CHAPTER 6:

6.0 FINDINGS AND DISCUSSION

6.1 Introduction

The previous chapter discussed the results of the study based on the eight main hypotheses which indicates the relationship between supply chain management practices, supply chain integration and supply chain management. This chapter summarizes the main points of the results and shows how they addressed the research questions. This chapter begins with a summary of the results and presents the findings in a brief manner.

This study examined the impact of supply chain management practices (i.e. strategic supplier partnering, customer relationship management, information sharing, information quality, internal lean practices, postponement, agreed vision and goals and risk and reward sharing) towards supply chain integration and supply chain performance in electronics manufacturing industry in Malaysia.

6.2 Summary of Result of the Hypotheses

This study contributes to the existing body of knowledge by examining the relationship between supply chain management practices, supply chain integration and supply chain performance among the firms in the electronics manufacturing industry of Malaysia. This study has its novelty in that it provides a holistic perspective of the critical factors that influence supply chain management practices towards the supply chain integration and supply chain performance in this particular industry.

The model used is based upon a unified framework combining eight constructs that constitute the a combination of comprehensive model (Li et al. 2006b; Li et al. 2005) and system approach model (Min & Mentzer 2004), both of which were captured from the extensive literature review. This new combination framework represents a comprehensive supply chain management practices which constitute several dimensions such as upstream (strategic supplier partnership) and downstream (customer relationship) sides of a supply chain, information flow across a supply chain (information sharing and information quality), and internal supply chain processes (postponement), system approach (Min & Mentzer 2004) (agreed vision & goals and risk & award sharing).

Moreover, the model is interactive, multi-dimensional, and comprehensive to help strategic managers to understand the relationships between supply chain management practices, supply chain integration and supply chain performance, which have received very little research attention to date. Thus, by combining the variables and testing them in a separate category singly, has allowed the researcher to generate a more accurate picture of the causal relationships between the variables.

In order to close these gaps and verify certain issues of supply chain management practices in electronics manufacturing industry of Malaysia, the study suggested a few objectives. As previously stated, the intent of this study was to verify the following:

1) To examine the relationships between the dimensions of supply chain management practices variables (strategic supplier partnering, customer relationship, information

sharing, information quality, internal lean practices, postponement, agreed vision and goals and risk and reward sharing), mediating variable *(supply chain integration)*and dependent variable *(supply chain performance)*.

2) To ascertain the level of impact of the dimensions of supply chain management practices variables (strategic supplier partnering, customer relationship management, information sharing, information quality, internal lean practices, postponement, agreed vision and goals and risk and reward sharing) on supply chain integration.

3) To ascertain the level of impact of the dimensions of supply chain management practices variables (strategic supplier partnering, customer relationship management, information sharing, information quality, internal lean practices, postponement, agreed vision and goals and risk and reward sharing) on dimensions of supply chain performance (flexibility performance, output performance and resource performance).

6.2.1 Summary of Result of Hypothesis One

The table below depicts the summary result of Hypothesis One (1), which indicates the relationship between dimensions of supply chain management practices (independent variables) and resources performance (dependent variable). Hypothesis [1c] and Hypothesis [1d] posit significant positive relationships between dimensions of supply chain management practices and resource performance.

Table 6.1
Summary Results of Hypothesis One

Hypotheses	Statement	Result
H1	**Supply chain management practices are significantly and positively related to resources performance.**	
H1[a]	Strategic supplier partnering is significantly and positively related to resources performance.	Not supported
H1[b]	Customer relationship is significantly and positively related to resources performance.	Not supported
H1[c]	Information sharing is significantly and positively related to resources performance.	**Supported**
H1[d]	Information quality is significantly and positively related to resources performance.	**Supported**
H1[e]	Internal lean practices are significantly and positively related to resources performance.	Not supported
H1[f]	Postponement is significantly and positively related to resources performance.	Not supported
H1[g]	Agreed vision and goals is significantly and positively related to resources performance.	Not supported
H1[h]	Risk and reward sharing is significantly and positively related to resources performance	Not supported

Source: Computed Data Analysis

In relation to the first dimension of the dependent variable (supply chain resource performance), only two dimensions of the supply chain management practices: (1) information sharing and (2) information quality have significant relationship with supply chain resource performance. The other six dimensions of the supply chain management practices: (1) Strategic supplier partnering, (2) customer relationship management, (3) internal lean practices (4) postponement; (5) agreed vision & goals and (6) risk & reward sharing are not significantly related to supply chain resource performance.

6.2.2 Summary of Result of Hypothesis Two

The table below depicts the summary result of Hypothesis Two (2), which indicates the relationship between dimensions of supply chain management practices (independent variables) and output performance (dependent variable). Hypothesis (1c), Hypothesis (1d)

and Hypothesis (1f) posit significant relationships between dimensions of supply chain management practices and output performance.

Table 6.2
Summary Results of Hypothesis Two [2]

Hypotheses	Statement	Result
H2	**Supply chain management practices are significantly and positively related to output performance.**	
H2[a]	Strategic supplier partnering is significantly and positively related to output performance.	Not supported
H2[b]	Customer relationship is significantly and positively related to output performance.	Not supported
H2[c]	Information sharing significantly and positively related to output performance.	**Supported**
H2[d]	Information quality is significantly and positively related to output performance.	**Supported**
H2[e]	Internal lean practices are significantly and positively related to output performance.	Not supported
H2[f]	Postponement is significantly and positively related to output performance.	**Supported**
H2[g]	Agreed vision and goals is significantly and positively related to output performance.	Not supported
H2[h]	Risk and reward sharing is significantly and positively related to output performance.	Not supported

Source: Computed Data Analysis

In relation to the second dimension of the dependent variable (supply chain output performance), only three dimensions of the supply chain management practices; (1) information sharing and (2) information quality, and (3) postponement, have significant relationship with supply chain output performance. Besides, the other four dimensions of the supply chain management practices; (1) strategic supplier partnering, (2) internal lean practices, (3) agreed vision & goals, (4) customer relation and (5) risk & reward sharing are not significantly related to supply chain output performance.

6.2.3 Summary of Result of Hypothesis Three

The table below depicts the summary result of Hypothesis Three (3), which indicates the relationship between dimensions of supply chain management practices (independent variables) and flexibility performance (dependent variable). Hypothesis [1c] and [1g] posit significant relationships between dimensions of supply chain management practices and flexibility performance.

Table 6.3
Summary Results of Hypothesis Three [3]

Hypotheses	Statement	Result
H3	**Supply chain management practices are significantly and positively related to flexibility performance.**	
H3[a]	Strategic supplier partnering is significantly and positively related to flexibility performance.	Not supported
H3[b]	Customer relationship is significantly and positively related to flexibility performance.	Not supported
H3[c]	Information sharing significantly and positively related to flexibility performance.	**Supported**
H3[d]	Information quality is significantly and positively related to flexibility performance.	Not supported
H3[e]	Internal lean practices are significantly and positively related to flexibility performance.	Not supported
H3[f]	Postponement is significantly and positively related to flexibility performance.	Not supported
H3[g]	Agreed vision and goals is significantly and positively related to flexibility performance.	**Supported**
H3[h]	Risk and reward sharing is significantly and positively related to flexibility performance.	Not supported

Source: Computed Data Analysis

In relation to the third dimension of the dependent variable (supply chain flexibility performance), only two dimensions of the supply chain management practices: (1) information sharing and (2) agree vision & goals; have significant relationship with supply chain flexibility performance. The other six dimensions of the supply chain management practices: (1) Strategic supplier partnering, (2) customer relationship, (3) internal lean

practices (4) postponement, (5) information quality, and (6) risk & reward sharing are not significantly related to supply chain flexibility performance.

6.2.4 Summary of Result of Hypothesis Four

The table below depicts the summary result of Hypothesis Four (4), which indicates the relationship between dimensions of supply chain management practices (independent variables) and supply chain integration (mediating variable). Hypothesis 4c, 4d and 4g posit significantly positive relationship between (1) information sharing and supply chain integration, (2) information quality and supply chain integration, and (3) agreed vision & goal and supply chain integration.

Table 6.4
Summary Results of Hypothesis Four [4]

Hypotheses	Statement	Result
H4	**Supply chain management practices are significantly and positively related to supply chain integration.**	
H4[a]	Strategic supplier partnering is significantly and positively related to supply chain integration	Not supported
H4[b]	Customer relationship is significantly and positively related to supply chain integration	Not supported
H4[c]	Information sharing is significantly and positively related to supply chain integration	**Supported**
H4[d]	Information quality is significantly and positively related to supply chain integration	**Supported**
H4[e]	Internal lean practices are significantly and positively related to supply chain integration	Not supported
H4[f]	Postponement is significantly and positively related to supply chain integration	Not supported
H4[g]	Agreed vision and goals is significantly and positively related to supply chain integration	**Supported**
H4[h]	Risk and reward sharing is significantly and positively related to supply chain integration	Not supported

Source: Computed Data Analysis

In relation to the supply chain integration, the mediating variable, only three dimensions of the supply chain management practices: (1) information sharing, (2) information quality,

and (3) agreed vision & goals, have significant relationship with supply chain integration. Besides, the other four dimensions of the supply chain management practices: (1) strategic supplier partnering, (2) customer relationship, (3) internal lean practices and (4) risk & reward sharing are not significantly related to supply chain integration.

6.2.5 Summary of Result of Hypothesis Five

The table below depicts the summary result of Hypothesis Five (5), which indicates the relationship between dimensions of supply chain integration (mediating variables) and supply chain performance (dependent variable). This study hypothesized that supply chain management integration has significant relationship with supply chain performance.

Table 6.5
Summary Results of Hypothesis Five [5]

Hypotheses	Statement	Result
H5	**Supply chain integration is significantly and positively related to supply chain performance**	
H5[a]	Supply chain integration is significantly and positively related to resources performance	**Supported**
H5[b]	Supply chain integration is significantly and positively related to output performance	**Supported**
H5[c]	Supply chain integration is significantly and positively related to flexibility performance	**Supported**

Source: Computed Data Analysis

The results show that all the Hypotheses 5a, 5b and 5c are fully supported. Alternatively, the results show that the variance in the supply chain performance (resource performance, output performance and flexibility performance) is explained by supply chain integration. Hence, the findings imply that supply chain performance could be enhanced or influence through supply chain integration.

6.2.6 Summary of Result of Hypothesis Six

The table below depicts the summary result of Hypothesis Six (6), which indicates the mediating effect of supply chain integration in the relationship between dimensions of supply chain management practices (independent variables) and resources performance (dependent variable). This study hypothesized that supply chain integration has significant mediation effect in the relationship between supply chain management practices and supply chain resource performance (Hypothesis 6). The results show that all the hypothesis 6 is partially supported.

Table 6.6
Summary Results of Hypothesis Six [6]

Hypotheses	Statement	Result
H6	**Supply chain integration will mediate the relationship between supply chain management practices and resource performance**	
H6[a]	Supply chain integration will mediate the relationship between strategic supplier partnering and resources performance.	Not supported
H6[b]	Supply chain integration will mediate the relationship between customer relationship and resources performance.	Not supported
H6[c]	Supply chain integration will mediate the relationship between information sharing and resources performance.	**Supported**
H6[d]	Supply chain integration will mediate the relationship between information quality and resources performance.	**Supported**
H6[e]	Supply chain integration will mediate the relationship between internal lean practices and resources performance.	Not supported
H6[f]	Supply chain integration will mediate the relationship postponement between and resources performance.	Not supported
H6[g]	Supply chain integration will mediate the relationship between agreed vision and goals and resources performance.	Not supported
H6[h]	Supply chain integration will mediate the relationship between risks and reward sharing and resources performance.	Not supported

Source: Computed Data Analysis

However, this study found that supply chain integration could only mediate two dimensions of supply chain management practices that are the information sharing and information quality dimensions. Specifically, (1) supply chain integration partially mediates the relationship between information sharing and supply chain resource performance, and (2) supply chain integration fully mediates the relationship between information quality and supply chain resource performance.

6.2.7 Summary of Result of Hypothesis Seven

The table below depicts the summary result of Hypothesis Seven (7), which indicates the mediating effect of supply chain integration in the relationship between dimensions of supply chain management practices (independent variables) and output performance (dependent variable). This study hypothesized that supply chain integration has significant mediation effect in the relationship between supply chain management practices and supply chain resource performance (Hypotheses 7). The results show that the hypothesis 7 is partially supported.

Table 6.7
Summary Results of Hypothesis Seven [7]

Hypotheses	Statement	Result
H7	**Supply chain integration will mediate the relationship between supply chain practices and output performance**	
H7 a]	Supply chain integration will mediate the relationship between strategic supplier partnering and output performance.	Not supported
H7[b]	Supply chain integration will mediate the relationship between customer relationship and output performance.	Not supported
H7[c]	Supply chain integration will mediate the relationship between information sharing and output performance.	**Supported**
H7[d]	Supply chain integration will mediate the relationship between information quality and output performance.	**Supported**
H7[e]	Supply chain integration will mediate the relationship between internal lean practices and output performance.	Not supported
H7[f]	Supply chain integration will mediate the relationship between postponement and output performance.	Not supported
H7[g]	Supply chain integration will mediate the relationship between agreed vision and goals and output performance.	Not supported
H7[h]	Supply chain integration will mediate the relationship between risks and reward sharing and output performance.	Not supported

Source: Computed Data Analysis

However, this study found that supply chain integration could only mediate two dimensions of supply chain management practices, that are, information sharing and information quality dimensions. Specifically, (1) supply chain integration partially mediates the relationship between information sharing and supply chain output performance, and (2) supply chain integration fully mediates the relationship between information quality and supply chain output performance.

6.2.8 Summary of Result of Hypothesis Eight

The table below depicts the summary result of Hypothesis Eight (8), which indicates the mediating effect of supply chain integration in the relationship between dimensions of supply chain management practices (independent variables) and flexibility performance

(dependent variable). This study hypothesized that supply chain integration has significant mediation effect in the relationship between supply chain management practices and supply chain flexibility performance (Hypothesis 8). The results show that the Hypothesis 8 is partially supported.

Table 6.8
Summary Results of Hypothesis Eight [8]

Hypotheses	Statement	Result
H8	**Supply chain integration will mediate the relationship between supply chain practices and flexibility performance**	
H8[a]	Supply chain integration will mediate the relationship between strategic supplier partnering and flexibility performance.	Not supported
H8[b]	Supply chain integration will mediate the relationship between customer relationship and flexibility performance.	Not supported
H8[c]	Supply chain integration will mediate the relationship between information sharing and flexibility performance.	**Supported**
H8[d]	Supply chain integration will mediate the relationship between information quality and flexibility performance.	Not supported
H8[e]	Supply chain integration will mediate the relationship between internal lean practices and flexibility performance.	Not supported
H8[f]	Supply chain integration will mediate the relationship postponement between and flexibility performance.	Not supported
H8[g]	Supply chain integration will mediate the relationship between agreed vision and goals and flexibility performance	**Supported**
H8[h]	Supply chain integration will mediate the relationship between risks and reward sharing and flexibility performance	Not supported

Source: Computed Data Analysis

However, this study found that supply chain integration could only mediate two dimensions of supply chain management practices that are the information sharing and agreed vision and goals dimensions. Specifically, (1) supply chain integration partially mediates the relationship between information sharing and supply chain flexibility performance, and (2) supply chain integration partially mediates the relationship between agreed vision and goals and supply chain flexibility performance.

6.3 Readdressing the Research Question and Recapitulation of Main Findings

The presentation in this section provides answers to the research questions that were raised in this study at the initial stage. The four research questions were posed to guide the research study process. This section revisits research question or the objectives of study and provides answers with elaboration in accordance to the findings of the research. The four research questions are:

RQ1: What are the supply chain management practices contributing to the supply chain performance in electronics manufacturing industry in Malaysia?

RQ2: What are the supply chain management practices contributing to the supply chain integration in electronics manufacturing industry in Malaysia?

RQ3: What dimensions of supply chain performance are related to supply chain integration in electronics manufacturing industry in Malaysia?

RQ4: How does supply chain integration mediate the relationship between supply chain management practices and supply chain performance in electronics manufacturing industry in Malaysia?

In further discussion, this section will deliberate the findings in terms of the relationship between the dimensions of supply chain management practices, (that is, strategic supplier partnering, customer relationship management, information sharing, information quality, internal lean practices, postponement, agreed vision and goals and risk and reward sharing),

supply chain integration (mediating variable) and dimensions of supply chain performance (that is, resource performance, flexibility performance and output performance).

Besides, further discussion is on the findings on the mediating effect of supply chain integration towards the relationship between supply chain management practices and supply chain performance. Overall, this current research has generally rendered conclusive and new evidence that contributes significantly to the existing body of knowledge to the literature on the importance of supply chain management practices to supply chain integration and supply chain performance in the electronics industry in Malaysia.

Despite the significant amount of research progress achieved in the field of supply chain management, the issues of supply chain management practices, supply chain integration and supply chain performance in a single setting has seldom been addressed succinctly in the previous literature. By treating the potential impact of supply chain management practices and supply chain integration on supply chain performance improvement in this study, important conclusive evidence emerged. The major findings of this study are as follows:

6.3.1 The Relationship between Supply Chain Management Practices and Supply Chain Performance

RQ1: What are the supply chain management practices contributing to the supply chain performance in the electronics manufacturing industry in Malaysia?

The first research question, what are the supply chain management practices contributing to the supply chain performance in the electronics industry in Malaysia, was answered by the survey findings. The supply chain management practices have direct positive impact on the supply chain performance. The finding implies that information sharing and information quality practices can help firms to enhance the performance of supply chain management in the electronics industry.

Firstly, in this study information sharing refers to the extent of information communicated between partners in the respective supply chain such as suppliers, distributors and customers (Ding, et al., 2011; Li, Ragu-Nathan, et al., 2006; Li, et al., 2005; Sezen, 2008). In detail, the content of information sharing among trading partners along the supply chain involves information sharing pertaining to business proprietary, business planning, business process and change of information. The result shows that information sharing practices is positively related to supply chain resources performance. This finding confirms the statement of previous research that Malaysia's electrical and electronics industry has high information sharing culture among its supply chain members (Chong, Ooi, Lin, & Raman, 2009). As such, the level of supply chain performance may depend on the extent of information sharing practices. A higher level of information sharing practices may lead to a

higher level of supply chain resources performance. This finding is consistent with the resource-based view and other studies that highlight the significant role of information sharing in achieving high performance (Chin, et al., 2004; Ding, et al., 2011; Graham & Hardaker, 2000; Hong & Jeong, 2006; Li, Ragu-Nathan, et al., 2006; Li, et al., 2005). These previous studies also found significant relationships between information sharing and supply chain performance. For example, Graham & Hardaker (2000) asserted that efficient use of resource is made possible if organisation in the supply chain implement good information sharing practices. Similarly, this finding is also supported by Basnet, et al., (2003) who found lack of information sharing among members of supply chain as the key hindrance for supply chain excellence in New Zealand manufacturing firms. Meanwhile, Hong & Jeong (2006) argue that information sharing in deemed to be important in both large enterprises and medium/small enterprises in order to influence the various performance goal of its supply chain. In relation to the resource-based view, this study supports Li, et al., (2006) contentions on the role of information sharing in achieving competitive advantage.

Hence, this study provides further support for the information sharing – supply chain performance relationship. Furthermore, this study also provides characteristics of information sharing that could improve supply chain resource performance. In this study, the characteristics of information sharing that could improve supply chain resource performance include sharing of information on business unit proprietary with its trading partners, informing in advance of changing needs with trading partners and sharing of proprietary information. In addition, the characteristics proceed on with sharing of information on issues that affect business, sharing information on business knowledge of

core business processes, promote exchange of information that helps establishment of business planning among trading partners along the supply chain and finally, sharing information about events or changes that may affect the other partners.

In terms of the impact of supply chain flexibility performance , for example, (Stein & Sweat, 1998) found that supply chain members or trading partners who practice regular information sharing has the ability to work closely as a single entity and subsequently possess the capability to understand customer needs and respond successfully to the demand variation (flexibility performance). Similarly, this finding is also supported by Jarrell (1998) who noted that information sharing taking place in the entire supply chain could enhance flexibility performance of the supply chain in the long run. In turn, this creates flexible supply chain to react to sudden changes in volatile demand environment (Lee, So, & Tang, 2000). In relation to the resource-based view, this study support (C. Jones, 1998; Novack, Langley, & Rinehart, 1995) the contentions on the role of information sharing by taking data available in an organisation and sharing it with other partners within the supply chain as a source of competitive advantage.

Hence, this study provides further support for the information sharing – performance relationship. Furthermore, this study also provides characteristics of information sharing that could improve supply chain flexibility performance. In this study, the characteristics of information sharing that could improve supply chain flexibility performance includes sharing business units' proprietary information with its trading partners, informs trading partners in advance of changing needs, sharing proprietary information, sharing information about issues that affect its business, sharing information on business knowledge of core

business processes, promote exchange of information that helps the establishment of business planning among trading partners along the supply chain and finally, sharing information about events or changes that may affect the other partners.

Secondly, this study refers to information quality as the extent of quality of information communicated in terms of completeness, reliability, accuracy, adequacy, and timeliness (Li, Ragu-Nathan, et al., 2006; Li, et al., 2005). In detail, the content of information quality in the process of information sharing among trading partners along the supply chain that involves completeness of information sharing across supply chain, reliability of information sharing across supply chain, accuracy of information sharing across supply chain, adequateness of information sharing across supply chain and timeliness of information sharing across supply chain. The result shows that information quality practices are positively related to supply chain resources performance. As such, the level of supply chain resource performance may depend on the extent of information quality practices. A higher level of information quality practices may lead to a higher level of supply chain resources performance.

This finding is consistent with the resource-based view and other studies that highlight the significant role of information quality in achieving high performance (Forslund & Jonsson, 2007; Li, Ragu-Nathan, et al., 2006; Li, et al., 2005). These previous studies also found significant relationships between information quality and performance. For example, Forslund & Jonsson (2007) found that information quality as the key driver in achieving high supply chain performance. As such, (Moberg, et al., 2002) supported that without information quality there will be little value of information reliability and validity. The

conclusion that exchange of quality information has a positive impact on supply chain resource performance is logical and in line with previous research (Fliedner, 2003; Petersen, 1999). Hence, this study presents evidence that information quality may increase the supply chain performance.

Thirdly, in this study, agreed vision and goal refers to the extent of system approach view in establishing commonly agreed vision among supply chain partners to achieve specific common objectives (Mentzer, et al., 2001; Min & Mentzer, 2004). The result shows that agreed vision and goals practices are positively related to supply chain flexibility performance. As such, the level of supply chain flexibility performance may depend on the extent of agreed vision and goals practices. A higher level of agreed vision and goals practices may lead to a higher level of supply chain flexibility performance. This finding is consistent with other studies that highlight the significant role of agreed vision and goals in achieving supply chain performance (Bechtel & Jayaram, 1997; Mentzer, et al., 2001; Min & Mentzer, 2004). For example, Mentzer, et al., (2001) found that agreed vision and goals practices are the key enabler to achieve strong collaboration and relationship among members of supply chain. Subsequently, it promises better organisational performance (Bechtel & Jayaram, 1997) and supply chain performance (Min & Mentzer, 2004). Hence, this study presents evidence that agreed vision and goals may increase the supply chain flexibility performance.

Fourthly, in this study, postponement refers to the extent of which the practice of moving forward one or more operations of supply chain management such as produce, source and distribute to a much later point in the supply chain (Beamon, 1998; Hoek, et al., 1999; M.

E. Johnson & Davis, 1998; Naylor, et al., 1999; Van Hoek, 1998). In detail, the content of postponement in the supply chain operations includes modularity production and assembly, delay assembly activities at point of order and at the location closer to customer (Doran & Giannakis, 2011; Li, Ragu-Nathan, et al., 2006; Li, et al., 2005). The result shows that postponement practice is positively related to supply chain output performance. As such, the level of supply chain output performance may depend on the extent of postponement. A higher level of postponement practices may lead to a higher level of supply chain resources performance. This finding is consistent with the resource-based view and other studies that highlight the significant role of postponement in achieving high performance (Chung & Ng, 2008; Hoek, et al., 1999; Pagh & Cooper, 1998; Sako, Lamming, & Helper, 1994; Yang, et al., 2007; Yeung, et al., 2007). These previous studies also found significant relationships between postponement and supply chain performance. Such examples are found in the work of Krajewski, Wei & Tan,(2005) ;Yeung et al., (2007) found that postponement practices as the key element in achieving reduced inventory cost and improved supply chain performance in manufacturing environment. Further, the result of this study is consistent with a case study research in United Kingdom automobile industry which provided substantial evidence that postponement influences the supply chain output performance in terms of manufacturing lead time and shipping information accuracy (Sako, et al., 1994). Hence, this study presents evidence that postponement may increase the supply chain output performance.

6.3.2 The Relationship between Supply Chain Management Practices and Supply Chain Integration

RQ2: What are the supply chain management practices contributing to the supply chain integration in the electronics manufacturing industry in Malaysia?

The second research question, that is, what are the supply chain management practices contributing to the supply chain integration in the electronics industry in Malaysia, can be answered by the survey findings. The supply chain management practices have a direct positive impact on the supply chain integration. The finding implies that information sharing practices, information quality practices and agreed vision & goals among members of supply chain can help increase the integration capabilities of supply chain management in the electronics industry in Malaysia. In this study, supply chain integration reflects the extent to which all activities within an organisation, and the activities of its suppliers, customers, and other supply chain members, are integrated together (Marquez, Bianchi, & Gupta, 2004; Narasimhan & Jayaram, 1998; Stephens, 2001). In general, this finding implies that electronics manufacturing industry in Malaysia have a high level of supply chain integration.

This result implies that a high level of information sharing, information quality and with commonly agreed vision & goal among trading partners in a supply chain could result in a higher level or higher extent of integration among supply chain members (trading partners) in the electronics manufacturing industry. The finding is also in accordance with previous researchers who also found the significant role of supply chain management practices in

achieving supply chain integration (Kim, 2006b; Levy, Bessant, Sang, & Lamming, 1995; Li, et al., 2009; Power, 2005).

Furthermore, the positive significant relationship between information sharing and supply chain integration found in this study provides empirical evidence on the importance of information communication effectiveness among the supply chain partners. As such, this point provides confirmation of the conclusion of both Li et al., (2009) and Kim, (2006b). In addition, this study also found that information quality has positive significant relationship with supply chain integration. In relation to electronics manufacturing firms, the finding shows that a quality communication of information could enhance the level of supply chain integration in the electronics industry. This finding supports the view that supply chain integration could be influenced profoundly by information quality in terms of supply chain management practices (Levy, et al., 1995). Also, agreed vision & goal has positive significant relationship with supply chain integration. This particular finding supports Bowersox, Closs & Stank, (1999) and Min & Mentzer (2004) whose arguments that commonly shared vision and goals among suppliers, manufacturers and customers in a supply chain will assimilate growth, in an organisation. It also supports the Bowersox, Closs & Stank, (2000) contention that supply chain integration could be leveraged through common goal sharing with trading partners in the same supply chain.

6.3.3 The Relationship between Supply Chain Integration and Supply Chain performance

RQ3: What dimensions of supply chain performance are related to supply chain integration in the electronics manufacturing industry in Malaysia?

The third research question, that is, what dimensions of supply chain performance are related to supply chain integration in the electronics manufacturing industry in Malaysia, can be answered by the survey findings. The supply chain integration has a direct positive impact on the supply chain performance. The supply chain performance is further investigated specifically in terms of resource performance, flexibility performance and output performance. The finding implies that supply chain integration enhances the performance of supply chain in terms of resource performance, flexibility performance and output performance in the electronics industry.

Specifically, this study found that supply chain performance (includes resources performance, output performance, flexibility performance) could be enhanced through extensive level of supply chain integration. The specific findings of the relationship between supply chain integration and supply chain performance is discussed in the following section.

The result of this study supports the proposition of previous studies that supply chain integration could have significant influence and impact towards performance (Fabbe-Costes & Jahre, 2007; Kim, 2006b; Lee, et al., 2007; Zolait, Ibrahim, Chandran, & Veera,

2010). This research adds to the existing body of knowledge by demonstrating a linkage between supply chain integration and performance of the manufacturing firms in the developing economies, Malaysia, a link which has also been recently substantiated by Zoliat, et al., (2010) who found that supply chain integration has a positive effect on the firms performance in terms of operational excellence, customer relationship and revenue growth. This point provides confirmation of the conclusion of both Lummus & Vokurka, (1999b) and Sezen, (2008) . Other authors (Flynn, et al., 2010; Lee, et al., 2007), clearly showed that there is a direct supply chain performance benefit, specifically in the cost containment and performance reliability if the integration of various business network in the supply chain is managed effectively.

6.3.4 The Relationship between Supply Chain Management Practices, Supply Chain Integration and Supply Chain Performance

RQ4: How does supply chain integration mediate the relationship between supply chain management practices and supply chain performance in Malaysia's electronics manufacturing industry?

The fourth research question, that is, how does supply chain integration mediate the relationship between supply chain management practices and supply chain performance in the electronics industry in Malaysia, can be answered by the survey findings. The supply chain integration partially mediates the relationship between supply chain management practices and supply chain performance. The finding implies that information sharing practices, information quality practices and agreed vision & goals could improve the performance of the supply chain indirectly via supply chain integration as a mediator.

This study conceptualizes supply chain integration as the cumulative capability of an organization, in which, manufacturing firms, should have before achieving excellent supply chain performance. Evidently, the study indicates that information sharing, information quality and agreed vision & goal has both direct and indirect effects on supply chain performance. The indirect effect is via supply chain integration. This finding also entails that manufacturing firms that have better information sharing, agreed vision & goals and information quality practices would have better supply chain integration, which in turn, would lead to higher level of supply chain performance.

The mediation role of supply chain integration between information sharing and supply chain performance in this study provides support to other related research regarding the relationship between supply chain management practices and performance (Kim, 2006b; Li, et al., 2009; Rai, et al., 2006). These prior studies have suggested that supply chain integration to mediate the relationship between supply chain management initiatives and (1) organisation performance (Rai, et al., 2006), (2) supply chain performance (Li, et al., 2009) and (3) competitive capabilities (Kim, 2006b). According to Rai et. Al., (2006) supply chain integration positively mediates the relationship between information flow [information sharing and information quality] and firm performance. In the context of this study, firm or organisational performance is a fraction of supply chain resource performance and found to be influenced by the mediating effect of supply chain integration. Similarly, research by Li, et al, (2009) revealed the positive impact of effective information flow [through IT implementation] on supply chain performance and verified the finding of which supply chain integration has a positive effect on supply chain performance. The possible explanation on the mediation role of supply chain integration between information sharing

towards performance is mostly related to the importance of effective implementation of information technology in enhancing information flow among supply chain members to promote operational flexibility (Gonzalez-Benito, 2007; Ramayah, Sang, Omar, & Dahlan, 2008) .

In addition, supply chain integration also mediates the relationship between information quality and supply chain performance. As such, this finding still provides support to other related research regarding the relationship between supply chain management practices and performance (Donald J. Bowersox, et al., 1999; Kim, 2006b; Li, et al., 2009; Min & Mentzer, 2004; Rai, et al., 2006). Specifically, this study provides a clear view that increased level information sharing improves the level of supply chain integration (S. W. Kim & Narasimhan, 2002; Li, et al., 2009) and in turn, supply chain integration will improve the overall performance of supply chain (Li, et al., 2009), particularly flexibility performance (Sezen, 2008).

Furthermore, this study also found that supply chain integration significantly mediates the relationship between agreed vision & goals and supply chain flexibility performance. This finding support Min & Mentzer (2004) theoretical framework that highlights the importance of agreed vision & goals and supply chain process integration in improving the performance. Accordingly, the level of supply chain performance would be enhanced significantly when manufacturing firms in the electronics industry with well integrated supply chain having a high level of commonly agreed goal and shared vision (Van Hoek, 1998).

In sum, the study found that supply chain integration plays a role as a mediator in the relationship between supply chain performance and supply chain management practices in the electronics manufacturing industry in Malaysia. Specifically, the supply chain management practices dimensions that have been significantly mediated by supply chain integration include information sharing, information quality and agreed vision &goals.

6.4 Summary

The presentation in this section provides answer to the research questions posed by this study in the beginning of the research. Four research questions were posed in this study. The questions have been used to guide the whole research process in this study. This section revisits the research questions and provides answers with elaborations according to the findings of this study research. This chapter presented the research discussion. The information sharing, information quality and agreed vision & goals have a strong positive direct and indirect impact on supply chain performance. Moreover, supply chain integration is an important link between supply chain management practices and supply chain performance, which helps to enhance the performance.

The supply chain management practices through supply chain integration gives better performance to overall supply chain in the electronics manufacturing firms in Malaysia. Information sharing and information quality has strong positive impact to supply chain integration and supply chain performance. Therefore, information sharing and information quality are important supply chain management practice to enhance the performance of supply chain in the electronics industry in Malaysia.

Nevertheless, there are several hypotheses which are not supported or found insignificant in this study which contradicts to the previous research study. The difference is some of the result; compare to the previous research is due the difference in terms of industrial classifications, firm sizes, country origin of study, and maturity of the respondent's firm. Apart from these contextual factors, the insignificant results provided an insight that there must be some intervening factors that may help to translate the effect of supply chain management practices and supply chain performance. Therefore, above discussion provides reason to the insignificant result of several dimensions in the relationship between independent, intervening and dependent variables.

Table 6.9
Summary of Discussion

Research Question [RQ]	Research Objective [RO]	Hypothesis [H]	Result & Discussion
RQ1: What are the supply chain management practices contributing to the supply chain performance in the electronics manufacturing industry in Malaysia?	RO1: To determine the supply chain management practices that contribute to the supply chain performance in the electronics manufacturing industry in Malaysia.	H1: Supply chain management practices are significantly and positively related to supply chain resource performance. H2: Supply chain management practices are significantly and positively related to supply chain output performance. H3: Supply chain management practices are significantly and positively related to supply chain flexibility performance. .	There are four dimensions of supply chain management practices which influences supply chain performance in Malaysia's electronics manufacturing industry. The four practices are information sharing, information quality, agreed vision & goals and postponement.
RQ2: What are the supply chain management practices contributing to the supply chain integration in the electronics manufacturing industry in Malaysia?	RO2: To determine the supply chain management practices that contribute to the supply chain integration in the electronics manufacturing industry in Malaysia.	H4: Supply chain management practices are significantly and positively related to supply chain integration	There are three dimensions or factors of supply chain management practices which influences supply chain integration in Malaysia's electronics manufacturing industry. The three factors are information sharing, information quality, and agreed vision & goals.

Source: Compiled by researcher

Table 6.7 (continue)
Summary of Discussion

Research Question [RQ]	Research Objective [RO]	Hypothesis [H]	Result & Discussion
RQ3: What dimensions of supply chain performance are related to supply chain integration in the electronics manufacturing industry in Malaysia?	RO3: To determine the dimensions of supply chain performance that is related to supply chain integration in the electronics manufacturing industry in Malaysia.	H5: Supply chain integration is significantly and positively related to supply chain performance.	Supply Chain Integration in the electronics industry in Malaysia influences supply chain performance. The influence toward supply chain performance includes supply chain resource performance, supply chain output performance and supply chain flexibility performance.
RQ4: How does supply chain integration mediates the relationship between supply chain management practices and supply chain performance in the electronics manufacturing industry in Malaysia?	RO4: To determine the relationship between supply chain practices and supply chain performance, mediated by supply chain integration in the electronics manufacturing industry in Malaysia.	H6 Supply chain integration will mediate the relationship between supply chain practices and supply chain resource performance. H7 Supply chain integration will mediate the relationship between supply chain practices and supply chain output performance. H8 Supply chain integration will mediate the relationship between supply chain practices and supply chain flexibility performance.	Information Sharing, Information Quality and Agreed Vision & Goals have an impact on supply chain performance, mediated by supply chain integration in the electronics industry in Malaysia.

Source: Compiled by researcher

The table 6.7 above shows the summary of the research questions, research objectives and discussion of the study result. In the next chapter, the conclusion and recommendations are presented to conclude the overall research study. Furthermore, the next chapter also discusses the limitations in doing this research and suggested the topic for future research.