



CHAPTER 5

Conclusion and Recommendation

5.1 Conclusion

With increasing environmentalism customer awareness, the rapid growth of technologies and regulations, the researches showed that the adopting and implementing green supply chain management (GSCM) was the important tool for the organization to keep their competitive advantage over the companies that were reluctant to comprise GSCM and lead to sustainable growth. Then, this study aimed to explore and determined the green innovation process that needed to be addressed being useful for the pharmaceutical service providers to apply for their competitive advantage. Generally, applying green logistics concept was in the initial stage in pharmaceutical industry. This research focused on observing current operation practices of healthcare logistics services providers, including distributors, healthcare institutions, hospitals, wholesalers, retailers, and drug stores. Based on literature review, recently definition of green supply chain management (GSCM) was integrating environmental thinking into supply chain management, including product design, material sourcing and selection, manufacturing processes, delivery of the final product to the consumers, and end-of-life management of the product after its useful life, which focuses on reverse logistics (Srivastara,2007). Other studies defined green process innovation as one components of green innovation, which focused on the corporate management strategy, and as the performance in process innovation that is related to energy-saving, pollution-prevention and waste recycling or no toxicity. Also green process innovation was positively correlated to a competitive advantage (Chen et al., 2006).

Based on observing the case study company, the management team realized and pushed the green concept in their organization and company objectives. The proposed model was applied in ordering process and logistics process. Starting

with identifying their customers' needs, analyzing all factors via value chain analysis model, applying green logistics to organization objectives and goals, then applied and implemented the lean principles collaborated with tailored strategy as strategic tools, then adapted to working procedures of each area. In this study applied the proposed model in ordering process which was the first step of operations process. At this point, the analysis based on the lean principles by defining specify customer value, identified all the steps in the value stream of service processes that eliminated waste and non-value processes, and made the value-creating steps occurring in tight sequence so the service was delivered smoothly to the customer. Then let customers pulled value from the next upstream activity and began the process again and continue it until a state of perfection was reached. To illustrate the proposed model of green concept initiated within case study company by making it to real business practices. As implementing paperless project within ordering team that required good management for expanding the capacity of center server for saving all reference documents into electronic files and promoted the credit card as another buying tool channels for the customer, which was an applying technology innovation to the business process. The credit card project aimed to serve the customer requirements on their credit limitation and real time information.

Other actions were to redesign the order team structure in conjunction with educating employees to realize on green concept and changing packaging of sensitive temperature product required big amount of financial support for protocol packing test and encouraged customer to accepted this new practices since more than 60 years they believed that product safety had to pack and protect with many packaging materials and secondary packaging. Besides, implementing proposed model in fleet management by reducing the energy consumption, time consumption and reduction of cost but the services still meet the customer expectation. These practices in pharmaceutical service providers were quite similar to other industry practices in term of using eco-energy or clean energy consumption through biodiesel and reusable resources.

Various studies addressed the concept of GSCM encompassing environmental initiatives in operations, inbound logistics, outbound logistics, and reverse logistics, including and involving materials suppliers and energy consumption aimed to improve the efficiency, effectiveness, and KPI improving. Measurement methods and set up related KPI or the green performance measurement were considered to ally with individual company objectives.

Based on the study, the case study company applied and implemented the proposed model with the green logistics concept more than just applied Total Quality Management and new technology with less concern on environmental impact. The improvement required more resources, energy consumption, and cooperation from all concerned departments. The results were analyzed and validated through the improvements of work efficiency, accuracy, and Key Performance Indicators (KPI) as a measurement tool. The way to set KPI was based on the ISO 14031 guideline which presented in three areas, KPI-Management performance, KPI-Operations performance and KPI-Environmental performance presented in Chapter 4. The improvement results of KPI presented that the company was succeed for implementing the green logistics model and also, the cost saving approximately THB 37. 4 Million, and their image was improve according to survey results showed the 95% perceive that the company care for the local community

Base on the depth-interview results, customer perceived that case study company was the one company take responsibility to the local community, it could be concluded that applying and implementing the green logistics innovation within the company operations lead to cost reduction, improvement of company work efficiency, improvement of company image, and also reduction of impact of contribution carbon emission to environment.

However, as the cost of the pharmaceutical distributor decreased, it seemed logical for manufacturers to reduce their price and extend this benefit to their end users, but the selling price of drugs are depending on many factors, such as the

cost of research and development, marketing cost, the policy of each healthcare service providers, and the market conditions.

As succeed implementing the proposed model within case study company, this study aimed extend this proposed model to other stakeholders of pharmaceutical service provider to explore their perceptions, willingness to adopted green logistics concept and attitudes toward the case study company to transfer the green concept into real business practices by conducting the instructed in-depth interview research among 20 experts. Based on the interview's results, all of them agreed that this model would improve their KPI, reducing cost and improve the environmental impact, if they applied it but it depended on many factors to initiate this concept in their organization. Most of stakeholders understand the green logistics related to packaging and transportation activities. Some defined it as the improvement of current process or technology that created less impact to the environment. They realized the green concept but have limitation in applying to their current operation. They were willing to apply and support all activities to minimize environment impact but not willing to be the initiator. They perceived that green logistics concept required more financial support, technology and especially they encounter with limited the best practices or sample from other organization to follow.

It seemed to be the big and medium firms concerned on applying green concept regarding to the financial support, competitive advantage and finding the new strategy for sustainable growth. Moreover innovation was the new term for all organization to apply or implement through product innovation or process innovations in their organization. Then, it required more education, training, clear work instructions, especially required big support from top managements.

Besides, the question to obtain their attitude toward the new business model that required improvement of technology innovation for developing web base system for the customer to place their orders, 75% of the experts and drug owners are interested to buy and use this system. They expressed the ideas that this might decrease the problems, errors of the current process of both operations and logistics

and supported to reduce the environmental impact but other 25% curious to adapting this concept. They were concerned that the retail drugstores would disappear similar to as the grocery stores in Thailand that were replaced by model trade business. So this web base requested limited assess of members.

However, the proposed model alliance with green process innovation adapted to every area in pharmaceutical business. The lean strategy also recommended continuing support for existing proactive actions and examines the proposed model to serve the modern customers who are now even more demanding as a response, logistics delivery and service criteria which were enablers for competitive advantages. The tailoring activities have to comply with pharmaceutical regulation and market constraints to enhance the company's quality improvement, cost effectiveness and lead time reductions. Furthermore; success of the green logistics concept requires the cooperation among concerned business partners throughout the supply chain. The effective green innovations were determined by effective innovation in general. Likewise, the advocates of radical green innovation for the application of techniques believed to favor radical innovation more generally. But the improvement of applying this proposed model in this study was the incremental innovation.

As there was currently no obligation to reduce carbon emissions in Thailand, setting ambitious carbon reduction target may result in unnecessary and excessive cost. Under the current context with the expected economic recession, it was advised that carbon reduction activities should be limited to activities which were economically feasible. So as to support the long-term commitment, it was recommended that support strategy should also be executed. The strategy included green procurement, carbon management information system, internal capacity building, and organizational arrangement. Nonetheless, in the short-term, it is recommended that a data collection system should be developed in order to estimate corporate carbon footprint effectively.

5.2 Future recommendation

Base on the outputs of this study, the proposed model supported the organization to implement green logistics concept within their organization embraced with observing case study company practices on their green performance and it was illustrated in Chapter 4 combine with extending this proposed model to other stakeholders. Finally, the author presented the new business model to gain more understanding the advantage or disadvantage of this model. This model would support them on issuing the order via web-base system, save their time, improve more accuracy for issuing order in term of price, quantity, promotion, and the customer was the center to control their input before order released to picking stage at the warehouse. This new application still need more test to develop for the functions, features, information base on customer need, have to comply with the FDA law for buying drug via web-site and develop if for user friendly.

5.3 The Limitation of the Research

This research focuses on green innovation and a tailored strategy that will increase the competitive advantage of local pharmaceutical service providers in Thailand. The research will study the pharmaceutical logistics and supply chains, including operational process, logistics process, distribution process, internal / external factors that relate to green innovation and tailored logistics applied in one of the leading pharmaceutical logistics service provider.

Also, the research will exclude the inventory management and inbound activities in the warehouse which already many research exist. This research explores the adoption of green innovation and development only within pharmaceutical service providers with a company case study which is facing a hostile market, it was subject to confidential information and accuracy.

5.4 Future Study

As the business owners and managers constantly search for ways to improve efficiency in everyday operations and ultimately increase profitability. They need a clear understanding of ongoing processes in the company to ensure that employees run their tasks smoothly and that there is no waste in the workflow. Clear vision of the working process means finding out where resources (time, money, people, effort, etc.) are spent on activities that do not add value to the business, and then eliminating those problems. Base on the study results, successfully of implementing green innovation logistics focus only the ordering areas, packing and delivery of outbound logistics regarding to the limitation of permission to gain information. However, the inbound logistics activates might need to addressed and investigate throughout the whole workflow and evaluate which activities create the impact to environment. Also, investigation on inventory management that might need to review for next enhancement on environmental performance