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Letter from the Editor-in-Chief

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We hope that this journal will continue to promote understanding of the current status and potential capabilities of Myanmar and South Korea and promote in-depth international exchange and cooperation.

We would like to express our deepest gratitude to the editorial board and YUE and KOMYRA for their valuable support in The Myanmar Journal publication.

February 28, 2022

Youngjun Choi *yj choi*

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Effects of Logistics Activities on Firm Performance of Pharmaceutical Factory (Insein)

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ABSTRACT : Logistics plays a central role in every business transaction. The objectives of this study are to identify the logistics activities and firm performance of Pharmaceutical Factory (Insein) and to analyze the effects of logistics activities on firm performance of Pharmaceutical Factory (Insein). To achieve the objectives of the study, primary data were collected from 175 employees out of 351 managerial level employees (50% of total respondents) by using simple random sampling method. These data were collected by using structured questionnaire. The secondary data were gathered from the relevant text books, previous research papers, factory's records and annual report, and internet websites. Descriptive statistics and multiple regression analysis were used to analyze the effects of logistics activities on performance of Pharmaceutical Factory (Insein). According to the multiple regression result, demand forecasting activity, production planning activity and industrial packaging activity were significantly and positively effects on firm performance. However, procurement activity, inventory control activity and warehousing and storage activity have no significant effects on firm performance Therefore, the factory should more emphasize procurement activity, inventory control activity and warehousing and storage activity.

Key words *: Logistics Activities, Logistics Management, Firm Performance, Pharmaceutical Factory (Insein)*

I. Introduction

Logistics management is the key to continuous and integrated supply chain

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involving efficient flow of various processes, from freight forwarding and inventory management to packaging and delivery of goods. Logistics management function consists of customer service, sourcing and procurement, production planning and scheduling, packaging, and assembly (Randell et al., 2010). In the business environment, logistics either have an internal or external focuses (inbound or outbound). Inbound logistics is the process of moving goods from suppliers into a warehouse, then into a production facility to make products. Inbound logistics can include raw materials, tools, component parts, office equipment and suppliers. Outbound logistics is the process of moving finished products out of warehouse inventory and distribution them to customers. Successful organizations prepare supply chain management and logistics management to reduce costs, increase their competitiveness and develop operation efficiency. Reducing cost of each logistics activity encourages the total amount of costs and improves company's performance.

Logistics is playing more and more important role to improve the efficiency and effectiveness of their manufacturing and distribution. It applies not only in the private sector but also in the public/government and non-profit sectors. The primary goals of any organization are continuous improvement of operations and the effectiveness and efficiency of its performance. In order to gain and sustain the competitive advantages, the manufacturing firms are necessary to provide the best customer value at the lowest possible cost.

Manufacturing area is getting developing in Myanmar. Manufacturers always try to find many ways to minimize costs and production time. To minimize cost, manufacturers control logistics activities. Manufacturers use new technologies and machines to reduce production time. In addition, manufacturing firms are now encountering challenges to produce their products in the right quantity, right quality and right condition, to reach the right place at the right time, for the right customer at the right price. To overcome these challenges, it is necessary to have an operation strategy which is well managed and follows incorporated logistics activities. Performance is the key to economic growth and competitiveness. Inefficient logistics raises the cost of doing business and reduces the potential for both international and domestic's integration. Not surprisingly, an effective logistics sector is now recognized almost everywhere as one of the cores enables of development.

In recent years, people are being knowledgeable about health and being more careful to taken quality product. Hence, most of the pharmaceutical production organizations are being to produce various dosage forms and quality products by attractive packaging design. The inefficient logistics system does not meet customer expectation and would contribute the competitive disadvantages situation against their rivals (Nyaberi & Mwangangi, 2014). Pharmaceutical Factory (Insein) was established in April 23, 1958. It has progressively grown to become one of the

leading pharmaceutical productions in Myanmar. Pharmaceutical Factory (Insein) is mainly manufacturing and distribution of pharmaceutical products from China suppliers, India suppliers and Europe suppliers.

The factory has seven main production lines such as tablet and capsule production plant, liquid production plant, ointment production plant, powder production plant, injection production plant, infusion production plant and vaccine production plant. Based on the business nature of the factory, logistics activities are the key factor to get the competitive advantage for the factory. Therefore, logistics activities are essential for Pharmaceutical Factory (Insein) in order to reduce logistics costs and increase sales. The aim of this study is to investigate logistics activities and their effects on performance of Pharmaceutical Factory.

Objectives of the Study

The specific objectives of the study are;

(i) To identify the logistics activities and firm performance of Pharmaceutical Factory (Insein)

(ii) To analyze the effects of logistics activities on firm performance of Pharmaceutical Factory (Insein).

II. Research Methods

This study focuses on logistics activities and firm performance of Pharmaceutical Factory (Insein). This factory is situated in Insein, Yangon. Among the various logistics activities, this study emphasizes demand forecasting, procurement, production planning, inventory control, warehousing and storage and industrial packaging. There are 351 managerial level employees in Pharmaceutical Factory. Both primary and secondary data were used in this study. To achieve the objectives of the study, primary data were collected from 175 employees out of 351 managerial level employees (50% of total respondents) by using simple random sampling method. These primary data were collected by using simple random sampling method. These respondents are general manager, deputy general managers, assistant general managers, managers, assistant managers, and supervisors from the respective logistics department and other departments. Secondary data were collected from relevant text books, previous research papers, and organization's record and internet website. Descriptive statistics, and multiple regression analysis were used to analyze the collected data. Data collection period was in January, 2020.

III. Literature Review

Logistics management is that part of supply chain management that plans, implements, and controls the efficient, effective forward and reserve flow and storage of goods, services. Logistics is the function that is responsible for the flow of materials into, through and out of an organization. Logistics management would increase trade, reduce the cost, contribute to higher exports and faster growth, and create jobs and higher living standards. Logistics is essential for every organization. Christopher (1996) described that logistics has always been a central and essential feature of all economic activity. Without logistics, no materials move, no operations can be done, no products are delivered, and no customers are served (Waters, 2003).

1. Logistics Activities

Logistics is responsible for the movement and storage of materials as they move through the supply chain. Aim of logistics is to achieve high customer satisfaction. It must provide a high-quality service with low- of acceptable- costs. The logistics activities are varied from firm to firm depending on their particular organizational structure, management opinions about what constitutes logistics and the importance of individual activity to its operation (Coyle et al., 2008). There are 16 major logistics activities can be identified with the respect to the logistics operations and management in a company and its supply chain (Lambert et al., 2009). This study only focuses on six logistics activities: demand forecasting, procurement, production planning, inventory control, warehousing and storage and industrial packaging. Other logistics activities such as transportation, materials handling, order fulfillment, facility location, salvage and scrap disposal, logistics information, customer services, return goods handling, parts and service support and maintenance are supporting for production of pharmaceutical products and therefore are not considered in this research.

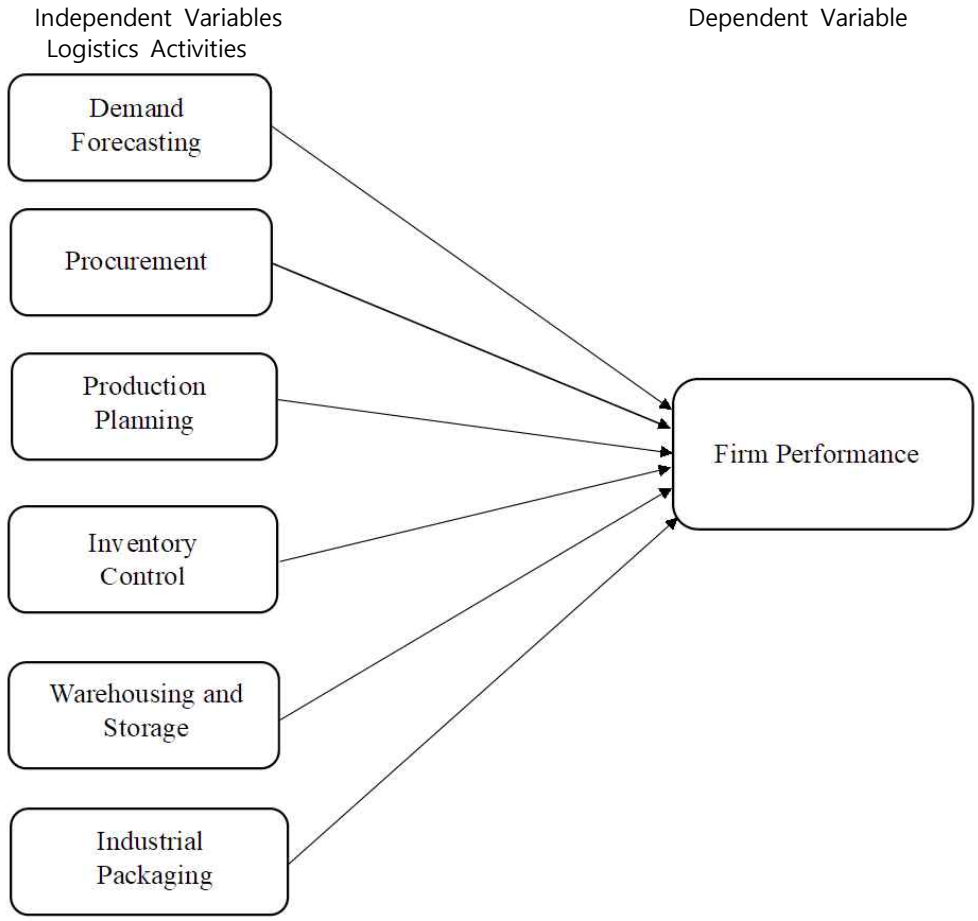
Demand forecasting is a systematic and scientific estimation of future demand for a product. Demand forecasting is a systematic process that involves anticipating the demand for the product and services of an organization in future under a set of uncontrollable and competitive forces (Lambert et al., 1998). Procurement is the act of acquiring, buying goods, services or works from an external source, often via a tendering or bid process. The role of the procurement manager ensures that the company does not over spend on allocated budgets and helps to forecast future spending (Lambert et al., 1998). Production planning involves scheduling, estimating, and forecasting the future demands for products. This takes into account customer

orders, production capacities and capabilities, forecasting of future trends, and inventory levels (Lambert & Stock, 1993). Inventory control is the processes employed to maximize a company's use of inventory. The goal of inventory control is to generate the maximum profit from the least amount of inventory investment without intruding upon customer satisfaction levels. Every organization holds stocks to give a buffer between supply and demand. Win (2018) described warehousing is the set of activities that are involved in receiving and storing of goods and preparing them for reshipment. Warehousing served the strategic role of long-term storage for raw materials and finished goods. Packaging is a coordinated system of preparing goods for safe, secure, efficient and effective handling, transport, distribution, storage, retailing, consumption and recovery, reuse or disposal combined with maximizing consumer values, sales and hence profit. Packaging also refers to the process of design, evaluation and production of packages.

2. Firm Performance

According to Prathap and Mittal (2010), performance measurement is a crucial criterion for evaluating the competence and achievement of an organization. Tuttle and Heap (2008) defined performance measurement as the process of quantifying action, where measurement is the process of quantification and action leads to performance. Firm performance encompasses three specific areas of firm outcomes: financial performance (profits, return on assets, return on investment); market performance (sales, market share); and customer satisfaction/ value added (Ristovska et al., 2017). Every organization has to measure the performance of logistics. If they do not take measures, they have no idea how well they are doing, whether things are improving or getting worse, whether they meet targets, or how they compare with competitors. Cost, lead time and customer satisfaction are one of the most widely used measure of performance in logistics management. Based on the literature review, research framework is developed as follows.

Figure 1. Research Framework of the Study



Source: Author's Compilation

The framework explains the relationship between the independent and the dependent variables in the study. In this study, the independent variables are demand forecasting, procurement, production planning, inventory control, warehousing and storage and industrial packaging. Dependent variable is firm performance. Firm performance is measured by respondent perception regrading with sale income, productivity, cost reduction and customer satisfaction.

IV. Results and Analysis

Firstly, the study analyzes to find the first objective by using descriptive statistics.

In order to identify the logistics activities and firm performance, the respondent perception on the selected variables is described by the mean values. The statements for each variable are measured with five-point Likert scale. To measure the reliability of the variables, Cronbach's coefficient alpha is calculated. This method has been recognized as an effective and widely-used approach to determine the internal consistency of study instruments. The results of descriptive statistics and reliability test are shown in Table (1).

Table 1. Descriptive Statistics and Reliability Test of the Variables

Sr. No.	Variables	Mean	Items	Alpha
1	Demand Forecasting	3.61	7	0.815
2	Procurement	3.84	7	0.678
3	Production Planning	3.81	6	0.665
4	Inventory Control	3.95	7	0.795
5	Warehousing and Storage	4.13	6	0.808
6	Industrial Packaging	3.97	7	0.800
7	Firm Performance	3.71	11	0.741

Source: Survey Data (June, 2021)

According to the results of reliability analysis of variables in Table (1), all variables have Cronbach's Alpha value ranging from 0.665 to 0.815. As the reliability value gets closer to 1, it becomes acceptable. All the above numeric data of reliability analysis of dependent and independent variables are demonstrating that the measurement scales of the variables are stable and consistent to be accepted. Thus, Cronbach's alpha value of all variables are accepted for statistical analysis.

According to Table (1), all levels of employees have good perception on logistics activities. The mean value of warehousing and storage activity is the maximum mean value with 4.13 among logistics activities. It means that the factory makes daily finished goods inventory records, correct documentation in receiving the finished goods from plant to warehouse, enough warehousing space for resources, use air conditioning system and specialized systems for some raw materials and some finished goods. The mean value of demand forecasting activity is the minimum mean value with 3.61. It means that the respondents have good perception on demand forecasting activity because the factory is making demand forecasting based on the needs of the market. The mean value of firm performance is 3.71 thus the result shows the agree level of respondent perception on firm performance. Thus, the logistics activities carried by Pharmaceutical Factory (Insein) can improve firm performance.

Secondly, multiple regression analysis can be applied to test the effect of logistics activities on firm performance for analyzing the second objective. In regression

equation, firm performance is dependent variable and demand forecasting, procurement, production planning, inventory control, warehousing and storage and industrial packaging are used as independent variables. The result of multiple regression analysis of logistics activities on firm performance is shown in below.

Table 2. Multiple Regression Analysis of Logistics Activities and Firm Performance

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	Beta	Std. Error	Beta		
(Constant)	0.493	0.220			
Demand forecasting	0.122	0.055	0.183	2.217	0.028
Procurement	0.076	0.076	0.081	1.005	0.316
Production planning	0.156	0.069	0.172	2.263	0.025
Inventory control	0.048	0.065	0.056	0.740	0.461
Warehousing and storage	0.060	0.053	0.071	1.130	0.260
Industrial packaging	0.363	0.069	0.386	5.234	0.000
R	0.807				
R2	0.651				
Adjusted R2	0.639				

Source: Survey Data (January, 2020)
Regression is significant at the 0.01 level ($p<0.01$)
Regression is significant at the 0.10 level ($p<0.05$)
Dependent variable: Firm Performance

The regression analysis results provided that the demand forecasting activity, production planning activity and industrial packaging activity were positive and significant effect on firm performance ($b=0.122$, $t=2.217$, $p<0.05$), ($b=0.156$, $t=2.263$, $p<0.05$) and ($b=0.363$, $t=5.234$, $p<0.01$) but the result did not support the significant relationship between procurement activity, inventory control activity and warehousing and storage activity ($P>0.05$) as shown in Table (2).

Among the significant activities, industrial packaging activity is the most important activity to influence on firm performance. The other logistics activities (procurement, inventory control and warehousing and storage) show no effects on performance of Pharmaceutical Factory (Insein). The study shows that these logistics activities have some weaknesses. In the case of procurement activity, the factory is reported to the head office to purchase raw materials and packaging materials. It takes at least 3 to 6 months until the goods are received and approved by the factory.

The multiple correlation coefficient (R) is the linear correlation between observed and model predicted values of the dependent variable. Its large value indicates a strong relationship. Table (2) shows regression (R) value 0.807, R square value 0.651 and adjusted R square value 0.639. R Square, the coefficient of determination, is the

squared value of the multiple correlation coefficient. It shows that 65.1% of the variation in time is explained by the model. Adjusted R Square is a "corrected" R Square statistics that penalizes models with large numbers of parameters. These statistics, along with the standard error of the estimate, are most useful as comparative measures to choose between two or more models.

V. Discussion

This study aims to identify the logistics activities and firm performance and to analyze the effects of logistics activities on firm performance of Pharmaceutical Factory (Insein). In this study, the data were collected from 175 managerial level employees at Pharmaceutical Factory (Insein).

In identifying logistics activities and firm performance, warehousing and storage activity is the maximum mean value among logistics activities. Thus, the managers make daily finished goods inventory records and accurate documentation in receiving the finished goods from plant to warehouse. Moreover, the factory has enough warehousing space for resources and it uses air conditioning system and specialized systems for specific raw materials and selected finished goods. Demand forecasting activity is the minimum mean value. Hence, the managers have fair perception on demand forecasting activity than other activities. The factory's performance increases year by year and the logistics activities are successful in Pharmaceutical Factory (Insein).

In terms of warehousing and storage activity, finished goods warehouse is located in Yangon, where the factory is located. As a result, the cost of drug production has risen due to the increase in transportation costs for delivering orders to hospitals. It can be said that the firm performance mainly focuses on the demand forecasting, production planning and industrial packaging and may have less attention on the others. The demand forecasting activity of Pharmaceutical Factory (Insein) is estimated by customer demand and sale volume based on data and information from sales and marketing department. Procurement department coordinates with related departments for annual procurement planning and ensure the availability of the right raw materials in the right quantities.

The factory has made production plan based on manpower, machine capacity and materials required to meet the planned production targets. Pharmaceutical Factory (Insein) is using inventory quality controls including use by date, retest date and expiry date for each receipt of each individual material. Pharmaceutical Factory (Insein) uses AS/RS warehouse system and BMS (Building Management System).

Pharmaceutical raw materials and finished products are maintained within acceptable limit by BMS (Building Management System). Pharmaceutical Factory (Insein) uses high quality packaging materials such as high-density polyethylene (HDPE) plastic seeds for tablets and capsules, polyethylene laminated aluminum foil for oral rehydration salts.

In the regression analysis for analyzing the effect of logistics activities on firm performance of Pharmaceutical Factory (Insein), demand forecasting, production planning and industrial packaging activities have significant and positive effects on firm performance. If the factory uses demand forecasting activity properly, there will be increased in firm performance. And also, when it uses good production planning activity, there will be increased in firm performance. Furthermore, when it uses industrial packaging activity, there will be increased in firm performance. Thus, the factory makes demand forecasts based on customer demand and sale volume, conducts the production plan based on market demand and sales forecast and uses high-quality packaging materials.

On the other hand, procurement, inventory control and warehousing and storage activity are not significant effects on firm performance of Pharmaceutical Factory (Insein). It is possible that production is not increasing due to waste, the raw materials did not arrive on time, there is a gap or need for control, systematic storage is required, raw materials and finished goods can also be damaged by human, animals and weather. As another point, the respondent does not fully understand the question being asked and the respondent is not responsible for that section. Therefore, the factory needs to focus on procuring the materials effectively, adding inventory quality control and forecasting system and storage system.

The most contributing factor is industrial packaging activity. The factory uses quality packaging materials because the packaging itself does not have an adverse effect on the product (e.g. through chemical reactions, leaching of packaging materials or absorption). Therefore, the firm performance can be increased by quality packaging.

VI. Conclusion and Recommendations

Logistics activities and firm performance and the effect of logistics activities on firm performance were analyzed in this study. All levels of employees have good perception on logistics activities and firm performance. Demand forecasting, production planning and industrial packaging activities have significantly and positively effects on firm performance of Pharmaceutical Factory (Insein). Other logistics

activities (procurement, inventory control and warehousing and storage) did not show significant relationship with firm performance of Pharmaceutical Factory (Insein).

According to the results, the firm performance was increased with the three logistics activities. Pharmaceutical Factory (Insein) can improve its performance by arranging logistics activities effectively. Industrial packaging activity is found the most significant activity among all logistics activities; therefore, the factory should more emphasize the industrial packaging activity to increase its performance.

Based on the conclusion drawn from the study and the established research problems and research objectives, the research required to forward realistic and applicable recommendations. The factory should consider and should manage logistics activities for becoming successful organization. The procurement activity of Pharmaceutical Factory (Insein) shows no effect with firm performance. Therefore, the factory should evaluate the customer's requirements in order to do better procurement function, should make the effective procurement plan to produce quality products with reasonable price and should develop and implement purchasing policies to ensure that the factory does not over spend on allocated budgets.

The result did not support the significant effect between inventory control activity and firm performance. Therefore, the factory should use the inventory control practices such as ABC analysis (ABC analysis is a technique for arranging factory's inventory into a hierarchy of most important to least important items. A-items are the best-selling, highest priority stock and require regular reordering and constant quality review. B-items are valuable, medium-priority stock and usually require monthly reordering. C-items are low-priority stock and are typically carried in high volumes with minimal reordering.). Moreover, it should control inventory effectively by minimizing the inventory investment, should use maintenance of an up-to-date inventory control system and should review inventory periodically and revise stocking patterns and norms. Furthermore, there is no effect of warehousing and storage activity on firm performance. Therefore, the factory should make the effective warehousing design and storage system to store and easy issuing of raw materials and finished goods.

Finally, demand forecasting, production planning and industrial packaging activity have significant and positive effects on firm performance. These results show that the factory can create better performance as the result of demand forecasting, production planning and industrial packaging of logistics activities. Thus, these three factors should take into consideration and essential for improvement of firm performance.

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References

Christopher M. 1996. Emerging Issues in Supply Chain Management: Proceedings of the Logistics Academic Network Inaugural Workshop, Warwick University. Asia-Australia Marketing Journal, 4(1): 19-24.

Coyle JJ, Bardi EJ, Langley CJ. 2008. The Management of Business Logistics: A Supply Chain Perspective. 7th ed. South-Western Publishing Co.

Lambert DM, Stock JR. 1993. Strategic Logistics Management. Irwin Boston.

Lambert DM, Cooper MC, Pagh JD. 1998. Supply Chain Management: Implementation Issues and Research Opportunities. The International Journal of Logistics Management, 9(2): 1-19.

Nyaberi JN, Mwangangi P. 2014. Effects of Logistics Management Practices on Organization Performance in Kenya: A Case of Rift Valley Bottlers Limited in Uasingishu County. International Journal of Social Science and Entrepreneurship, 1(12): 458-473.

Prathap G, Mittal R. 2010. A Performance Index Approach to Library Collection. Performance Measurement and Metrics, 11 (2): 458-473.

Randell WS, Defee CC, Brady SP. 2010. Value Propositions of the U.S Trucking Industry. Transportation Journal, 49(3): 5-23.

Ristovska N, Kozuharov S, Petkovski V. 2017. The Impact of Logistics Management Practices on Company's Performance. International Journal of Academic Research in Accounting, Finance and Management Sciences, 7(1): 245-252.

Tuttle T, Heap J. 2008. Green Productivity: Moving the Agenda. International Journal of Productivity and Performance Management, 57(1): 93-106.

Waters D. 2003. Logistics: An Introduction to Supply Chain Management. 1st ed. Palgrave Macmillan Ltd.

Win SL. 2018. Logistics Activities and Firm Performance of Mya Buyin Dairy Plant in Kyaukse. MBA Thesis, Meiktila University of Economics.

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