

# Efficiency Increase in Storehouse Management: The Case Study of ABC Company Limited

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This research aims to study the storehouse management efficiency of the case study ABC Company Limited. The sample used was 200 employees from the case study company ABC Company Limited. Questionnaires to obtain the data were used as the research tool. Analysis was conducted by descriptive and deductive statistics; percentage, mean, standard deviation, t-test, f-test, one-way ANOVA and Pearson's correlation analysis. The study results show that of the 200 respondents, 149 are males (74.5%), 92 respondents are aged between 20-30 years (46.0%), 94 graduated from secondary / vocational / vocational education (47.0%). Regarding incomes, 122 people (61.0%), earn 10 001-20 000 baht per month, and 66 people (33.0%) had worked for the company 5-10 years. The efficiency of storehouse management in the case study ABC Company Limited was at a highest level for these perspectives, respectively; places to store, FIFO system and ABC material management, receiving products with accurate counting and use of a barcode system. The hypothesis testing indicated that differences in gender, age and working period significantly affected storehouse management efficiency in the case study at a statistical level of .05. The efficiency of information storehouse management significantly correlated with the increase of ABC Company's information storehouse management at a statistical level of .05. The recommendation from the study is that the administrators should focus on the efficiency increase of ABC Company Limited in terms of appropriate storehouse management by using standard materials and managing in the time determined.

**Key words:** *Inventory management, Storehouse management, Efficiency.*

## Introduction

The economic trend in the globalisation era causing a lot of competition in business operations, is that competition is no longer just competition between organisations, it is a competition between supply chains too (Bowersox, 1997; Christopher, 1998; Bradley et al., 1999; Cox, 1999; Christopher and Lynette, 1999; Lambert and Cooper, 2000; Ditkaew, Pitchayatheeranart, & Jermsittipasert, 2020). To understand competition in the supply chain it is important to understand the overall supply chain performance (Zaman and Ahsan, 2014). In general, the important factors which affect Thailand's economic growth, both in the present time and in the future, are industrial groups of products and services which are now in a high competition. Therefore, industrial sectors should continuously develop and find new approaches to improve their products and services to meet that competition. The rapid changes to products structure and services and storehouse management become a crucial factor in the competitive business situation. They also exert pressure on industrial sectors to improve their products and raw material management in order to make a low capital with high quality, and to send their products punctually to satisfy their customers. The inventory serves an important role in running a business and ensuring an appropriate quantity of products. It is difficult to predict what will happen in the future; in order to be ready for production, which depends on a production plan and buying control, time is needed to prepare or to allow a waiting period for the organisation of promotion activities and the use of the quantity needed (Apinya Kraissamrong, 2012). The management plan of product sending is a part of a business running plan which makes an organisation successful and the business competitive. Logistics systems management is also very important for storehouse management, which has some important elements to work with; the need of management quality and the expertise of product sending. Moreover, it includes inventory management and materials selection for using in the storehouse (Nopadol Kerdtuam, 2012). The inventory management principle that every company should realise is keeping raw materials in the least quantity for production and export; they should be ready for production and export to the market. Inventory management includes the product-providing process, production control and logistics management control (Peerawat Luesaknoi, 2012). The survey indicates that the problems of the case study company were; raw material increase, receiving-paying control and the management of raw material and product. The aforementioned information gives cause to study the efficiency increase of storehouse management of the ABC Company Limited, in order to find out ways to improve inventory management and the management of products remaining. This will increase the competitive competency of the company.

## **Research Questions**

The research questions for this research are as follows;

1. How is the storehouse managed in the case study of ABC Company Limited?
2. What are the indicators of storehouse management in the case study ABC Company Limited?
3. How does the efficiency comparison of storehouse management in the case study ABC Company Limited relate to company employee personal information?
4. What is the correlation between storehouse management and efficiency indicators in the case study ABC Company Limited?

## **Research Objectives**

The purposes of this study are:

1. To examine warehouse management in the case study ABC Company Limited.
2. To examine the efficiency indicators of storehouse management in the case study ABC Company Limited.
3. To examine the efficiency comparison of storehouse management in the case study ABC Company Limited.
4. To examine the correlation between storehouse management and the efficiency indicators of storehouse management in the case study ABC Company Limited.

## **Literature Review**

The research, entitled 'Efficiency Increase of Storehouse Management: Case study of ABC Company Limited', is supported by the literature review in the following topics:

### **Warehouse Management**

#### ***Meaning of Warehouse Management***

Warehouse is a planned place for efficient use and the moving of products and raw materials. Its function is for product storage during the moving process, to support production and product distribution. The stored products can be divided into 2 types; 1) material which consists of raw material, product components and its elements, and 2) readymade products, or products including during-process products and used and reused products. Warehouse management is a products-receiving, product storage, which means the product distribution base for selling. The key goals of management and business running are systematic business

running, investment, storage quality control, protection, reducing loss and reducing the cost of process, and effective use of the area.

### ***Main activity of Warehouse Management***

- Goods Receipt
- Holding goods
- Cross docking
- Identify goods
- Dispatch goods
- Sorting goods
- Picking
- Putting away
- Shipping

### **Key Performance Indicators**

From the theory of performance evaluation, it can be concluded that the performance evaluation regarding logistics should take in the evaluation of the whole perspective. It should not be evaluated by separate sections. The evaluation of logistics can be classified into five branches; (1) plan: concerns customer orders and all activities concerning customers, (2) supplier: pertains to material quality and the competency of material sender, (3) production: regards the evaluation indicators of general products, (4) delivery: concerns the shipping capacity, and (5) customers: the evaluation of customer satisfaction and the comparison of organisation and customer expectation. The factors used for logistic capacity evaluation aim to reduce the cost of operation to grow more interest and add value to capital. Neely et al. (1995) defined the operation evaluation as the steps of efficiency evaluation of a business operation. Efficiency is the effective use of resources for customer satisfaction, and productivity is responding to the scope of customers' needs from new types of business environments, which makes the supply chain need the performance measurement system. For this reason the performance measurement system is the important basic instrument for making the supply chain effective and creating the advantages of business competition (J.E. Hernandez, 2014), including leading methods of achievement for the best supply chain.

(P. Bolstorff et al., 2003, P.M. Ralston et al., 2015). Many studies have developed indicators for the performance measurement of the supply chain and those indicators can be divided into several elements. Most of these studies similarly explain how to classify supply chain evaluation. The most commonly found elements were cost, flexibility, quality; product quality and process quality, and time (Gattorna and Walters, 1996; Soo Wook Kim, 2006; Alireza Shokri et al., 2013; Ming Juan Ding and Ferry Jie, 2013; Hugo Afonso and Maria do Rosário Cabrita, 2015). Additionally, some studies mentioned other elements, such as efficiency, responsiveness (Aramyan et al., 2007; Jie, Ferry et al., 2007; Trienekens et al., 2008; Xiaoyong Zhang and Lusine H. Aramyan, 2009; Ferry et al, 2013), sustainability (R. Manzini and R. Accorsi, 2013) and financial dimensions (Faranak Fattahi et al., 2013).

## The efficiency of Performance Measurement System Organisation and Supply Chain

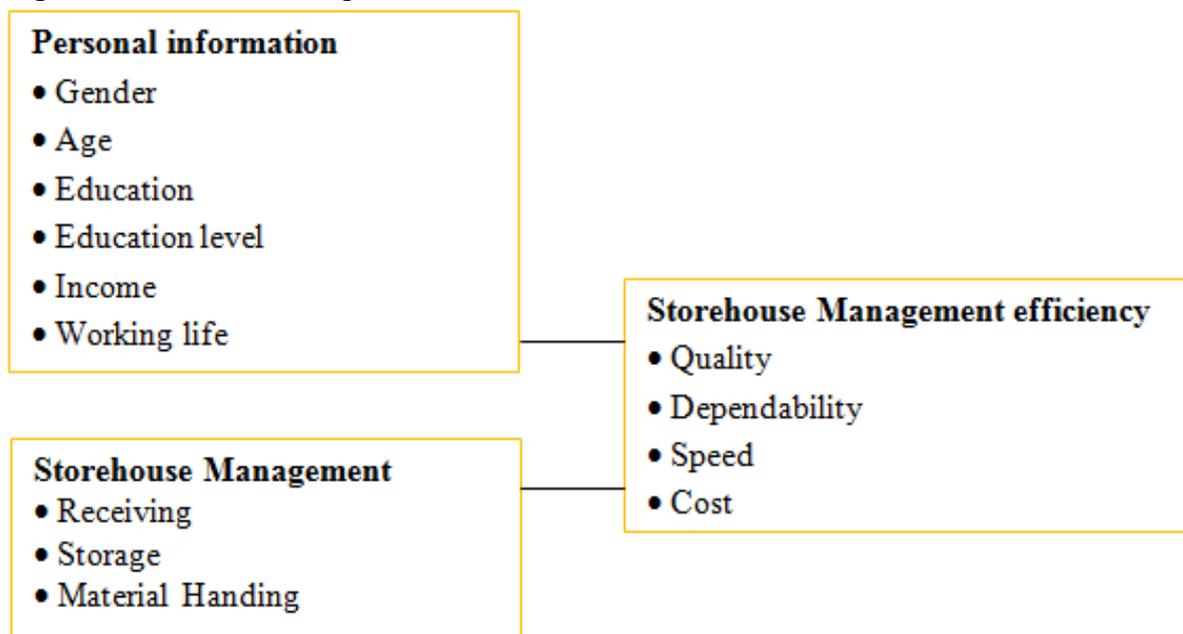
Plikrit Klankaewdarmrong (2009) mentions that the effective indexes of efficiency for a warehouse and distribution centre under the ISO 9001:2000 are the index of staff satisfaction and security, efficiency of shipping, the accuracy of product storage, quality and waste of warehouse product, accuracy of storage area, effective use of the area, pallet shipping, the productivity of staff and tools, returned products, unqualified products, cost of warehouse management, cost of shipping and the cost rate of shipping in competitive time. The Industrial Logistics Performance Index: ILPI is the instrument for performance measurement of logistic management in an organisation. It consists of nine activities and four dimensions that focus on effective logistic measurement, namely, quality, dependability, speed, and cost, which can be analysed for the efficiency comparison and management competency of the company.

The Research Conceptual Framework from the literature review of the concepts, theories and related research helped in summarising and to create the conceptual framework used in the research as follows:

### Independent variables

### Dependent variables

**Figure 1.** Research Conceptual Framework



## Research Methodology

The research entitled 'Efficiency Increase of Storehouse Management: Case study of ABC Company Limited', is quantitative research. A questionnaire was used as the research instrument.

## Population

The population used for this research was 400 staff from shipping and sections related to the warehouse of ABC Company Limited.

## Samples

The sample used for this research was 400 staff from shipping and sections related to the warehouse of ABC Company Limited. Deviation accepted was 5 percent, which made 200 samples as calculated by Yamane's method (Yamane, 1973, cited in Theerawut Akakul, 2000).

## Data Collection

The researcher collected both primary and secondary data as follows:

1. Primary data was the responses from the 200 experts who had knowledge of and experience in the function of warehouse management.
2. Secondary data was a collection of data on receiving, storage and material handing from January to October, 2019. The principles and theory were collected from articles, journals, research, news from different resources such as libraries and the Internet.

## Research instruments

The questionnaire survey tool is divided into four parts as follows:

**Part 1:** Personal information of the respondents regarding gender, age, education and period of working, in an itemised check list. The data obtained was analysed by percentage.

**Part 2:** An opinion survey with fifteen items rated by five levels of Likert's rating scale.

**Part 3:** A code of opinions about storehouse management with twenty items rated by five levels of Likert's rating scale.

A draft of the questionnaire was taken to three experts for IOC value investigation. The researcher selected the items that had statistic value at .05. After the experts investigated, the researcher analysed and found the IOC value at 0.962 between 0.67-1.00, which made the

questionnaire reliable. The researchers amended the questionnaire according to the experts' suggestions and tested its reliability using Cronbach's method (Cronbach, 1990: 202-204). The questionnaire items that had reliability value more than 0.70 would be selected and implemented with 30 samples. It was found that Cronbach's Alpha Coefficient was at 0.820, which showed a high reliability. The statistics used for data analysis were inferential statistics, t-test, one-way ANOVA, Pearson's correlation analysis.

### **Data Analysis**

The data was collected from the samples and analysed by computer program using the statistics as follows:

1. Descriptive statistics used for warehouse management efficiency analysis of ABC Company Limited. Frequency, percentage, mean and standard deviation were employed.
2. Inferential statistics used for efficiency increase of warehouse management analysis of ABC Company Limited were t-test, One-way Analysis of Variance one-way ANOVA and Pearson's correlation analysis.

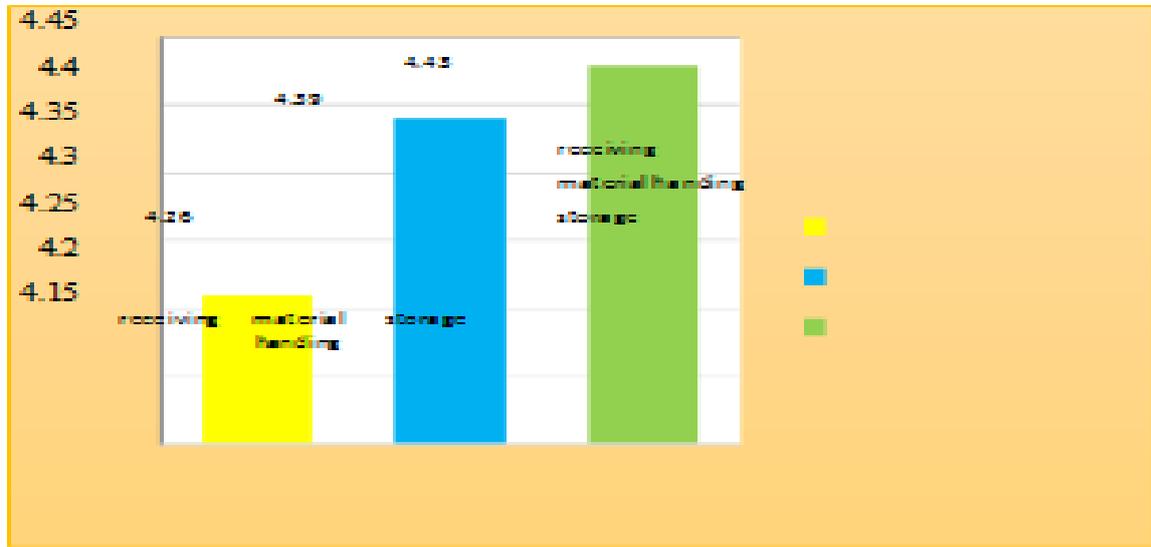
### **Research Results**

The study results show that of the 200 respondents, most were male (149, 74.5%), a large proportion (92) were aged between 20-30 years (46.0%), 94 had graduated from secondary / vocational / vocational education (47.0%) 122 people (61.0%) earned incomes of 10,001-20,000 baht per month, and 66 people (33.0%) had working history at the company of 5-10 years.

### **Storehouse Management of ABC Company Limited**

The findings indicate that the level of storehouse management at ABC Company Limited was at a highest level for overall perspectives. Considering each perspective, the receiving average at 4.26, the material handling average at 4.39 and the storage average at 4.43 were at the highest level, respectively, as shown in figure 2.

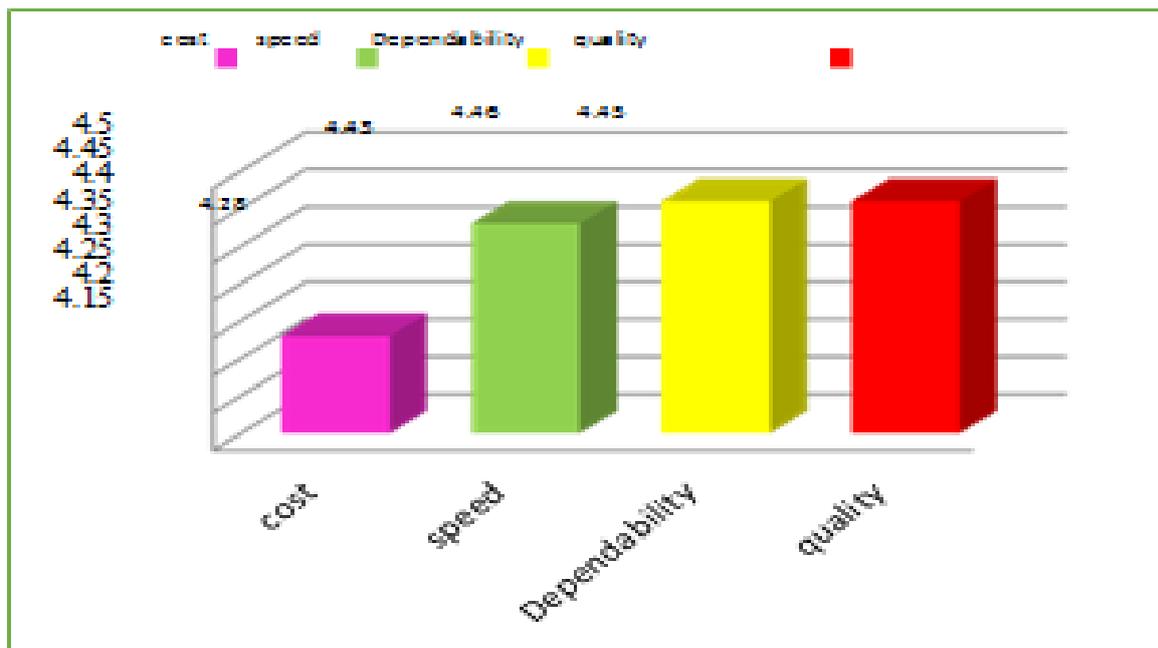
**Figure 2.** Level of Storehouse Management



### Efficiency Indicators of Storehouse Management

The findings indicate that an overall perspective in storehouse management efficiency was at a high level. Considering each perspective, it is found that a quality average at 4.46, a dependability average at 4.45, a speed average at 4.43 and a cost average at 4.42 were also at a high level, respectively, as shown in figure 3.

**Figure 3.** Level of storehouse management efficiency in the case study ABC Company Limited.



## Results of Hypothesis Testing

**Hypothesis 1:** Different sorts of personal information affected the level of storehouse management efficiency. It was found that gender, age and the period of working significantly affected storehouse management efficiency at .05 statistic level.

**Table 1:** Respondents have opinions about the warehouse management performance indicators

Variable	F	p-value
Gender		0.033*
Age	5.566	0.001*
Education	4.866	0.001*
Education level	0.262	0.609
Income	16.647	0.000*
Working life	0.196	0.899

\* Statistical significance at 0.05

From table 1, among respondents, there are opinions about the performance indicators of warehouse management. Overall, it is found that respondents with gender, age, status and different incomes had opinions about different warehouse management performance indicators with a statistical significance of 0.05.

**Hypothesis 2:** Method of storehouse management correlated with storehouse management efficiency.

**Table 2:** Analysis of correlation between storehouse management and the level of storehouse management efficiency.

Storehouse Management		Correlation of storehouse management efficiency		
	r	sig	Level of correlation	level
Receiving	.510**	.000	Moderate with the same direction	3
Storage	.598**	.000	Moderate with the same direction	3
Material handling	.376**	.000	Less with the same direction	4
Mean	.627**	.000	High with the same direction	2
*statistical significance .05				

Table 2 shows that on overall perspectives, the method of storehouse management correlated with the level of storehouse management efficiency. In the overall perspectives, its correlation was at a high level with the same direction;  $(R) = 0627$ .

## Discussion and Conclusion

The findings indicate that:

1. Overall perspectives of storehouse management method on receiving, storage, material handling was at a high level which was congruent with Thiyada Jaimaikram (2015) in whose research, 'Efficiency Increase of Storehouse Management: Case Study of Storehouse 2', Rajburana Bangkok, was also found at a high level.
2. Overall perspectives on receiving perspective was at a high level, congruent with Work it Poolsiri's (2014) study 'Decision Factors and Customer's Satisfaction towards Storehouse Management System in the Industrial Community of Phra Nakhon Si Ayutthaya Province', which was found at a high level.
3. Overall perspectives on storage perspective was at a high level, congruent with Patrawan Thanapisanjiratorn (2015) in whose study 'Influence of Storehouse Operation towards Growth of Construction Material Shop in Nakhon Ratchasima Province' was also found at a high level.
4. Overall perspectives on the material handling perspective was at a high level, congruent with Pornthida Tattanasuntornchai (2012) in whose study 'Impacts of Logistics Management towards Efficiency Operation of Construction Wholesale Business in Thailand' was also found at a high level.
5. Overall perspectives of storehouse management efficiency indicators on cost, speed, dependability and quality were at a high level, congruent with Pachaploy Jaroenthanayachote (2015), in whose study 'Storehouse Management of Pearl Milk Tea Business' it was also found at a high level.

## Recommendations

The researcher recommends that:

1. Storage: The administrator manage the area for storage effectively by setting the product zone considering the speed of product rotation; the slow product rotation should be put in the inner zone, the moderate product rotation should be put in the middle zone and the quick product rotation should be in the front zone near the door, for convenient distribution. The temperature be controlled suitably for each product type, to reduce losses arising from weather. The stock card system be replaced where possible with a scanning barcode system, to reduce inefficiency and work repetition and result in better and more convenient product stock checking.



2. Material Handling: The administrator design a storehouse and storage chart by: analysing the area of the storehouse and the quantity of raw material in the storehouse, setting codes for new products and setting product placing in best order for storage. It is recommended that standard tools for material handling such as carts and hand pallet trucks be selected, to reduce cost of handling, and technology for storehouse management be implemented to increase efficiency, in order to deliver products to customers on time.



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