

STRATEGIC PROFILING: EMPIRICAL EVIDENCE OF SUPPLY CHAIN STRATEGY PRACTICES IN SMALL AND MEDIUM ENTERPRISES

Titik Kusmantini^{1*}, Wisnu Untoro²

¹ Department of Management, Faculty of Economic and Business, Universitas Pembangunan Nasional, Yogyakarta, 55282, Indonesia

² Department of Management, Faculty of Economics and Business, Universitas Sebelas Maret, Solo, 57126, Indonesia

ABSTRACT

Introduction/Main Objectives: The purpose of this study is to describe the characteristics of the development pattern of the capabilities of SME (Small and Medium Enterprises) to manage an integrated supply chain's capabilities. **Background Problems:** The use of a single source will lead to a single respondent bias and give rise to inter-rater reliability for the perceptual data. When measuring the performance variables in this study, which uses self-reporting, the use of a single respondent will lead to bias. **Novelty:** This study aims to test the concept of fit, in particular for the alignment of strategy between functions, which are the supply chain and manufacturing strategies, by using a selection approach. The taxonomy result will produce a strategic profile which is able to describe the extent to which the strategic decision agrees with, and is consistent between the functions of SMEs in particular. **Research Methods:** The hypothesis testing process of the study uses a sample of 102 SMEs in the Province of Yogyakarta, Indonesia. The testing technique used in this study is a cluster analysis and an ANOVA. **Finding/Results** The testing result of the cluster analysis identifies three taxa of supply chain strategy groups. The result of the ANOVA test is used to test three hypotheses and all the hypotheses are supported, while the hypothesis of the supply chain's strategy group differences, based on the type of product, is not proven. **Conclusion:** The cluster testing result produces strategic profiling; it identifies the three groups of the supply chain's strategies that describe the ability of SMEs to design their supply chain's capabilities, with particular regard to the six dimensions of the supply chain's strategy that have been listed.

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* Corresponding Author at Department of Management, Faculty of Economic and Business, Universitas Pembangunan Nasional, Jalan Diponegoro No. 11 Sembego, Maguwoharjo, Depok, Sleman, 55282, Indonesia.
E-mail address: titik.kusmantini@upnyk.ac.id (author#1), wisnu.untoro@gmail.com (author#2)

INTRODUCTION

Over the past decade, the very competitive business situation no longer encourages organizations that only focus on developing their ability to compete individually, but rather those that develop the ability to compete supported by partner companies, both upstream or downstream (Hilletoft, 2009). The effort to synchronize internal processes with an external company has changed the context of business competition, which is no longer based on the ability of an individual company, but competition which is based on the supply chain. The practical ability of the supply chain's management is integrated as a critical structure block for a company, in an effort to develop a supply chain strategy (Morash, 2001) and the conception of an integrated supply chain is believed to be one of the critical sources for the company in its ability to compete (Han, Wang, & Naim, 2017). Thus, the understanding of a supply chain's strategy concepts cannot be separated from the study of the development of the integrated supply chain's practical research, because the scope of the supply process's inte-

gration is an important element in the development of a supply chain's strategy (Miller, 1996); (Cagliano, Caniato, & Spina, 2004).

A supply chain's strategy is a set of strategic decisions which include: (1) The criteria for the selection of the supplier. (2) The scope of the integration, which should be synergistic with the company's purpose. (3) The span of control for the integration mechanisms, or, as they are called, initiation technology (Cagliano et al., 2004); (Bhattacharya, 2017). (4) Consideration of the type of product and the uncertainty of request (Huang, Uppal, & Shi, 2002). (5) Consideration about the characteristics of the market (Govindan, 2018). Empirical research studies that evaluate the effects of the supply chain's strategy dimension individually on the performance of a company have been done by (Flynn, Huo, & Zhao, 2010); (Sezen, 2008); (Droge, Jayaram, & Vickery, 2004); (Cousins & Menguc, 2006); (Frohlich & Westbrook, 2001); (Stock, Greis, & Kasarda, 2000); and (Lee, Padmanabhan, & Whang, 1997), but all result in findings that are inconsistent, as presented in Table 1.

Table 1. Various conclusions of SCI strategic perspective universalistic-based research

SCI Dimension	Research Result	Researcher(s)
Supplier Integration	There is a positive effect	(Lee et al., 1997); (Frohlich & Westbrook, 2001); (Droge et al., 2004); (Flynn et al., 2010)
	There is no effect / negative effect	(Stock et al., 2000); (Cousins & Menguc, 2006); (Sezen, 2008)
Consumer Integration	There is a positive effect	(Flynn et al., 2010); (Danese & Romano, 2013)
	There is no effect/ negative effect	(Droge et al., 2004); (Sezen, 2008)
Logistic Integration	There is a positive effect	(Fabbe-costes & Jahre, 2008)
Information Integration	There is a positive effect	(Sezen, 2008)
Internal Integration	There is a positive effect	(Flynn et al., 2010)
	No effect	(Narasimhan & Jayaram, 1998)

The practice of testing the integrated supply chain individually refers to the universalistic perspective. The universalistic argument is the simplest theoretical argument, and is the assumption that the alleged linkages of independent variables with the dependent are based on two things: (1) Identifying a single dimension for the strategic concept and the importance of the need for restrictions on a single dimension, as the variable being studied. (2) Developing an argument that the implementation of one strategy dimension, individually and universally, is believed to be able to affect performance (Doty, Glick, & Huber, 1993).

The testing of research results on integrated supply chains, based on the universalistic perspective's results from previous studies, has not been conclusive, as presented in Table 1. Baier, Hartmann & Moser (2008) state that the findings of the integrated supply chain's effect on performance have not been consistent, because universalist researchers ignore the role of the contingent variables. Another criticism about the confusion of the universalistic test results is triggered by an error in the methodology, in particular the development of the incomprehensive integrated supply chain's construct (Danese & Romano, 2013). Fabbe-costes & Jahre (2008) have conducted mapping studies of an integrated supply chain and the results of their meta-analysis concludes that there is diversity in the integrated supply chain construct's measurement, but most research is focused on the capabilities of relationship management, either with the suppliers or the customers. The measurement of the integrated supply chain's construct must be multidimensional because the integrated supply chain is a critical element which is strongly influenced by the contingency factor; which allows it to perform better (Flynn et al., 2010).

The contingency argument is more complex than the universalistic argument, since the contingency argument implies the existence of a stronger interaction effect rather than a simple linear relationship between the independent variables and the dependent variable (Herrington et al., 2004); (Venkantraman & Camillus, 1986); (Delery & Doty, 1996). The contingency theory states that the relationship between the independent variables and the dependent variable, which could be heterogeneous depending on the difference in the level of the contingency variables, is important to consider. Some researchers have examined the alignment of the supply chain's strategy relationship with the manufacturing strategy as a single variable contingency, to be considered during the formulation of a company's supply chain strategy (Flynn et al., 2010); (Hilletofth, 2009).

The Fact on the field, strategy implementation process is often constrained because of the conflict of interests between the functions, thus the research problem is how able are SMEs to create congruency and be consistent with their decisions on strategy between the functions, which also takes into consideration the contingent variable of the organizational context, such as the competitiveness of the companies and the type of products that are produced.

LITERATURE STUDY AND HYPOTHESES DEVELOPMENT

1. Configuration Theory

Doty et al. (1993) explain that the configuration approach is generally differentiated into two research purposes: the configuration approach to the strategy's typology development and the strategy's taxonomy development. A typology reflects an ideal type of strategy while on the other hand, taxonomy reflects the combination

of a number of relevant strategies attributable to a group of organizations (McKone-Sweet & Lee, 2009). The empirical evidence for the strategy's typology testing is the significant performance (Sum, Kow, & Chen, 2004); (Hitt, 2011) and it has opened a space for the taxonomy research. The motivation for this research is the theoretical argument that in reality there is no single company which is fit or perfect, or has a single type of ideal strategy that has been developed by the strategy experts (Drazin & Van De Ven, 1985); (Delery & Doty, 1996). The taxonomy aims to classify the existing conditions of the phenomena that occur due to the scope of strategy groups, which have diversities in which the different characteristics of these strategies are mutually exclusive and exhaustive (Doty et al., 1993); (Christopher, Peck, & Towill, 2006); (Kathuria, Joshi, & Porth, 2007).

2. Organizational Fit Theory

The organizational fit theory was first raised by Galbraith & Nathanson (1978), who stated that a strategy must have an alignment with the organization's contextual factors to result in the better performance of the organization. While Jennings, Rajaratnam & Lawrence (2003) also explain that poor alignment reflects the inability of a company to create the strategic alignment with the organizational context and this will create distance between the company and its environment. In other words, the company is less responsive to the changes happening around it. The research into the development of organizational fit has produced a structure for the contingency theory to clarify the conception's relevance to the alignment strategy, which has the assumption that a strategic relationship with performance will be stronger if there is alignment with the contingent variable (Venkantraman & Camillus, 1986). In this study, the alignment concept of the supply chain's strategy with the contingent

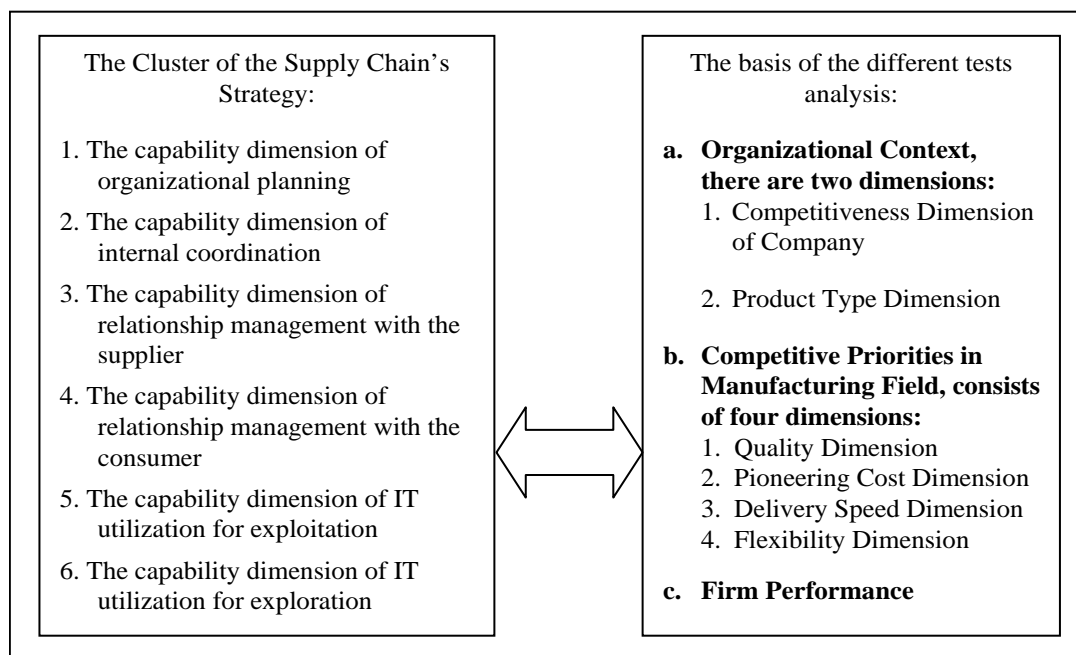
variable of manufacturing's strategy, or the organizational context such as the competitiveness and product type, will result in better performance.

Van De Ven & Drazin (1985) distinguish three models for the contingency approach; they are an interaction approach (to test the effect of the contingent variable as a moderating variable), a selection approach (taxonomy study), and a system approach. When using a configuration perspective or a system approach, the fit's concept reflects the existence of the alignment of the strategy with several variables that must be considered simultaneously. The three approaches will have significance and predictions for the results of the different empirical tests. In this study, the alignment of the strategy's testing uses a selection approach. A selection test commonly uses a cluster grouping technique, because that is why a lot of taxonomic strategy research will result "taxa" or a strategic profile that describes the strategy group, based on the characteristics of each strategy group, based on the interpretation of the strategy's practice in real terms in the company.

3. Framework and Hypotheses Development

This section will present a conceptual framework as a thought reference for the taxonomic testing of the supply chain's strategy. The conceptual framework for the supply chain's strategy is illustrated in Figure 1. It describes the capabilities of the supply chain as a taxonomic primary of the supply chain's strategy group. The conceptual framework also illustrates the capability of the supply chain's linkages with the contingent factors, such as the organizational context and the competitive priorities factor, in the field of manufacturing as the dimension of the manufacturing strategy.

Referring to the perspective of the company's resources, then the selection of a strategy



Source: (McKone-Sweet & Lee, 2009)

Figure 1. Conceptual Framework

needs to consider a number of contingent factors, so it can create a competitive primacy through the creation of the organization's capabilities in the utilization of the different resources with its competitors (Watts, Kim, & Hahn, 1995). Thus, the impact is the creation of performance differences between the groups of supply chain strategies, because of the existence of their context differences in the organization and the selection of the competitive priorities in the manufacturing field, as well as the impact on the differences of the performance achievement.

The contingent factor of the organizational context that is often considered in the design of a supply chain's strategy is the context of its competitiveness and the type of product offered by the company (Huang et al., 2002); (Herrington et al., 2004). In addition, the contingent factor of the competitive priorities' selection in the manufacturing field is also necessary, to identify whether, in the strategy cluster that is formed later on, it has a different emphasis to the competitive priorities' selection in which the competitive priorities in manu-

facturing include four things, which are: the quality dimension, the pioneering cost, the speed of delivery and the flexibility. Lastly, the testing of the different test configurations for the supply chain's strategy, to see if it is also based on the performance achievement of the perception, will also be researched.

3.1. The Alignment off the Supply Chain's Strategy with the Organizational Context

a. Competitiveness Context

Competitiveness is a one-dimensional contextual idea/aim that should be considered in the development of the supply chain's capability, since the ability to compete is one of the determining factors for the supply chain's management to be more effective (Huang et al., 2002). The high competitiveness of a company is needed when market conditions increasingly fluctuate and the barriers to exiting and entering the market are also higher, which forces companies to supply more diverse products or services (Christopher & Holweg, 2011). If the barriers to exiting and entering the market are

higher, it reflects that the level of competition in the industry is more intense; there are many researchers who have examined the positive relationship between the practice strategy of a supply chain with the level of competition (Vickery, Jayaram, Droge, & Calantone, 2003); (Hilletofth, 2009). In addition, the increasing competitiveness of a company also reflects the high levels of market uncertainty which sometimes affect the growth of the company's market share, therefore the selection of the supply chain's strategy should be aligned with the growth in the company's market share (McKone-Sweet & Lee, 2009). A company that has wide and global market share growth requires a different supply chain capability for its diverse customers' demands and rapid changes in their needs. Moreover, referring to Porter's theoretical framework for competitive strategy, which identifies five sources for the driving force of an industry's competition level, so if the market's growth has scope that is wider or it is entering the global market, this will determine the selection of the strategy and the different features competing with it as well (Porter, 1980); (Cagliano et al., 2004). Thus, with regard to the context of competitiveness, the researcher uses two trigger aspects of competitiveness, which are: the intensity of competition and growth in the market share. The research hypothesis related to the contextual factor of the uncertainty of a request is:

H1a: There are differences in the organizational context, especially the competitiveness dimension of the company's inter-group for the supply chain's strategy for taxonomy results

b. Product Type Context

The type of product is a factor of the organizational context that explicitly reflects the capability of the development of the supply chain, so it is able to adapt to the changing

requirements of the customers' needs. Categorical products are generally grouped into two types, they are innovative or convenience products (Huang et al., 2002). To face the competition in the global market, which is getting more intense and causing the shortening of products' life cycles, companies have acknowledged that the integration process of their supply chains and manufacturing processes is a critical source of competitive primacy (Tan & Tan, 2005). A company operating in a competitive market requires the ability to create new and innovative products, or the development of their features or services. Products which have a long life cycle prioritize the efficient management of the supply chain, because the company is faced with a market that tends to be predictable when the fluctuations are relatively small (Stonebraker, Peter & Liao, 2004) (Bhattacharya, 2017). Huang & Shi (2002) identify two types of contradictory supply chain strategies, based on the type of product that is produced; they are agile strategies which are fit for innovative products while lean strategies are fit for convenience products. Management of the development of the product's distribution chain for innovative products is more selective, even in its use of the agency system, and this type is extremely contradictive with convenience products. Thus, with regard to the context of the product's type, the researcher proposes the second hypothesis, which is:

H1b: There are differences in the product's type inter-group for the supply chain's strategy for taxonomy results.

3.2. *The Alignment of the Supply Chain's Strategy with the Dimension of Manufacturing's Strategy*

With regard to the implementation process for the strategy, some strategic alignment experts stress that the alignment of a strategy should be

viewed from various perspectives, such as the alignment of the strategy with the organizational context (McKone-Sweet & Lee, 2009); (Simchi-Levi, Simchi-Levi, & Kaminsky, 1999), and the alignment of the strategy vertically and horizontally (Kathuria et al., 2007). The vertical fit shows the existence of an alignment relationship for the functional strategy with the corporate or business strategy, because a miss-linkage or miss-alignment can occur when the company does not have the ability to translate its business purposes at the corporate level into a number of strategic programs and actions at the functional level. This could have a negative impact on the company's performance (Cagliano, Caniato, & Spina, 2006); (Kathuria et al., 2007).

While the horizontal or lateral alignment shows the consistency of strategic decisions between functions (Kathuria et al., 2007), this study focuses on the alignment of the supply chain's strategy with manufacturing's strategy. Hofmann (2010) explains that the relationship between the functions of the supply chain's management will be the determinant of the company's success in creating the competitive priorities needed in the operating field that will beat the competition. This is affirmed by Frohlich & Westbrook (2001) who also emphasize that the alignment and connectedness of the internal processes in the scope of the manufacturing function with the external process, both upstream and downstream, will create efficiency in the overall business process. Thus, the selection of competitive priorities for the manufacturing field must be translated into strategic activities and decisions for the scope of the supplier. Banchuen et al., (2017) introduces four competitive priorities in the operational or manufacturing field and explains that the selection of competitive priorities, especially for the quality and the pioneering costs' nature, is a trade-off. It can be interpreted explicitly that the

selection of the supply chain's strategy will determine the selection of the competitive priorities for the different manufacturing processes as well. The four competing priorities, such as the manufacturing strategy dimensions, are the product's quality, the pioneering cost, the prompt delivery of the product and the level of flexibility.

a. The Product Quality Dimension

The manufacturing strategy is a technique or method that is implemented at the functional level of the operation area, which is aimed to produce the competitive priorities in the manufacturing field that are oriented to the primacy in terms of the quality or cost leadership (Sum et al., 2004); (Zhao, Sum, Qi, Zhang, & Lee, 2006). Two of these dimensions are critical aspects, needed to create a competitive primacy in the manufacturing processes that is hard to imitate, because most companies focus on achieving high quality. The quality primacy is achieved because the company has a high-performance product, of a good quality, which can be reliably reproduced (Kim, 2006). McKone-Sweet & Lee, (2009) affirm that the capability of the supply chain, which is oriented to the development of the supply chain, is integrated with the external side and, based on its use of IT, it will have a competitive primacy in terms of the creation of the product's quality, which must be higher than those of the other strategies. Thus, based on the taxonomy results of strategy, which will be analyzed further to determine whether the inter-group strategy has different competitive priorities in terms of the product's quality, then the hypothesis is:

H2a: There are differences in the priority selection of the product's quality dimension inter-group of the supply chain's strategy for taxonomy results.

b. The Pioneering Cost Dimension

The focused-factory concept was first raised by Skinner (1978), who stated that a company which does not focus on a selection of competitive priorities will have poor company performance. The company must be able to determine its primacy in the manufacturing operation's field, or discover what will get it more orders for its products, so it earns more than its competitors, especially manufacturers in China who focus more on primacy in terms of the pioneering costs, compared to primacy in terms of quality. The development of the supply chain's capability to create primacy in terms of pioneering costs places more emphasis on the planning and coordination's capability in the internal scope, since the orientation is toward the efficiency of the internal process (Narasimhan & Jayaram, 1998); (Baier et al., 2008). Thus, with regard to the argument, the research hypothesis of the supply chain's strategy diversity will produce the different priority selections, especially in terms of pioneering costs:

H2b: There are differences in the priority selection of the pioneering cost's dimension inter-group of the supply chain's strategy for taxonomy results.

c. The Prompt Delivery Dimension

The competitive priorities in the manufacturing field, such as delivery and flexibility by McKone-Sweet & Lee (2009) are known as an order qualifier, which means they are a prerequisite component for the competitive priorities to win the competition, as they can provide the maximum satisfaction for the customers. It means that if the company wants to seize the market because of its primacy in terms of quality, so the component of the product's delivery also becomes an additional requirement to give maximum value. In the supply chain's strategy group, which is oriented to downstream,

it requires the process requirement of quicker product delivery; this becomes an argument for the submission of the research hypothesis as follows:

H2c: There are differences in the priority selection of the prompt delivery's dimension inter-group of the supply chain's strategy for taxonomy results.

d. The Flexibility Dimension

The business competition situation that grows increasingly competitive requires the company to have the ability to rapidly respond to the changes; the ability to respond to change is called a flexible supply chain process (Boon-itt & Wong, 2011). Han et al., (2017) describe three important aspects for a supply chain to be flexible; it must be flexible in terms of the quantity it can handle, its processes, and it must support the production of more varied products. The supply chain's capability development, which is oriented to the supply chain's development, is integrated with the external side and in particular with the suppliers, so it will have a competitive primacy, especially in terms of flexibility in the manufacturing field (Banchuen et al., 2017). This is possible due to the collaborative product development process; so with regard to the competitive priorities selection of flexibility, the research hypothesis is proposed as follows:

H2d: There are differences in the priority selection of flexibility's dimension inter-group of the supply chain's strategy for taxonomy results.

3.3. *The Alignment of the Supply Chain's Strategy and Firm's Performance Achievement*

This study also aims to provide empirical evidence of a positive relationship between the supply chain's strategy and organizational performance. Several previous studies have

provided empirical evidence that integration with the suppliers (Cagliano et al., 2005); (Frohlich & Westbrook, 2001); (Flynn et al., 2010) effects performance, and integration with consumers also has a significant effect on performance (Flynn et al., 2010); (Danese & Romano, 2013). Some researchers also provide empirical evidence that the capability of the supply chain, which is increasingly integrated, will create a more superior performance (Frohlich & Westbrook, 2001). Likewise, empirical evidence of the utilization of IT has been believed to be a key competency to create the effectiveness of transactions in the supply chain's processes (Christopher & Holweg, 2011); (Bhattacharya, 2017). Affirmed by Boonitt's (2011) findings that the utilization rate of IT for exploitation and exploration is able to create a different performance, considering that the capability of the exploration and exploitation, with regard to the organizational knowledge, is an intangible asset so the benefits are increasing for the perception's performance, which is usually measured subjectively as process efficiency, the reduction of production costs, the speed of the products' delivery; time taken to respond to the market's changes and the flexibility of the process or the production's volume. The empirical evidence of previous studies into the relationship of the supply chain's capability against the perception's performance becomes the basis for the proposal of the hypothesis:

H3: There are differences in the perception performance's dimension inter-group of the supply chain's strategy for taxonomy results.

METHODOLOGY

The population of this research is all the manufacturing companies that are classified as Small and Medium Enterprises (SMEs) in the Yogyakarta region. To simplify the sampling

process, the researcher used a list of SMEs' addresses presented by several sources and conducted cross-checks of the data, and the sampling technique used a purposive technique with the criteria of superior product manufacturing companies, which are export oriented. The questionnaire was sent to 150 SMEs in five districts of Yogyakarta, 102 questionnaires were returned (response rate 68%) and used for further analysis. The resources based single source used business owners as the respondents. The use of a single informant is not effective, but some previous researchers suggested the use of single data is related within the scope SME acceptable because the operational implementation in the scope of SMEs that is not too complex (Bowman & Amborsini, 1997). The initial contact with the owners of the SMEs is done to ensure they are willing to participate, this increases the response rate and reliability of the data (Zhou & Benton, 2007).

The variable measurement scale uses a Likert scale with five answer options ranging from strongly disagree (score of one) to strongly agree (score of five). The development instrument for the supply chain's strategy includes six dimensions, four dimensions replicate the instruments developed by McKone-Sweet & Lee, (2009), they are: (1) the organizational planning capability (five items); (2) the coordination capability across functions (five items); (3) the management capability of suppliers (four items); (4) the management capability of consumers (five items) and two other dimensions, which are the information technology's capability for exploitation and exploration, which replicate the instruments developed by Subramani (2004). There are two organizational context variables, they are competitiveness (three items), while the type of product and the IT's capability for exploitation and exploration in the form of categorical data do not require validity testing.

The competitive priorities are from the manufacturing strategy's dimension replicating instrument, which are: (1) quality consisting of three items; (2) lowest cost consisting of three items; (3) the speed of delivery consisting of five items and flexibility consisting of four items (Vickery et al., 2003); (Han et al., 2017). The testing results of all the dimensions of the supply chain's strategy (four dimensions) and four dimensional manufacturing strategies are all valid items, except for two invalid items, which are: competitiveness (DP3) and flexibility (F1). The performance used the instruments developed by Wong & Wong (2008) which measure the perception performance of the company compared to the industry average. There are six items and they are all valid (Appendix A).

The reliability testing for each of the nine exogenous variables and one endogenous variable in this study used the internal consistency method and Cronbach's alpha. According to Hair, Anderson, Tatham, & Black (2005), the instrument will be considered reliable if the coefficient's alpha minimum is 0.50. But Rindskoff (2015) argues that an alpha coefficient of 0.5 is poor; the testing results of all the variables are found to be reliable, as shown in Appendix B. The testing result of the competitiveness variable is 0.639. This finding is recognized by researchers as a weakness of this study.

The hypotheses testing were done gradually. The early stage of a sample-based grouping characteristic's ability to manage the supply chain uses the cluster analysis technique, and an ANOVA technique was used to test the three hypotheses of the study.

RESULT

1. Cluster Analysis Result

Before the hypotheses can be tested, the supply chain's strategy group analysis needs to

be tested, using the cluster analysis technique. The cluster testing result produces strategic profiling; it identifies the three groups of the supply chain's strategies that describe the ability of SMEs to design their supply chain's capabilities, with particular regard to the six dimensions of the supply chain's strategy that have been listed. The description of this strategic profiling is obtained by using the k-means clustering method, also known as a non-hierarchical clustering technique that is designed to produce a group of subjects or case profiles quickly because of the shorter stages of the grouping iterations (Hair et al., 2005). The resulting process of grouping went through nine stages of iterations and produced the right number of clusters. The acquisition of the right number of clusters is based on the minimum distance between the centers of the clusters that developed from the iterations, which is 4.848. For the number of subjects or SMEs, the 102 companies produced three clusters, and the number of members in each cluster is: cluster 1 amounted to 31 SMEs; cluster 2 amounted to 32 SMEs while cluster 3 amounted to 39. Table 2 describes the strategic profiling of the capabilities of the companies to manage the resources of their supply chains.

The initial question after testing the clustering is whether the three ideal types of supply chain strategies, such as agile, lean and leagile have the capability of managing the different resources or not. The subsequent analysis, using the ANOVA technique, identifies that the inter-group strategy, based on the four dimensions of the supply chain's strategy proves that there is a difference, however the two dimensions related to the IT's capability for exploitation and exploration proves that there is not a difference. It means that the three strategy groups statistically do not have a significant difference in terms of their IT management

Table 2. Strategic Profiling based on Final Cluster Centers

Strategy Dimension RP	Cluster			The Profile Description of Strategy Group RP
	1	2	3	
Planning Capability	4.97	4.47	5.32	Cluster 3 is superior in all dimensions, reflecting the type of supply chain strategy that is agile (Agile Supply Chain Strategy)
Coordination Capability	5.48	4.35	5.78	
Suppliers' Management Capability	5.57	4.59	5.65	Cluster 2 only priorities the development of IT for exploration of the cost efficiency, appropriate to lean strategy type (Lean Supply Chain)
Consumers' Management Capability	5.52	4.89	5.71	
IT for Exploitation	1.23	1.21	1.33	Cluster 1 combines the primacy of both strategies appropriate to each strategy type (Leagile Supply Chain Strategy)
IT for Exploration	1.25	1.36	1.37	

capability for exploitation or exploration. Theoretically, the ideal type of agile strategy should have a greater capability to utilize IT for exploitation and exploration, compared to the other two groups of strategies.

The third stage, after believing that all three strategy groups statistically have different practices for the supply chain's strategic capability, is illustrated in Table 3. This next stage involves naming a strategy group, based on the description of the average value of six dimensions of the supply chain's strategy. Referring to the ideal typology of the supply chain's strategy, the agile type has the orientation of organizational planning capability. The coordination of management with suppliers and customers is better than in the lean strategy group. Instead the empirical evidence of the average value of the supply chain's capability in the supply chain's lean strategy group has primacy in terms of its internal coordination, which is better than in the other two groups, as well as having a superior capability of using IT for trimming operational costs, but the utilization of IT is not intended for the creation of added quality and value for the product. The findings strengthen the previous research conducted by (Watts et al., 1995);

(Goh, Lau, & Neo, 1999), that the two types of ideal supply chain strategies have opposite characteristics.

2. The Hypotheses Testing

After testing the supply chain strategy's taxonomy and describing the strategic profiling, the next step is testing the hypotheses. Table 3 shows the ANOVA test's results; testing the organizational context's dimension and the company's competitiveness and the type of products resulted in an F_{count} value of 24.687 (with probability value of 0.000) and an F_{count} value of 1299 (with probability value of 0.277) respectively. These results can be interpreted as showing that the inter-group of the supply chain's strategy for taxonomy has a significant level of difference with the company's competitiveness, because the p value < 0.005 . While based in the context of the resulting product type, it can be concluded that the strategy of the inter-group for the resulting type of products' difference is not significant, because the resulting p value is > 0.005 . It is also observed that the mean of the square value between clusters is relatively small, at 0.464, so it can be concluded that there is a trend for the type of product that is homogeneous.

Table 3. The Testing Results Summary of ANOVA Dimensions of Supply Chain Strategy

Dimension of Supply Chain Strategy	Cluster average value			F _{count} Value	Sign	Explanation
	1	2	3			
Planning Capability	4.97	4.47	5.32	12,958	0.000*	The differences in the planning capability of the inter-group strategy is significant
Coordination Capability	5.48	4.35	5.78	63,612	0.000*	The differences in the coordination capability of thee inter-group strategy is significant
Suppliers Management Capability	5.57	4.59	5.65	47,112	0.000*	The differences in the suppliers management capability of the inter-group strategy is significant
Consumers Management Capability	5.52	4.89	5.71	22,117	0.000*	The differences in the consumers management capability of the inter-group strategy is significant
IT Utilization for Exploitation	1.23	1.21	1.33	1882	0.158	The differences in the IT utilization for exploitation capability of the inter-group strategy is significant
IT Utilization for Exploration	1.25	1.36	1.37	2010	0.139	The differences in the IT utilization for exploration capability of the inter-group strategy is significant

* The significance on the probability < 0.01

Competitive priorities are an essential element that must be developed by a company, when the company designs its manufacturing strategy. According to Skinner (1969) there are four selections for the competitive priorities that can be produced in the manufacturing field to sustain a company's competitiveness, the four competitive priorities are the primacy of the product's quality, the pioneering cost, prompt delivery and flexibility. The competitive primacy can be achieved if there is an alignment of cross-functional decisions (McKone-Sweet & Lee, 2009); (Banchuen et al., 2017). Referring to the ANOVA test's results, which are presented in Table 3, Hypothesis 2 was divided into four hypotheses because the testing is done with the manufacturing strategy's dimensions, so it can be concluded that there is a difference in the inter-group of competitive priorities in the cluster strategy. The resulting significance

probability value from all four dimensions is under the alpha probability value of 5%, so hypotheses 2a; 2b; 2c and 2d are supported.

Referring to Table 4, which shows the summary of the test results of the ANOVA, it can be concluded that there is a significant difference in the performance achievement for the inter-group of the supply chain's strategy which is formed, considering the probability value of 0.003 which is smaller than alpha 5%. The average value of performance achievement in cluster 3 is lower than in clusters 1 or 2. Ideally, cluster 3 which has the resource management capability of the supply chain is better than the other clusters are supposed to have a higher performance achievement.

3. Discussion

The primacy of taxonomic analysis is to provide a description of the strategic profiling which is

Table 4. The Testing Results Summary of ANOVA

Variable	Cluster average value			F _{count} Value	Sign	Explanation
	1	2	3			
Company Competitiveness	6.11	5.27	4.90	24.687	0.000 *	The differences in the company's competitiveness for the inter-group's strategy is significant
Product Type	1.74	1.84	1.62	1.299	0.277	The differences in the resulting product's type for the inter-group's strategy is not significant
Quality	6.07	5.52	5.27	14.922	0.000*	The differences in the quality's primacy for the inter-group's strategy is significant
Cheap Production Cost	5.83	5.05	5.25	14.887	0.000*	The differences in the cheap production cost's primacy for the inter-group's strategy is significant
Prompt Delivery	5.93	5.60	5.44	7.690	0.001*	The differences in the prompt delivery's primacy for the inter-group's strategy is significant
Flexibility	6.04	5.61	5.06	19,413	0.000*	The differences in the flexibility's primacy for the inter-group's strategy is significant
Performance	4.26	3.81	4.02	6322	0.003**	The differences in the performance's achievement for the inter-group's strategy is significant

* The significance on the probability < 0.01; ** The significance on the probability < 0.05

actually relevant to the existing condition of the company, so the contextual meaning is very high (Swink, Narasimhan, & Kim, 2005). But the weakness, according to Stonebraker, Peter & Liao (2004) and McKone-Sweet & Lee (2009) is that an opportunity to produce taxa profile or inconsistent findings with the typology that has been developed by the previous researchers into strategy is enormous. The study's findings relating to the organizational contexts' testing concludes that the inter-group of the supply chain's strategy has a different competitiveness level. It supports the research results by McKone-Sweet & Lee (2009) that the diversity of the industry will affect the company's ability to be competitive. Mc Kone-Sweet and Lee's statement about the diversity of the development of the different resource management capabi-

lities will result in different levels of company competitiveness as well, which is supported by the results of this study. While with regard to the product type's context, the research results conclude that the difference in the resulting product type inter-group for the supply chain's strategy is not supported. The result of interviews with managers explains why some SMEs are export oriented, and some are not; those SMEs that are export oriented show more aggression in improving their competitiveness with new production and marketing technologies.

However, if an average value for each final cluster is observed, the average value of the competitiveness level for clusters 1, 2 and 3 is 6.11, 5.27 and 4.90 respectively (appendix of final cluster centers). This result is not consistent

with the average value of the resource management's capability, where cluster 3 has a better capability than the other clusters, but the result is exactly the average value of the competitiveness level is smallest. There is an alignment in the results of cluster 1 and 2, which are consistent with the average result of the resource management's capability.

Then, the average value of the resulting type of product in the three clusters has a relatively small deviation. The average values of the type of product for clusters 1, 2 and 3 are 1.74; 1.84 and 1.62 respectively. The testing results of ANOVA have concluded that there is no difference in the resulting type of product for the three strategy clusters; this is supported by their inconsistent average value. Although all three average values for the type of product above have the ideal average value of 1.5 and can be classified as an innovative product type, but the average amount of the type of product in strategy group 3 (agile strategy group) should have the highest average value or be the most innovative product type. Similarly, strategy group 2 should have the smallest average value since the resources management of the supply chain is efficiently appropriate if the convenience type of product is not innovative. The result of this study is predicted because the majority of samples are furniture or home interior companies and the sample criteria to select the export-oriented SMEs reflect the homogeneous type of products. The result of this study contradicts the results of the taxonomic supply chain's strategy done by Mc Kone-Sweet and Lee (2009) and Huang & Shi (2002), where the cluster of the agile supply chain's capability is better with innovative products, because the ability to manage the supply chain's activities will drive better product development capabilities.

MANAGERIAL IMPLICATION, LIMITATION AND FUTURE WORK

1. Managerial Implication

This research makes a practical contribution for organizations about the importance of several simultaneous supply chain strategy solutions. Given the fact that companies are required to be able to compete in fragmented and complex markets, the ability to offer a variety of products must be accompanied by a variety of strategic decisions. The first consideration is the necessity of aligning the type of product with the supply chain's strategy. Highly standardized products should choose a supply chain strategy that focuses on cost leadership, but innovative products should be aligned with a supply chain strategy that focuses on quick responses or agility.

2. Limitation

This study has sought to find a number of ways to minimize the bias, for instance, by using a number of criteria to select the sample and using a data collection technique based on a single source. The criteria for selecting the sample of export-oriented SMEs apparently triggered bias in the testing results for the resulting type of product. In fact, in Yogyakarta, the primacy products are the products of furniture companies, or handicrafts such as silver, home interior items and teracota or earthenware, which have triggered the finding that there is no difference in the resulting type of product, because the assumption is that all primacy product types are classified as innovative products.

The second bias in the research is predictable as this study used a single source for its data, only one interviewee represented each company. The use of a single source triggered single respondent bias and gave rise to inter-rater reliability in the perceptual data, especially when

measuring the performance variable in this study, which used a self-reporting method, so the use of a single respondent leads to bias.

The third drawback is the value of Cronbach's alpha (competitiveness) of less than 0.7, so the use of multiple sources needs to be considered.

3. Future Work

There are three important notes that should be considered for future research. First, to produce consistency in the results, a better strategy alignment and effect's testing is necessary, to increase the diversity of the industry being examined. More diverse industries enable different supply chain strategies.

In addition, it will be better for the future researches to avoid the effects of response bias; the research should use a compound respondents approach or multi-sources. This is intended to limit the effect of perception data inter-rater reliability and the effect of single respondent bias.

The third important thing, in order to generalize the results of the research more broadly, is it needs to consider a number of other contingent variables, so the multivariate model's testing will improve the results of the bivariate model's testing. The argument for future researches is considering whether the concept of fit is an important concept for the strategy's execution, because it often inhibits the flexibility of the company if the company only considers its focus to be on its internal conformity. Thus, any further studies need to test the concepts of the fit and flexibility as concepts that are complementary by considering the other contingent variables, including the changes in the external environment factors. For example, the relational capital's dynamism in the supply chain's network will affect the flexibility of the company when it tries to respond to rapid

changes in the environment (Christopher et al., 2006); (Herrington et al., 2004). With regard to the strategy's implementation process, some experts in strategic alignment stress that the alignment of a strategy must be viewed from various perspectives, such as the strategy's alignment with the organizational context (Hilletofth, 2009); (Huang et al., 2002); (Chan, Ngai, & Moon, 2016) and the strategy's alignment vertically and horizontally (Kathuria et al., 2007). Its vertical fit shows the existence of the functional relationship's strategy alignment with corporate or business strategies, because the inability to translate ideas formed at the corporate level into the functional area will result in poor performance (Kathuria et al., 2007); (Hoejmose, Brammer, & Millington, 2013); (Hoejmose et al., 2013); (Hofmann, 2010).

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Appendix A. The results of validity testing

The Capability Dimensions of Organizational Planning (OP)			
OP ₁	Planning formal supply chain activities.	0.798	Valid
OP ₂	Doing more comprehensive performance evaluations of the supply chain's members.	0.809	Valid
OP ₃	Supply chain processes as part of the integrated planning for all companies in the supply chain.	0.874	Valid
OP ₄	Considering demand forecasting in the supply plans.	0.699	Valid
OP ₅	The ability to get performance planned.	0.501	Valid
The Capability Dimension of Internal Coordination (IC)			
IC ₁	The coordination between the purchasing function and another related function.	0.744	Valid
IC ₂	The coordination to adjust buffer stock for order demand.	0.769	Valid
IC ₃	The coordination for distribution activities to align with aggregate planning.	0.873	Valid
IC ₄	Innovation supported by the across-function team.	0.568	Valid
IC ₅	Technology transfer to support innovation base on know-how communication.	0.690	Valid
The Capability Dimension of Relationship Management with the supplier (RMS)			
RMS ₁	Always produce a joint resolution with suppliers.	0.680	Valid
RMS ₂	Trying to produce effective solutions.	0.669	Valid
RMS ₃	Cooperation with more suppliers will be profitable for the company.	0.802	Valid
RMS ₄	Always develop open communication with suppliers.	0.698	Valid
The Capability Dimension of Relationship with The Consumer (RMC)			
RMC ₁	Make intimate contact with the customer.	0.797	Valid
RMC ₂	Feedback from customer is always used to process improvements.	0.824	Valid
RMC ₃	Active consumer involvement in product development process.	0.795	Valid
RMC ₄	Selective response to customers' needs or requirements.	0.868	Valid
RMC ₅	Conduct customer satisfaction surveys continuously.	0.617	Valid
The capability dimension of IT utilization for exploitation (IT for Explt); The capability dimension of IT utilization for exploration (IT for Eplr) and Type of Product using categorical measurement scale, so not requirement instrument testing.			
The Competitiveness (C)			
C ₁	The company is able to operate effectively in a turbulent environment.	0.911	Valid
C ₂	Conditions of extreme pressure from business competition has no impact on the competitiveness of product.	0.938	Valid
C ₃	The ability to always break through in a new market	0.450	Dropped
High Quality Dimension (Q).			
Q ₁	The product meets the quality standards specified by the company.	0.848	Valid
Q ₂	The quality of the product matches the product's design.	0.939	Valid
Q ₃	High product reliability.	0.884	Valid

The Pioneering of Cost Dimension (PC)			
PC ₁	Opportunity production processes produce relatively small defects.	0.829	Valid
PC ₂	Allocate corporate resources very efficiently.	0.839	Valid
PC ₃	The utilization rate for the manufacturing capacity in the production process is at maximum.	0.852	Valid
Speed Delivery Dimension (SD)			
SD ₁	Being able to anticipate delays in the delivery process.	0.567	Valid
SD ₂	Able to guarantee the product's delivery process in a timely manner. Trying to shorten leadtime delivery	0.683	Valid
SD ₃	The company fully responsible for the delivery of its products to	0.781	Valid
SD ₄	consumers.	0.868	Valid
SD ₅	Trying to fulfill the order by the due date.	0.822	Valid
Flexibility Dimension (F)			
F ₁	Flexible in accepting orders according to consumers' demand.	0.451	Dropped
F ₂	Able to fulfillment product orders according to customers' requirements.	0.908	Valid
F ₃	Able to meet sudden orders from customer.	0.795	Valid
F ₄	Designing flexible technology to support the production process.	0.784	Valid
Performance Achievement (Perf)			
Perf ₁	The ability of an efficient production process.	0.799	Valid
Perf ₂	The ability to always make reductions in total production costs.	0.635	Valid
Perf ₃	The ability to deliver the product in a timely manner	0.856	Valid
Perf ₄	The ability to respond to market changes quickly.	0.731	Valid
Perf ₅	Flexibility in the production process.	0.736	Valid
Perf ₆	The ability to meet volatility in the quantity of orders.	0.734	Valid

Appendix B. The results of reliability testing

No	Variable	Indicators	Cronbach's alpha	
1	Supply Chain Strategy			
	1.1.OP	5	0.783	Reliable
	1.2.IC	5	0.820	Reliable
	1.3.RMS	4	0.783	Reliable
	1.4.RMC	5	0.770	Reliable
2	Organizational Context			
	2.1. Competitiveness	3	0.639	Reliable
3.	The Dimensions of Manufacturing Strategy			
	3.1. Quality	3	0.870	Reliable
	3.2. Pioneering Cost Production	3	0.792	Reliable
	3.3. Speed of Delivery	5	0.799	Reliable
	3.4. Flexibility	4	0.730	Reliable
4	Performance	6	0.814	Reliable