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## Empowering marginalized community with an innovative technology

Nor Fariza Mohd. Nor<sup>a</sup>, Norizan Abdul Razak<sup>a</sup>, Mohd Yusof Abdullah<sup>a</sup>,  
Jalaluddin Abdul Malek<sup>a</sup>, Ali Salman<sup>a</sup>

<sup>a</sup>*E-Community Research Centre, Faculty of Social Sciences and Humanities, Universiti Kebangsaan Malaysia, Bangi, Selangor, 43650, Malaysia*

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### Abstract

The Malaysian government is aggressive in its innovations in information and computer technology. However, the senior citizens are left behind, mainly due to fear of technology or having low or zero ICT literacy. This paper reports on the usage of a simplified technological device and its impact at two sites in Malaysia. The respondents' fear towards technology was reduced and they developed interests and needs to seek information online. To conclude, to ensure people's acceptance and ICT adoption, any initiatives to bridge digital divide must consider the A4I2 framework which was developed to prosper the initiative of bridging digital divide in Malaysia which include access, adaptability, acceptance, attitude, innovation and inclusion.

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*Keywords: digital divide; A4I2 framework; Malaysia; ICT literacy; non formal education;*

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### 1. Introduction

Many developing and developed countries in the world are confronted with progressive, rapid and uneven economic growth which resulted in a divide between those who have access to technology and those who do not have access to it. Therefore, at the World 2003 Summit on Information Society, the government and world leaders pledge their commitment to support and build nations which are people-centred, inclusive and development-oriented information society for all, in order that everyone can access, utilize and share information and knowledge (United Nations Report, 2006). Malaysia is one of the countries which is confronted with the challenge to narrow the divide between the urban “have” and the rural “have-nots”. The Malaysian government has been working closely with the private sectors in addressing the digital divide between the urban and rural communities. Concerted effort has been taken to ensure that ICT access is provided for the rural segment of the population, through Internet services and purchasing power in the form of affordable computer. The ICT agenda of the Malaysian government is to address the issue of digital divide between groups defined by income, age, and geographic area. The government realized

Norizan Abdul Razak Tel : +603-89214352 : fax : +603-89214353  
[norjef@ukm.my](mailto:norjef@ukm.my)

that having ICT knowledge and skills is vital, especially in a digital world where the amount of information doubles every two years (Farmer, 2010).

As a result, the Malaysian government has been making progress in its innovation in information and computer technology. One of the inventions is a simplified technological gadget with computer applications, which is developed by MIMOS (Malaysian Institute Of Microelectronic Systems). This gadget is called JENii or *Jendela Informasi Anda* or literally translated as *Your Window of Information*. It is especially developed to alienate and alleviate the fear of using computer among ICT illiterate senior citizens and women. It is the purpose of this paper to report a study which was undertaken to investigate the use of JENii at two sites in Malaysia.

## **2. Literature Review on Information Communication Technology and its Application**

Studies conducted in developing and developed countries revealed that there are substantial gaps in access to computer use between different groups of society. A study conducted by Abdul Razaq et al (2009) showed that increase knowledge in computer usage among adult helped them to realize that knowledge in ICT can empower them to search for information and get information much quicker. As a result, their motivation to use the computer more often increased. Another study by Musa Abu Hassan and his team (2009) among agro-based entrepreneurs found that the entrepreneurs did not use ICT because they did not know the benefits of ICT and did not possess the skills in using ICT. Consequently, they had difficulties when they tried to use it which also brought about the fear of using computer. In addition, a study by Norizan Razak et al (2010) among women aged 35 and above, in terms of ICT application, revealed that time, low literacy and low needs affected the patterns of computer use among these women. The result concurs with that of Norizan Razak et al (2010), whereby low ICT literacy level and low needs of computer use affected the frequency and patterns of technology use among women in two rural areas in Malaysia. As for studies abroad, a survey in Finland by Elina et al (2007) on 1555 elderly, for instance, found that there are three main reasons for non-usage of computers among elderly; motivation, access and skills.

In summary, several factors can be attributed to the low use of computer and Internet among the senior citizens and women, which are low ICT literacy or zero ICT knowledge, no real need for the use of technology, no demands of use, slow capacity in learning how to use computer, technophobia or fear of technology and perceived difficulty of use.

## **3. The Study**

This study was conducted at two research sites in Malaysia based on fundings from MIMOS's research grant. This device, named JENii is introduced to increase ICT awareness and ease the adoption of technical gadget for its users. It is with the intention of empowering the senior citizens who are ICT illiterate. JENii has features which include community applications such as chat, Email, SMS, simple navigation controlled by icon user interface, touch screen function which eases complexity of usage, built-in WiFi, Bluetooth and Wimax. Furthermore, it has push button device instead of keyboard. The features certainly makes it the right technological gadget in order to reach the ICT illiterate senior citizens. It is considered a noble invention designed for the senior citizens who also have fear to use computer.

The goal of the present study are to investigate the behaviour of the target group and their interaction towards JENii. While the objectives of the study are (1) to address the impact gap (usefulness of content and community applications), (2) to find out users' acceptance towards the device (in order to eliminate technophobia and complexity of the device), and (3) to address the gap in accessing Internet coverage. Therefore, it is appropriate that an impact study be carried out in order to find out how JENii functions in bridging the digital divide in Malaysia.

#### 4. Methodology

Quantitative and qualitative approaches were the most appropriate methodology for triangulation purpose and to collate the maximum input for data. The respondents were from two localities in Malaysia and they are senior citizens aged 55 and above. Since the respondents are senior citizens, the approach was to let them explore the device in order to alleviate their fear of technology. They were given a short training on how to use the device, but the 'learning' part is left to them, and hence, they went through non formal education because they were given ample time to explore the application of the device in the comfort of their home.

In order to avoid the novelty effect of the introduction to the technology, it is essential to conduct and observe the use of the technology applications for 30 hours of usage. Data was collected for a period of six months, with three visits to the respondents' homes. The three visits were divided into three phases. Phase one was referred to as pre-exposure to JENii, whereby face to face interviews were conducted and a set of questionnaires were distributed. The questionnaire was designed with the objective of gathering and collating the demographic profile of the respondents in terms of race, age, education background, household information (income, children) and geographical areas, the socio economic status-employment, economic activity, e-inclusion activities and finally, information and communication technologies literacy and penetration- infrastructure, dial up and broadband connectivity, Internet access points, e-community centers, hand-phone, and fixed telephone line. Phase two is the exposure phase, in which the focus was on observing the respondents' behavior and their interaction with JENii. This involved recording and documenting users' perceived level and understanding of the device and ergonomic interaction between the users and the device. Another round of face to face interviews was also carried out in phase two. For respondents who could write and were willing to write, they were encouraged to record their reflection and experience in using JENii in a log book. In the final phase, focus group interviews were conducted for the purpose of getting in depth information pertaining to evaluating the effectiveness of the technology. Results and data obtained from phase one, two and three of this study were correlated in order to answer the research questions. This paper reports the qualitative data gathered in the study.

#### 5. Findings

The findings presented will be based on the AI4 framework, which refers to access, adaptability, acceptance, attitude, innovation and inclusion.

##### 5.1. Access

There are three types of users among the respondents; those who used JENii frequently, those who hardly ever utilized JENii and those who never used JENii at all. The reason is attributed to access. Those who frequently used JENii managed to get good signal from WiWi, but those who hardly ever used JENii or never used it at all cited difficulty in getting coverage as the reason for inaccessibility. Although the technical team changed the faulty devices, the devices still failed to work due to the location of the respondents' houses. The respondents also raised their delight with WiWi, because they can use WiWi technology to access the Internet with their children's laptops and hand-phones.

Despite coverage problem however, majority of respondents were able to explore the content of JENii on their own and only a small number of them were assisted by their family members. Having access to JENii's content certainly raise their awareness on how easy it is to get information with just the touch of a button.

The placement of JENii in the respondents' homes certainly means making adjustments to the respondents' daily routine, as they now have to allocate time to use JENii. Most of the respondents used JENii in the evening because they would have completed their daily chores by then. Some accessed it in the evening, but there were few who used the device in the morning.

### 5.2. *Adaptability*

Most of the respondents reported that JENii is easy to use and they are familiar with the functions of the buttons on JENii because all functions are stated on the screen. When interviewed, they were able to name every icon which appears on the main page of JENii without looking at the manual. They claimed that they are confident in using the device. They can adapt easily to the device because the buttons are labeled and the purpose of each button is stated on the screen. Adaptability is very important because if the device has complex technology and features, respondents will feel frustrated and will give up easily.

### 5.3. *Acceptance*

To reiterate, the respondents in the present study have either low, inadequate or zero ICT knowledge to begin with. As a result, they have high level of technophobia. However, since the device is simplified in its technological features, the respondents generally gave encouraging and positive feedbacks. Majority of respondents showed high interests towards the device. In fact, a high level of enthusiasm was shown during the training. As mentioned, some respondents faced technical problems. But the technical problem did not deter them from taking the initiative to learn about computer. Most reacted positively as they became more interested to learn about technology and some have even expressed their intention to purchase computer. It is concluded that the introduction of JENii and Wiwi has managed to reduce the respondents' fear of technology.

### 5.4. *Attitude*

Majority of respondents showed positive attitude towards technology. They are now aware of how technology can help empower them to search for information quickly and easily. Access to newspapers online, for instance, enabled the respondents to keep up with issues in the country. Most respondents reported that having access to current issues and other information has helped them to become more confident and more knowledgeable. Furthermore, they are also aware of socio economic opportunities which are available. Subsequently, this will help improve their life. Finally, the awareness pertaining to the benefits of using technology has also increased the respondents' needs to search for information online.

### 5.5. *Innovation*

This technological innovation which was meant for people with low ICT literacy level or with no ICT knowledge at all has definitely achieved its aim. The device is simple to operate and light weight with attractive technological features, and hence, appropriate for the target group, i.e., the senior citizens.

### 5.6. *Inclusion*

It is concluded that the introduction of JENii as a device to help bridge the digital divide among the marginalized group, in particular, the senior citizens, appears to be a success. They are now part of the information society community because they acknowledged that they have been empowered to use technology to access information and seek for information. They expressed positive attitude towards technology and as revealed in the findings, some are ready to migrate to the real computer.

## 6. **Conclusion**

JENii is basically a device for users to search for information online and to be familiar with some of the online facilities available in the device. Generally, positive responses were given, but the technical glitches resulted in feelings of frustration for those who were unable to get Internet coverage. Therefore, it is a good technological innovation which aims to ensure that senior citizens are more comfortable with ICT and to help reduce their techno-

fear. In addition, the opportunity to learn about technology informally has helped towards achieving the aim of introducing JENii.

Although the respondents accepted the device well, some felt frustrated due to the technical glitches and problems in accessing the Internet. The provider needs to resolve this problem because the connectivity issue and technical problem do affect to a certain extent the users' interests and motivation to use JENii. Motivation is crucial for ensuring that the introduction of a new technological device is successful.

Besides alleviating and reducing the respondents' fear of technology, the respondents' knowledge of computer terms has also been developed. But most importantly, the device has changed the respondents' perception towards technology as they are now aware of its importance as a tool to search for information and how it can change their life. The adoption of ICT will help the development of information society, which is in line with the nation's ICT agenda. In conclusion, the Malaysian government has been aggressive in its efforts to bridge the digital divide, as reflected in the continuous work and pro-active role shown by the appointed Ministries and its agencies in achieving its goal to ensure ICT access to all Malaysian citizens.

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