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Improving Competitiveness Of The National Industry Of Logistics Service Providers Through Collaboration From The Perspective of Consumer Goods Manufacturing Companies In East Java

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ABSTRACT*: The purposes of this study are to measure and to analyze the effects of collaboration to competitiveness, collaboration to information sharing, collaboration to capability, collaboration to flexibility, information sharing to competitiveness, information sharing to capability, information sharing to flexibility, capability to competitiveness, capability to flexibility, and flexibility to competitiveness in the national industry of logistics service providers. The research object is the national industry of logistics service providers associated in Asosiasi Logistik Indonesia (ALI) in 2011. The types of data are primary and secondary data. The population consists of 294 logistics service-provider companies (3PL). The sampling technique applied is census sampling. Returned and valid numbers of questionare are 125, spread through the whole area of East Java. All data is analized using SEM (Structural Equation Model). Study findings show that collaboration does not significantly affect competitiveness, unless it is done through information sharing; collaboration does not significantly affect capability, unless it is done through information sharing; collaboration does not significantly affect flexibility, unless it is done through information sharing and capability; capability does not significantly affect competitiveness unless it is done through flexibility; and information sharing does not significantly affect flexibility unless it is done through capability. Those findings suggest that collaboration and capability have indirect influences on competitiveness, which means that they affect competitiveness through mediating variables. Only information sharing directly affects competitiveness.*

Keyword : *Collaboration, Information Sharing, Capability, Flexibility, Competitiveness*

I. INTRODUCTION

Globalization has encouraged higher level of competition in many areas, including in the field of logistics service industry. This occurs as a result of increasingly limited resources, unpredictable demand, and the high cost of logistics distribution. Logistics distribution as a dominant component of business activities requires much effort to increase its competitiveness. Effort to increase competitiveness of logistics services has been carried out by many business organizations. The effort is in forms of collaboration strategies, arguments stating that collaboration can increase market share, improving customer service, sharing and lowering product development costs, reducing risks, improving product qualities, improving skills and knowledge, reducing inventories, etc. (Lewis, 1990; Parker, 2000; McLaren, 2000 &Holton, 2001 in Bititci Umit S., et al.., 2004). However, the implementation of strategies solely cannot guarantee the success of collaboration in improving and sustaining competitiveness in long term. Studies conducted by Harbinson & Pekar (1998), Zineldin & Bredenlow (2003) have proven that 70% of collaboration undertaken by business organizations has failed for several reasons. First, collaboration only focuses on short-term goals and motivated only by price, and is not oriented on the overall values. Second, it lacks of internal alignment, as to the fact that collaboration requires the involvement of a variety of cross-functional areas within the company (for example from the purchase to R & D, Marketing and Human Resources). Third, collaboration is not based on a cultural synergy. The culture of collaboration must be projected toward effectiveness and efficiency of management among the collaborating parties, and that such synergy is expected to occur and to raise the culture of trust and commitment between the collaborating partners. Fourth, information sharing is insufficient, in which information itself is a primary requirement to achieve alignment of organizational collaboration relationships. These problems indicate the persistence of gaps in present collaboration, and that it requires follow-up studies to increase competitiveness through collaboration, especially in Indonesia.

The results of research by Hughes (2008) and Bititci et al. (2004) show that collaboration conducted by organizations does not guarantee success on achieving information sharing and flexibility in order to increase competitiveness. This means that there is a need for deeper examination on the kind of collaboration to increase logistics capabilities and to bring subsequent effects to the competitiveness of the logistics service companies.

Previous studies on logistics capabilities and their impact on performance have been carried out (Joong-Kun et al., 2008). However, studies on logistics capabilities and their impact on flexibility where flexibility becomes part of a supply chain performance (Beamon, 1999) have not been done, and as such, it opens up opportunities to deepening the study.

Limited resources experienced by organizations and uncertain effects of environmental changes (the emergence of new competitors, fluctuation of consumer demand, etc.) require every organization to improve their competences and capabilities to achieve effective and efficient governance. There is also an urgent need to increase capabilities as a result of collaboration in order to increase competitiveness.

Findings stating that collaboration was not successful in improving performance and competitiveness become an issue for further studies, because these findings do not support the theory of *relational view* (Singh & Dyer, 1998). This relational view theory states that limited resources of organizations require an increase conducted through relationship between enterprises (collaboration) in order to produce the required information, knowledge and capabilities to increase competitiveness. Similarly, as the findings state that information sharing has no effect on flexibility and competitiveness, it is important to study the matter deeply. This situation is contrary to the *knowledge base of theory* (Nonaka, 1995), a theory stating that information sharing is one of the ways to improve performance (Van Ewyk, 2000). Therefore, further research is indeed necessary to study the impact they have based on the perspective of *resources base view theory* (Wernerfelt and Rumelt, 1984) and *contingency theory* (Lawrence, P.R., & Lorsch, J.W.,1967).

From this background, the research problem is formulated: "How can we improve the competitiveness of National Logistics Service Providers (3PL) through collaboration from the perspective of consumer goods manufacturing companies in East Java?" The main research problem is then broken down into 10 sub-research problems as follows: (1) Can strong collaboration improve competitiveness? (2) Can strong collaboration improve intensity of information sharing? (3) Can strong collaboration improve capability? (4) Can strong collaboration improve flexibility? (5) Can increasing intensity of information sharing improve competitiveness? (6) Can increasing intensity of information sharing improve capability? (7) Can increasing intensity of information sharing improve flexibility? (8) Can increasing capability improve competitiveness? (9) Can increasing capability improve flexibility? (10) Can increasing flexibility improve competitiveness?

The study begins with literature review on collaboration in supply chain, information sharing in logistics distribution, capability in logistics distribution, flexibility in logistics distribution, and supply chain competitiveness in logistics service provider industries. It then generates specific hypotheses for empirical testing. Based on the analysis, results and discussion are presented for future researchers and practitioners.

II. THEORITICAL BACKGROUND

2.1 Collaboration in Logistics Distribution

Collaboration in the context of supply chain first emerged in the mid of 1990s that began with the formation of Collaboration Planning Forecasting and Replenishment (CPFR). Then in practice, it was developed into a Vendor Managed Inventory (VMI), and subsequently emerged as CRP (Continuous Replenishment Programs) (Ireland & Bruce, 2000; Barratt, 2002). Collaboration literally means working together (Huxham, 1996; Jordan & Michel, 2000). Collaboration is often used when referring to individuals or organizations working together for a common future goal. Collaboration is a way for organizations to achieve the completion of necessary activities when their own work itself is not capable enough to do so (Huxham, 1996).

There are some definitions of collaboration. Huxham (1996) defines it as taking advantages of a very positive form of work in relation to other parties for some forms of mutual benefits. Another definition by Huxham (1996) states that collaboration is an organization's mode of difference, a positive benefit for the purposes of maintaining relationships between organizational independence, integrity and identity differences, and further potential for partnership interests. Jordan & Michel (2000) state that collaboration involves a number of companies linked to create and support a service or product for disposal services including end of life. McLaren et al. (2000) states that collaboration involves a focus on collaboration planning, coordination and process integration among suppliers, customers, and other parties in a supply chain, as well as cooperation strategy and partnership decisions about network designs.

Relational View Theory (Dyer & Singh, 1998) is a theory which states that limited critical resource companies have are inherent in the relationship between companies; so as to achieve the competitive advantages, they require specific interconnected assets, knowledge-sharing routines, complementary resources of power or capability, and effective governance. This theory supports the collaboration measurement in this study—that is building a partnership of collaboration and information sharing among Third Party Logistics companies with consumer goods manufacturing companies will produce a resource of knowledge and expertise which can then become a source of capability to increase flexibility and competitiveness.

2.2 Information Sharing in Logistics Distribution

Information sharing is a transfer or exchange of information indicating the level and position of inventory, sales data, and information on the forecasting information, information about the status of orders, production schedules and delivery capacity, and performance measures (Lee & Whang, 2000). Information sharing becomes a key to success of supply chain (Whipple et al., 2002). According to Stevenson & Spring (2007), the flow of accurate and real time information in supply chain is considered very important to the flow of materials. Information sharing becomes an important element that reflects cooperation within the supply chain management. Information sharing is the ability to see data that is private in a system of cooperation and monitor the development of products, where information is passing in every process in the supply chain (Simatupang & Sridharan, 2005).

Provision of information requested by customers shows a decrease in the cost of inventory in the supply chain (Cachon & Fisher, 1997; Lee et al., 2000) when the information flow has priority over the flow of products and materials. The decrease in inventory allows the use of resources to be more efficient (Graham & Hardaker, 2000). Strader et al. (1999) suggest that supply and demand of information sharing in a supply chain help reducing inventory costs and shorten the turnaround time of orders, facilitate coordination, and improve the ability of supply chain to reach out to sudden changes in demand of an ever-changing environment (Lee et al., 2000).

2.3 Logistics Capability

Logistics capability is part of companies' resources; it covers all assets, competencies, organizational processes, and firm attributes; it also contains information and knowledge of strategic elements; and it can be used to improve the efficiency and effectiveness of companies' work (Barney, 1991). Hammer (2004) shows that the importance of operational innovation in organizations is one of the bases for sustainable and competitive advantages. Capability becomes an important part of strategic planning to identify and predict the ability to maintain and enhance the competitive position of an organization. Hayes & Pisano (1994) emphasize the importance of finding solutions to competitive problems faced by companies through core capabilities in providing a future source of customer value which is not time limited. Core capabilities are often used to gain access to a wide range of markets. Core capabilities must be closely related to the benefits provided by the products or services customer valued. Core capabilities can provide a competitive advantage for an organization. Another characteristic of these core capabilities is that these capabilities must be difficult to imitate. Sustainable competitive advantages cannot be achieved if the provided core capabilities can be easily imitated. Bartmess & Cerny (1993) identify three elements of the core capabilities which can inhibit the occurrence of imitation, namely (1) capability is complex and requires long term learning, (2) capability requires some functional areas, both internal and external to the organization, and (3) capability is the result of interaction function of expertise or knowledge in the function itself.

Logistics capabilities have been widely studied and measurement scales have been developed to link them with competitive advantages and company superior performance capabilities (Zhao et al., 2001; Ellinger et al., 2000; Lynch, 1998; Clinton & Clos, 1997; Eckert & Fawcett, 1996; Morash et al., 1996; Bowersox & Daugherty, 1995; Global Logistics Research team - GLRT at Michigan State University, 1995). The uses of logistics capabilities bring a particular meaning, which is to create differentiation (Daugherty et al., 1998; Anderson & Narus, 1995). These researchers found that logistics capabilities greatly contribute to companies' strategy and performance in delivering competitive advantages. According to Day (1994, p.38), capability refers to a complex package of expertise and body of knowledge, which is trained through organizational processes that enable firms to coordinate activities and use organizations' assets. Capabilities of companies have been identified as a major source of competitive advantages among the existing assets (Dierickx & Cool, 1989), and as further management action to exploit and enhance specific assets and capabilities of firms (Mahoney & Pandian, 1992). According to Morash et al. (1996, p.1), capabilities are attributes, organizational processes, knowledge and expertise that enable companies to achieve superior performance and sustainable competitive advantages. Logistics capability is shown to be a source of competitive advantages (Bowersox et al., 1999; Lynch et al., 2000, Zhao et al., 2001). Logistics capability is an important part of the success of supply chain, part of the time and quality that is based on competition (Mentzer et al., 2004). Some studies indicate that logistics capabilities can be grouped into five categories (Bowersox et al., 1999; Lynch et al., 2000; Zhao et al., 2001), namely customer focus, time management, integration, information exchange, and evaluation. According to Mentzer et al. (2004), the role and structure of organizations in the context of theories on firms suggests that logistics capabilities are grouped into four categories, namely demand management capabilities, supply management capabilities, information management capabilities, and coordination capabilities. According to Morash et al. (1996), in a comprehensive study that they conduct, logistics capability using two values of discipline (the deal and superior operational) is a way to categorize logistics capabilities themselves. The first emphasizes the value of discipline on the external customer, external customer relationships, and external

purposes; and this is labeled as demand-oriented or customer-oriented approach. Demand oriented logistics capability is related to customer service, lead-time, and responsibility to market. Second, the value of discipline which is associated with companies' operational capabilities and which emphasizes product availability, integrity and a low total cost distribution; and this is labeled as a supply-oriented operational approach. Supply-oriented capabilities are identified by the following characteristics. First, dissemination of distribution for inventory management (ability to effectively provide extensive and intensive distribution); second, election of distribution management with the ability to effectively measure the selected target or exclusive distribution outlets; and third, addressing a low total cost of distribution to minimize the total cost of distribution ability.

2.4 Flexibility in Logistics Distribution

Physical distribution flexibility is the ability of companies to quickly and effectively adjust inventory, packaging, warehousing and transportation of physical products in response to customers' needs (Day, 1994; Lambert et al., 1998; Van Hoek et al., 1998). Demand management flexibility is the ability of companies to rapidly and effectively respond to customers' needs for time, price, and service delivery (Langley & Holcomb, 1992; Day, 1994; Lee, 2001). Flexibility distribution has three elements. First, *range,* which means that this flexibility can be determined through the type of packaging, transportation, and the number of customers' needs which can be met. Second, *mobility*, which is measured by time and / or costs to use various means of transportation and packaging differences as well as differences in time and cost of management or demand. Third, *uniformity*, which is measured by the quality and reliability of delivery and quality of service.

Logistics distribution management includes the entire process of transporting goods from suppliers to manufacturers, to distribution centers, and to final consumers (Ricker & Kalakota, 1999). This process includes packing and shipping, preparation of documentation, inventory and warehouse management, transportation management and planning, as well as reverse logistics and shipping. Flexibility includes several aspects. Those aspects are selection of logistic components to accommodate the breadth of development requests in a short period; handling of a wide range of products; reverse logistics and a flexible return policy; abilities to package products in transit to fulfill customer's individual needs; handling of products arriving from various points of delivery; and abilities to customize products based on customers' needs.

Andersson (1991), Billesbach & Hayen (1994), and Dougherty & Pittman (1995) mention that flexibility in logistics channels is a time-based strategy. Quick response is the main objective of logistics systems. To ensure a quick response in a highly competitive situation, as demanded by time-based strategies, suppliers must improve service, thus increasing costs. A different way of thinking to adjust based-on-time constraints is by increasing flexibility. From a performance perspective, flexibility is a superior system that allows performance to be stable under changes. Most of the characteristics of logistics systems show constant changes and uncertainty; so flexibility in logistics systems can be considered as a strategy to improve responses to changes.

2.5 Supply Chain Competitiveness

This study focuses on the level of competitiveness of industries, especially Third Party Logistics (3PL) and their main activities in the management of logistics services. Definition of competitiveness at the industry level is the ability of nation-wide companies to achieve sustainable success facing their competitors without protection or subsidies. Measurement on the level of competitiveness in the industry covers the entire profits of national companies in the industry sector, the industry trade balance, foreign direct investment balance between outbound and inbound, and direct measurement on cost and quality of the industry level (Jordan's, 1998).

Operational strategy is considered as a competitive tool base that concentrates on process and content (Fuller et al., 1993; Hayes et al., 1984; Fisher et al., 1997). The important role of operation management and operation strategy for supply chain competitiveness has been studied by Fuller et al. (1993), Hayes et al. (1984), Fisher et al. (1997), and Levi et al. (2003). Operations are described as the basic unit of competitive advantages (Porter, 1996). Porter argues that operational effectiveness effort directly contributes to competitiveness and market leadership. According to La Londe et al. (1997), organizations must be fast, agile, and flexible to compete efficiently. This cannot be obtained without coordination and collaboration of companies in the supply chain (Vokurka et al., 1998). La Londe et al. (1997) argue that companies can compete if they are to develop and manage collaboration or partnership. According to Mentzer et al. (2004), competitive advantages can be obtained not only through product sold, but also through ways in which we manage, distribute, and provide supply chain. Chopra et al. (2006) find that a firm's competitive strategy defines its relation to its competitors and the collection of customers' needs who seek to satisfy themselves through products and services.

III. THEORITICAL FRAMEWORK AND HYPOTHESES

Third party logistics (3PL) collaborating with consumer goods manufacturing companies in terms of organizing logistics distribution and outbound logistics activities are particularly important to the supply chain.

Outbound logistics warehousing functions to perform activities, ranging from finishing manufacturing products up to distributing by means of effective and efficient transportation to deliver products to customers. Empirical studies related to logistics distribution activities of physical distribution were first developed by Heskett et al. (1964), which began in military logistics distribution that is now evolving into such a big business.

The emergence of globalization and free trade, where the level of competition is very high, demands logistics service providers to improve their competitiveness in logistics distribution activities, especially outbound logistics distribution as to deliver products quickly, accurately and appropriately in accordance with demanded price as expected by consumers. This requires a collaboration strategy with consumer goods manufacturing companies. Competition is based on time and this makes the quality of logistics capabilities a critical factor, as this will create customer value through a focus on logistics services (Langley & Holcomb, 1992; Morash et al., 1996a; Manrodt et al., 1997).

In addition to the efficiency function, logistics capability is also a source of competitive superiority (Zhao et al., 2000; Bowersox et al., 1999; Olavarrieta & Ellinger, 1997; Morash et al., 1996; Bowersox & Closs, 1996; Global Logistics Team, 1995). According to Day & Wensley (1988), the advantages of resources are a requirement that becomes more tangible as the advantages allow a company to train their capabilities. Capabilities and superior resources collectively demonstrate the ability of a firm to outperform its competitors. Resources and capabilities are to be very important because resources are productive assets owned by the company, while capabilities are what the company can do. Individual resources cannot provide competitive advantages, but it should be collaborated with other resources to create organizational capabilities. Capabilities are the essence of superior performance. Every company is trying to have a competitive advantage to face their competitor, so it requires effective improvement and efficient performance, especially to face external environmental factors that cannot be predicted and anticipated. Thus, flexibility is the kind of performance that could be able at any time to face changes fast and be able to adapt to the level of competition in the global era that exists in supply chain, especially in the logistics distribution activities, which are in desperate need of high responsibility.

Physical distribution flexibility is the ability of an organization to supply, package, warehouse, and transport physical products quickly to meet customers' needs (Day, 1994). Packaging type and the number of attributes describing the transportation mode **range** physical distribution flexibility. **Mobility** can be assessed through time and expense in the mode of transportation and packaging differences, while **uniformity** can be tested through the quality and reliability of delivery. Demand on management flexibility acts as flexibility on the perspective of outbound logistics distribution which refers to an organization's ability to respond to requests quickly and effectively; this means to respond to various needs of customers in making orders, packaging, and delivery schedule that will lead to successful long-term relationships with customers (Lengnick-Hall, 1996).

Studies examining the effects of collaboration on information sharing and collaboration on capability explain that information sharing is one of the core elements of collaboration (Simatupang & R. Sridharan, 2002). Such information is a shared resource owned by the collaborating parties in supply chain to build and enhance organization capability, while collaboration is a strategy built by supply chain to achieve organization capabilities (Bititci, 2004), increase performance and flexibility, (Zhao et al., 2008) and also to further increase competitiveness (Bititci, 2008). Closs et al. (1997) show that information is the resource of logistics. Information and logistics are the main ingredients in distribution flow in addition to financial flow, in which a flow of accurate information in the right time and the right place is needed for materials to run smoothly (Langley, 1986; Introna, 1991). While changing logistics systems of raw materials or semi-finished materials into finished products will create customer value, information systems will change the data in the form of information to facilitate managerial decision making; thus information is a complete resource for decision making that can improve the effectiveness, efficiency, and flexibility of the business. According to Ordaz, Alcazar & Cabrera (2003), resource is an input or the availability of these factors in a company. Resources can include different types of factors such as materials, information or knowledge of employees, patents and productivity, while capability is a requirement of resource coordination to develop competitive advantages and organizational skills in order to create activities that are more efficient and effective. Capability also involves all levels throughout the organization and a dynamic perspective on the increase. In addition, it is also related to expertise or competence to continue, develop, and adapt to its human resources, in order to maintain a winning mindset.

Seen from the perspective of research objects in Indonesia, the issue of capability and versatility is still such an interesting topic to discuss, because the level of capability is the ability for an organization to survive in the midst of globalization where business competition is very high. Limited resources require companies to governance these resources in an effective, efficient and sustainable ways. Logistics capability is a critical point for companies' third-party logistics (3PL) to engage in distribution activities, since achievement on optimal capability will also have an impact for consumer goods companies to grow and create products to meet customers' expectations and satisfaction. This indicates a high level of responsibility for third party logistics

companies providing distribution services for consumer goods manufacturing companies in order to improve the distribution logistics.

Based on the above analysis, this study is projected toward building new models and testing the consistency of relationship among the constructs of collaboration, information sharing, capability, flexibility and competitiveness in third party logistics companies in Indonesia. The proposed hypothetical model based on the afore-presented framework can be seen in Figure 1.

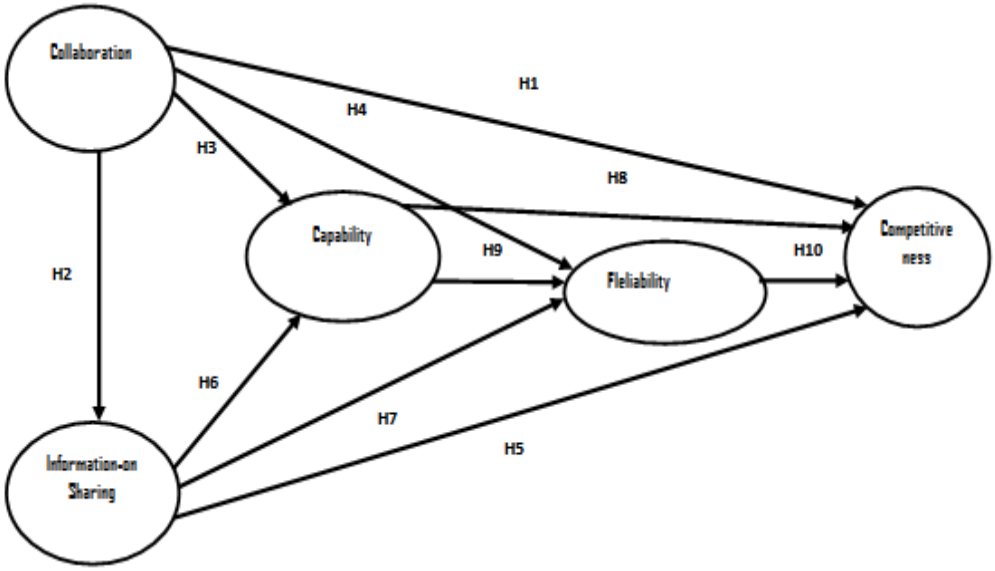

Figure 1. Research Conceptual Framework

The proposed hypotheses are as follows:
H1: Stronger collaboration contributes to improvement of competitiveness.
H2: Stronger collaboration contributes to intense improvement of information sharing.
H3: Stronger collaboration contributes to improvement of capabilities.
H4: Stronger collaboration contributes to improvement of flexibilities.
H5: Increasing intensity of information sharing contributes to improvement of competitiveness.
H6: Increasing intensity of information sharing contributes to improvement of capabilities.
H7: Increasing intensity of information sharing contributes to improvement of flexibilities.
H8: Increasing capability contributes to improvement of competitiveness.
H9: Capability increasing contributes to improvement of flexibilities.
H10: Flexibility increasing contributes to improvement of competitiveness.

IV. METHODOLOGY

This study used a survey method to measure and to analyze competitiveness in logistics service industries through collaboration from the perspective of consumer goods manufacturing companies in East Java. A questionnaire based on appropriate literature was developed and tested for validity and reliability prior to hypothesis testing. This study used Structure Equation Model (SEM) supported by systematic analyses as well as in-depth analyses on the practical implementation of business logistics service companies in Indonesia. This was done in order to reach deep understanding to support the quantitative analyses.

4.1 Population and Sample

Population of the present study is logistics services companies (Third Party Logistics) in Indonesia. Logistics services companies (Third Party Logistics) were chosen as the population in this study because they are dominant firms conducting logistics distribution activities, especially outbound logistics, and managing the distribution of products (finished products) to consumers, such as packaging, warehousing and transportation. Based on the data from Indonesian Logistics Association (ALI) in 2011, it was known that the number of logistics services companies (N) was as many as 294 companies.

Sample was chosen through several steps. The first step was a census of 294 nation-wide logistics services companies based on the data from ALI (Indonesian Logistics Association) in 2011 by sending questionnaires via email to find and identify the kind of collaboration done by the companies to their partners, i.e. consumer goods manufacturing companies. The second phase was collecting the results of questionnaires via email. As many as 125 national logistics service companies responded on behalf of their collaborating partners.

The third stage was identification of names of consumer goods manufacturing companies in East Java as the collaborating partners of the national logistics service companies. Questionnaire administered as a form of evaluation on the kind of collaboration, information sharing, capability, flexibility and competitiveness of service firms which have been providing logistics services like packaging, material handling, inventory management and warehousing, and transportation to the partner companies, consumer goods manufacturing companies as a logistics service user (user). The fourth stage, from the identification of the names of the consumer goods manufacturing companies, there were 70 consumer goods manufacturing companies which would be further evaluated. The fifth stage was classifying the manufacturing companies, in which as many as 55 consumer goods manufacturing companies would be evaluated to 110 different logistics service companies, and the rest 15 consumer goods manufacturing companies would be evaluated to the other 15 different logistics service companies. The data used was as much as 125 units for processing statistical analysis using SEM analysis.

4.2 Measurement

Measurement was included in the hypothesis. Respondents were presented with statements, and they had to choose one from the five alternatives provided using Likert Scale. The alternatives show degrees to which the statements characterized their firm. Validity and reliability analyses of the questionnaire results showed that all the indicators making up the constructs of the research conceptual framework proven to be valid and reliable. These results are shown in Table 1.

Table 1: Reliability and validity of the research instrument

Constructs	Indicators	Validity		Reliability	
		Corelation	Result	Alpha	Result
Collaboration	Trust	0,742	Valid	0,893	Reliable
	Commitment	0,673	Valid		
	Risk Sharing	0,772	Valid		
	Information Exchange	0,775	Valid		
	Openness	0,728	Valid		
Information Sharing	Availability	0,739	Valid	0,922	Reliable
	Accessibility	0,842	Valid		
	Timeline	0,839	Valid		
	Completeness	0,770	Valid		
	Accuracy	0,799	Valid		
Capability	Customer service	0,734	Valid	0,933	Reliable
	Delivery Speed	0,750	Valid		
	Delivery Reliability	0,772	Valid		
	Responsiveness	0,775	Valid		
	Delivery Information	0,810	Valid		
	Order Handling	0,767	Valid		
	Total cost	0,787	Valid		
	Distribution Coverage	0,743	Valid		
Flexibility	Range	0,860	Valid	0,921	Reliable
	Mobility	0,799	Valid		
	Uniformity	0,867	Valid		
Competitiveness	Price	0,763	Valid	0,916	Reliable
	Quality	0,768	Valid		
	Time	0,869	Valid		
	Delivery Flexibility	0,842	Valid		

Sources: Data analyzed

4.3 The Results of Hypotheses Testing

The results of the hypotheses testing using structural equation model can be seen in table 2.

Table 2 : Hypotheses Testing Results with SEM

Hyp	Influence			Std Estimate	C.R	*p.value*	Results
H1	**Collaboration**	**---->**	**Competitiveness**	**0.156**	**0.900**	**0.368**	**Not Significant**
H2	**Collaboration**	**---->**	**Information Sharing**	**0.964**	**9.729**	**0.000**	**Significant**
H3	**Collaboration**	**---->**	**Capability**	**0.287**	**1.320**	**0.187**	**Not significant**
H4	**Collaboration**	**---->**	**Flexibility**	**0.230**	**0.970**	**0.332**	**Not significant**
H5	**Information Sharing**	**---->**	**Competitiveness**	**0.752**	**7.076**	**0.000**	**Significant**
H6	**Information Sharing**	**---->**	**Capability**	**0.945**	**8.410**	**0.000**	**Significant**
H7	**Information Sharing**	**---->**	**Flexibility**	**0.022**	**0.086**	**0.932**	**Not significant**
H8	**Capability**	**---->**	**Competitiveness**	**0.105**	**0.811**	**0.417**	**Not significant**
H9	**Capability**	**---->**	**Flexibility**	**0.848**	**9.462**	**0.000**	**Significant**
H10	**Flexibility**	**---->**	**Competitiveness**	**0.226**	**3.088**	**0.020**	**Significant**

Source: Data analyzed

Hypothesis 1: Stronger collaboration will enhance the competitiveness of the logistics services companies. Analysis on hypothesis 1 shows the coefficient path between collaboration and competitiveness was 0.156 with *p.* value of 0.368. Since the value is greater than the critical value of 0.05, hypothesis 1 is rejected and this mean that collaboration does not have a significant direct effect to the improvement of competitiveness.

Hypothesis 2: Stronger collaboration will increase the intensity of information sharing for logistics services companies. Analysis on hypothesis 2 shows the coefficient path between collaboration and information sharing was 0.964 with *p*. value of 0.000. Since the value is less than the critical value of 0.05, hypothesis 2 is accepted and this mean that collaboration has a significant direct effect on increasing the intensity of information sharing.

Hypothesis 3: Stronger collaboration will enhance the capabilities of the logistics services companies. Analysis on hypothesis 3 shows the coefficient path between collaboration and distribution logistics capabilities was 0.287 with *p*. value of 0.187. Since the value is greater than the critical value of 0.05, hypothesis 3 is rejected and this means that collaboration does not have a significant direct effect to the improvement of capabilities.

Hypothesis 4: Stronger collaboration will enhance flexibility for logistics services companies. Analysis on hypothesis 3 shows the coefficient path between collaboration and flexibility was 0.230 with p-value of 0.332. Since the value is greater than the critical value of 0.05, hypothesis 4 is rejected and this means that collaboration does not have a significant direct effect to the improvement of flexibilities.

Hypothesis 5: Increasing intensity of information sharing will enhance the competitiveness of the logistics services companies. Analysis on hypothesis 3 shows the coefficient path between information sharing and competitiveness was 0.752 with p-value of 0.000. Since the value is less than the critical value of 0.05, hypothesis 5 is accepted and this mean that information sharing has a significant direct effect to the improvement of competitiveness.

Hypothesis 6: Increasing intensity of information sharing will enhance the capabilities of the logistics services companies. Analysis on hypothesis 3 shows the coefficient path between information sharing and capability was 0.945 with p-value of 0.000. Since the value is less than the critical value of 0.05, hypothesis 6 is accepted and this mean that information sharing has a significant direct effect to the improvement of capabilities.

Hypothesis 7: Increasing intensity of information sharing will enhance flexibility for logistics services companies. Analysis on hypothesis 3 shows the coefficient path between information sharing and flexibility was 0.022 with p-value of 0.932. Since the value is greater than the critical value of 0.05, hypothesis 7 is rejected and this means that increasing intensity of information sharing does not have a significant direct effect to the improvement of flexibilities.

Hypothesis 8: Increasing capabilities will enhance the improvement of competitiveness for logistics services companies. Analysis on hypothesis 3 shows the coefficient path between capabilities and competitiveness was 0.105 with p-value of 0.811. Since the value is greater than the critical value of 0.05, hypothesis 8 is rejected and this means that increasing capability does not have a significant direct effect to the improvement of competitiveness.

Hypothesis 9: Increasing capabilities will enhance flexibility for logistics services companies. Analysis on hypothesis 9 shows the coefficient path between capabilities and flexibility was 0.848 with p-value of 0.000. Since the value is less than the critical value of 0.05, hypothesis 9 is accepted and this mean that increasing capabilities has a significant direct effect to the improvement of flexibility.

Hypothesis 10: Increasing flexibility will enhance competitiveness for logistics services companies. Analysis on hypothesis 10 shows the coefficient path between flexibility and competitiveness was 0.226 with p-value of 0.020. Since the value is less than the critical value of 0.05, hypothesis 10 is accepted and this mean that increasing flexibility has a significant direct effect to the improvement of competitiveness.

V. DISCUSSION

The results showed that collaboration does not contribute directly to the improvement of competitiveness. These results indicate that increasing competitiveness in the logistics service industry, as seen from the perspective of consumer goods of the manufacturing companies, acting as the users of logistics services, cannot be realized through such collaborative roles; since the roles do not result in information sharing and do not contribute to increasing the delivery speed as the main element of competitiveness in the logistics service industry. This finding is contrary to the Relational View theory (Singh & Dyer, 1998), which explains that specific assets are required to achieve competitive advantages, and that limited critical resources which are inherent in the relationship between companies (collaboration) are also indispensable. Such contradiction can be explained by the following reasons. First, collaboration between logistics service companies and consumer goods manufacturing companies in this study did not consider aspects such as the size of each collaborating company, which finally results in not knowing the depth of the resource commitment as well as initial capabilities of the collaborating companies crucial to achieve the goals of collaborating. Second, the data shows that there are differences in production systems done by consumer goods manufacturing companies, in which there are companies using the *make-to-stock* systems and *made-to-order* systems; these differences affect the distribution systems and determine distribution length and lead-time. Third, the contradiction also means that the effectiveness of collaboration cannot be achieved if there is no equality, mutual dependence, and balanced level of collaboration that should be built through strong commitment among the collaborating parties (Slack & Lewis, 2008).

Another finding in this study explains that capability does not directly contribute to the improvement of competitiveness. This means that the finding contradicts the theory of resources base view by Wernerfelt & Rumelt, (1984) and Jay Barney (1991), which states that sustainable competitiveness of enterprises requires valuable, unique, and rare resources and capabilities—those resources and capabilities that can neither be copied nor be replaced. The contradictory result of this study explains that logistics capabilities cannot directly be formed through collaboration, as the empirical observations suggest the existence of different capability of the logistics service companies in terms of distributional ranges, in which 50% of the companies conduct domestic distribution, while the rest 50% conduct international distribution (export). The different capability in term of distribution range determines the logistics capability, a capability which is determined by factors such as unique and rare resources owned by the logistics service providers. Another analysis to explain such condition is that increasing competitiveness for logistics service companies need short lead-time and high-speed delivery; thus, resources and capabilities, which are still oriented to communication and information delivery, are not yet able to give such unique values to the matter. This indicates that increasing competitiveness for logistic service companies need flexible and reliable strategies focusing on responsiveness of the distribution activities themselves.

The study also finds that information sharing does not directly contribute to the increasing flexibility; this indicates that information sharing that is not supported by same types and characteristics of technology will only hinder integration and synchronization of the available resources leading into difficulties in achieving flexible distribution activities. Differences in types and characteristics of technology make it difficult for companies to fulfill the capacity of information needed by the collaborating parties. This finding confirms the finding by Bulenz Sezen (2008) which states that information sharing alone without consideration on the quality and design of chain supply systems will not be able to provide the capacity of information needed to improve flexibility.

Comprehensive analyses on variables that make up the overall research model show that information sharing is a critical and vital variable to determine improvement on competitiveness of logistics service companies. Explanation on the above analysis is provided by the theory of knowledge management (Nonaka, 1995), a theory which states that interaction between organizations and information sharing can improve knowledge, in which information is able to provide the required values to achieve effectiveness of the chain supply systems. Quick and accurate flow of information helps to form quick and accurate decision-making, which will finally form such short lead-time distribution of products and services. In other words, delivery speed, manifested through information sharing, plays the role as a key element in increasing competitiveness of logistics service providers.

VI. LIMITATION AND CONCLUSION

The main contribution of this study is that it explains that increasing competitiveness of logistics service industry itself can only happen when the role of information sharing is supported by the use of same types and

characteristics of information and communication technologies. There are several limitations to this study. First, this study did not consider the aspect of company size or company size as well as period or length of collaboration, which may contribute to the depth of commitment of the shared resources and of the collaboration in order to achieve healthy and mature relationship between logistics service providers (3PL) and consumer goods manufacturing companies. Second, this study does not identify the beginning of segmentation or classification of the types of distribution, export or domestic coverage, and this may greatly affect differences on the capability and competitiveness of the logistics service companies. Third, this study did not consider the classification of the types of collaboration—as it only deals with one type of collaboration or overall collaboration— such as collaboration for warehousing or collaboration for transport; yet, this study can still be considered a thorough study to measure collaboration for any types of collaboration including warehousing, transportation, and a combination of both. Fourth, assessment or evaluation on collaboration in this study is visible only from one side of the collaborating parties, i.e. only one partner in collaboration done the assessment, while the ideal requires that assessment on collaboration be made by all collaborating parties to make the result fairer or just fair.

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