

AWARENESS OF USAGE PEST DETECTION USING INTERNET-OF-THINGS APPLICATION IN PALM PLANTATION

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Abstract: The agricultural sector is an important sector for developing countries such as Malaysia, it is focuses on world trade as it is a leading supplier of food and raw material to the people of the world. The palm oil industry is one of the most important agriculture in Malaysia and several other countries in the world. Palm has become a commercial agriculture in the production of palm oil. However, the industry is also facing some issues such as pest attacks. This problem has affected the quality of palm trees. To address this problem, researchers have introduced pest detection using Internet-of-Things (IoT) applications to detect pests in oil palm farms. The objectives of this study were to identify knowledge of IoT among farmers, to investigate acceptance of farmers on the use of IoT in prevention of pest, and to recommend use of IoT (pest detection) to solve pest problem among farmers. This study used qualitative methods to obtain farmers' level of awareness in usage pest detection using IoT application. The findings of this study can inform farmers on the benefits of using IoT applications.

Keywords: Palm plantation, pest detection, Internet-of-Things

1. INTRODUCTION

The use of Internet-of-Things (IoT) applications in the palm oil industry helps farmers solve pest problems. This study was conducted on oil palm farmers in Rantau Panjang, Kelantan. The owner of the palm plantation was chosen as a respondent to interview. The objectives of this study were to identify knowledge of IoT among farmers, to investigate acceptance of farmers on the use of Internet-of-Things in prevention of pest, and to recommend use of Internet-of-Things application (pest detection) to solve pest problem among farmers. The main problem is to solve pest problem in the palm plantation. Based on literature review, pest attacks can reduce productivity. This problem can be monitored by IoT and can revolutionize the way farmers work. This study used qualitative methods to obtain farmers' level of awareness in usage pest detection using IoT application. The findings of this study can inform farmers on the benefits of using IoT applications and farmers can accept this application for use on their farm.

2. METHODOLOGY

This study used qualitative methods that aims to understand the phenomenon of what is experienced by the subject of research. Qualitative method is a primarily exploratory research. The purpose is to gain an understanding of underlying reasons and opinions. Truly, the qualitative method provides insights into the problem. Indeed, the primary data (interview and direct analysis) and secondary data (journal, articles, internet, newspaper, book published and reports) also used in the qualitative method.

Therefore, the qualitative method required to make an interview for getting the more detail information. Thus, all of the interviews must be recorded to obtain as evidence and writing the report after analysis the data. In addition, this study involves in searching some information

from the secondary data that are related from journal, articles, internet, newspaper, book published and reports.

3. RESULT AND DISCUSSION

From the analysis, farmers in palm plantations in Rantau Panjang Kelantan were informed that they do not know about IoT applications because they are not exposed to the latest technology. However, farmers are willing to accept IoT applications in managing pest problems in their fields. They believe that IoT application can solve pest problem in palm plantation. At the same time, they need the support and assistance of responsible agencies to enable the use of this tool in oil palm farms.

This result can be supported by the statement of Shi, Wang, Wang & Zhang (2015), who have presented IoT application to monitoring plant diseases and insect pests. IoT technology to percept the information, and the role of the IoT technology in agricultural disease and insect pest control, which includes agricultural disease and insect pest monitoring system, collecting disease and insect pest information using sensor nodes, data processing and mining. This author believes that the systems created can help solve all this problems in agriculture.

4. CONCLUSION

The problem of this study is farmer not exposed to the latest technology to be a barrier in making this research. Most farmers are found in the rural areas and are mostly unskilled and uninformed in terms of IoT. Second, insufficient facilities. IoT requires a great deal of equipment, software and hardware for the system to function properly. Without power supply, continuous use of IoT will be affected. Third, insufficient start-up capital. The early costs of developing an IoT system in an oil palm plantation could be a hindrance to farmers. The cost of some IoT sensors is still high. This is also one limitation in this research.

Implication of this study is this study not only provide a lot information to the farmer in palm plantation, but also all the citizen about the positive impact in using IoT application. Second, this study is using the qualitative methods that provide most accurate data because directly interviewed from the farmer in palm plantation. Third, this study can improve the knowledge of farmer in IoT application. Lastly, this study can raise the awareness of farmer in using pest detection for reducing the use of chemical pesticide and traditional method.

Recommendation of this study is the research on the level of exposure of IoT technology to oil palm farmers. Second, the research on advanced technologies used in the oil palm industry. Third, the research method in awareness of usage pest detection using IoT application can be more focus on using quantitative method. Lastly, this future research can get the result more widely, not only in the oil industry but also in other industries.

5. REFERENCE

Shi Y., Wang Z., Wang X. & Zhang S. (2015). Internet of Things Application to Monitoring Plant Diseases and Insect Pests. *International Conference on Applied Science and Engineering Innovation (ASEI)*, 31-32.