Applying Design Science Research Methodology for Development of a Mobile-Based Digital Quail Farming Guide

Publisher: IEEE Cite This PDF

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Abstract:
This study aimed to design and develop a mobile-based digital quail farming guide for the B40 elderly group. This mobile application, known as Quaillogy, provides learning materials for basic quail farming and different topics in entrepreneurship and marketing. The underlying motivator is to provide a tool for the B40 household income elderly to learn independently at their own pace about quail farming through mobile devices. The recently increased request for quail production will benefit the target users in becoming beginner breeders and entrepreneurs. Design Science Research Methodology (DSRM) was selected as the methodology that fit the requirement of developing the mobile application. It consisted of six stages: problem identification, definition objective, design and development, demonstration, evaluation, and communication. The evaluations from experts and users' views were conducted to examine the content and user interface design. In sum, this research achieved the objectives as the evaluations showed positive feedback. Quaillogy does contribute to the elderly by offering knowledge about basic quail farming and exposing them to basic digital marketing strategy knowledge. It indirectly benefits the elderly to initiate quail farming and eventually generate side income to support the upsurge in living expenses. The findings were aligned with several Sustainable Development Goals (SDGs) of "Quality Education", "No Poverty", and "Decent Work and Economic Growth". Knowledge transmission using mobile technology can provide an inclusive and equitable quality of education. At the same time, reducing income inequality and enriching economic growth can eradicate poverty. Future research may also be able to take more advantage of Quaillogy.

Published in: 2022 Mohammad Ali Jinnah University International Conference on Computing (MAJICC)

Date of Conference: 27-28 October 2022

Date Added to IEEE *Xplore*: 30 December 2022

▸ **ISBN Information:**

INSPEC Accession Number: 22475670

DOI: 10.1109/MAJICC56935.2022.9994157

Publisher: IEEE

Conference Location: Karachi, Pakistan

2022 Mohammad Ali Jinnah University International Conference on Computing (MAJICC)

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Keywords—quail, mobile based learning, elderly community.

I. INTRODUCTION

According to the World Health Organization [1], the rate of population ageing is much faster than before and has become a global trend. The number of older people is likely to double between 2015 and 2050. Poverty is one of the main challenges in the ageing megatrend, which significantly bears the global picture. *Poverty* is defined as living in deprivation, including limited access to health facilities and education and poor conditions of living standards [2]. Concerns occur distinctly among the elderly as to whether they can survive in life since most of them are retired and have started living on their own. Based on The United Nations Development Programme reports in 2020 [3], about 1.3 billion individuals live poorly worldwide. According to the world data lab, in 2019, an estimated 69 million older people across the globe lived in poverty. It rose sharply to 81.3 million by 2020, likely due to the Covid-19 pandemic that hit worldwide. In 2021, the figure decreased to 76.9 million; by the second half of 2022, the figure showed a reduction to 73.3 million. Although the internationally unharmonized databases hinder the precise data on elderly poverty, the available data are already worrying. Despite the declining number, preparation is required due to the inconsistency of the country's economy.

During the 11th Malaysia Plan, the government introduced guidelines to measure poverty based on the Multidimensional Poverty Index (MPI) [4]. The global MPI comprises three dimensions of poverty: health, education, and living standards. Meanwhile, in the Malaysian MPI, another additional dimension is added, namely household income. The household income class in the country is divided into three groups based on the percentage of the total Malaysians' income, namely the lowest 40% (B40), the middle 41% to 80% (M40), and the highest 20% (T20). The classification of these classes is based on the income line in the country. The B40 group refers to households with an income of RM4,360 and below, M40 includes households of RM4,361–RM9,619, and T20 for households with an income of RM9,620 and above [5].

One factor contributing to rising poverty among retired elderly is improper retirement planning. Due to the increasing life expectancy among the elderly, retirement planning is crucial to support their living expenses after retirement [6]. Indeed, their source of income after retirement will only depend on the money, they earn from the past few years of working and the monthly allowance from their family members who are still working. Therefore, to overcome the issues and help the elderly to reduce their financial burden, a mobile-based learning platform called 'Quaillogy' is proposed. Setting up a small business is an excellent idea to earn income at a late age. How people live and work has changed significantly with digital technology; the electronic business has replaced traditional offline channels. With the knowledge and guidance on the integration on knowledge of quail farming and digital marketing provided, the elderly could promote their businesses on various online platforms. Digital marketing allows potential customers to learn about the products or services offered. To fulfil the fourth

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