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Total Quality Management and Logistic Performance: Moderating Role of Reserve Supply Chain in Pharmaceutical Industry of Indonesia

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Currently, the pharmaceutical industry is making various logistics developments; such as a reduction in logistics costs. In order to reduce logistics cost. Currently, the pharmaceutical industry is focusing on outsourcing their logistics activities and centralizing their warehouse operation for various countries. Secondly, from wholesale supplies to 'end customer' deliveries. Especially in smaller sales markets, the pharmaceutical industry sends their products to wholesalers rather than directly to customers (hospitals, pharmacies, retailers), this strategy is fit for the low sales of the pharmaceutical industry. The prime objective of this study is to investigate the relationship between total quality management reserve supply chain and logistic performance of firms operating in the pharmaceutical industry in Indonesia. In addition to that, the indirect relationship between total quality management reserve supply chain and logistic performance, of firms operating in the pharmaceutical industry, is examined. Employing the survey-based methodology, the multiple regression technique is used to test the hypothesized. SPSS- multiple regression is used as a

statistical tool to answer the research questions raised in this study and the research objectives envisaged in this study. The findings of the study have provided support to the theoretical foundation and proposed hypothesis of the study. The current study will be helpful for policymakers and practitioners in understanding the issues related to supply chain risk, supply chain integration and supply chain agility.

Key words: *Total Quality Management, Logistic Performance, Reserve Supply Chain, Pharmaceutical Industry.*

Introduction

Historically, concept of TQM evolution has four stages: quality inspection, quality control, quality assurance until to total quality management. According to Aquilani et al (2017), from the 1910s, Ford Motors created mass the production line. With the mass production line development, formal inspection became necessary. At that time there was a lack of labour skill which caused raw material and time waste; the production could not meet customer satisfaction levels. For this reason, Ford Motor decided to implement quality inspection for the first time; academically link with quality control in 1922, with the publication of G.S.Radford's (Matthews and Marzec, 2017) 'The Control of Quality in Manufacturing'. Since organizations have started to apply quality inspection, it has been found that many problems cannot be solved by quality inspection.

The second stage of TQM is statistical quality control. According to Aquilani et al (2017), the philosophy of quality control comes from W. A. Shewhart who working at Bell Telephone Laboratories. Firstly, quality control was developed from process control, based on the organizations requirement to increase the usage of raw material, increase the level of skilled labour and equipment efficiency. Shewhart's developed a simple statistical technique for determining limits (Fernandes, et al., 2017). Even now, a large number of organizations still use the process control chart. The process control chart was massively used during the Second World War; it improved military operational speed (Khan & Mingyi 2018). After Second World War finished, the process control chart was used by many business organizations to improve customer satisfaction (Prajogo, et al., 2016). However, it cannot fulfil all business organization requirements; then next stage of TQM is quality assurance. During the quality assurance era, the concept of quality went from narrow to wide; not only limited to manufacturing organizations, but also expanded into business organization

management. Problem prevention became the primary objective of quality assurance (Mwanzia, et al., 2016).

"Logistic" is derived from the French 'logistique'. In the beginning, logistics was used in military activity, starting from military logistics used during World War Ⅱ. At that time the function of logistics was to transfer soldiers and munitions to the battlefield. After World War Ⅱ, America used the logistics advantage to develop their international business. American Malcolm P. McLean, who invented the modern sea container, is also known as the business logistics founder (Jakhar, 2015). With the economy booming in the 21th century, at present market value, global logistics is worth around $3.7 trillion. In 2009, the percentage of logistics market value almost 9.3% of global GDP (Bastas and Liyanage, 2018). The data shows that logistics plays an important role in global economy development.

At present, there is a lack of research on pharmaceutical logistics in China. Most of the research is still at an academic stage. Soares et al (2017) conducted empirical research on pharmaceutical logistics activities and capabilities. This study, to investigate Pharmaceutical logistics, was influenced by logistics activities and capabilities. The sample consisted of 500 pharmacies locate in Chang-Zhu-Tan region in China. This study indicated that, in current competitive environment, logistics capacities become a key factor to obtain a competitive advantage in the pharmaceutical industry. The result of this research shows that logistics activities have a positive relationship with cost & service and the capacity of delivery. In a related study, Prajogo et al (2016) indentified the significance of the integrated logistics model on the pharmaceutical industry in China. The study stated that pharmaceutical logistics was key for the transfer of pharmaceutical product from pharmaceutical manufacturers to customers. At present, pharmaceutical logistics in china is inefficient, causing a large amount of waste. In order to increase operation efficiency and to reduce the waste, there needs to be enhanced collaboration between company and company. Meanwhile, the pharmaceutical industry needs to improve the communication between supplier and customer (Lin, et al., 2005). Finally, this study showed that the integrated logistics approach could change the current situation of pharmaceutical industry logistics.

According to Fynes et al (2005), compared with the pioneering sectors of retail and electronics, the pharmaceutical industry is behind when it comes to logistics developments, distribution network optimization and sales planning. Currently, the pharmaceutical industry is making various logistical developments, such as reducing logistics costs. In order to reduce

logistics costs, the pharmaceutical industry is focusing on outsourcing their logistics activities and centralizing their warehouse operations in various countries. Especially in smaller sales markets, the pharmaceutical industry sends their product to wholesalers rather than directly to customers (hospitals, pharmacies, retailers). This strategy is fit for the low sales of the pharmaceutical industry (Vanichchinchai and Igel, 2011). The Industry is also looking to reduce the inventory of finished products. However, this is not an easy task in the pharmaceutical industry. The high stock levels are caused primarily by the labour-intensive administrative procedures related to production batch registration and release. The last point is a power struggle over who manages logistics in the pharma supply chain. Currently, in order to protect their own market position, the pharmaceutical industry is looking for ways to reduce the power of wholesalers' through logistics. Meanwhile, the pharmaceutical industry is also afraid of damaging the relationship with wholesalers by cancelling the logistics contracts. Schurman et al (2010) conducted a study about reverse logistics in the pharmaceutical industry. The study looks into the problems of reverse logistics in pharmaceutical industry. As the study shows, the reverse logistics in the pharmaceutical industry is different from other industries because products returned to other industries can be repaired or resold. However, for pharmaceutical industry generally has to destroy the product. During the product reverse process, there are many considerations to be taken into account such as: cold chain requirements, proper storage and disposal, etc. Finally, the study suggests that the pharmaceutical industry should focus on reverse logistics effectively to reduce the costs logistics (Zhang, et al., 2015).

Literature Review

Total Quality Management Practices

Beerens et al (2012) and Serafimovska and Ristova (2011) stated that "total quality management is a strategic, integrated management system that is focused on customer satisfaction and involves everyone in the organization using quantitative measurement tools to continuously improve the organization's services and products". Furthermore, the principle of TQM is customer focus. According to Zhang et al (2015), the major Japanese manufacturing companies have practiced TQM for the last 40 years. This is because total quality management can make companies continue to improve their quality to capture both local and global market share. Currently, organizations face fierce competition, TQM is one of the most useful tools applied by organization to gain a competitive advantage. Beerens et al (2012) states that total quality management is customer focus system; continuously improved quality to achieve customer satisfaction. This study stated that the base elements of

total quality management are: (1) Leadership, (2) Employee involvement, (3) Continuous improvement, (4). Customer focus.

Serafimovska and Ristova (2011) stated that quality management is a kind of strategic management and starts from top management. Therefore, top management leadership is the basis on which to build a suitable organizational culture. The organizational culture will directly influence the organizations performance. The famous leadership model to correspondent with total quality management is PDCA leadership, which includes Plan, Do, Check and act. Sadikoglu and Zehir (2010) stated that top management of organizations, as quality council, means that lots of organizations have a small group people to control the quality of the organization. Similarly, (Androniceanu, 2017) also had the idea about a quality improvement team. The total quality management principle stated that organization can use a TQM program to improve all levels of employees, to continuously achieve project objectives. However, top management requires the set up of a rational organizational culture to support total quality management (Ristova, et al., 2011). Without good top management, a total quality management program cannot run smoothly. Organization leader ability and behaviour can directly influence organizational successful or failure.

According to Anissimov (2011), total quality leadership means that top management has a duty to apply a TQM to meet customer requirements. In order to achieve organizational objectives, top management needs to create an organization mission and vision. Moreover, an organization needs to ensure that their employees understand and follow the organizational culture to increase productivity. This study also states that the organization sector development has a direct relationship with top management. Thus, top management, as the brain of organization, has a responsibility to take care of their employees and customers.

Lakshman (2006) conducted a study about leadership theory using total quality management. As the researcher stated, the quality of every individual product is not the responsibility of a top manager. This responsibility, to test product quality, belongs to a product quality manager. The role of top management is to manage the total quality of an organizations operation. This study chooses 15 criteria to evaluate a leader's ability in total quality management; communication, participation, self-managing teams and so on. The results stated that all 15 factors have an influence on the implementation of total quality management. Many researchers consider the main factor for successful quality management is quality top management. As Siva et al (2016) stated, the core principle of total quality management is customer focus, employee participation and continuous improvement. This

study suggested that top management should be set up to improve customer satisfaction and to encouraging all levels of employees to have the same goal to achieve the company mission. The results of this study stated that the top management leader has a positive and significant relationship with total quality management.

The quality of a pharmaceutical product will directly influence people's health at an assurance level. For this reason, in the pharmaceutical industry, every employee has a responsibility for product quality. Chen et al (2018) further outlined the role of leadership in the total quality management of a company. This study indicated that senior management has a responsibility for the product quality; senior management should not only working in an office but also needs to get out of the office and give attention to their staff, suppliers, and so on. This process ensures that the leader of a company can get accurate information. On the other hand, this process allows staff to get to know the manager level, it can mobilize all the positive factors of employees to produce a high-quality product. This study believes that leadership is the main factor in total quality management. Mustafa and Bon (2012) conducted a study to review the role and impact of leadership on total quality management in service organizations in Malaysia. In this study, the conceptual framework comes from 15 related studies, which were done by other researchers. From the preceding review, it can conclude that the ability of top management can directly affect organizational development. Meanwhile, this study indicated that it is difficult to find out how important leadership is in organizations and how it is linked to other TQM factors.

An employee, who works in an organization, needs to participate in the organization activities to achieve organizational goals. There has been a lot of research on the effect of employee involvement. As stated by Sadikoglu and Zehir (2010), all employee involvement will quickly help an organization to solve problems and accomplish comprehensive decision-making; if all employees take responsibility to solve a problem, even a huge problem can be solved. Mustafa and Bon (2012) conducted a study to investigate the effect of employee involvement on total quality management. Data was collected from six companies in Hong Kong. The study showed that employee involvement has a relationship with total quality management. Nevertheless, this study still found problems with employee involvement in Chinese organizations; total quality management is not fully applied by the Chinese and the attitude of employees is the biggest problem for employee involvement. A related study was done by Al-Khalili and Subari (2014) to identify the relationship between employees' involvement and quality improvement, in the manufacturing industry. This study stated that employees' involvement at all the level is important to gain competitive advantage and to

achieve the objective of total quality management. Similarly, one previous study examined the influence of employee involvement on total quality management, especially for employee attitude. The sample consisted of 280 employees who came from six organizations in the US. A questionnaire and formal interview survey method was used. This study aimed to assess the strengths and weakness in TQM; based on data to provide systematic information on total quality management, and to find the factors that are needed to successfully implement TQM practices. The results of this study showed that employee quality awareness can influence organization performance. More than ¾ of respondents considered quality of product, for their organization, as vital. Employee involvement has a positive relationship with problem solving, 2/3 of respondents felt that when employees participate in organization decision-making it will increase organization-working efficiency. Employee training can increase organization productivity, 3/4 of respondents stated that they have had at least one-week of training in the previous years. Moreover, 72% of respondents considered that communication is still a weakness when implementing total quality management. Therefore, managers need to increase the frequency of their communication with their employees. Face-to-face communication was accepted by most of employees. Finally, the study stated that if all organizational employees share responsibility and give rational suggestions to the organization, the quality of the organization can be perfect.

The means of continuous improvement can be described as improved organizational process in order to provide products/services that meet customer expectations. In other words, innovation may be part of continues improvement. In order to fulfil customer satisfaction, organizations need to continue to innovate new products and services. Continuous improvement and innovation should be the foundation of organization, they can directly influence organization total quality management. Androniceanu (2017) described continuous improvement (Kaizen in Japanese) to continue to provide quality products and services in order to improve customer satisfaction. This is the foundation to practice total quality management. Further, this study stated that organizational culture is the most significant element in continuous quality improvement. Meanwhile, the Plan-Do-Study-Act (PDSA) cycle provides the basic process for organizations to continuously improve.

TQM and Logistics

Total quality management may improve the logistics performance. Therefore, total quality management on improving logistics performance has economic significance. This study aims to clarify the relationship between total quality management and logistics performance in the pharmaceutical industry. Karia and Asaari (2016) conducted a study to investigate the status of quality management practices on logistics; to compare the extent of quality practice between logistics companies and manufacturing companies in Australia. The sample consisted of 500 companies listed as members of Logistics Association Australia. The study show that the most significant factor to indentify the quality of logistics is “on time delivery”. The main limitations for companies implement quality management is “changing corporate culture” and “training and education of employee”. Finally, the study indicates that to implement quality management in manufacturing companies is more extensive than in logistics firms.

Androniceanu (2017) conducted a study about quality management in the logistics industry. This study investigated the factors that encouraged Hong Kong’s logistics industry to implement quality management. There were three factors used to evaluate; awareness of quality, rising customer expectation and the improvement mechanism. In this study, the sample consisted of 184 permanent staff who were the employees of Oriental Logistics Company. In order to implement the quality management, the company developed a ten steps process, which starts from management commitment, quality improvement team, quality measurement, quality awareness, manager & supervisor training, goal setting, effort cause removal, corrective actions and recognition- award, continuous improvement. The study indicated that since Oriental Logistics started using a quality management system to set up the standard and procedures, it integrated the different departments at the same standard, this made it is easy for employee management. Meanwhile, quality management system makes sure that every aspect of the work process conforms to customer requirement and meets the expectation of the customer. Yu et al (2017) conducted a study to investigate the importance of quality management used to increase logistics performance. The target population selected 800 companies, which were listed on the Kuala Lumpur Stock Exchange (KLSE) .The sample consisted of 113 Malaysian companies that had significant logistics requirements. In this study, the measurement was selected from four areas: process for performance measures, customer expectations issues, tools for measuring customer expectations, satisfaction with current results. The results showed that many Malaysian companies have implemented quality programs in their logistics functions. It is around 70% of the total sample. The other

30% of companies also had planned in the next three years to implement total quality management. Meanwhile, most of the companies considered quality management as long term planning, because the availability of funds was the greatest obstacle faced by managers. Finally, this study indicated the sample size as an apparent limitation.

Zhao et al (2006) stated that research on business issues in china are becoming increasingly important to the global economy. The objective of this study was to investigate the current status, opportunities and proposition in supply chain management, logistics, and quality management in china. The study showed current China logistics barriers and challenges. The main barrier is undeveloped logistics infrastructure. Meanwhile, the study showed that the quality management, implement in china companies, was introduced from western countries. But there is a vast difference between China and western countries. Therefore, the researcher suggests that Chinese companies need to consider the company status, to implement total quality management to improve their logistics performance and supply chain performance. In recent years, numerous approaches have been proposed to improve operational performance. There are three methods: just in time, supply chain management and quality management. A study by Kannan and Tan (2005) show how just in time, supply chain management and quality management correlate and how they influences business performance. The sample consisted of 556 employees from senior operations and materials managers in North America and Europe. The results showed that all correlations with Just in time, SCM and TQM were significant.

Reserve Supply Chain

This definition of SCM was extended to integrate all physical, information and financial flow among key supply chain partners to balance between supply and demand of inventories while keeping up with the goals of competitive advantage. The SCM concept is an integration of various business functions including sourcing and procurement, production operations, distribution strategy, logistics management, and others (Li and Liu, 2008). The concept of supply chain management has undergone at least a decade of redefinitions. Due to rising concerns in regards to pollution contributed by electronic waste (e-waste) mismanagement, the upstream product flow attributed to extended producer responsibility has facilitated the emergence of closed-loop supply chain management. Closed-loop supply chain (CLSC) is an integration of forward and reverse supply chain (FSC and RSC) that addresses product movement in the downstream and upstream directions, where various categories of returns are gathered from collection points and centralized at returns processing plants, evaluated and

undergo appropriate disposition options, re-enter secondary markets and the process repeats itself for the next reincarnation cycle until no significant value can be recovered from the product.

Supply chain management that embrace recoverable manufacturing systems is slightly different from fundamental aspects of conventional operation management. Most of the authors have described reverse supply chain (RSC) as a continuation of forward supply chain (FSC), where assimilation of both closes the supply chain loop and fulfils the objective of pollution prevention (Sasikumar and Kannan, 2008). Environmentally-conscious corporations can integrate sustainability across supply chains by dealing with three major issues in regard to returns management. They are supply, processing and distributions of recovered goods.
Reverse supply chain is a major constituent of closed-loop supply chain. In earlier literatures, reverse supply chain is also known as product recovery management (PRM). PRM relates to the management of products that moves in an upstream direction, and Genovese et al (2017) described the objectives of PRM as; “To recover as much of the economic (and ecological) value as reasonably as possible, thereby reducing the quantities of waste”.

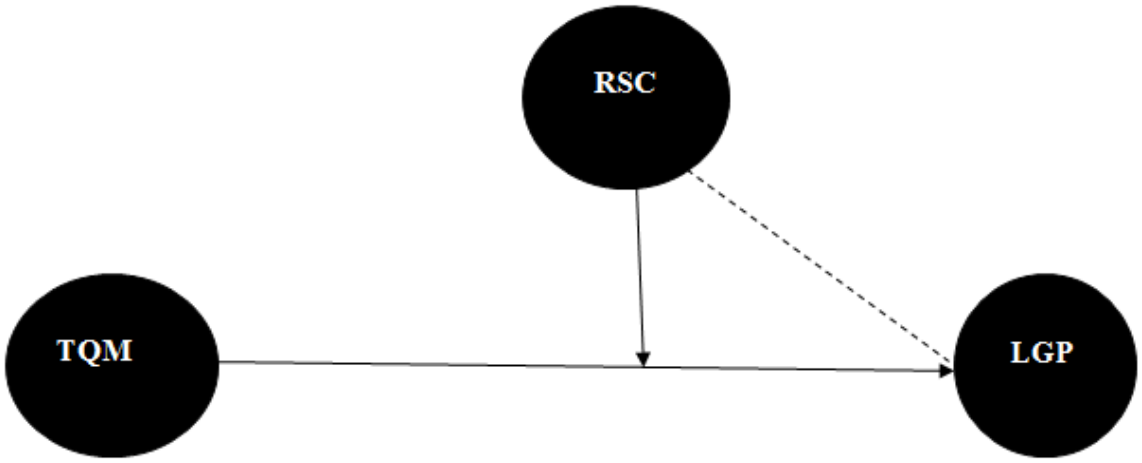
Thierry et al. was among the pioneer authors who highlighted the need to minimise the amount of waste generated by used products, and proposed five different product recovery alternatives for reprocessing products and materials. Lakshman (2006) described reverse logistics (RL) as the operational support to manage physical product and information for the purpose of recovering added-value constituents. (Chen, et al., 2018) suggested that both RL and CLSC are interchangeable terms as they were synonymous. Ristova et al (2011) supported that RL is a key component of CLSC and both activities have garnered a reputation in sustainable development. A number of previous researchers have applied reverse logistics as a term that describes a managerial approach towards asset recovery. This study was driven by previous studies that presented mixed evidence on the viability of reverse logistics business activity in different settings such as country location, type of industry and others. Furthermore, the definitions of reverse logistics were broadly interpreted and may include management of returns, reprocessing works and sale of unused assets or scrap materials.
According to Genovese et al (2017) there are five sequential processes in RSC and the objective associated with each process is described as follow; (1) product acquisition is the gatekeeping activity to receive and collect used products from downstream customers, (2) reverse logistics is the mechanism for recapturing product value including transportation and centralised

returns centre, (3) inspection and disposition is the assessment of returned products and selecting the most appropriate disposition option, (4) remanufacturing (or reconditioning) is the actual work for recovering material and energy to reclaim reusable parts or restore whole product, and (5) distribution and sales creates demand for recovered products in current or secondary market. There are substantial challenges in managing reverse supply chain as these activities are often an afterthought issue during product development and quite often operates independently from forward flow functions.

According to Zhao et al (2006) case study research on third-party logistics providers revealed that most of their clients seek RL services to focus on core business while providing liberal returns policies to maintain customer satisfaction. However, these service providers function according to the tasks assigned by parent companies and the recoverability of a product may be impeded to a pre-determined yield target, thus diminishing the effort of maximising value in returns. If the residual value of a products is high, firms should expedite the recovery process to capture value from time-sensitive products by being responsive at the expense of cost (Atasu, et al., 2008).

Reverse logistics is a contemporary manufacturing approach for maximising recoverable value in returned products and Section 2.2 has discussed the overlapping definition shared by RL and CLSC. Other than CLSC, the integration of environmental management into supply chain management has developed the concept of green supply chain management (GSCM). GSCM is comprised of green purchasing, green manufacturing, green distribution and reverse logistics. The goals of reverse logistics from the perspectives of CLSC and GSCM are similar, that is to reduce or eliminate waste emissions by reducing, reusing, remanufacturing and recycling ‘waste’ into new material and/or products. According to Schurman, et al (2010) the estimated value of backward flowing products is $100 billion per year, equivalent to 6 percent of total sales. Based on the International Association of Electronics Recyclers of the United States, it is estimated that forty million units of computing equipment accounting for some 1.5 billion pounds of electronic equipments was being sent for recycling in the year of 2010. In the case of Malaysia, Theng (2008) disclosed that consumers can deliver used equipments to original manufacturera provided that the company supports recycling programs and employ policies dedicated to product take back.

Figure 1. Conceptual framework



Based on Malaysian Communications and Multimedia Commission, there are 31.4 million mobile phone subscribers in the country. Within an estimate of one to eight years, at least thirty million mobile phones will lose its functional value and become disposable e-
Waste. These are valuable due to the rising price of precious metals such as gold, silver, copper, steel and aluminium. There are two strategic approaches for recovering end-of-use products.
Basing on the literature reviewed the study has proposed the following hypothesis :

H1: Total quality management (TQM) has significant impact on the logistic performance (LGP)
H2: Reserve supply chain (RSC) has significant impact on the logistic performance (LGP)
H3: Reserve supply chain (RSC) moderates the relationship between Total quality management (TQM) and logistic performance (LGP).

Methodology

To achieve the objective of the current study, the author has employed the survey-based methodology and the data is gathered through a self-administered questionnaire. The email and a personal courier are used to collect data from the respondents, who are the operation managers of manufacturing firms. Data is analyzed via SPSS 20.0, which is among one of the robust and advance research software for the data analysis in the social sciences. The data has undergone these analyses, namely a) the descriptive analysis, b) the reliability, and the

validity analysis, and d) the regression analysis. Meanwhile, testing of the hypothesis is done using multiple regression analysis and Pearson correlation. The results from these tests help to indicate the direction and strength of the association between the independent and dependent variables, as well as to identify the most influential variable in the model. Many authors have suggested that the value of the Pearson coefficient explains the degree of the strength of association among variables. Its value lies between -1 and 1. A value of 0 shows no association, -1 shows perfectly negative association, while 1 shows perfectly positive association.

Results

This study adopts the Structural Equation Modelling (SEM) for analysis for several reasons. SEM is considered to have equal ability with multiple and linear regression analysis which assumes that variables are evaluated with no errors. Even though SEM involves multiple regression and factor analyses, it is a more effective way of estimating instruments for a number of separate multiple regression equations, which it evaluates concurrently (Hair et al., 1998). For the sample collection, the cluster sampling technique was employed. The Five-technique approach, that was presented by Gay and Diehl (1992), was used to calculate the sample size for this study. The first step is to estimate the total population, followed by the estimation of population sample size, using the table presented by Krejcie & Morgan (1970). The population size turned out to be 310. In the social sciences, SEM is considered as a powerful and commonly used tool since it can test a number of relationships at once (Hair et al., 2016). Although, previously many researchers have emphasized upon AMOS, a co-variance-based approach. However, PLS-SEM is a good alternative to the CB-SEM approach.

Table 1: Reliability

	CR	**AVE**	**Cronbach Alpha**
TQM	0.975	0.872	0.885
LGP	0.702	0.737	0.924
RSC	0.96	0.871	0.893

The SEM is one of the most appropriate methodologies for a number of reasons. SEM is the best among existing techniques. It is quite advanced and provides a more robust solution of

researcher problems which simply cannot be attained from multiple regression. According to Hair et al. (2016) the PLS approach is useful especially when the sole purpose of using structural modelling is to obtain explanation and prediction about the constructs. For the current study, the PLS-SEM technique is employed, because it is assuming it to be more flexible, demands less in terms of sample size, and has the ability to handle multiple structural modelling. Moreover, the model is constituted of reflective and formative constructs. The study aims to reflect prediction between the constructs. Hair et al. (2016) also supported the reasoning for employing the Partial Least Square method. The SEM-PLS approach involves two models i.e. structural model and measurement model.

The measurement model shows the relationship among the observed and the latent variables. In estimating the measurement model, changes occur in all items of the model. Therefore, a strong correlation is expected to exist between variables and are combined to form a construct. In order to confirm the validation of the measurement model i.e. how well the observed variables represent the constructs, Confirmatory Factor Analysis is done. Under CFA, first and second order constructs are estimated. During estimation of the measurement model, all elements are separately analysed using reflective, formative, and structural modelling.

Table 2: Discriminant Validity

	$\mathbf{R^2}$
LGP	48.70%

The Fornell-Larcker criterion of discriminant validity is a powerful measure and has been widely used by researchers. Discriminant validity measures the association between reflective variables and their constructs. Generally, it operationalizes the variables that are involved in the model. Thus, the current study incorporated this as a threshold for assessing discriminant validity. Value for reliability index is expected to be 0.70 or above. Thus, the value for outer-loadings and cross-loadings turned out to be the same. Since cross loadings analyse the presence of correlation among the constructs, therefore, this study has examined the discriminant validity between the variables and constructs, as shown in table 2.

The next step after checking the validity and reliability of instruments, is the estimation of the structured relationship between the variables. Unlike other techniques, the SEM-PLS method observes the simultaneous examination of all the constructed variables. Therefore, in the case

of the structural model, it analyses the direct and indirect effects of variables. The structural model is also shown below.

Table 3: Direct Effect

	(β)	**SD**	**T-value**	**P-Values**
H1	0.342	0.165	3.234	0.000
H2	0.451	0.221	3.345	0.000

The Moderation is shown in the table 4

Table 4: Indirect Effect

	(β)	**SD**	**T-value**	**P-Values**
H3	0.211	0.135	3.211	0

Table 5: Expected Variance

	R^2
LGP	48.70%

In structural modelling, coefficient of determination or R^2 explains the predictive power of endogenous variables. Closer to 0 value for path coefficients indicate insignificance of coefficients. Value for R^2 also lies between 0-1, value closer to 1 indicate greater predictive accuracy and vice versa. The value of 0.75 indicates substantial predictive power, 0.50 indicates moderate predictive power, while 0.25 indicates weak predictive power. The value for R^2 came out to be 0.487, which shows that ethic and culture explains 48.7 percent variation in SCM.

Conclusion

The current empirical research is on pharmaceutical logistics in Indonesia. Most of the researchers are still in the academic stage. Consequently, the author has conducted empirical research on pharmaceutical logistics activities and capabilities. This study, to investigate Pharmaceutical logistics, was influenced by logistics activities and capabilities. The sample consists of 500 pharmacies locate in the Chang-Zhu-Tan region in China. This study

indicated that in the current competitive environment, logistics capacities become a key factor to obtain a competitive advantage in the pharmaceutical industry. The result of this research shows that logistics activities have a positive relationship with cost & service and capacity of delivery. In a related study, Prajogo et al (2016) identified the significance of the integrated logistics model in the pharmaceutical industry in China. The study stated that pharmaceutical logistics is used to transfer pharmaceutical products from the pharmaceutical manufacturers to customers.

At present, pharmaceutical logistics in china is at the primary stage, inefficiency logistics cause waste. In order to increase operation efficiency and to reduce the waste, there needs to be enhanced collaboration between company and company. Meanwhile, the pharmaceutical industry needs to improve the communication between supplier and customer. Finally, this study showed that the integrated logistics approach could change the situation of the current pharmaceutical industry logistics. Currently, the pharmaceutical industry is making various logistics developments. In order to reduce logistics cost, the pharmaceutical industry is focusing on outsourcing their logistics activities and centralizing their warehouse operations in various countries. Second, from wholesale supplies to ‘end customer’ deliveries. Especially, in smaller sales markets, the pharmaceutical industry sends their product to wholesalers rather than directly to customers (hospitals, pharmacies, retailers), this strategy is fit for the low sales of the pharmaceutical industry.

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