The bringing of the ABC analysis technique for using to increase the efficiency of placing products in the warehouse

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ABSTRACT
This research has the objective for increasing the efficiency of using the area for placing products in the warehouse and reducing the time period of making a requisition, moving products for delivering materials and products for customers in the quantity and the time period that customers require. But from the case study of the company, this is found that the storage system of products has lacked of the efficiency. This will create the problem in waiting. There is no separating to store products to be easily for picking. By in picking of the product for 1 time, this will have to use the time and the distance more than it shall be. Due to this is difficult to store of products that are placed and combined together according to the storing place and there is placing of products to block the walkway until this can’t move with the forklift. There is bringing the ABC analysis technique to use in classifying of product transactions for improving the placement of products in the warehouse. After the improvement of the placement of products, later, this will use this technique with best-selling products (X-001) that will use more than 9 staffs to move products in order to compare the time period for moving products before and after the improvement of the placement of products. This will use the distance of 42 metres for the total time period of 54 minutes and 48 seconds. After the improvement of the placement of products, this will reduce the time period to 18 metres or this will reduce the time period that can be calculated to be 85.71%. And this can reduce the time period to 6 minutes and 42 seconds or this can calculated to be 88.22% and this will use only 3 staffs to move products. In the overall picture of making a requisition for moving products in the warehouse after the improvement, this will help to make staffs to work conveniently and rapidly. This will have better efficiency. Besides, this will help to make to see the abnormality of products that can’t be moved for letting the executive to consider to manage further.

Key words: ABC analysis technique, warehouse
1. INTRODUCTION

In the management of the warehouse, this has the important duty in storing for both materials and products to have the suitable condition and quantity including this will do the duty to disperse products from the manufacturer to the consumer within the agreeable time period. Hence, this will have to manage the quantity of entering and going out of products in order to protect to create the shortage stock problem. There is the inspection of managing the useful life of storing products in order to protect materials and products to be expired in the useful life before this will bring to use or deliver to the customer. And this is for letting to have the enough storing area. With this reason, the management of the storage area for products in the warehouse will have the importance. If this has managed the inventory with the efficiency, this will make the working process to be convenient for making a requisition rapidly. This can deliver materials and products to the customer in the quantity and the time period that the customer requires. Conversely, if this has managed the warehouse without the efficiency, this will give the effect to make the cost to be increased more. Due to this will create the waste from waiting, storing inventory materials and the transportation. By the case study of the company, this is one company that has produced and installed metals for decorating the building in Thailand. From the study of the working condition in the current situation, this is found that this will create the problem in waiting for the inefficient system of storing products. There is no separating of storing products to be easily for picking. By the picking of products for 1 time, this will have to use the time period and the distance more than it shall be. The one part of the reason is created from the sign that has pointed out the condition of the product that isn’t matched with the product that will be delivered to the customer. That sign will always be torn from the product body due to this will use scraps of form cushioning materials to be made to be the sign to point out the product. And for the storage of products that are placed and combined according to the storage place and there are products which have blocked the walkway until this can’t move with the forklift, besides, this is found that the X-001 product is the product that has the most purchasing order. Those products are stored in the faraway place in the area of the walkway in front of Zone B. This will have to use more than 9 staffs to move those products. Due to there are those products to block the walkway, this won’t be able to move with the forklift. This will have to move product by using the manpower only. This will use the distance for 42 metres with the total time period of 54 minutes and 48 seconds. Besides, generally, for each movement of products, this will have to move with the forklift that will have only one staff to be able to drive this aforementioned forklift. Not just only that, this is found that there is only 1 warehouse staff that will know the position of storing of product transactions in the warehouse. If one day that this staff has taken a leave from the job, this will give the effect on moving products to have the difficulty. This will create the problem of waiting and the warehouse management won’t be able to control the making a requisition with the First-In First-Out: FIFO method. By for the staff who has stored products, when he has observed the area that can be placed for products, he will place products including placing products on the walkway and the walkway on the door for entering and going out as shown in the pink area in the Figure 1 by he won’t consider about the movement of products with the forklift that can’t enter in to move products in the later time. This will make to have to use many staffs in moving products out instead of using the forklift. This will create the waste and this will make staffs to work duplicately which will create the stress and the fatigue in working. Moreover, in each zone of the warehouse, this will make the storage of different kinds of products to combine together.
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There is no separating of the category of products for both materials and finished products. And this will give the effect on some product transactions in the warehouse to deteriorate and loss due to products are stored for a long time. This can’t bring it to deliver to the customer.

Figure 1 The current condition of the warehouse that has products to block the walkway

Hence, the research will analyze with the cause and the effect chart, this is found that for the method of storing products in the warehouse, this will make to create the problem in the current condition. By this has started from the way in placing the layout that will have no efficiency. Products will be placed and combined together and the sign to point out the product condition won’t be matched with the product. This will make to find the way of improving the efficiency of using the area to create the highest benefit in placing products in the warehouse and the storage system to have the efficiency by using the ABC analysis technique to use in classifying product transactions for making the improvement of the placement of products in the warehouse under the regulation and the policy of the organization.

2. ABC ANALYSIS TECHNIQUE

The ABC analysis technique is the idea of classifying of products and the inventory according to the setting criteria for being easily for the management according to products that have been classified. The classification of products may be in the form of the quantity of products or the value of that products that will have on the organization such as; the profit, the cost or Sales etc. Due to the warehouse have many transactions [1] and the product in each transaction won’t have the importance for the organization equally. Some products have the most importance. Some products have the less importance such as; this will have product transactions in the warehouse for only 5-20% that have the high value for 70-80% of all product values in the warehouse. By the principle of classifying the inventory will be separated to be 3 categories such as; A,B and C respectively. The group A will be consisted of products that have the high importance but this won’t have only some transactions (Stock Keeping Units: SKUs) approximately for 5-20% that have the high value until to 70-80% of all product values or the quantity in the warehouse. The group B will be consisted of products that have the second importance. This will be only 25-30% of product transactions that will have the value for 20-30% of all inventory values. And the group
C will be consisted of products that have the least importance which will have product transactions more to 50-60% but this will have the value for 5-10% of all inventory values. [2] The regulation in classifying the inventory won’t have the fixed regulation. But each organization will have to adjust to be suitable with the situation.

### Table 1 The classification according to the ABC Analysis Technique

<table>
<thead>
<tr>
<th>Classification</th>
<th>Percent of SKUs</th>
<th>Percent of Movement</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>5-20%</td>
<td>80%</td>
</tr>
<tr>
<td>B</td>
<td>25-30%</td>
<td>15%</td>
</tr>
<tr>
<td>C</td>
<td>50-60%</td>
<td>5%</td>
</tr>
</tbody>
</table>

### 3. RESULT

The researcher has designed the purchasing order list in each month for gathering the information precisely and there is bringing the information to analyze with the ABC technique. [3] But due to the company can’t make to give the information of the product value. This will make the classification of products according to the quantity of purchasing order of customers per year. As shown in the Figure 2, this has designed the layout of placing the warehouse under the limitation of storing on the previous layout of the warehouse. As shown in the Figure 3, this has shown the red color frame instead of the group of product transactions in the group A that is consisted of Zone G, Zone E and Zone C1 to Zone C3 which will determine to be in the area that is closed to 3 doors of entering and going out of the warehouse and this is closed to the area of inspecting of products before this will deliver to customers. Because product transactions in Group A are products that customers have placed orders in each month with the most quantity. The green frame is instead of the group of product transactions in Group B that will be consisted of Zone D and Zone C4 to C5. By product transactions in Group B are products that have the percentage of the quantity of purchasing orders that is secondary from Group A which will be in the middle area of the warehouse. [4] For the convenience in moving products in the warehouse and this will be able to move products in and out for both of 3 doors. And the brown frame will be instead of the group of product transactions in Group C that is consisted of Zone B which will be in the innermost of the warehouse. Because this will be products that have the least quantity of purchasing orders. The researcher will place products in the category of steel bars and aluminium lines for both products that have passed the production process which will be sprayed for painting already and this won’t spray for painting in Zone A and Zone F in the yellow frame according to the picture due to the company would like to adjust the placement of products in the aforementioned zone by the company itself. And this hasn’t determined to bring products to place on the area of the walkway of the forklift and for blocking the door for entering in and going out for having the convenience in moving products in each zone. In the part of the area inspecting importing materials, before this has the improvement, this won’t have determined the suitable area, this will have to inspect in front of the company. After this has the improvement, this has determined to have the inspecting area that is near the head office which will be closed to the door of entering in and going out of the company. And this has designed the sign to point out products that have the important detail which is the standard for the warehouse instead of writing on scraps of foam sheets cushioning materials. And this will make the board to show product transactions in each zone which will show product transactions that will have the important detail completely, correctly and accurately. This will be easily for searching and moving products.
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**Figure 2** The classification of the product group according to The ABC Analysis Technique

**Figure 3** The determination of the product group in each zone in the warehouse

From the above improvement, this will count the time of making a requisition of product transactions, X-001 which will be products that have many quantities of purchasing orders that will be stored in Zone E which will be in the area near the door of entering in and going out of the warehouse. This is found that this can reduce the number of staffs in moving products from the previous place from 9 persons to 3 persons. This is consisted of the staff who will drive the forklift for 1 person and staffs for moving products for 2 persons. This can reduce the time period in the movement to the inspecting area from the previous place from 42 metres to 18 metres. This will reduce to 85.71% when this has considered the time period in the movement to the inspecting area from the previous area. This can reduce from 54 minutes and 48 seconds to 6 minutes and 42 seconds or this can reduce the time period to 88.21%. This will make to save the cost from hiring staffs in moving products from the previous place. This can reduce from THB 2,700 per
day to THB 900 per day. This will give the effect to be able to reduce the cost of hiring staffs in moving products to THB 1,800 per day. This can calculate to be 66.66%. Besides, this will have presented to the company to train the working skill of warehouse staffs to be able to make a requisition via the system that the company has determined and trained the driving skill of the forklift for another 1-2 staffs to be able to work with the flexibility more. When this has made a requisition and this has moved products in the large quantity or there is taking leave of skillful staffs. Currently, this will have the staff that will be able to make a requisition and know the position of storing product transactions in the warehouse for only 1 person and there is only 1 person who has driven the forklift as well.

From classifying product transactions with the ABC Analysis Technique, this will make to see the abnormality of products for many transactions that have no any movement (Dead stock) which will distribute to customers until this becomes the sunk cost. Some transactions have no any movement for more than 13 years. This can calculate to be the product value that has no any movement for all for more than THB 7 million. This will make to separate the aforementioned transaction out from the normal inventory transaction in order to let the company to find the way to disperse products further such as; the setting of the promotion to reduce the aforementioned price level. This is the premium product for customers or this will donate to other agencies. This will make product transactions not to move to reduce the quantity down and this will have the storage area in the warehouse more.

4. CONCLUSION

For bringing the ABC Analysis Technique to use in classifying product transactions for improving the placement of products in the warehouse, products in Group A will be set to be closed to the way of entering in and going out which will have use this technique with best-selling products, X-001. This will have to use more than 9 persons in moving products. This will make to use the distance for 42 metres for the total time of 54 minutes and 48 seconds. By after this has improved the placement of products, this will make the distance to be reduced to 18 metres or this can reduce the distance that can be calculated to be 85.71% and this can reduce the distance to 6 minutes and 42 seconds or this can calculate to be 88.22%. This can reduce the number of staffs for moving products to be 6 persons or this can reduce the cost of hiring staffs in moving products to be THB 1,800 per day. This can calculate to be 66.66% as shown in Table 2 that 7 staffs that are reduced. They can be transferred to work in other parts of the company. And in the overall picture of making a requisition and moving of products in the warehouse after the improvement, this can help to let staffs to work conveniently, rapidly and have the efficiency more. Besides, this will help to make to see the abnormality of products which have no any movement for letting the executive to consider to manage further.

Table 2 This has concluded the comparison before and after the improvement of the placement of products in the warehouse

<table>
<thead>
<tr>
<th>List</th>
<th>Before Improvement</th>
<th>After Improvement</th>
<th>Difference</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warehouse Employee (person)</td>
<td>9</td>
<td>3</td>
<td>6</td>
<td>77.78</td>
</tr>
<tr>
<td>Transportation Distance (meter)</td>
<td>42</td>
<td>18</td>
<td>36</td>
<td>85.71</td>
</tr>
<tr>
<td>Transportation Time (second)</td>
<td>54 min 48 sec</td>
<td>6 min 42 sec</td>
<td>48 min 06 sec</td>
<td>88.22</td>
</tr>
<tr>
<td>Cost (bath per day)</td>
<td>2,700</td>
<td>900</td>
<td>1,800</td>
<td>66.67</td>
</tr>
</tbody>
</table>

http://www.iaeme.com/IJMET/index.asp 429  editor@iaeme.com
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REFERENCES