baik*
IQI02	*Fungsi di perusahaan kami bekerjasama untuk menyelesaikan masalah yang timbul diantara mereka*
IQI03	*Fungsi di perusahaan kami mengkoordinasikan kegiatan mereka*
IQI04	*Fungsi di perusahaan kami bekerja secara interaktif satu sama lain*
IQI05	*Selama sesi penyelesaian masalah, kami berusaha mendapatkan semua opini dan ide semua anggota tim sebelum membuat keputusan*
IQI06	*Perusahaan kami membentuk tim untuk menyelesaikan*

	masalah
IQI07	*Dalam 5 tahun terakhir, banyak masalah yang telah diselesaikan melalui sesi kelompok kecil*
IQI08	*Kualitas terkait pencarian real-time dari data operasi*
IQI09	*Pemanfaatan kualitas pertemuan inter-fungsional berkala antar fungsi internal*

Supplier Quality Integration

Berdasarkan kondisi di perusahaan anda, apakah anda setuju atau tidak setuju dengan pernyataan berikut?

SQI01	*Kami mempertahankan hubungan kerjasama dengan supplier kami*
SQI02	*Kami membantu supplier kami untuk meningkatkan kualitas mereka*
SQI03	*Kami mempertahankan komunikasi yang erat dengan supplier kami mengenai pertimbangan kualitas dan perubahan rancangan*
SQI04	*Supplier kami memberikan masukan terkait pengembangan produk untuk quality control*
SQI05	*Supplier kami terlibat dalam proses pengembangan produk baru kami untuk kualitas manajemen*
SQI06	*Kami melibatkan supplier kami dalam upaya peningkatan kualitas*
SQI07	*Kami membantu supplier kami untuk meningkatkan prosesnya agar dapat memenuhi persyaratan kualitas kami*
SQI08	*Kami membagikan persyaratan kualitas kami kepada supplier kami*
SQI09	*Kami bergabung dengan supplier kami dalam menyelesaikan masalah kualitas*

Customer Quality Integration

Berdasarkan kondisi di perusahaan anda, apakah anda setuju atau tidak setuju dengan pernyataan berikut?

CQI01	*Dalam manajemen kualitas, kami tetap menjaga hubungan erat dengan pelanggan kami*
CQI02	*Pelanggan kami memberikan umpan balik mengenai performa kualitas dan pengiriman kami*
CQI03	*Pelanggan kami menyediakan masukan dalam kualitas kontrol selama proses perancangan produk*
CQI04	*Proses kami telah bersertifikat, atau memenuhi syarat, dari pelanggan kami*
CQI05	*Pelanggan kami terlibat dalam manajemen kualitas selama proses pengembangan produk baru kami*
CQI06	*Kami mengikut-sertakan pelanggan kami dalam upaya peningkatan kualitas kami*

Supply Chain Performance

Supplier Oriented Performance

Berdasarkan kondisi di perusahaan anda, apakah anda setuju atau tidak setuju dengan pernyataan berikut?

SOP01	*Supplier kami dapat memodifikasi produk dengan cepat untuk*

	memenuhi persyaratan perusahaan kami
SOP02	*Supplier kami dapat memperkenalkan produk baru kepasar dengan cepat*
SOP03	*Supplier kami dapat merespon perubahan dalam permintaan pasar dengan cepat*
SOP04	*Supplier kami memiliki rekaman on-time delivery yang luar biasa ke perusahaan kami*
SOP05	*Lead time yang dibutuhkan supplier kami (waktu yang berlalu antara pemesanan kami dan pengiriman produk) untuk memenuhi pesanan kami singkat*
SOP06	*Supplier kami menyediakan layanan pelanggan tingkat tinggi ke perusahaan kami*

Customer Oriented Performance

Berdasarkan kondisi di perusahaan anda, apakah anda setuju atau tidak setuju dengan pernyataan berikut?

COP01	*Perusahaan kami dapat memodifikasi produk dengan cepat untuk memenuhi persyaratan pelanggan kami*
COP02	*Perusahaan kami dapat memperkenalkan produk baru ke pasar dengan cepat*
COP03	*Perusahaan kami dapat merespon perubahan dalam permintaan pasar dengan cepat*
COP04	*Perusahaan kami memiliki rekam jejak on-time delivery ke pelanggan yang luar biasa*
COP05	*Lead time yang dibutuhkan (waktu yang berlalu antara penerimaan pesanan pelanggan dan pengiriman produk) untuk memenuhi permintaan pelanggan singkat*
COP06	*Perusahaan kami menyediakan layanan pelanggan tingkat tinggi untuk pelanggan kami*

Financial Performance

Bagaimana performa perusahaan anda dibandingkan dengan kompetitor anda?

FP01	*Penjualan*
FP02	*Pertumbuhan penjualan*
FP03	*Keuntungan*
FP04	*Pertumbuhan keuntungan*
FP05	*Laba atas investasi (ROI)*
FP06	*Laba atas penjualan (ROS)*
FP07	*Pangsa pasar*
FP08	*Pertumbuhan pangsa pasar*

A.3   Appendix B: Reliability, Validity and Multicollinearity Test

	Reliability		Validity		Collin.
	ρc	A	AVE	Loadings	VIF
Supply Chain Management Practices (SCMP)					
Just-in-time Cap.	0.914	0.900	0.582		
JIT01				0.759	3.321

JIT02				0.743	3.335
JIT03				0.832	2.649
JIT04				0.801	4.290
JIT05				0.885	4.527
JIT06				0.841	6.917
JIT07				0.756	5.191
JIT08				0.511	1.470
Postponement	0.847	0.766	0.582		
POS01				0.769	1.273
POS02				0.729	1.534
POS03				0.792	1.933
POS04				0.742	1.774
Supply Chain Quality Integration (SCQI)					
Internal Qlt Intgrn	0.943	0.934	0.626		
IQI01				0.782	5.642
IQI02				0.835	5.225
IQI03				0.720	2.356
IQI04				0.848	8.235
IQI05				0.830	4.657
IQI06				0.828	5.063
IQI07				0.777	3.828
IQI08				0.688	7.236
IQI09				0.718	8.014
Supplier Qlt Intgrn	0.901	0.875	0.509		
SQI01				0.628	4.800
SQI02				0.731	3.155
SQI03				0.712	4.329
SQI04				0.735	3.611
SQI05				0.608	2.539
SQI06				0.851	7.728
SQI07				0.822	8.144
SQI08				0.703	3.034
SQI09				0.541	1.921
Customer Qlt Intgrn	0.897	0.869	0.509		
CQI01				0.314	1.948
CQI02				0.346	3.261
CQI03				0.805	4.841
CQI04				0.393	3.321
CQI05				0.774	4.611
CQI06				0.783	2.054
Supply Chain Performance (SCP)					
Supplier Orntd Perf.	0.911	0.920	0.634		
SOP01				0.682	1.988
SOP02				0.840	2.857
SOP03				0.914	4.565
SOP04				0.703	1.772

SOP05					0.818	4.056
SOP06					0.819	3.434
Customer Orntd Perf.	0.920	0.894	0.661			
COP01					0.656	2.081
COP02					0.744	2.164
COP03					0.953	9.039
COP04					0.759	2.688
COP05					0.932	8.325
COP06					0.800	2.401
Financial Perform.	0.960	0.955	0.729			
FP01					0.793	4.191
FP02					0.728	3.719
FP03					0.842	8.352
FP04					0.771	5.238
FP05					0.912	7.847
FP06					0.921	7.211
FP07					0.880	8.555
FP08					0.893	7.706

A.4 Appendix C: Cross Loadings Factor

	JIT	POS	IQI	SQI	CQI	SOP	COP	FP
JIT01	0.660	0.303	0.203	0.152	0.163	0.447	0.257	0.148
JIT02	0.811	0.098	0.314	0.356	0.435	0.365	0.217	-0.080
JIT03	0.828	0.337	0.288	0.447	0.434	0.548	0.389	0.160
JIT04	0.675	0.245	0.078	0.161	0.129	0.570	0.295	0.119
JIT05	0.844	0.168	0.185	0.252	0.203	0.568	0.404	0.224
JIT06	0.917	0.212	0.462	0.545	0.410	0.505	0.419	0.191
JIT07	0.851	0.146	0.496	0.572	0.363	0.473	0.425	0.218
JIT08	0.379	0.375	0.046	0.005	0.271	0.312	0.365	0.172
POS01	0.371	0.668	0.194	0.199	0.387	0.431	0.588	0.323
POS02	0.210	0.714	0.119	0.042	0.267	0.301	0.309	-0.034
POS03	0.154	0.852	0.102	0.226	0.409	0.335	0.218	0.086
POS04	0.083	0.799	0.124	0.210	0.430	0.421	0.337	0.027
IQI01	0.235	-0.009	0.775	0.597	0.236	0.222	0.307	0.609
IQI02	0.285	0.106	0.830	0.616	0.353	0.157	0.380	0.572
IQI03	0.633	0.272	0.761	0.765	0.583	0.747	0.719	0.260
IQI04	0.336	0.039	0.838	0.632	0.359	0.204	0.394	0.628
IQI05	0.207	-0.191	0.791	0.521	0.162	0.147	0.327	0.651
IQI06	0.235	0.046	0.819	0.606	0.301	0.197	0.331	0.494
IQI07	0.105	0.048	0.753	0.537	0.258	0.228	0.265	0.486
IQI08	0.303	0.334	0.701	0.602	0.583	0.498	0.811	0.309
IQI09	0.286	0.312	0.741	0.751	0.697	0.540	0.770	0.315
SQI01	0.072	-0.068	0.568	0.542	0.269	0.275	0.344	0.660
SQI02	0.260	0.032	0.736	0.697	0.357	0.197	0.311	0.582
SQI03	0.151	-0.092	0.525	0.635	0.295	0.390	0.418	0.638
SQI04	0.448	0.198	0.601	0.780	0.594	0.569	0.490	0.172
SQI05	0.387	0.425	0.479	0.669	0.649	0.468	0.402	0.026

|							
SQI06	0.477	0.223	0.692	0.888	0.637	0.633	0.538	0.196
SQI07	0.542	0.247	0.734	0.849	0.594	0.611	0.652	0.306
SQI08	0.464	0.306	0.587	0.733	0.708	0.492	0.817	0.192
SQI09	0.253	0.207	0.335	0.545	0.500	0.241	0.293	0.318
CQI01	0.061	-0.233	0.477	0.448	0.249	0.208	0.343	0.558
CQI02	0.293	-0.284	0.620	0.504	0.297	0.047	0.231	0.442
CQI03	0.307	0.426	0.322	0.533	0.886	0.372	0.510	-0.044
CQI04	0.204	-0.107	0.586	0.531	0.295	0.194	0.222	0.468
CQI05	0.361	0.657	0.328	0.544	0.862	0.461	0.435	-0.015
CQI06	0.391	0.517	0.412	0.539	0.846	0.388	0.547	-0.051
SOP01	0.286	0.484	0.268	0.470	0.472	0.705	0.532	0.197
SOP02	0.513	0.511	0.306	0.457	0.374	0.824	0.431	0.225
SOP03	0.504	0.340	0.483	0.531	0.391	0.905	0.591	0.292
SOP04	0.385	0.269	0.138	0.199	0.075	0.648	0.376	0.069
SOP05	0.559	0.368	0.400	0.451	0.300	0.812	0.609	0.367
SOP06	0.559	0.374	0.526	0.693	0.489	0.854	0.628	0.349
COP01	0.259	0.326	0.529	0.480	0.466	0.242	0.694	0.561
COP02	0.371	0.389	0.396	0.396	0.257	0.682	0.691	0.257
COP03	0.445	0.554	0.614	0.632	0.613	0.714	0.956	0.438
COP04	0.329	0.402	0.546	0.531	0.344	0.703	0.725	0.370
COP05	0.413	0.360	0.656	0.659	0.599	0.585	0.946	0.423
COP06	0.360	0.317	0.524	0.598	0.586	0.453	0.823	0.237
FP01	0.292	0.222	0.746	0.619	0.289	0.342	0.440	0.839
FP02	0.036	0.114	0.501	0.344	0.098	0.213	0.461	0.817
FP03	0.152	0.089	0.596	0.445	0.174	0.269	0.521	0.919
FP04	0.037	-0.012	0.566	0.438	0.054	0.271	0.401	0.868
FP05	0.118	0.175	0.241	0.220	0.023	0.272	0.343	0.842
FP06	0.222	0.234	0.374	0.289	0.049	0.370	0.294	0.834
FP07	0.179	0.057	0.182	0.071	-0.179	0.237	0.246	0.796
FP08	0.147	0.152	0.287	0.275	0.038	0.293	0.323	0.817

A.5 Appendix D: Structural Equation Modelling
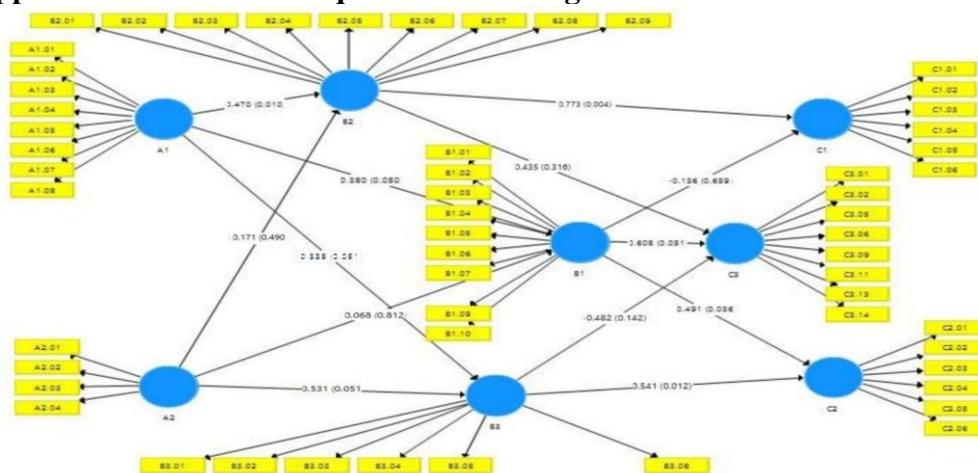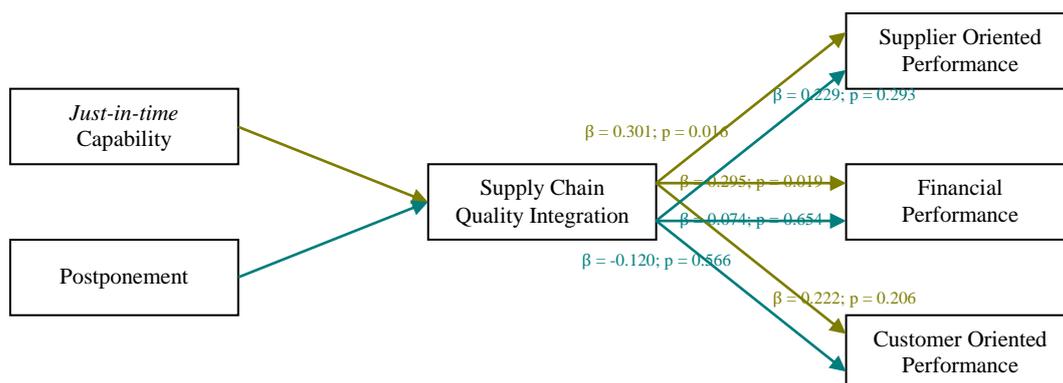

Source: SmartPLS 3.2.8
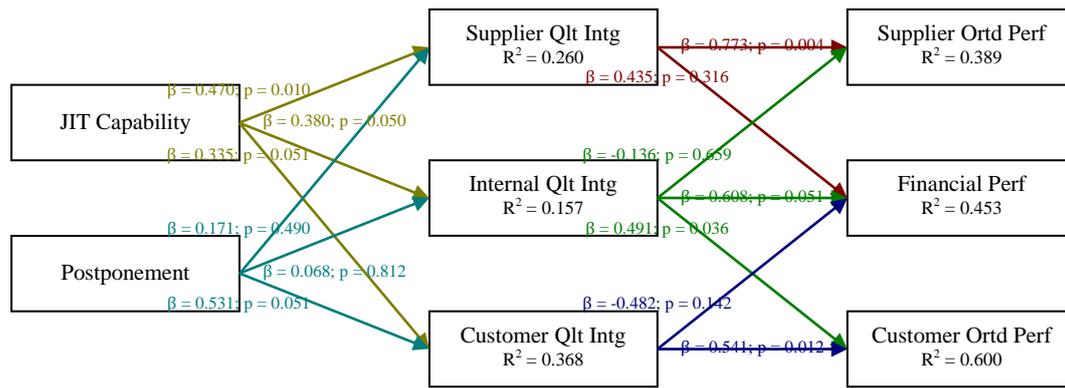
Structural equation modelling for the effect of Supply Chain Management Practices (SCMP) to Supply Chain Quality Integration (SCQI) and Supply Chain Quality Integration (SCQI) to Supply Chain Performances (SCP)
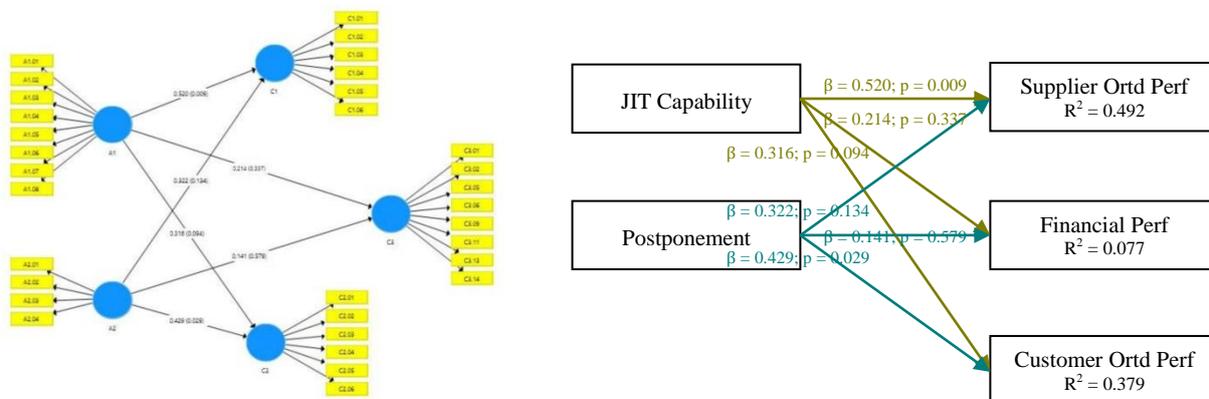
Source: SmartPLS 3.2.8

Structural equation modelling for the direct effect of Supply Chain Management Practices (SCMP) to Supply Chain Performances (SCP)

Structural equation modelling for the indirect effect of Supply Chain Quality Integration (SCQI) to the effect of Supply Chain Management Practices (SCMP) to Supply Chain Performances (SCP)