SOLUTIONS TO SOLVE PROBLEMS AND INCREASING EFFICIENCY WAREHOUSE A CASE STUDY OF XYZ COMPANY LIMITED.

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ABSTRACT

This research is aims to 1) To study the work process in the warehouse. 2) To analyze the cause of problems in goods picking in the warehouse. 3) To create guidelines for solving problems and increasing efficiency the warehouse of XYZ Company Limited. Researcher conducted the study by asking and observing using flow process charts and analyzing problems with the fishbone diagram. From performance measurement, Increasing efficiency warehouse using barcode system and fixed location system. the accuracy of goods picking. After updating using the barcode system and fixed location system found that the efficiency increased significantly as follows 1) Ability to accuracy of picking goods measurable 97.5 % Increased by 7.5 %, 2) In terms of picking time. After updating using the barcode system and fixed location system. Picking goods one round takes an average of 5 minutes. The goods picking time is reduced by 15 minutes per round. 3) The cost after using the barcode system and Fixed Location System. Company to reduce the overtime costs of employees to only 7,500 baht per month, reducing the overtime costs of employees up to 7,500 baht per month.

Keywords : Warehouse, Picking Goods, Barcode System, Fixed Location System

INTRODUCTION

Today's business is becoming increasingly competitive, regardless of any business in which various business establishments have to adjust their business operations in the globalization era In order to increase operational efficiency to keep pace with current business conditions Which the logistics Came to be a significant part of the business operation because logistics is hidden in the business of every business which is very important in business development to be able to compete in this globalization era. Therefore, the warehouse is a part of the business that businesses mostly have because of the warehouse is the place for laying, storing, or distribution. Therefore, business establishments must have warehouse management which is an important activity in logistics management. Warehouse management Is the process of integrating various resources in order to ensure the efficient and effective warehouse operation according to the objectives of the warehouse management of business establishment in order to achieve business success. The warehouse activities consist of activities such as goods receipt, put away, picking and ship which these activities will having performed well, there must be increased efficiency within the warehouse by arranging the area, positioning, placing products and applying technology into the warehouse is a key to increase efficiency in warehouse operations and the operation of the business to be successful as well Therefore, the warehouse is an important part that must be developed and improved for more efficiency. Good and efficient warehouse management will have a positive impact on the business and can respond to the needs of customers as well because

there is an organized storage of products. With the picking goods and delivering the products correctly no mistakes and no unnecessary costs from warehouse operations. Which is good for business establishments which is good for business establishments. If there is a poor warehouse management, unorganized product storage or delayed work within the warehouse, it will not be able to fully meet the needs of customers and do not cause any credibility. Guidelines for increasing the efficiency of warehouse management are available in a variety of ways, such as first in first out : FIFO, fixed location system for maximum efficiency according to the suitability of the barcode warehouse, resulting in activities within the warehouse that are orderly and orderly. Speed and accuracy Therefore making the warehouse operation efficient and effective. From the study of the warehouse to store the finished products of XYZ Company Limited found the problems within the warehouse that occurred as follows. Problems with picking errors and delays Which is caused by unorganized storage, no definite storage space, including no barcode technology used in the warehouse Which is a problem that must be solved in the warehouse operation because it is a problem that affects time operating costs And the credibility of the company Therefore, from studying the guidelines for increasing the efficiency of warehouse management according to the principles mentioned above Will be able to help increase the efficiency of XYZ Company Limited's warehouse in order to efficiently and effectively run the business and be able to develop into globalization competition As mentioned above, the researcher is interested in studying the problems of picking up and delays and increasing the warehouse efficiency of XYZ Company Limited in order to meet the cost, time and reliability.

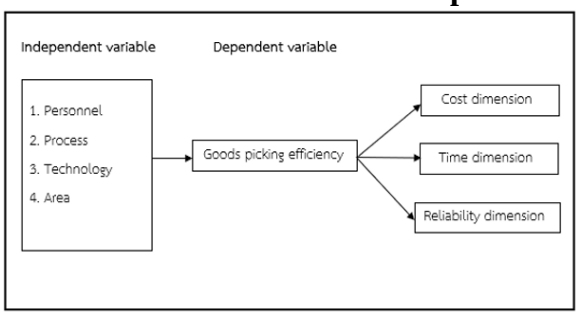
OBJECTIVES

1. To study the work process in the warehouse of XYZ Company Limited.
2. To analyze the cause of problems in goods picking in the warehouse of XYZ Company Limited.
3. To create guidelines for solving problems and increasing efficiency the warehouse of XYZ Company Limited.

Delimitation of research

The researcher has determined the scope of research by studying the work processes within the warehouse of XYZ Company Limited and conducting research and study of concepts, theories related to warehouse management. The use of barcode systems and fixed location system with a total duration of 5 months from 7 December 2018 to 26 April 2019

Conceptual Framework



LITERATURE REVIEW

Nannin Kamjon (2013) This thesis studied the application of barcode technology for determining product indications in the automotive parts factory. Research has shown that Using a barcode system to reduce the burden of creating production documents that were originally written by hand, changed to automatic creation from the computer. Which can reduce errors and result in faster production data
Redundancy of the original data By creating a data center that all parties have access to Can share data on the device Server and to save the cost of using printable paper. Only change to use A4 paper that is commercially available. Including reducing the problem of returning products from customers and reducing the delivery of test pieces for mechanical properties to confirm product identity Due to the unclear details of the product labels, Paisarn Kanjanawong and Ngathip Kanjanawong (2017), this thesis studied the application of two-dimensional bar code technology to provide information to tourists in tourist destinations. Wat Phra That Doi Suthep, Worawihan, Chiang Mai. Research shows that Using two-dimensional bar code technology to help visitors get the right information and be a part of the conservation process. Cultural heritage management and service points of interest to tourists are The Temple of God Kuan Na Mum and the relics of tourists are satisfied with useful information. Display of information that meets the needs Can easily access information and the number of data points is sufficient for the needs of Nopawan Charoenkit and Prin Boonkanit (2014). This thesis studied the design of bar code systems to control parts in dyeing and finishing industries. Research has shown that from the application of the new system with this barcode system Before updating the production data, the staff will enter the data with a delay than the actual work time. There are frequent errors in reading data. After using the newly developed barcode technology To increase the efficiency of data in real time, resulting in reduced operational time and reduced errors And result in lower document costs Which facilitates communication with customers Enabling businesses to compete with competitors sustainably from reviewing the relevant theoretical research concepts The researcher has applied various concepts and theories to the research. The use of bar code systems and storage systems by setting a fixed position to increase warehouse efficiency in the case of Burinin Industry Co., Ltd. in order to achieve the objectives of research and increase warehouse efficiency.

METHODOLOGY

Research process

Researcher will begin to determine the scope of the study and then study the processes within the XYZ warehouse of the company. Then, the project presentation, when presented, the consultant will decide on the project presentation. Having to make a new presentation, if going through the project process, then checking the correctness, the next step is to follow and evaluate. As a result, the next step is the preparation of papers published in conferences completed the process of conducting research.

Delimitation of study

1. Population and sample group studied by the target population, supervisor and warehouse staff divided into 1 supervisor, 4 employees, a total of 5 people.

2. Delimitation of content This study is a study of warehouse management by studying the area management within the warehouse of XYZ Company Limited.

3. Delimitation of time the researcher by studying the work processes within the warehouse of XYZ Company Limited and conducting research and study of concepts, theories related to warehouse management. The use of barcode systems and fixed location system with a total duration of 5 months from 7 December 2018 to 26 April 2019

From analyzing problems with the fishbone diagram obstacles to work found within the warehouse of XYZ company limited is goods picking errors and Delays Which is a major problem affecting product picking efficiency and results in operating time Increased warehouse management costs and the reliability of the company has decreased the cause of the problem of picking errors and delays are as follows:

1. Personnel factors is no training for staff resulting in lack of knowledge and employees lack motivation to work, resulting in unintended work.

2. Process factors storage unorganized products, resulting in the inability to identify products that need to be picked up clearly and without clear storage space, resulting in unclear storage procedures.

3. Technology factors is no barcode system is used, resulting in unclear location of storage and picking positions.

4. Area factors is not planning for storage space, resulting in no storage format and no clear storage space, resulting in unclear storage space.

Problems with picking errors and delays

Studying the pattern of storing goods in warehouses XYZ company limited Warehouse for finished goods storage from the study of finished goods warehouse, it was found that there were products that were stored for sale such as Refrigerant R22 R22P R32 R32P 134a 134aPlus which has both standard packaging size and special size packaging and make to orders without planning the storage area resulting in no storage format and no clear storage space, resulting in unclear storage space Including the lack of a barcode system, resulting in unclear storage location and picking positions Therefore affecting goods picking efficiency

Research methodology

1.Study and collect data on the storage area. From the study and data collection, it was found that the shelves were 24 shelves, 4 rows, 3 floor, 2 channels. A total of 144 storage.

2.Determine the barcode location from the results of the study and collect the product storage information, allowing the researcher to design a barcode that is used only in the warehouse with a 6-digit. code 1st-2nd is rack name, code 3rd is the name of the path. code 4th-5th is the storage floor. And the code 6-7 is channels.

3.Determine the pallet of the barcode. The researcher designed the pallet bar code to determine the details of the products arranged on the pallet, making it easier to check the information and receive the product. Helps to reduce the process of writing records with people who have received and helps to reduce the time taken to receive the bar code settings. The main barcode. Code 1st-5th is the product code and code 6th-7th is Lot product code.

4.Fixed Location System This concept of product storage is a concept that comes from the theory. Every product or every SKU will already have a fixed storage location. This type of storage is suitable for small warehouses. There are a number of employees who do not have a lot of work and have a number of products or the number of SKUs that store less products. Therefore designed the storage area according to the type of refrigerant as follows: R22 R22P R32 R32P 134a 134aPlus including R22 R32 special packaging size and special refrigerant make to orders By dividing the storage to be clear, as a system of regulations from the original, no storage format.

Increasing Efficiency

Based on the study of information within warehouse XYZ company limited, the researcher analyzed the problem of picking errors and delays with the fish bone diagram and studied the flow process chart. The analysis therefore increases the efficiency with the barcode system and the storage system by setting a fixed location system by determining the storage location. By establishing a fixed position along with the design of the barcode number within the warehouse to be consistent with the company's central system and using a barcode system along with the central system of the company, making product placement clear Accurate, fast and does not expire products by first in first out (FIFO) according to the original picking pattern of the company. Which can solve the problem of picking errors and delays After increasing efficiency, the number of work processes or events decreased from 14 events to 12 events, which decreased by 2 events. Delayed / waiting events decreased from 2 events to 0 events, which decreased 2 events. Total duration decreased from 69 minutes to 39 minutes. Reduced by 30 minutes, including the cost of the operation (Representing 1.25 baht per minute or 600 baht per day) from 86.25 baht to 56.25 baht, down 30 baht as shown in Figure 1

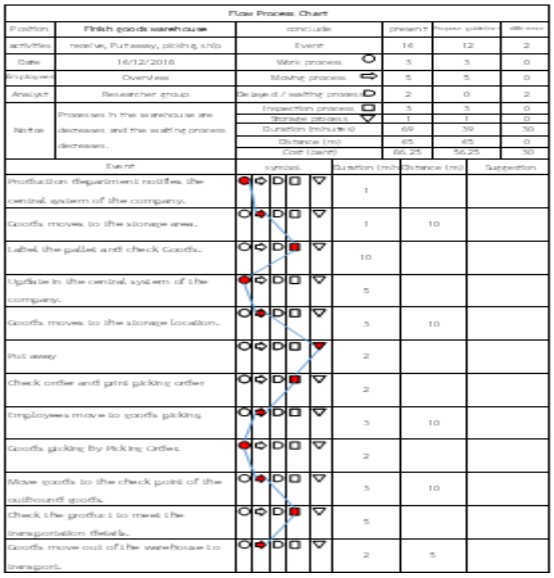


Figure 1 Show Flow Process Chart XYZ company limited after increasing efficiency

RESULTS

Performance indicators for increasing efficiency in warehouses using barcode systems and fixed location system to XYZ Company Limited

Indicators	Before	After	difference
Reliability dimension (Unit : %)			
1. Accuracy goods picking (Unit : %)	90	97.5	7.5
Time dimension (Unit : minutes/time)			
2.Goods picking time (Unit : minutes/round	20	5	15
Cost dimension (Unit : Bath/mount)			
3. Over time cost (OT) (Unit : Bath/mount)	15,000	7,500	7,500

Table 1 Performance Indicators

Reliability dimension

Reliability dimension from the original in 1 month, picking up the product by about 1,200 times, goods picking errors and delays about 120 round that calculated by Rule of three.

Accuracy in goods picking before increasing efficiency

$$\text{Accuracy in goods picking} = \frac{1{,}080}{1{,}200} \times 100 = 90\ \% \text{ (notation } 1{,}200 - 120 = 1{,}080\text{)}$$

Accuracy in goods picking after increasing efficiency

$$\text{Accuracy in goods picking} = \frac{1{,}170}{1{,}200} \times 100 = 97.5\ \% \text{ (notation } 1{,}200 - 30 = 1{,}170\text{)}$$

Time dimension

From the flow process chart, within the XYZ company warehouse, after increasing efficiency, it was found that the picking process had a time of picking before 20 minutes/round after increasing efficiency for 5 minutes/round. Product reduced by 15 minutes/round

Over time cost/person after increasing efficiency

Employee 5 person OT hour person/day = 2 hour (from 4 hour)
OT hour average 2 x 5 = 10 hour/day = 10 x 20 day = 200 hour/mount
OT cost = 200 x 37.5 = 7,500 Bath/mount

Conclusion

From the study of warehouse space management and analysis of problems in goods picking into the warehouse of XYZ company limited. The researcher found that the problem solving and increasing efficiency of the warehouse is the implementation of barcode system and fixed location system by setting fixed location with determine the barcode location of warehouse in accordance with the central system of the company and use barcode system in accordance with the central system making clear product positioning, picking accurate, fast, and not expiring goods by first in first out : FIFO picking the form of the company Which can solve the problem of picking errors and delays cause result in more efficient picking And also respond to the logistics indicators that the researcher has set to respond to the 3 dimensions of logistics as well.

Study results show flow process chart in warehouse XYZ company limited before and after increasing efficiency by using barcode system and fixed location system to increase efficiency Found that it can reduce the problem of picking errors and delays as follows

Reliability dimension from increase efficiency and estimation by the method of custody found that accuracy of picking from the before 90% after increasing efficiency to 97.5%. The accuracy of goods picking up 7.5%.

Time dimension from the flow process chart in warehouse XYZ company limited. After increasing efficiency, it was found that the picking process had a time of picking from the original 20 minutes/round after 5 minutes/round performance increase. Therefore, the time to goods picking is reduced by 15 minutes/round, which is accounted for 75%.Cost dimension from writing the process to improve the operation process to increase work efficiency can be seen that over time cost employee decrease and shorten the working time as well as increase the efficiency of the work process. With overtime cost from 15,000 baht/month after increasing efficiency to 7,500 baht/month, overtime costs reduced by 7,500 baht/month, which accounted for 50% percentage reduction.

Suggestion

Suggestions to use research results

Increasing efficiency warehouse with barcode systems and fixed location system requires investment in increasing efficiency, therefore must be considered in this section and must look at the suitability of the warehouse with the Increasing efficiency. Too In addition, the guidelines for increasing efficiency also include a variety of guidelines such as RFID, ABC-Analysis, warehouse layout design etc.

Suggestions for further research

There should be a cost of investing in a barcode system and calculating the payback period and should have more time to collect data and find other increasing efficiency methods to apply.

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