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Paper Title : E-FARMING: A Guide for Sustainable Organic Rice Cultivation Mobile Application

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Critique

Overview of the Paper

The use of technology has increased. People make use of it on a daily basis. It makes their job easier and faster. One of the technologies that people use in their daily lives is the mobile phone. It is an electronic device used for long-distance wireless communication. It operates on a cellular network, which transmits radio signals through a network of towers or base stations. Modern smartphones include a variety of features such as high-resolution cameras, GPS navigation, and app access. They have evolved into an essential part of modern life. By this, the authors of this paper utilize mobile devices to develop a mobile application that benefits farmers. A mobile application, also known as an app, is a type of software created specifically to run on mobile devices like smartphones and tablets. The majority of mobile applications are made to offer users particular features or services, like games, social media, online shopping, news, or productivity tools. They call this mobile application, 'E-FARMING'. It is "A Guide for Sustainable Organic Rice Cultivation Mobile Application" that helps farmers in cultivating their crops, giving them articles about agriculture, and some techniques in farming. Authors use Rapid Application Development in creating the mobile application because of the short time scale in implementing the application. Since the researchers live in the Municipality of Dumingag, this is what gave them motivation to create this app to assist their local farmers. Researchers asked their users what potential features the developers might need to create.

Statement of the Problem

The research project's authors did not define the issues for which they are looking for a solution. They concentrated on outlining the goals of the E-FARMING mobile application. However, these objectives can assist in identifying the potential issue that they seek to resolve. First is the lack of guides for farmers in cultivating their rice fields. There are several articles and videos that may help farmers in cultivating the rice field but it takes some time searching for it. Second is the deficiency of information about sustainable organic agriculture. Not all farmers have similar techniques and style of farming. So having the information about other farmers in their farming style may help the farmers in the Municipality of Dumingag. And lastly, the shortage of pest control tips, organic fertilizer, and techniques. Farmers need a better and faster way of farming. So having a reliable app, it may guide them about the techniques for better farming, controlling pests for a good harvest, and organic fertilizer for a faster growth of goods.

Purpose or Significance of the Paper

The research's authors specify the study's goals. Their first goal is to develop a module that will help farmers cultivate rice fields. This module might help the local farmers in Dumingag in cultivating their rice fields using good procedures and methods. The second goal is to develop a module that offers farming-related articles. Local farmers benefit from these modules because they will now be familiar with the practices of other farmers across the country. The third goal is to develop a module that provides information on pest control strategies, organic fertilizer, and techniques. This is extremely beneficial to their local farmers because it can help them produce a good harvest. This paper will be useful to other researchers who study ICT solutions in agriculture. This paper might give them some insight and serve as a useful reference tool. They might also enhance the app's features and expand its range, and it could establish connections with all farmers in the nation.

Methodology

Authors of the paper utilize Rapid Application Development in implementing the project. Rapid Application Development (RAD) is a software development methodology that emphasizes quick feedback loops and rapid prototyping in order to produce software applications more quickly and effectively. In order to create high-quality software applications that satisfy user needs, the RAD approach places a strong emphasis on the use of rapid prototyping and iterative development, as well as close collaboration between developers and stakeholders. The RAD approach can assist organizations in producing software applications more quickly, cost-effectively, and with fewer errors. However, it might not be appropriate for complicated or extensive software projects because it necessitates a high level of collaboration and communication between developers, stakeholders, and users.

Researchers identify the primary functionalities and features of the mobile application during the first phase, requirement and planning. In the second phase, called User Design, researchers agree with their possible users (LGU Dumingag) about the functionality, features, and workflows of the mobile application. Researchers illustrate potential functionality and processes using Use Case Diagrams, Activity Diagrams, and Class Diagrams. The third phase is Development, where researchers create a prototype with its user interface and test it on their

users. They will gather feedback from their users for a possible enhancement of their prototype. Cutover is the last phase, where researchers conduct a final test about the prototype and they use System Usability Scale (SUS). The purpose of the SUS is to provide a standardized and reliable method for evaluating the usability of software systems and digital products. It can be used to compare the usability of various systems or iterations of the same system as well as to pinpoint specific areas where the system can be improved.

Summary of Findings

The researchers were able to determine the system's functionality after speaking with the Dumingag Municipality's Local Government Unit in a number of interviews. The LGU manages the features "Manage Related Articles," "Manage Pest," "Manage Organic Fertilizer," and "Manage Rice Field Preparation," while farmers can use the features "View Related Articles" and "View Organic Guide." After developing and deploying the Mobile Application, the researchers gather comments and suggestions from the users for further enhancements of the application. The application is implemented to android mobile phones.

Over 30 stakeholders who evaluated the system gave the testing results an average score of 88. It was a sign that the system's usability was better than average given that the SUS average score is 65.

Points of Agreement

- ***The app's feature that offers related articles on sustainable organic agriculture is a good method for encouraging farmers to adapt new farming practices and learn more about farming.***

The authors of this study specify in their goals that they'll develop a function for the E-FARMING app that will allow users to view related articles about farming. Given that not all farmers are knowledgeable in all aspects of farming, this feature is extremely important to the farmers. They will pick up some farming methods from other farmers across the country and abroad. Additionally, since some online articles are difficult to access, it is a useful feature that enables farmers to view articles more quickly. They can get ideas from other farmers, it's like sharing ideas through the internet. They can also identify which farming techniques are more effective.

The article of Blohm, N. (2023) discusses how reading about other farmers can give readers new perspectives on methods, tools, and approaches that can help farmers enhance their own businesses. Additionally, it can assist farmers in keeping up with industry trends and gaining knowledge from the achievements and mistakes of others in the industry. In the article of Xiao S., et. al., (2020) shows the importance of sharing information about farming methods and techniques. This article examines the value of smallholder farmers sharing their knowledge so it can result in better farming methods, higher productivity, and improved food security.

There are some farming applications that allow users to view online articles and information as well. Examples include McNaughton S.'s "Farm Progress." (2023). This app

offers daily news updates, forecasts for the weather, and details on crops, livestock, and equipment. "AgriApp" by Manimala M. J. et. al., (2020), this app provides a variety of agricultural services and information, such as weather updates, crop information, market prices, and agricultural news.

Points of Disagreement

- ***Demographic factors may affect the farmers' adoption to the Mobile Application E-FARMING.***

Technology development has changed many different industries, including farming. Farming-related mobile applications have been created to assist farmers in a variety of ways, from tracking crop growth to monitoring weather patterns. However, due to various demographic factors that affect farmers, the adoption of mobile applications for farming may not be as quick as anticipated.

Age is one of the main demographic factors that may make it difficult for farmers to use mobile applications. Many farmers are older people, who might be less good with technology and may find it difficult to use mobile applications. The older generation might be less willing to change because they are more accustomed to conventional farming practices.

The level of education of farmers may also have an impact on whether they use mobile applications. Farmers with less education might struggle to use and comprehend technology and might not be able to fully benefit from mobile applications. Higher educated farmers, on the other hand, might be more prone to use and comprehend technology, and they might be better suited to incorporate mobile applications into their farming practices.

Language barriers may also be a significant factor hindering farmers' adoption of mobile applications for farming. Farmers may find it difficult to use mobile applications effectively in some rural areas because they might not be native speakers of the language. Additionally, some farmers might not have access to smartphones or the internet, which prevents them from using mobile applications.

Diaz A., et. al.,(2021) journal talks how demographic factors, such as age, education level, and farm size affect the farmers in adopting technology for farming. Assunção, J., et. al.,(2019) journal talks about the lack of access to the internet and other digital resources is one of the biggest obstacles for farmers to overcome when implementing mobile applications. This problem is especially prevalent in rural areas, where digital infrastructure and internet access are scarce. Farmers in these regions frequently need to travel great distances or make costly satellite internet connections in order to access internet services. It may also be difficult to use mobile applications for farming in these areas due to the unreliability of mobile networks.

In conclusion, despite the potential for mobile applications to enhance farming practices, farmers might be unable or only slowly able to adapt because of demographic factors. Farmers may find it difficult to use mobile applications for farming effectively due to their age, education level, and language barriers. When creating mobile applications for farming, it's crucial to take into account these elements and look for ways to make these applications more accessible to all farmers, regardless of their demographic backgrounds.

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