

Realizing the Well-Being of Senior Citizen by Developing Smart Application: A Conceptual Model

Ammar Ihsan Nasution*¹, Jamaludin Ibrahim²

^{1,2}Department of Information System, International Islamic University Malaysia (IIUM)
ammarihsan04@gmail.com¹, jamaludinibrahim@gmail.com²
*Corresponding Author

Received 06 December 2020; accepted 30 April 2021

Abstract. Years after years, there is an increased number of senior citizens in Malaysia. As the result, senior citizens become one of the society segments that given a priority focus by the government. Many programmes are planned by the government to help the senior citizen. But, issues on senior citizen still occurred, such as financial/economy, social, emotion/psychology, religious spiritual, education/knowledge, health, environment, family, and others. Today, technology grows rapidly and used in many sectors, including education, health, security, and in daily activities. Harnessing technology makes life easier and productive. Mobile application can be found easily and utilized by everyone. The researcher believes that this technology/smart application can help the senior citizen to be productive and have a good life. The researcher uses different method of research to process and discuss the proposed solution including Literature Review (LR), Business Model Environment Map (EM), Business Model Canvas (BMC), and Value Proposition Canvas (VPC) used as the method of this paper. The result of this paper produced conceptual smart application system that can be useful for the senior citizen. Therefore, the researcher proposed the smart application system as the way to realize the well-being of Senior citizen.

Keywords: Senior Citizen, Smart Application, Industry Revolution, Digital Application, Business Model Canvas

1 Introduction

Senior Citizen or Elderly refers to people aged 60 years and above as defined by World Assembly on Aging, & Vienna International Plan of Action on Aging [1]. Now, senior citizen become one of the segments that prioritized by the government. It shows that current government take this issue seriously. This can be seen from the government's plan to ensure the rights of senior citizens must be fully realized. Moreover, Malaysian government also provide special budget 2019 for senior citizen including:

- Giving a one-off RM500 payment to eligible pensioners,
- Proposes the mandatory EPF contributions of senior citizen to be reduced from 6% to 4% to encourage the hiring of those above the age of 60 who want to work.
- Tax incentives for companies that hire senior citizens, with a salary limit of RM4,000 a month.
- Allocated RM10 million annually to extend medical benefits to parents of contractual civil servants [2].

This shows how the Senior Citizen is given a big help by the society. Many plans

and programs have been executed by the government and NGO to ensure the prosperity of the senior citizen [3]. As we live in the sophisticated era, internet-based application should be developed to help the senior citizen. There must be a smart application that is designed specially to help senior citizen in their daily activity so that they can be productive, active, and can contribute to the society. Through this paper, the researcher proposes a conceptual solution for realizing the well-being of senior citizen through smart application.

As we live in Industry Revolution (IR) 4.0, the number of smartphone and internet users rise significantly [4]. It brings the new way of communication activity to cloud-based technology such as email, social media, instant messaging, and application. This help a citizen and country to be more productive by utilizing technology [5]. Unfortunately, these new technologies often not recognized by the senior citizen that create a gap between the youth and the elderly, between the senior citizens and their family [6]. In fact, disruptive technology brings a positive effect as it makes the communication and daily activities become easier, faster, and efficiency [7].

Nowadays, senior citizens in Malaysia are covered with negative news in the newspaper and online new portal. Recently, many negative news about senior citizens such as senior citizen being a victim of snatch theft [8], being a victim of scam [9], insulting Islam and being assaulted [10], committing suicide, depression, and others [11]. Moreover, Criminal Investigation Department of Selangor Police Contingent Headquarters reported that there were 122 suicide cases occurred between December and January 2019, and majority of them involving senior citizen [12]. This shows senior citizens currently struggle with their life.

In addition, National Policy for Older Persons and Plan of Action for Older Persons found that 1 out of 4 senior citizens have empty nest syndrome [13]. Empty nest syndrome is a feeling of grief and loneliness parents may feel when their children leave home for the first time, such as to live on their own or to attend a college or university, and it seldom experienced by senior citizen [14]. Senior citizen with this syndrome would easily feel depressed, a sense of loss of purpose, a worry, and stress [15]. Thus, there is a need for other hobby or activity to make their life busy and full of happiness and positive things.

On the other hand, to solve these issues, the government comes with many programs to realize the prosperity of senior citizen. Financial minister also provides Higher welfare aid for people with disabilities, senior citizens, and poor children with the higher budget in 2021 [16]. The government also will increase funding for Citizen Activity Centers (PAWE) from RM33,000 a year to RM50,000 [17]. This shows that the government took serious consideration towards senior citizen in the future.

As we life on the sophisticated era, the researchers believe that the technology should be used to support the government to help the senior citizen. In this paper, the researcher suggested the development of smart application for senior citizen that will make their life easier and happier and solve the issue of safety, healthy, and comfortability in elderly.

2 Methodology

To solve the problem of senior citizen, the researcher adapts the design thinking method that included Literature Review, Business Model Environment Map (EM), Business Model Canvas (BMC), and Value Preposition Canvas (VPC). Literature review used by the researcher to learn and understand the current situation of the senior citizen. Researcher also use literature review to seek for problems and opportunities that found by previous researchers.

In addition, the researcher uses BMC (Business Model Canvas) as the new Business Model that can be used understand the dental problem and solution that should be made available to the senior citizen. Value Preposition Canvas also used to gather the requirement and understand the problem and that solution that needed by the users. Then, Business Model Environmental Map also included to have better understanding of the suggested conceptual solution [18].

3 Literature Review

According to Department of Statistic Malaysia, the proportion of Malaysia population age 60 and older have increased from 5.2 per cent in 1970 to 6.3 per cent in 2000 and has been projected to 9.9 per cent in 2020. And in 2030, it projected to 15% [19]. This is showing how the elderly will become an important age segment that need to be prioritized by the government [20].

In 2011, Malaysian Government released National Policy for Older Persons:

- To enhance the respect and self-worth of the elderly in the family, society, and nation

- To develop the potential of the elderly so that they remain active and productive in national development and to create opportunities for them to continue to live independently

- To encourage the establishment and the provision of specific facilities to ensure the care and protection of the elderly

Moreover, Malaysian Government also prioritized the senior citizen as shown on the new priorities and emphases on Eleventh Malaysia Plan that included senior citizen as their priority. In detail, in strategy A4: Addressing the Needs of Specific Target Groups: Government target to enhance the living environment for the elderly that include empowering voluntary community development programs for senior citizen, promoting active ageing, lifelong learning and retirement village concept and improving supportive environment for the senior citizen [21].

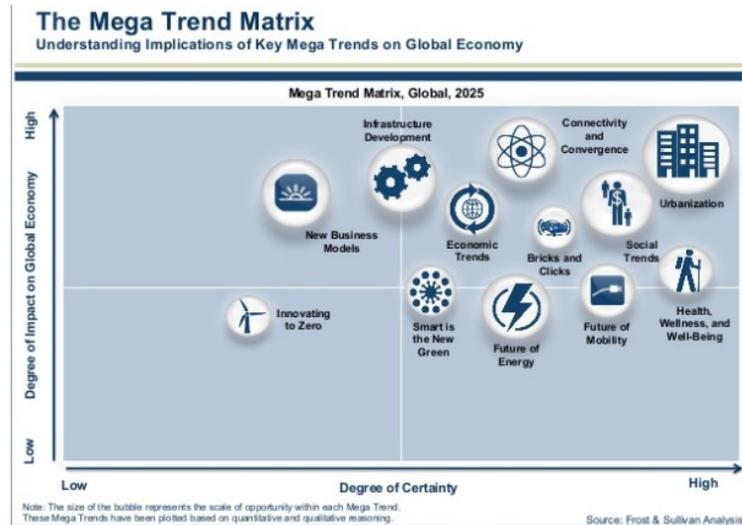


Fig.1. Mega Trends Matrix (Frost and Sullivan, 2015)

According to Mega Trends, health, well-being, and wellness is an important trend that now the global should focused. Based on the research that conducted by Frost and Sullivan with Malaysian Investment Development Authority (MIDA), economic growth, health, wellness, well-being, connectivity, and convergence is an important aspect and become Government focus towards [22]. Health, wellness, and well-being

has become the highest degree of certainty and medium impact on global economy level. For the degree of certainty, it surpassed the other major trends such as economic trends, infrastructure development, future of mobility, future of energy, etc. The well-being is not belonging for specific segment of citizen, but it should include all the segments including senior citizen.

Revolution Industry 4.0 nowadays transform the traditional way of society does the communication and activity. In IR 4.0 people prefer to utilize modern technology in their daily activities such as working, studying, and playing. IR 4.0 through big data and cloud computing, helps individual, company, and government to run their business and activities. Many online system and application developed to make the life of people easier and more convenient. The researcher also believed that optimizing the use of technology can help the senior citizen for having a brighter future for them.

Malaysian Government, through Pelan Tindakan Warga Emas Negara (PTWEN) proposed the use of technology as one of the solutions to realize the well-being of the senior citizen [23]. In addition, government planned to provide space and opportunity within individuals, professional and community for increase knowledge regarding gold residents and aging by harnessing technology, such as:

- Senior Citizen Online Portal
- Television
- Establishment of association professional multi discipline to plan related programs / activities senior citizen
- Develop an e-community specifically for senior citizens

Many scholars also researching and developing the technology that can be utilized to help the elderly, such as smart kitchen [24], medical & home automation sensor system [25], smart home as they believe that the technology can be extremely helpful to the senior citizen [26]. Furthermore, Meg Morris and his colleagues on their book "smart technologies for older people" added the 4 key areas that the technology should focus on to optimize the well-being of the older people, which are smart homes, robotics, virtual reality and gaming, telemedicine for clinicians, telemedicine for consumers, and social connectedness as these area is important and needed by the elderly [27].

Developing an application for elderly is a complex process that need to meet specific needs, that includes health monitoring, personal information, social interactivity, leisure, and maintaining safety and privacy [28].

Currently, there are some apps that available to download on the internet. Some of them are IBP (for documenting and monitoring blood pressure), magnifying glass with light, pillboxie (medication reminder), simple social (social media site that designed for elderly), skype, WebMD (healthy monitoring apps), Words with friends (a scrabble-like game for senior to maintain their cognitive health) [29]. However, there is no one single application that can fulfill the need of an elderly. Thus, the researcher suggesting a conceptual solution for a smart application to be developed in helping senior citizen.

4 Proposed Business Model

The researcher come with conceptual solution business model that will solve the stated problem for the senior citizen. The proposed business model in this paper also included Environmental Map (EM), Business Model Canvas (BMC), and Value Proposition Canvas (VPC).

4.1 Business Model Environment Map (EM)

Business Model Environment Map used by the researcher to understand the environment's forces in a structured way. To help the elderly by developing digital application, the researchers use the business model environmental map as below:

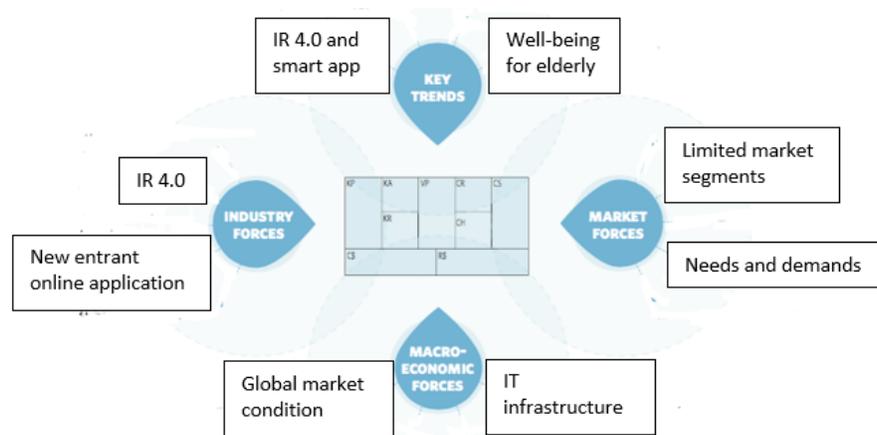


Fig.2. Business Model Environmental Map (EM) [30]

The smart application system for elderly will focus on well-being of elderly and IR 4.0 and smart application as the key trends. And another new entrant's online application becomes the industry forces of smart application system. For the market, researcher found that needs and demands and limited market segments become the forces. And both global market condition and IT infrastructure will become the macroeconomic forces for smart application system for senior citizen. Understanding these environmental maps help the researcher to understand how the environment's forces that will affect the smart application system in the future.

4.2 Business Model Canvas (BMC)

Business Model Environment Map used by the researcher to understand the environment's forces in a structured way. To help the elderly by developing digital application, the researchers use the business model environmental map as below:

4.2.1 Customer Segments

The Customer Segments is the user that involve in the smart application. The customer segments included:

- Senior Citizen will be the main customers who will use the system.
- Family will be the closer user to the senior citizen. There will be of then

communication and interaction between senior citizen and their family, especially when the senior citizen feels lonely, stress or facing other problems.

4.2.2 Value Proposition

The Value Proposition is the value of the services that provided in the smart application of senior citizen to satisfy the customer. The value propositions included:

- Free and Easy to use
- Senior Citizen Friendly Device
- Availability
- Trusted and Relevant Content
- Healthy Life Application

4.2.3 Cost Structure

The cost structure defines as the amount of the cost that must be paid from the activities that conducted for the development and implementation of smart application of senior citizen. The cost structure included:

- Staff Allowance
- Digital Development
- Senior Citizen Allowance
- Maintenance smart application system

The Business Model Canvas

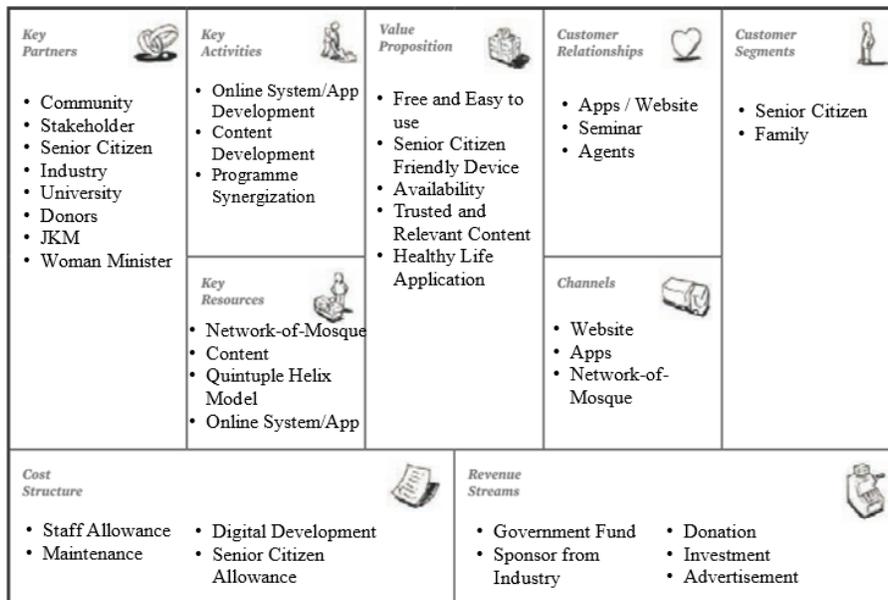


Fig. 3. Business Model Canvas (BMC) [31]

4.2.4 Revenue Stream

The revenue streams are the revenue that generates from the customer to cover the cost structure to develop and maintain smart application of senior citizen in the future. The revenue streams included:

- Government Fund, as they have put some budget on their program to realize the well-being of senior citizen
- Sponsor from industry that willing to participate in the program
- Investment from the investor
- Donation
- Relevant advertisement that will be displayed in the application

4.2.5 Key Partners

The key partner describes the people or group of people that act as partners in order to run the smart application system. The key partners include the industry and several government departments:

- Community
- Stakeholder
- Industry
- University
- Donors
- JKM
- Woman Minister

4.2.6 Key Activity

The key activities are the main activities that provide in smart application to achieve the wellbeing to the senior citizen. The key activities included:

- Online System/App Development
- Content Development
- Program Synergizing with the whole partners

4.2.7 Key Resources

The key resources describe the most necessary assets required to process smart application for the elderly. The key resources such as:

- Network-of-Mosque (NoM)
- Content of the whole Smart Application
- Quintuple Helix Model
- Online System/App

4.2.8 Customer Relationship

The customer relationships are the type of relationship that used to develop smart application of senior citizen. The relationship can be built from digital website and portal, and agent.

4.2.9 Channels

The Channels are the parties that communicate in the future university to achieve its value proposition. The channels included:

- Website
- App
- Network of Mosque

4.3 Value Proposition Canvas (VPC)

VPC or Value Proposition Canvas used by researchers to learn and discover the needs and the expectation of the customers who will utilize the smart application later. In this paper, the researcher developed VPC for both senior citizen and their family. There are total of 10 senior citizens and their family interviewed to gather the requirement and understand the problem that they faced currently. By having this interview, the researcher produced the figure 4 and figure 5 as the value proposition canvas for senior citizen and the family of senior citizen.

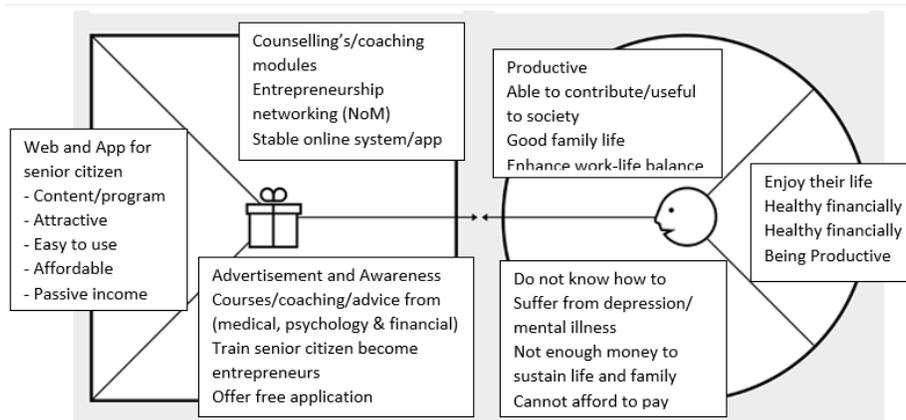


Fig.4. Value Proposition Canvas (VPC) for senior citizen [32]

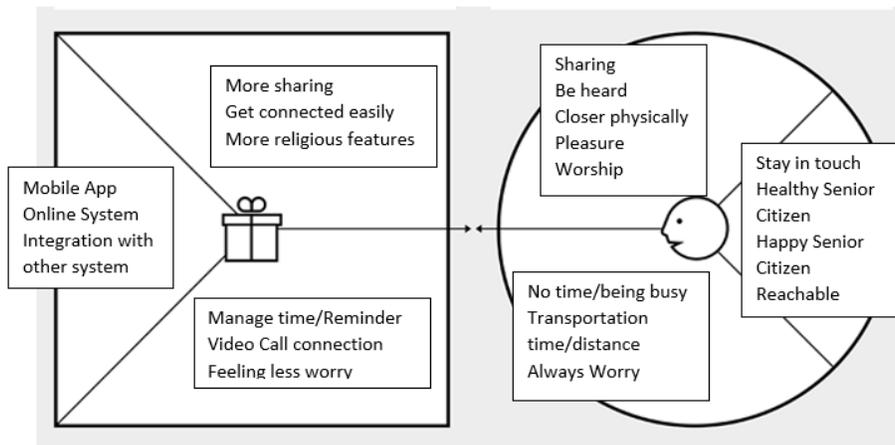


Fig.5. Value Proposition Canvas (VPC) for family [32]

The development of smart application system for senior citizen should be able to solve the problem that faced by the senior citizen. The common problem that faced by the senior citizen is the communication gap with the youth and their family and incapable of utilizing new technology. Not all senior citizens are familiar with the latest technology that available in the market, so the smart application must be designed very friendly with the senior citizen.

The researcher suggested these features to be included as these will solve

some of the problem that faced by the elderly:

- News and information
- Religious Feature (digital Al-Quran, salat reminder, Islam care)
- Single click communication/call/video
- Emergency call/panic button
- Online training and courses
- Medical Center (health care, healthy food information, health test)
- Finance management
- Healthy feature (music relaxation, fit activity tracker, fitness/medication)
- Brain/memory/hearing training

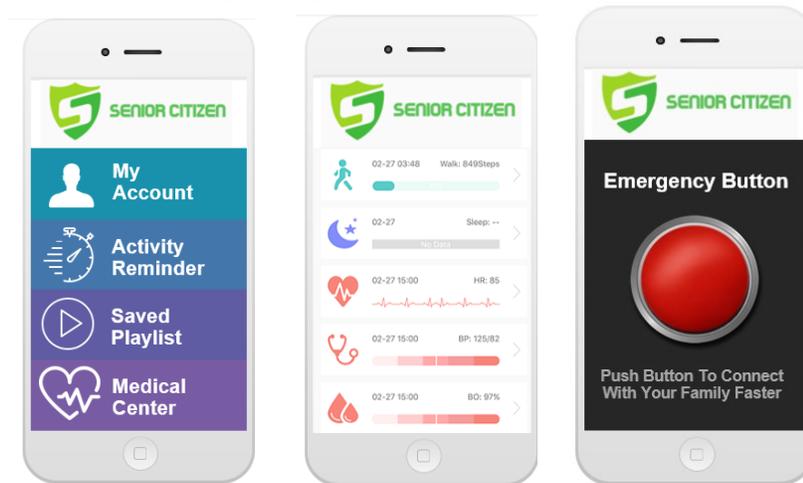


Fig.6 Mockup smart application for elderly

5 Conclusion

Smart technology growth significantly. It can be found in many places for many purposes and used by different age groups of people. Information and technology can be utilized as solution for elderly, especially the one who have visual problems, hearing problems, remembering problems, and others.

Through this research, the researcher suggests the proposed conceptual smart application as one of the solutions to achieve well-being of senior citizen. This finding includes Business Model Environment Map (EM), Business Model Canvas (BMC), and Value Proposition Canvas (VPC). The result of this paper produced conceptual smart application system as a solution to solve some of the problem that faced by the senior citizen

Health, income, and social isolation significantly and positively influenced the quality of life of senior citizen as the study and survey that conducted by Amalina, N & Ahmad, Y [33]. And as the increased number of technologies, then the smart application that used internet/cloud-based must be developed by observing the needs of senior citizen [34].

For future works, there must be other study conducted in the larger area to find and gather all possible business model and features of the smart application to achieve the goals, for actualizing the well-being of senior citizen. The researcher suggests that the

future research should be conducted in a larger audience. As currently, this paper in limited audience and cover Malaysian environment only. Also, for the future research, the researcher can also discover the tools and system (machine) that can be used to create a better life of the elderly, as the current paper focused on online application/system. With the proper plan and program that planned by the government, and by have a smart application for senior citizen, it will make their life easier as it will reduce the gap between them and the family and society, and make them happier, as well to encourage them to be active and productive.

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