

Stock Counting System Using PDA: Case Study

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INTRODUCTION

In the traditional stock counting system, A count sheet is used. Employees need to actually go to the shelves and manually count the items, write down the amount. Every item on the shelves and in the stock needs to be thoroughly counted. For a particular company, the counting of the items in the stock takes about 3 days due to many items and many types while counting the items on the shelves takes about 1 day (for the whole night) since it needs to be done after closing the cashier and finished before the next day to start a new sell. The count sheets containing every item barcode are created to record the counting results. When there are many items in the warehouse, the counting takes more time. A cashier needs to be occupied for counting process since the POS program needs to be off and changed to another program to report the total sales. This reduces the lane to serve the customers. Also, lots of reports need to be done manually such as the creation of the count sheets, and the key-in results to record the values.

Palm Digital Assistant (PDA) is one of the wireless mobile devices that were around since 1972. It has basic features such as touched screen, wireless connection, wire connection, and synchronization. These features are sufficient to use in many businesses such as restaurants, and inventory systems. Since it is cheap nowadays, a company may buy a lot of them for employees to use and to connect with the POS system and inventory systems etc.

In this work, we focus on the experience in developing the stock counting system using PDAs. The case study utilizes the PDA as a barcode reader to read items and connect the counting data online to existing inventory database. Also, the description of the supported infrastructure for the use of PDAs is mentioned.

Of course, there are many commercial off-the-shelf softwares to help stocking counting. In our warehouse, buying them is too expensive and there is a need to customize them to the existing system. Note that there are existing information systems about the inventory already in the superstore. The superstore decides to expand the existing information system to facilitate the stock counting process. The use of PDA is introduced since it is not expensive. With the PDA, manual counting sheet process is revised and the counted data can be submitted online to the database. However, the PDAs need wireless network connection to update the database. The existing wireless infrastructures need to also be revised.

Due to the use of Palm Digital Assistant (PDA) to avoid the manually counting stock, the operation workflow needs to be changed to support this. Currently the PDA is used for checking the price of items. Then, the PDA will also be used for stock counting and connected online to the server to generate the counting report. This will save time and personnel to perform this task. The employees need to take the PDA to scan the barcode of items in stock and on the shelves. The information of the items is extracted automatically from the database and the counting is recorded online

to the database. Time to close the cashier can be shortened. The stock counting will be operated efficiently while the information is integrated.

The design issues of the system in both hardware and software sides are investigated. In the hardware side, we inspect the cost feasibility for PDAs and access point setup in the real location. In the software side, we present the design of additional database to store the counting values, the design of user interface on PDA, and the server application to support the database as well as the reports. The results of the feasibility study is shown and user satisfactory is reported.

BACKGROUND

In (Physical Inventory Guidelines, 2007), the process of conducting annual physical inventories is described. There are three major steps which include planning for a physical inventory, conducting the physical count, and reconciling the physical inventory.

The planning phase is to prepare the conduction. Several steps are involved that are to plan the staff, schedule, related parties, prepare storage area, team development, prepare the guidelines. In the conduction, the control of inventory tags or count sheets is required. Each item should be counted twice. In the last step, reconciliation means finding the difference of the physical count and the balance in the database. The correction and adjustment are made in this step. Also, the quantity on hand and the quantity used or sold during the year are compared by the simple equation.

Quantity used of the current year = Physical count previous year + Purchases during the current year – Physical count of the current year) .

If the amount on hand is more than what is used during the year, there may be an obsolescence. Then, inventory adjustment is needed.

Inventory counting, sometimes known as a cycle inventory counting is thus important in big warehouse. Many issues are raised upon the counting such as frequency of counting, accuracy

tracking, timing, staffing etc. The frequency of counting depends on the material types. Some materials are counted more often than another. For a large warehouse, counting is a tedious work. The next count may be based on the previous day counts. Thus, accuracy tracking is needed for future improvement. Timing is the time spent on the counting process. This may require the shutdown of some operations. Staffing should be skilled so that the counting process is fast and the accuracy is improved (Piasecki, 2012). The management should inform the staff about the counting program, the schedule of counting. The inventory section may be occupied until the counting is done. After the counting is done, the computer data needs to be updated (Gray, 2012).

Many inventory software requires this inventory counting process. ASDA (2001) together with WIS International Ltd. provide a solution for inventory counting in WalMart in UK. It has been shown that the accuracy of the stock counting was increased and counting time was reduced.

In Schreibfeder(1997), it is mentioned that accurate stock counting is an advantage. This is to ensure the physical inventory in the warehouse while often there are many cases where the computer inventory level is the same as the physical inventory. The counting process is needed. However, the frequency of the counting has effects on the accuracy of the stock level. It was mentioned that the stock balance should be about 97% accurate which means it can be more or less than the physical amount by 3% (Schreibfeder, 1997). The best way to maintain this is to periodically count the stock, e.g. many times a year. There are two methods suggested in the literature. The geographic count system is to count the product from the last shelf to the first for every product. By this way, each product will be counted equal times per the year. Misplaced or lost products can be found easily. Another method is based on the ranking. The more often the product that is received or shipped, the less accurate the stock level it can be. The ranking approach considers the

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