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IT Solution for Outdoor Spaces and Buildings Issue for Urban Ageing Elderly Community

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Abstract

In recent years, populations worldwide, including Malaysia, have experienced aging due to improved nutrition and healthier lifestyle choices. These factors contribute to longer life expectancies and a growing senior population, raising concerns about living arrangements and healthcare facilities for the elderly. The Klang Valley, a region in Malaysia centered on Kuala Lumpur and encompassing nearby towns and villages in Selangor province, has witnessed rapid urban migration in recent decades. Urban living presents numerous challenges that can negatively impact the mental health of the elderly. This study aims to explore the issues faced by the urban-aged population in the Klang Valley. Employing and adapting the Soft System Methodology to fit with the requirements of the research, interviews were conducted to gather crucial data on outdoor spaces and building-related challenges, focusing on urban seniors at one of the Elderly Care Centers in Ampang, Selangor, Malaysia. The research identified the primary concerns of the urban-aged community in the Klang Valley and proposed IT solutions to address them. The problem situation is expressed through the Soft System Methodology, leading to the proposal of a mobile application designed to alleviate these issues.

Keywords: Urban Aging Elderly, Klang Valley, Outdoor Spaces, Building Challenges, IT Solutions

Introduction

The needs of elderly individuals have not always been at the forefront of international development strategies. However, as demographic trends shift in many countries, older people are increasingly becoming significant targets in development plans (Bani et al., 2018). This shift has changed the way issues related to the elderly population are approached.

Populations around the world, including Malaysia, are aging due to improved nutrition and healthier lifestyle choices, resulting in increased life expectancies and a growing number of

older adults (Faudzi et al., 2022). The most urgent concern centers on living arrangements and healthcare facilities for this demographic.

Aging is a natural process, and learning to adapt to new circumstances is crucial for the well-being of our elderly loved ones. Common health issues affecting older individuals include memory loss, dementia, and Alzheimer's disease (Bani et al., 2018). Many people struggle to recognize the importance of the elderly within society (Faudzi et al., 2022).

Objectives

- To examine the existing challenges encountered at one of the Elderly Care Centers in Ampang, Selangor, Malaysia
- To conceptualize a system or technology suitable for use at one of the Elderly Care Centers in Ampang, Selangor, Malaysia
- To propose a system or technology tailored at one of the Elderly Care Centers in Ampang, Selangor, Malaysia

Aim

- To recommend an IT solution addressing outdoor spaces and building-related issues for the urban aging elderly community in Klang Valley.

Problem Statement

- Challenges in Outdoor Spaces and Buildings for the Urban Aging Elderly Community in Klang Valley.

Klang Valley, an area in Malaysia centered in Kuala Lumpur and encompassing the neighboring towns and villages in Selangor province, has experienced rapid urban migration in recent years (Ain & How, 2016). Urban living presents various challenges (Noor, 2019), especially for the growing elderly population in Malaysia, a developing country (Appleton et al., 2002). The majority of Malaysia's senior population is aged 60 and above, and as the total population increases, this demographic is projected to rise significantly (Department of Statistic, 2018).

By 2030, it is estimated that 15% of Malaysia's population will be over 60 years old (Department of Statistic, 2018), resulting in an aging population. This trend will likely exacerbate healthcare challenges, particularly for age-related conditions such as dementia, hypertension, Alzheimer's, Parkinson's, respiratory diseases, arthritis, and various neurological and behavioral disorders (Noor, 2019). To better understand the challenges in outdoor spaces and buildings for the urban aging elderly community in Klang Valley, interviews were conducted at one of the Elderly Care Centers in Ampang, Selangor, Malaysia.

The concept of elderly-friendly neighborhoods aims to provide easily accessible support and services for the aging population, addressing their physical and mental health, mobility limitations, and safety concerns (Elsawahli, 2013). These neighborhoods should feature qualities that make them more physically and socially accommodating to elderly residents (Elsawahli, 2013). However, there is currently a lack of communities that allow seniors to coexist with younger people and provide elderly-friendly amenities and designs (Khalid et al., 2020).

The Human Rights Commission of Malaysia (SUHAKAM, 2013) has emphasized the need for medical care, care facilities, and nursing homes to protect and promote the rights of older individuals. According to SUHAKAM, the elderly is considered "persons with disabilities" and thus belong to a more vulnerable segment of society that requires additional support (SUHAKAM, 2013).

Methodology

This project adapts Soft Systems Methodology (SSM) to explore outdoor spaces and building issues among urban-aged people, focusing on the Klang Valley in Malaysia. The methodology has been modified to suit the requirements of the study. The revised steps are as follows:

Step 1) Enter the Situation Considered Problematic:

Using the interview method during the Soft System Methodology stages, we collected essential data regarding outdoor spaces and building issues in the Klang Valley, focusing on urban aging seniors. We developed a set of questions and interviewed a representative from one of the Elderly Care Centers in Ampang, Selangor, Malaysia. The data collected informed our discussions and decisions for the project. The interview session revealed challenges with outdoor spaces and buildings for urban older adults at one of the Elderly Care Centers in Ampang, Selangor, Malaysia.

Step 2) Express the Problem Situation:

Based on the information collected through the interview method, we identified the need for an IT solution to address outdoor spaces and building issues for urban aging seniors as shown in Fig. 1 below.

Fig. 1. IT solution for Outdoor Spaces and Building Issues for Urban Ageing

Step 3) Formulate the Proposed Solution of Purposeful Behaviour
In this adapted step, we define the proposed solution that can help alleviate the identified problem.

We propose a mobile application prototype be developed in collaboration with doctors, computer specialists, and software engineers. This application aims to assist urban aging elderly individuals in the Klang Valley, particularly those at one of the Elderly Care Centers in Ampang, Selangor, Malaysia. By providing an easy-to-use platform for locating nearby public facilities, the application helps minimize outdoor spaces and building issues.

The mobile application serves as a digital platform that increases accessibility and convenience for urban aging individuals to stay informed and locate nearby public facilities. Key features include memory aids such as appointment reminders, address books with photos, personal information, standardized menus, personalized menus, and safety features like panic buttons and speed dial.

- Customer
  Urban aging elderly at one of the Elderly Care Centers in Ampang, Selangor, Malaysia

- Actor
  Doctors, computer specialists, and software engineers

- Transformation
  Digitalization of outdoor spaces and building issue resolutions

- Worldview
  Enhance accessibility and convenience for urban aging elderly to stay updated on the latest information and find nearby public facilities.

- Owner
  Official parties responsible for elderly care

- Environmental Constraint
  Cost of development and potential barriers to technology adoption

Step 4) Build a Conceptual Model of The Proposed Solution
In this step, the representation of the proposed solution is illustrated. Fig. 2 below shows the proposed Conceptual Model for Mobile applications for Urban Ageing Elderly.

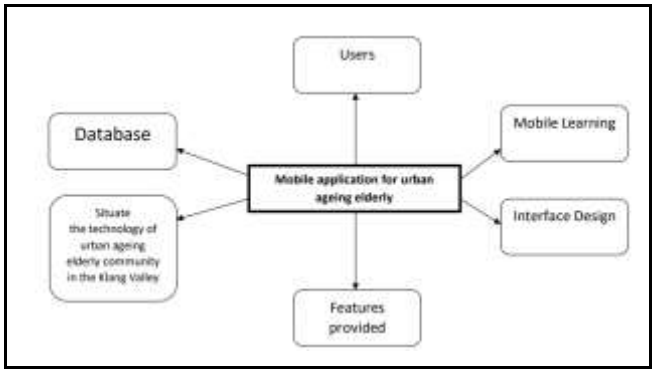

Fig. 2. The Conceptual Model for Mobile application for Urban Ageing Elderly

Step 5) Compare Models with the Real World

The conceptual model is compared to the real-world situation to initiate a discussion on possible improvements. Table 1 below shows the Comparison of the Conceptual Model of the Proposed IT Solution with the Real-World Situation.

Table 1
Comparison of the Conceptual Model of the Proposed IT Solution with the Real-World Situation

Elements in the Conceptual Model	**Real World**	**What could we do?**
Situate the technology of the urban aging elderly community in the Klang Valley	The elderly community in Klang Valley can use our IT solution, which is mobile apps that can help old people find their public facilities nearby, which can help in minimizing outdoor spaces and building issues faced at one of the Elderly care centers located in Ampang, Selangor, Malaysia	Develop mobile apps that can help old people find their public facilities nearby using Android Studio.
Users	The elderly always finds it hard to find a facility nearby and the caretaker is worried about their whereabouts.	Propose the need for a mobile application that helps with informative and GPS installation.
Features provided	Features include in mobile apps (Such as: GPS, Geofencing, Listing)	Develop features to make the mobile apps more functional.
Interface Design	Mobile applications are sometimes not suitable for the elderly to use.	Documented the requirements of the design that would be friendly for the use of the elderly.

Mobile Learning	Elderly people find it hard to understand mobile application systems. It's sometimes too advanced.	Prepared a video on how to use mobile applications for elderly people and caretakers can help to teach their elderly.
Database	Keep all user data in a Database.	Set up and use Google Firebase, which is a real-time database to keep all the users' data.

Step 6) Define Changes that are both Desirable and Feasible
This stage consolidates the analysis and considers feasible and desirable changes. The potential changes are listed in the last column of Table 1, and the final decisions are transferred to the implementation stage.

Step 7) Take action to Improve the Problem Situation
The identified feasible and desirable changes are implemented, and the final form of the proposed prototype of the IT solution is further described.

The proposed solution is a mobile-based application called "Senior Care" that helps urban-aged individuals in the Klang Valley find nearby public facilities. The app uses geofencing technology to detect nearby facilities and provides GPS tracking for safety purposes. The application is designed to be user-friendly for the elderly and their caretakers.

A) Recommended Solution
The "Senior Care" mobile application addresses outdoor spaces and building issues for urban-aged individuals in the Klang Valley. It uses geofencing and GPS tracking to provide safety features and help users find nearby public facilities.

B) Existing Solutions
Existing solutions, such as medical smartwatches, VitalTech, and ToiLabs, aim to assist the elderly in various aspects of their lives. However, these solutions may or may not be tailored to the specific needs of the urban-aged population in the Klang Valley. Further studies need to be conducted.

C) Potential Scope
A comprehensive mobile application that addresses the specific needs of the elderly, such as medication reminders and drug interaction alerts, could significantly benefit this population.

D) Future Improvement
Proposed improvements for the Senior Care mobile application include support for multiple languages, expanding coverage to all areas in Malaysia, and compatibility with other mobile platforms such as iOS.

Conclusion

The Klang Valley region in Malaysia, centered around Kuala Lumpur, encompasses nearby towns and villages within the Selangor province. Urban migration in the Klang Valley has risen sharply in recent years, presenting numerous challenges for residents, particularly the urban-aged elderly, and impacting their mental health. This study aimed to explore the difficulties faced by the urban-aged elderly in the Klang Valley. Soft Systems Methodology (SSM) was employed to gather crucial data on outdoor spaces and building issues in the Klang Valley, with a particular focus on urban aging seniors. A series of questions were developed, and an interview was conducted with a representative from one of the Elderly care centers in Ampang, Selangor, Malaysia. The collected data served as the basis for discussions and decision-making for the project. According to the interview results, urban older adults in one of the Elderly care centers in Ampang, Selangor, Malaysia face problems related to outdoor areas and buildings.

To address these challenges, a mobile application tailored for older adults is proposed. The design of the mobile application should be user-friendly and cater to the specific needs of the elderly. IT professionals can play a key role in developing the application to help mitigate outdoor space and building concerns at one of the Elderly care centers located in Ampang, Selangor, Malaysia. The mobile application aims to provide the urban-aged elderly with a convenient tool to find nearby public facilities and navigate the challenges of outdoor spaces and building issues in the Klang Valley. By involving IT professionals in the development process, the application will be better suited to address the unique needs and preferences of older adults in the region. The outcome is expected to enhance the quality of life for the urban-aged elderly and provide them with a more accessible and supportive environment in the Klang Valley.

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