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Web Based E-Catalog Implementation at TPK-KOJA: Case Study of Stock Inventory Division

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Abstract

The implementation of web-based e-Catalog by utilizing the Prestashop CMS application is very helpful for the Stock Inventory Division to manage stock of spare parts, especially related to aging, location and number of updates from stock on hand. The display of information that presented in the form of images and detail specification of the product greatly helps the Procurement Division in finding out a product to facilitate ordering and reduce the risk of error ordering goods. This e-catalog also can be utilized by the Equipment Engineering Division and Utilities Facility Division to see spare parts and their numbers related to the planning, maintenance and repair of equipment and the existing utilities at TPK-Koja facilities. E-Catalog TPK-Koja can also be accessed either from a desktop computer / workstation or smartphone to ease the user experience. After implementing this e-Catalog system the stock opname activities won't require so many personnel anymore, so it can reduce costs and time. This Prestashop CMS web-based e-Catalog system is very cheap and very powerful for displaying product catalogues.
Keywords: e-catalogue, stock inventory, inventory management, web-based catalogue.

I. INTRODUCTION

PT. Terminal Petikemas Koja (TPK) is a join operation firm between Indonesia public firm, PT Pelabuhan Indonesia II (Indonesian Port Corporation) with a Hongkong based private firm, PT Hutchinson Port Indonesia. About 90% of TPK's daily operational works depends on the performance of heavy equipment such as Quay Crane Container (QCC), Rubber Tyred Gantry Crane (RTGC), Head Truck and Chassis, Valmet, Forklift etc. In supporting the performance of these equipments, the readiness of spare parts and lubricants such as wirerope, tires, alloy wheels, oil, grease and others in time is needed. A dedicated warehouse or storage area is required to fulfill quick distribution in desired time. Approximately 700 items of spare parts and lubricants will be stored in the warehouse and manage by the Stock Inventory division under the TPK Finance Department.

In managing spare parts and lubricants, the Stock Inventory Division is connected with Procurement Division, Engineering Division, Utilities Facility Division, Budget Division and others. Currently the Oracle system has been used as an integrated ERP system to connect all of these divisions, but some obstacles still unsolved and leaves difficulties in its implementation. Based on interview result with the TPK's management there are several obstacles that cannot be solved such as:
  1) The value and amount of aging spare parts is quite high.
  2) Procurement Division still has difficulty of recognizing the physical form of the spare parts to be ordered, this increase the risk of spare parts ordering errors.
  3) Difficulty to control spare parts such as locations and others.
  4) Stock inventory checking activity requires large number of personnel.
To overcome those obstacles above, it is necessary to develop a new system by considering the cost, time, effectiveness and efficiency. Prestashop CMS (Content Management System) was chosen as a way

out. The use of this CMS application considered to be able to reduce the cost, furthermore the interface of the CMS is very professional and available as an opensource application so that the company does not violate the existing licenses. Prestashop possess warehouse management system features that can be used as stock inventory to control and view the products catalog. The use of web-based e-Catalog can accelerate user access to spare parts or products needed. In addition to, this e-Catalog also can be accessed via smartphone to deliver the ease of flexibility and speed in getting the desired information.

There is a necessity in developing current existing system by considering the cost, time, effectiveness and efficiency of the resulting application can be in accordance with the expectations above. From the search and discussion carried out, an agreement was made to develop a web-based e-Catalog application using a CMS (Content Management System). The utilization of the opensource Prestashop's CMS is considered to be able to reduce the cost more than current system because the application is free, no worries regarding the license piracy issue. Furthermore, the user interface of this CMS is very user friendly and professional. Prestashop provides warehouse management features that can be used as stock inventory control and as products catalogue. The use of web-based e-Catalog will accelerate the activities to access the spare parts or products required. In addition, this application can be accessed on a computer or by a smartphone to gain better user experience, flexibility and speed in getting the desired information.

II.   LITERATURE REVIEW

2.1 Stock Inventory

Inventory is the availability of stocks or resources used in an organization. Inventory systems are a set of policies that control and monitor inventory levels and determine in what levels its must be maintained, how large orders must be made and when stocks must be replenished (Ogbo & Ukpere, 2014). One of the effective inventory management is by controlling the existing inventory (Raza, Karim, & Hussain, 2017), with these controls, there will be no shortages or excesses of inventory that affect the company's operational (Pinho, Fernandes, & Pinho, 2010). One of the objectives of inventory control is to minimize costs associated with production, storage and inventory (Ziukov, 2015).

2.2 E-Catalog

E-Catalog can be interpreted as an electronic storage that contains information about goods, products, or services that play an important role that contains a list of items, specifications and prices that are a reference in the comparison of various similar products where the system users can ensure that the submitted request has met accordance standards or not (Endianingsih, 2015). E-Catalog is a product information in electronic form that can be divided into Static Catalogs that only displaying the images and text and Dynamic e-Catalog that displays moving animated images (Lestari, Triansyah, & Yulmaini, 2013).

2.3 Prestashop

Prestashop is an open sourced Content Management System (CMS) that is free of charge or non-licensed. The Prestashop CMS is one of most popular CMS application in the world with very user friendly modules without leaving the security of the system. (Lytvyn, 2014). Prestashop was founded in Paris and introduced to the public in 2007. With the smarty application, Prestashop is used by many small and medium-sized companies to sell their products (Prakoso & Asmunin, 2106). Based on the 2018 survey, Prestashop is among the 7 best open sourced e-Commerce in the world (Islam, 2018).

2.4 Content Management System

Content Management System (CMS) is a complex web application contains some equipment that allows to add, update & delete pages and content on a website from a web browser without having an understanding of HTML or other similar technologies (Divya, 2013). CMS application are easy to use, inexpensive, do not require special operating skills, fast and good security (Olusola & Sunday, 2013).

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2.5 Web Based

Web-based application is application that can be accessed using a web browser via an intranet or internet network. Web-based application is a computer software encoded in programming languages that support web-based software such as HTML, JavaScript, CSS and other programming languages (Linda, 2016).

III. METHODOLOGY

The method used in this study is qualitative, with a case study approach. In this approach, an in-depth analysis of information is used by understanding the information find the right solution to solve the problem. To test the validity of data, data analysis and triangulation are used (Safuan, 2016).

IV. RESULT

The research was conducted in 3 months (November 2018 to January 2019) by conducting some observations and interviews with the managers and staff of the Stock Inventory Division, Procurement, Utilities and Engineering Facilities and other involved management, so that the data and information gathered were comprehensive. From the results of interviews and observations some problems found as follow:

1) Aging spare parts both in number and value have increased significantly.
2) The Procurement Division has difficulties in recognizing the of the spare parts to be ordered that will increase the risk of ordering errors.
3) Difficulties in controlling spare parts quantity, quality and location.
4) Require a lot of personnel in performing stock opname.

V. DISCUSSION

5.1 Problems Identification

1. Aging spare parts both in number and value have increased significantly.

Significant amount of aging spare parts noticed from the data collected during the research (Table.1).

Table 1. TPK-Koja Inventory Aging

No	Age	Total	
		Qty	Amount (IDR)
1	5years	172	1.748.119.588
2	3-5 years	154	2.331.370.894
3	2-3 years	91	881.690.076
4	1-2 years	113	1.176.510.809
5	0-1 year	198	2.876.450.209

Data in Table.1 shows the age of spare parts along with the amount and value. It is known that 172 pcs of spare parts have ages 5 years and above with a value of IDR 1.7 billion. This is not a good information, apart from the large number and value of spare parts, there are also other risks of outdated and obsoletion because they have been consumed by age (Daniel, E. C. & Romanus, 2017). Same condition found for 3-5 years old spare parts, which amounts of 154 pcs and in a value of IDR 2.3 billion. If this condition is allowed, the age of spare parts over 5 years will increase both in number and value over time. The evaluation of current system and control urgently required in order

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to solved this aging problem [4]. Actually, the existing system has overcome the aging problem, but the aging data is not displayed and to obtain the information the data must be downloaded that takes some time so that anticipation of aging runs slowly.

2. Difficulties in recognizing the form or shape of the spare parts to be ordered by The Procurement Division, so that the risk of ordering errors becomes high.

   The results of observations and interviews with the Procurement Division manager and staff, revealed that the existing Oracle System has not been able to fulfill the desired demand related to the procurement of spare parts, especially the ability of the system to display the image information, this becomes an obstacle for managers and staff to know the form or shape of spare parts to be ordered so that the risk of error in spare parts ordering becomes high. The above risks ultimately lead to losses of and time in which will be affected the productivity of the company (Widjaya & Sugiarti, 2013).

3. Difficulties in controlling and updating of spare part's information.

   The results of observations and interviews with the Stock Inventory Division manager and staff can be concluded that there are problems in the spare parts update and control because the existing system is not user friendly enough, so it takes more effort to check spare parts via the system and sometimes spare parts update is delayed to next year due to this difficulty. This problem is creating the risks of data manipulation. This condition is contrary to the principle of a good stock inventory that paying attention to the quality and quality of the stored goods (Ogbo & Ukpere, 2014).

4. Require large number of personnel in performing stock opname activities.

   Another finding from the results of observations and interviews with the Stock Inventory Division manager and staff, was the audit team requires approximately 20 personnel to perform the 2 days of stock opname activity. Stock Opname is conducted twice in a year, the activity is carried out together with the external audit team by checking the stock card distributed by Finance Division. From the results of stock opname activity, the most commonly finding is the actual location of spare parts do not match the specified location, the amount in the stock card does not match with the actual amount of and a mismatch between the actual code number and those recorded in system.

5.2 Countermeasures

After identification of the problems, it can be concluded that a new system is needed to answer all of the problems stated. The system must be user friendly and can be accessed via mobile phone. The answer to this requirement was the development of new system called TPK Koja e-Stock Catalog (e-Catalog) which is a web-based application by utilizing Prestashop CMS (Safuan, 2018).

   The user interface of TPK Koja e-Stock Catalog is as follows:

1. Front View Interface (Front End)

   The front or frontend display of the Koja e-Catalog TPK website can be seen in the Figure.1.

Figure 1. Front End Interface

Spare parts data categorized into 3 major groups as Fast Moving, Slow Moving and Consignment for the ease of use. After registered into the system thru login page (Figure.2), user may choose in which group is the spare part they would like to search. Registered user may login with their email and password, others must create new account registration and waiting for approval before starting to use this application.

Figure 2. Front End Login Interface

After the user has successfully logged in, the user can now browse for the desired product as seen on Figure.3 below.

Figure 3. Product View

Figure.3 shows the interface of spare part data with image, storage location and detail specification provided. This interface has become the solution from the problems faced by the Procurement Division. The appearance of new e-catalog system is very helpful to speed up the operator's work and reducing the risk of errors in ordering spare parts based on trial held by Procurement Division staff. Spare part specification (Figure.3) provide detail information about the spare part such as the storage location, item number, image, amount of available stock and aging information. The spare part information also enhanced with a QR code for ease of data access and for audit purpose.

2. Back View Interface (Back End)

Back end interface is using to maintain spare part data by Stock Inventory Officer with different interface (Figure.4).

Figure 4. Back End Login Interface

Unlike the user login, no registration menu available here because the backend user must be registered directly by the super admin.

Figure 5. Back End Interface

The appointed operators or users to operate this e-Catalog are able to input the detail spare part specification from the menu in the backend interface (Figure.5) and also be able to monitor the movements of existing spare parts. The most interesting features is the Stock management features that could be used to manage spare part information in detail such as product brand and supplier (Figure.6).

Figure 6. Stock Management Interface (Stock Tab)

User interface of the Stock Management feature is divided into 2 tabs, the Stock's tab and Movement's tab. Stock tab contains the product name, quantity and product availability (Figure.6). Also provided editing facilities to update the quantity. The Movement tab contains not only the product name and quantity available, but also records the data of when and who is entering or updating the product into the system (Figure.7).
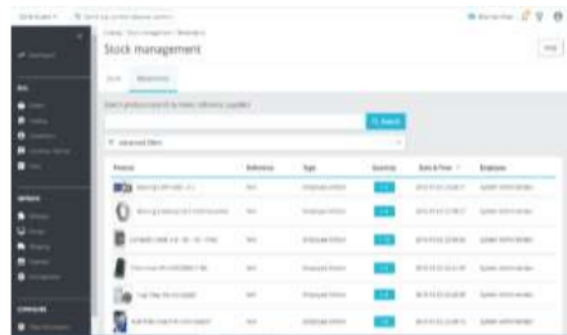
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Figure 7. Stock Management Interface (Movement Tab)

VI.   CONCLUSION

The application of web-based e-Catalog with Prestashop CMS significantly ease the difficulties of the Stock Inventory Division in managing spare parts information related to aging, location and the number of updates from stock on hand. The information presented in the form of images and complete details of product specification has greatly helps the Procurement Division in recognizing the form and shape of the product to facilitate and reduce the risk of error in ordering goods. This new e-catalog also can be utilized by the Equipment Engineering Division and Utilities Facility Division to observe the spare parts and their amount for the planning, maintenance and repair of equipment purposes. TPK Koja e-Catalog also can be accessed via a smartphone so to make it easier for users to operate than via desktop computer / workstation. In the future, stock taking activities will not require large number of personnel, so it can reduce the costs and time. Lastly, the web-based e-Catalog with Prestashop CMS is very cheap but very powerful for displaying product catalogs.

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