THE USE OF VOICE TECHNOLOGY TO ENHANCE THE PICKING ACTIVITY IN WAREHOUSE

Nur Khaerra Ummah Pratiwi[1*], Sella Monica[2], Rully Yandri[3], Doddy Himawan[4]
[1,2,3,4] Institut Transportasi dan Logisik Trisakti, Jakarta, Indonesia
Corresponding author: khaerranur25@gmail.com

Abstract. Order-picking spends a lot time among all warehouse activities. Technology can replace the previous system that consumes much time and efforts in order to operate the order picking . Voice technology can be solution in the industry, especially in retail segment. This research was conducted using qualitative approach, and it explained clearly in-depth about the activities that were carried out. It is assumed that voice technology can support order-picking activities.

Keywords: warehouse, order picking, voice technology

Introduction

Supply Chain Management (SCM) is an interconnected or integrated activity from the supply to the costumer (end-to-end system). To expedite these activities, a system that is interconnected among suppliers, manufacturing, warehousing, and distribution is required. One of them is warehousing section. In addition, warehousing is a set of management activities in logistics storage starting from the activities of receiving, recording, entering, storing, regulating, bookkeeping, maintaining, expending, and distributing to the activities of warehouse management accountability (making repots) to support the continuity of work units as well as the effectiveness and efficiency of the organization as a whole (Hadi et al., 2004)

Warehousing activities start from receiving, putting away, storing, order-picking, and shipping (John J BARTHOLDI, 2011). Order-picking activity spends a lot of time among all warehouse activities. In this activity, it needs more time traveling, such as picking goods in some areas, searching for certain goods, extracting, and followed by other activities. It consumes 50% of the warehouse activities (Frazelle et al., 2002). Order-picking is an activity to pick up the goods before they are distributed. Therefore, order-picking is an activity that consumes much time and requires more workers in warehousing because it ensures the match between the list of goods in the computer and physical goods,

In this recent era, technology has played a necessary role for all industrial sectors including warehouse section. It can ease the process or the activity, and it can also get everything done faster. What is more, technology can replace the previous system that consumes much time and efforts in order to operate the order picking. Also, technology is expected to be able to foster the activity in order to make it more effective and efficient (Miller, 2004). One of the technologies that is considered to support the order-picking activity is voice technology. The following figure 1 depicts the comparison of the previous system, called scanning, and voice technology (Richards, 2014).
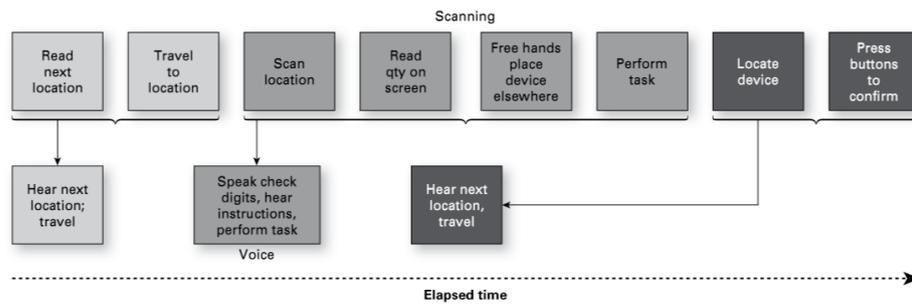
Figure 1: The comparison of scanning system and voice technology
Source : (Richards, 2014)

In scanning system, there are eight activities, namely reading next location, traveling to location, scanning location, reading quantity on screen, free hands placing devices elsewhere, performing task, locating devices and pressing buttons to confirm. On the other hand, in voice technology, there are only three activities. In addition, Travel is a simplified form of reading next location and traveling to location; voice is a simplified form of scanning location, reading quantity on screen, free hands placing device elsewhere, and performing task; and another travel is a shortened form of locating device and pressing buttons to confirm. Therefore, it can be stated that it is more effective and efficient. In the order-picking activity, the use of technology is the main thing although the usage of other activities also require it (Richards, 2014).

Voice technology is one of technologies used to optimize operators with a portable sound, and it is mounted in a headset belt. The sound terminal is communicated in real time via wireless with a host computer. What is more interesting is that the operator can do his or her job by listening to voice instruction with eyes and hands-free.

In the voice technology operation, the operator only needs to listen to the instruction, walk toward the location to pick up the item, and talk through the microphone to confirm that the operator takes the correct item. Moreover, the system will tell the details of the item. Besides, the advantages using voice technology are:

1. Accuracy which increases the reduction of errors in taking goods in order-picking activities,
2. Productivity which the pickers' hands and eyes are free, so the pickers can truly choose products and move easily from one location to another location,
3. Flexibility time which maximizes the pickers that work more efficiently with the time in taking goods.

Voice technology is one of the solutions to make warehouse order-picking more effective and efficient.
From the preceding background, the research problem are identified as follows:

1. Order-picking consumes 50% of the warehouse activity
2. Requiring more time for traveling, such as picking goods in some areas
3. Searching for certain goods
4. Extracting followed by other activities

Based on the research problems, this study focuses on order-picking activity to reduce time and make the time faster and more accurate in warehouse activity.

The objective of research is to investigate whether or not voice technology is effective and efficient for enhancing order-picking activity.

Method

This research used qualitative to depict voice technology in-depth which can be used as an alternative support in warehousing activities. Data collection was done through a structured interview, semi-structured and in-depth interview, and focused group discussion (Miles et al., 2014)

Data source in this paper were the subjects who had the capability and appropriate expertise of information in accordance with the needs of this study (purposive). The interview was conducted from July 6 to July 9, 2020 and was delivered to three respondents. The respondents were a warehouse junior manager, a national warehouse analyst, a warehouse operation supervisor, and they are from three different companies in Indonesia. There were five questions given to the respondents.

1. What problems occur in warehouse activity?
2. What is the way to solve them?
3. What do you think of the rule of voice technologies?
4. How does voice technology solve the problem?
5. What are the challenges of voice technology for the next year?

From the respondents' answers, they can be developed into a few questions.

Discussion and Result

According to the interview and the questions given, the result states that order-picking activity is the main key in improving warehouse. Regarding the productivity, accuracy, and time, it allows the companies in the retail segment to increase stock updates in real time. Voice technology can be the solution in the industry, especially in the retail segment since in the warehousing, it has a labor-intensive operation and high volume of Stock Keeping Unit (SKU) with a wide scope, so it takes time and requires a lot of workers. The respondents mentioned the advantages of using a voice technology system, such as reducing errors in taking goods, minimizing visual fatigue due to seeing the massages on the screen or data list, eliminating the need for papers, printing inventory costs in the distribution and list of manual entries, and maximizing the pickers that work more efficiently with time in taking goods. The respondents stated that the predictions for the use of voice technology in the future are emphasized on the cost and the human resources. The companies need high cost to use voice technology in their order-picking activity since it is not common in Indonesia. Thus, they also need to prepare the availability and capability of the human resources (pickers) to operate voice technology. If they want to use voice technology and have more capable pickers to use it, they have to spend high cost or budget. With the increase in warehousing activities that focus on order-picking, the voice technology system will provide solutions to enhance productivity, accuracy and flexibility of time in warehousing. The questions are extended and still focus on the primary ones.

Conclusion

In warehouse activities, the order-picking process is a part of warehousing activities. Therefore, the picking process is the main key in improving warehousing. One of the alternative supports in improving the picking process is voice technology. The advantage of voice technology is that it sets both the pickers' hands and eyes free, so that the pickers can truly choose products and move easily from one location to another location. Voice technology can also be a solution in industry, especially in the retail segment, because it has a labor-intensive operation, high volume of high Stock Keeping Unit (SKU) with a wide scope, so it is time-consuming and requires a lot of workers. Voice technology is recommended for any retail companies which

have good financial support, for it demands high cost. If the companies are able to fulfill the demands, voice technology will be effective and efficient with capable human resources.

References

Frazelle, E., York, N., San, C., Lisbon, F., Madrid, L., City, M., New, M., San, D., Singapore, J. S., & Toronto, S. (2002). SUPPLY CHAIN STRATEGY The Logistics of Supply Chain Management McGraw-Hill. In *SUPPLY CHAIN STRATEGY The Logistics of Supply Chain Management McGraw-Hill*. https://s3.amazonaws.com/academia.edu.documents/32893345/book_-_Supply_Chain_Strategy_-_The_Logistics_of_Supply_Chain_Management.pdf?AWSAccessKeyId=AKIAIWOWYY GZ2Y53UL3A&Expires=1512498029&Signature=WWC%2Bkieq8sVqPydmESnKSmZW Uj8%3D&response-content-disposi

Hadi, Dwiantara, L., & Rumsari. (2004). Manajemen logistik Terintegrasi. *Pos*.

John J BARTHOLDI, I. I. I. and S. T. H. (2011). *WAREHOUSE & DISTRIBUTION SCIENCE Release 0.94*. *January*, 1–321. papers3://publication/uuid/7F731EF1-7AB3-46A4-BC4A-514E4B78D73B

Miles, M. B., Huberman, A. M., & Saldana, J. (2014). Qualitative Data Anlaysis. In *SAGE Publication, Inc.* https://doi.org/10.1192/bjp.112.483.211-a

Miller, A. (2004). Order Picking for the 21st Century. *White Paper Tompkins Associates*, 1–8. http://www.baxtek.com/products/vocollect/Voice_v_Scan_White_Paper.pdf

Richards, G. (2014). Warehouse Management: A Complete Guide to Improving Efficiency and Minimizing Costs in the Modern Warehouse. In *Journal of Chemical Information and Modeling*. https://doi.org/10.1017/CBO9781107415324.004