

# 1.0 rfid is able to identify from

[Business](#), [Management](#)



1.

0 Introduction Daifuku Malaysia Sdn Bhd (Daifuku) developed the first automated storage and retrieval system (AS/RS) in Japan since year 1966. One of their core business are factory and distribution automation. Daifuku has the automated warehouse, storage spaces and sorting and picking system to satisfy the customer requirement in order to distribute for the retailers, wholesalers and warehousing. (Research and Markets, 4AD) This program is use to manage the every single step of warehouse including receive and retrieval inventory, replenishment and picking. The objectives for developing this AS/RS system in to achieving workload reductions and cost savings through improvements in storage efficiency, labor saving in warehouse work and improvements in management levels. About forty years since using this system, automated warehouses have now become more capacity and high performance through the expansion of models, including stacker cranes and peripheral equipment. (Corporation, 2AD) 2.

0 Quick Response Quick response code have become a convenient way to communicate amounts of information from physical objects to mobile devices. Quick response built up a lot of business opportunity to speed up the flow of information and merchandise between retailers and manufacturers and the warehouse system. Daifuku is using the quick response to manage the warehouse system by many way. Quick response used information technology, flexible processes and organizational structure to manage product and services in order to make it efficient and convenient. Nowadays, the number of user and use is increasing and quick response is encourage to

researchers and industries in developing business and convenient in order to reduce error. 2.

1 Radio-Frequency Identification (RFID) is an equipment that used in hundreds of applications such as race-timing, assets tracking and tool tracking. (Ustundag, 2013) Besides, RFID is a wireless non-contact use of radio-frequency electromagnetic fields to move the data for identifying and tracking tags attached to assets. RFID is able to identify from distance unlike the barcode technology. It supports a large set of ID than the barcode technology and can incorporate additional data from different ways such as product type and manufacturer. (Amit and Berghel, 2011) RFID technology consists of three parts in two combinations, a transmitter or receiver and one of them called antenna as a RFID reader. These two will combine and make a RFID tag. When the RFID tag is read, it will detect the radio signal that activates the transmitter or receiver.

(Pateriya and Sharma, 2011) There are many uses of quick response technology around us today, one of the quick responses that use by Daifuku is RFID. Daifuku is using RFID to the receiving inspection. Daifuku was using barcode operation with semi-automated to scan the label when received before they use the RFID technology. It needs several times to operate to complete it. (Kaur et al., 2011) Besides, once the products are scanned, they have to change a new label after the new orders. So, in order to reduce the labour cost and time, Daifuku uses RFID technology to replace the barcode technology. The operator only needs to pass the RFID reader gate by carrying all the tote information.

2. 1. 1 FastOrder Picking Order picking, which is a key task in a warehouse that refer to the operation through which item retrieved from storage locations to fulfill customer orders.

The order picking system is designing to identify the picking are understanding the storage system and determine the storage policy like picking method, piking strategy, material handling system and picking assist technology. (Pan et al., 2012) Order picking process is receiving goods in an amount unit size and retrieving them from storage.

It is a labor-intensive activity. Recent industries have change the traditional trends by using the automated system to run this task. However, the modern warehouse order picking is making goods quickly to satisfy the customer requirement. This is due to the flexible that able to meet the needs of the large customer base and huge amount of item.

(Liu et al., 2015) Besides, it also can help in reduce the labor cost that operate on the picking task. Furthermore, it also require high quality and the item security that the product can available and deliver on time for the customer. The order picking activity has easier compare to the traditional order picking because it only need the operator to give command to the automated system to do the picking. (Pan et al., 2012) Daifuku is using three type of picking system in order to increase efficiency and accuracy to do picking that is pick-to-light system, picking cart system and put-to-light system.

One of the picking system that used RFID is picking cart system. Picking cart system is the operator will set an order to the car display and scan through the RFID to confirm the type and quantity of pick items. The cart system will automated pick those item needed that the instruction given. The cart system is a walk through picking equipped with totes, weight scale and the inspection devices that is RFID.

2.2 Automated System and Retrieval System AS/RS is an equipment in order to manage the inventory and material handling. AS/RS is widely used by a major automated manufacturer or warehouse. (Salah et al.

, 2011) AS/RS can briefly meant as combination of machine and controls automatic store and retrieve inventory speedy. (Research and Markets, 4AD) Daifuku used AS/RS to manage the logistic system. AS/RS used in automated manufacturer and warehouse and play an important role in production systems. One of the AS/RS is Unit load AS/RS. (Chakole, 2013) This is one of the popular AS/RS system around the world.

The unit load of AS/RS has a flexible design up to 40 meter and versatility make Daifuku's Unit load AS/RS the best-selling of AS/RS. The second AS/RS is mini load AS/RS. Mini Load AS/RS used to carry small amount weight that are in bins or shelves in the storage system. It provide the fastest and efficient storage and retrieval containers. (Rashid et al.

, 2011) It help in high speeds to ensure the item carry for the order picking and production operation on time. Besides, Daifuku also used the rack-supported building AS/RS. The rack supported building AS/RS is a racking constructed as a building with a codes. It help the space efficient and reduce

cost due to the high rise AS/ RS. In addition, vehicle type mini load AS/RS also one of the AS/RS system that used by Daifuku. Vehicle type mini load AS/RS is a fast and vehicle type AS/ RS designed to provide space and function by group.

2. 2. 1 Easier storage space Basically, the AS/ RS will be able to recommend suitable storage space to the operator to place the item or Stock Keeping Unit (SKUs) at the certain space. This inventory management system able to control and tracking include easier storage space. (Sproles and Kuehn, 2014) Daifuku is using the mini load AS/RS to manage the warehouse. The mini load AS/ RS maximize more vertical space as building than the shelves systems. The SKUs is placed vertically on shelves with high precision to utilize the storage density.

Many researchers found that design of AS/ RS with the vertical rack is consider have larger storage space to store the inventory or SKUs. Both AS/ RS offer high-density storage capacity with a wide space. (Chakole, 2013) Besides, it also suitable for storage of heavy item on shelves units especially the racking system in building AS/ RS.

This able to Daifuku to reduce cost and utilized the storage space. The effectiveness of picking order also can reduce lead time and labor costing in order to the efficiency of inventory storage. Furthermore, by using the AS/ RS to store the inventory with systematic, it is easier to know where the product placed and this will reduce the time to track the inventory. Daifuku will able to manage more inventory and maximize the use of warehouse space.

Daifuku's AS/RS required a high level of above keep with the high technician and mechanical.

3.0 Recommendation In order to run the RFID and AS/RS smoothly, Daifuku recommend to send their employee to training and have some course to understanding how the equipment run and operate. (Whittington et al., 2011) Once the employees know how to operate the AS/RS and RFID, it will help to reduce the human error that will cause to the running down of equipment or human error. Besides, Daifuku can hire some professional that know at the maintenance equipment in order to reduce the cost if some of the minor problems detect from the AS/RS or RFID. (Sproles and Kuehn, 2014) By hire a professional, Daifuku can save up some of the maintenance fees especially for the minor problem from getting outsourced to do the maintenance.

4.0 Evaluation The disadvantage of using the RFID and AS/RS technology is it need the high maintenance fees in order to keep the effectiveness of the machine. The main purpose to the maintenance is to ensure the equipment run and operating smooth and fully efficient all the time. (Ustundag, 2013) It need to have inspection on all those equipment in order to constantly having a well productivity. If the problems found, it need to make an adjustment and correct before the major problems detected. An equipment rundown true cost is difficult to estimate and of course it need a higher cost to do the maintenance compare to the labor and material if need to make repair. The next disadvantage that bring from RFID and AS/RS is professional needed in operate those technology. The AS/RS and RFID required skills, experience and knowledge to function it, In order to hire a professional to operate this,

Daifuku need to give some training or bring out the professional to operate this kind of equipment.

(Hu et al., 2016) (Gulcharan et al., 2013) This need some times and money to give some course to those selected to operate the equipment. Besides, especially the AS/RS has a lot of sub systems to memorize.

So, Daifuku have to do this expenses to send them to the course in order to make sure they know well of all this equipment. 5.0 Conclusion In the nutshell, Daifuku have a high quality in manage the warehouse by using the quick response technology where is RFID and AS/RS. By using the RFID technology, Daifuku will be able to fast order picking with those system.

The order picking activity has easier compare to the traditional order picking because it only need the operator to give command to the automated system to do the picking. Besides, the AS/RS also help Daifuku to manage the storage space in order to utilize the space as well due to those AS/RS such as the mini load AS/RS is a vertically building to store the inventory. It save a lot of space and easier to pick and put the inventory on the shelves by using the machine operate.

The disadvantages that bring out from RFID and AS/RS is high maintenance fees required and professional required in operate them. Daifuku recommend to train the employees to ensure they understanding the equipment well and reduce the maintenance fees by hiring the professional.