Evaluation of Senior ICT Requirement based on Knowledge Sharing Framework

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ABSTRACT

The purpose of this study is to identify the problems faced by senior citizens while using computer and to identify the most popular computer technologies used among the senior citizens. This paper formulates some hypothesis based on a survey conducted in early 2010, where main issues were identified as requirements and opportunity of sharing knowledge among the senior citizens. Findings shows that specific computer technology requirement and suitable content of a web portal that suits senior citizens is essential so that the older generation who see computers and new technology as what they have the potential to be - a tool for expanding their horizons, learning new skills and finding new interests at any age. The limitation of this paper is identifying the ICT requirements for senior citizens. As for future research it is suggested that the study about the content of a web portal as well as the design guidelines for the portal to be analyzed. This paper provides information on barriers among senior citizens using a computer. Secondly, the website design requirement for this community. This paper also examines a proposed knowledge sharing framework to get it adapted for the senior citizens community.

Keywords
Senior Citizen, Knowledge Management, Knowledge Sharing

1.0 INTRODUCTION

ICT continues to be the best hope for developing countries to accelerate the development process there is an emerging need for all sectors of society to find ways to optimize the opportunities which information and communication technology presents. Knowledge and information produced should be shared and delivered fast and information technology must offer the solutions that are able to fulfill the requirements of the organization.

The concept of knowledge sharing arose when people found many challenges in managing knowledge. One of the key challenges in knowledge sharing is how to develop a culture of distributing knowledge within a community. Different individual have different views with the term of knowledge sharing and the perspective of the term. But, knowledge sharing means a commitment to inform, translate, and educate interested colleagues. It is an active listening and learning process, not a technology-driven panacea.

As an individual, all the senior citizens have their own knowledge, which they usually keep within the records of their mind. Besides, there is no specific platform for them to express what they have for sharing purposes. Due to that case, senior citizens are believed do not have a good interaction between other senior citizens and as a results, they do not gained anything that is stored inside the senior citizens' mind.

The objective of this paper is to identify the problems faced by senior citizens while using computer and to identify the most popular computer technologies used among the senior citizens. At present, there is no accessible platform for the senior citizens to contribute all their knowledge. The problem faced internally within them is how to encourage all the members and where do they have to place their knowledge. Most of the community members and more interested in keeping all their knowledge that they have without considering the importance of sharing the knowledge.

2.0 LITERATURE REVIEW

Generally, knowledge can be defined as the fact or condition of knowing something with familiarity gained through experience or association. The meaning of knowledge was adopted from Oxford Advance Learner Dictionary. Knowledge is best defined as actionable information-deeper, richer, and more expansive. Actionable implies when and where it is needed to make the right decision, and the right context (Tiwana, 2000). According to

(Tiwana, 2000), there are two types of knowledge, which are tacit and explicit knowledge. As for other sources, (Nonaka, 1994) demonstrate the organizational complexities of attempting to manage the dynamic process of knowledge generation. He defines knowledge as possessing one of two main characteristics – tacit or explicit knowledge.

2.1: Knowledge Sharing

According to (Miller, 2002) sharing is a process whereby a resource is given by one party and received by another. For sharing to occur, there must be an exchange; a resource must pass between source and recipient. The term knowledge sharing implies the giving and receiving of information framed within a context by the knowledge of the source. What is received is the information framed by the knowledge of the recipient. Although based on the knowledge of the source, the knowledge received cannot be identical as the process of interpretation is subjective and is framed by our existing knowledge and our identity.

Sharing knowledge is one of the first cultural roadblocks we run into when implementing a KM project or program. The common recipe reads: "A corporate intranet with technology to allow people to create their own home pages encourages sharing. Real sharing implies opportunity for feedback, acceptance of critique, willingness to engage in deep dialog, and the expectation of reciprocity. Sharing requires a level of trust. It is a two way process and forms an integral part of relationship building.

Knowledge sharing means a commitment to inform, translate and educate interested colleagues. It is an active listening and learning process, not a technology- driven panacea. The key to sharing is helping the other party appreciate your context, which is difficult unless the context can be constrained. For example, within a community of practice, there may be agreement on a common language, or there may be sufficient context accumulated in the form of common experience and learning. Information sharing is not only about the technical aspects of work. Tasks, vision, values, goals, contacts, support, feelings, opinions, problems and questions are all part of the sharing experience.

2.2: Senior Citizen

When defined in an official context, "senior citizen" is often used for legal or policy-related reasons in determining who is eligible for certain benefits available to the age group. The term was apparently coined in 1938 during a political campaign. It has come into widespread use in recent decades in legislation, commerce, and common speech. Especially in less formal contexts, it is often abbreviated as "senior(s)", which is also used as an adjective.

The age which qualifies for senior citizen status varies widely. In governmental contexts it is usually associated with an age at which pensions or medical benefits for the elderly become available. In commercial contexts, where it may serve as a marketing device to attract customers, the age is often significantly lower.

In Malaysia, the standard retirement age is currently 58. The senior citizens though are defined as those aged 60 and above. This definition is according to the statement done at "World Assembly on Ageing 1982" at Vienna.

2.2.1: Common Worries about Technology among Senior Citizens

Some seniors take to the Internet very quickly. The discovery of a way to store numerous photos of family and friends must seem like a godsend. Then there's the convenience of being able to contact loved ones all over the world at a moment's notice. In remote areas Internet access can provide a window to the world.

According to (Twombhy, 2009) seniors with grandchildren or great-grandchildren often adapt better to using modern technology. This is especially true when children are physically available to teach them how to use things like computer. Kids delight in giving their grandparents enough skills to show up their parents. Grandparents appreciate the attention and family interaction.

Teaching technology to senior citizens takes a special kind of patience. Not only are you introducing them to new technology, but you have to bear in mind that these seniors may have problems of their own, which impair their learning skills. As stated by (Stein, 2008), if senior citizens are worried about using a computer, they may also not like mobile phones and other technological aids which could prove very useful on occasion.

The key to getting senior citizens to come to enjoy technology is to remove the fear - which comes about through a lack of understanding. It is advisable to teach them small skills at a time. Some of them , once they pluck up the courage to start, find it hard to stop but for many it is a question of small steps - dialing using a mobile phone and taking one call before moving on to texting and

watching someone else send a simple email before having a go.

According to (Stein, 2008) libraries, clubs and small groups offer help and assistance to senior citizens to help them understand technology and these places also mean they meet similar people with the same worries.

Based on a survey that was conducted by (Jokisuu, 2007) with the purpose to explore the reasons that the elderly people have for not adopting various ICTs. The seniors without prior experience of computer usage had several reasons for their lack of use. A relatively large group of senior citizens in that survey stated that they had never used a computer whereas some of them even said that they were not interested in learning to use it either. The results also suggest that age, education and place of living are significant factors in determining whether an older person makes use of ICT.

Most of the non-users were in the older age groups. Another similarity among the non-users was the environment in which they lived: there were less computer-users in sparsely populated area than in towns and other more densely populated areas. In addition, gender did not have a significant effect on computer use.

2.2.2: Problems with ICT among Senior Citizens

(Jokisuu, 2007) conducted a survey on a group of respondents to identify the problems with ICT among senior citizens. In this survey the senior citizens were asked to describe the problems they have encountered while using ICT. The responses concerned with technology in general or related specifically to computers, digital television, or mobile phones. Most of the senior citizens mentioned one or two problems that they had observed. Five general categories of problems were identified which is elements of technology, attributes of users, skill requirements, management of technology and technical problems

2.3: Requirement and Opportunity of Sharing Knowledge among Senior Citizens

A survey was conducted early this year to identify the requirement and opportunity of sharing knowledge as well as experience using a web based portal as a platform to serve the senior citizens. A total 40 respondents were selected from various locations to analyze a local web based portal designed by Malaysian Government University.

Overall, most of the respondents agreed with the portal arrangement and they all agree that the arrangement of the portal is very pleasing. The icon

usage of the portal was also very pleasing according to the respondents. The response for the color usage in the portal really attracts the respondents where most of them were very pleased with the selection of color for the fonts that are available at the portal. The respondents said that this will help those who are color blind.

The selection of the text size available in this portal was pleasing enough for the respondents that are having eyesight problem as they can increase the text size to see the text in the portal. As for the script that is used in the portal, the respondents agree with the usage of Malay language in the portal but they also suggested that the portal should be in English language too so that the web visitors can select from both the languages.

The portal is said to be user friendly and the instructions in the portal is easy to understand. As stated by most of the respondents that it is easy to understand the instructions in the portal because it is in the Malay language and the respondents do understand the language well and the language level used in the portal in not very difficult to understand.
The links that are available in this portal are said to be useful and the content of the portal is said to be appropriate for the targeted community as the links that are available in the website are useful for the community. Very less of the respondents agreed with the quality of the content of the portal. The same reason was given as before that the language should also be available in English.

The information proposed in the website is said to be very little and less helpful for the targeted community because many of them said that the information is less related to them. They were expecting information on financial aids, healthcare and also on facilities provided by government for this community. Same respond was given for the facts and abbreviations used in the portal.

The proposed categories in the portal are said not to be appropriate because too many categories make this community confuse. As the speed of this system is slow, this makes the respondents do not like to surf the portal for long as they have to wait for the page in the portal to load for a long time.

Very less navigation facilities are available in this portal and many of the respondents were not pleased with the usage of the site map available in the portal. They said that the site map was not very useful for them. Lastly, the respondents think that the portal does have some assistive technique for disability navigation that can be useful for the less fortunate users of the site.

3.0 METHODOLOGY

The researcher conducted a survey to gather information and identify the facilities and environment for knowledge sharing in order to develop a web based portal to serve the senior citizens of Johor Bahru. Besides that, the analysis was also done to identify a knowledge sharing framework as a guideline for the portal development.

There are varieties of framework to be treated as guideline in a project. Thus, researcher has looked through many frameworks that are available in the internet and has decided to use framework which was proposed by (Aida et. al., 2009) from the Information System Department of Faculty of Computer Science and Information System in this university. Figure 2 shows her framework made for the developing of knowledge portal for the special children needs.

However, as researcher can see the scope and the community of practice is different, so the step taken to make some changes not in the mine body of the framework, but in the framework terms and omitting some parts that is not going to be used in the project or they may be out of the project scope.
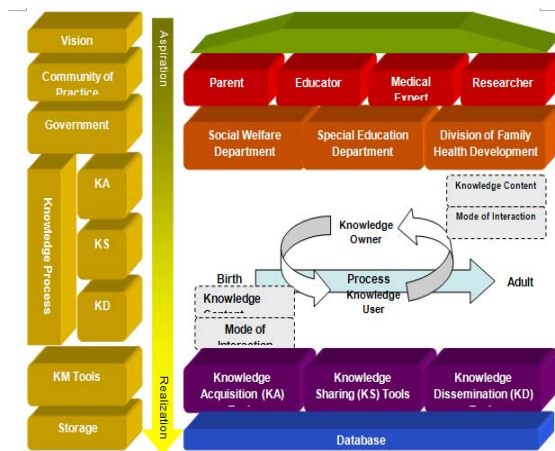

Figure 2: Proposed Knowledge Sharing Framework (Version 2.0). Framework to develop knowledge portal for the special children needs.

The data collection of this study was referred through the extensive reading. Literature research is important to obtain depth understanding about the research's topic. Two ways of conducting the literature research were carried out, which is online research (via internet) and offline research which was conducted at various locations in Johor Bharu and Ipoh. Before the detailed study was done, early observation was used to collect data from the research study. Analysis of the interview as well as the survey that was conducted with the respondents from various places in Johor Bahru city in Johor has been used to determine the content and the design of the website for senior citizens.

The adaptation of the framework above was analyzed to suit the community of practice of this study. Researcher concentrates more on the knowledge process area of the framework whereby the senior citizens are above the age of 60 until death. They are also the knowledge owners as well as the knowledge users but this does not limit to only senior citizens. The family members of the elderly people, the researchers as well as the medical experts can be categorized in the process of knowledge sharing among the senior citizens.

4.0 RESULTS

As mentioned earlier that a survey was conducted to gather information and identify the facilities and environment for knowledge sharing in order to develop a web based portal to serve the senior citizens at Johor Bahru. A total of 40 respondents were given survey forms to fill in. The survey was conducted to gather information, feedback and views from the respondents regarding the matters that are being researched. The research also takes into consideration the design of a web portal taking senior citizens in mind.

4.1   Reasons for not using the Computer

The key reasons stated by most of the senior citizens for not using the computer are shown in Figure 3. The most common reasons for non-access are the categories ''no computer at home'' and ''not interested''. In-home computer availability seems to be less important. The two motives may be categorized indicating a lack of means and motivational indifference. Lack of means is a smaller and motivational indifference is a larger issue within the young and old senior population, compared to the middle-aged population.

For the option ''PC is too expensive'' only 7% of the respondents ticked this option. The reason may be twofold. For instance, financial concerns seem to be less crucial for senior citizens compared to middle-aged people. On the other hand, it may simply be the case that a lack of knowledge about the computer also includes a lack of knowledge about its price.

The researcher also found pronounced for people ticking that they ''do not know what it is''. Thus, a minority would prefer to use the computer but cannot afford it. A majority does not invest in computer technology because they are not interested or lack knowledge about it.

Another important category for not using the computer is ''missing skills''. Nearly 78% of the non-using senior citizens in this region perhaps might be persuaded to use a computer if they were instructed on how to use it.

With regard to the aging process in Johor this is an alarming percentage. The same holds for about 12% of the respondents who ticked the next category ''I do not know what it is''. The reason ''too complicated'' is ticked by almost 49% of the non-users.
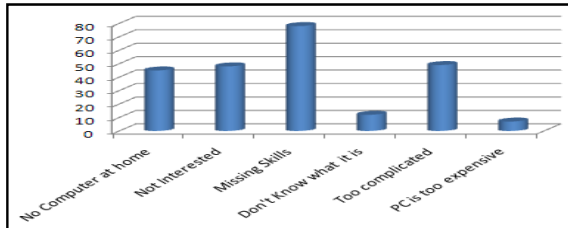

Figure 3: Reasons for senior citizens not using a computer

4.1.2   Age-Related Functional Limitations

Getting older can result in several problems such as vision issues. These include decreasing ability to focus on near tasks, changes in color perception and sensitivity: blues/greens become harder to see then reds/yellows and dark blue/black can be indistinguishable, reduction in contrast sensitivity as well as reduction in visual field. From the survey, almost 91% of the respondents are vision impaired is having trouble in reading without glasses most of the time.

Besides vision, hearing loss is also a common problem with the older age people. 43% of the elderly people are having hearing loss and not all of them are using hearing aid. Motor Skill impairment is also identified as another problem where seniors are merely to have Parkinson's – Tremor, rigidity, slow movement, impaired balance and co-ordination and Arthritis (the leading cause of disability in those over 55).

These age people also prone to Cognitive decline where there will be decline in the ability to encode new memories of facts and decline in working memory. Aging may affect memory by changing the way the brain stores information and by making it harder to recall stored information. This will effect on either short-term or long-term memory loss. 27% of the respondents agreed that they are affected with cognitive decline.

4.2   Common Computer Based Technologies For Senior Citizens

Analysis was done to identify what computer based technologies are the respondents mostly familiar with and the result is shown in figure 4.
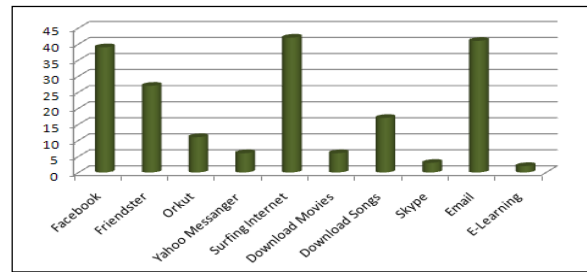

Figure 4: Computer Based Technologies Used by Respondents

Besides that, there were questions asked to identify the difficulties they face when using a computer and mostly of the respondents gave the same answer. Figure 5 illustrates the percentages difficulties faced by senior citizens while using a computer. Figure 6 shows the percentage of knowledge sharing portal features from respondent's perspective that was identified among the respondents of the survey.
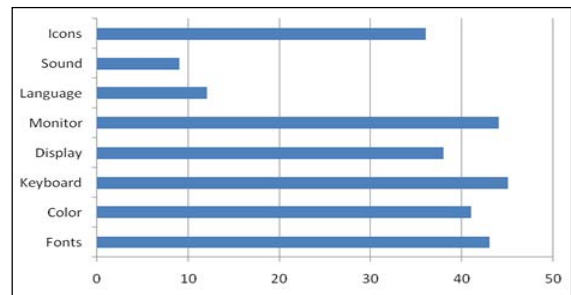

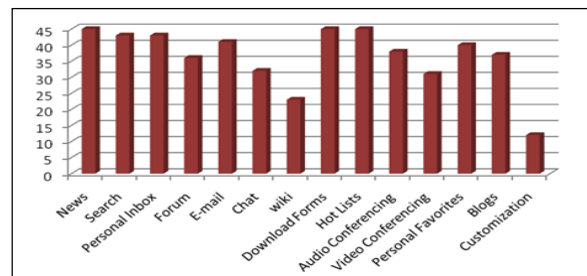*Figure 5: Major Difficulties Faced By Respondents When Using Computer*

Figure 6: Knowledge Sharing Portal Features from Respondents Perspectives

4.3   Website Design Requirements for Senior Citizens

There are a few criteria that need to be taken into consideration when designing a website for senior citizens. The most common question that this group

of age will ask when visits any website in the Internet are: Are the links clear? Is the text guiding the user to the wrong place? Is the typeface too small?

The researcher identified a checklist of ways Web designers can address the visual and cognitive disabilities that many seniors live with. They include building sites with large, plain typefaces; avoiding the juxtaposition of yellow, blue and green, a color combination that can be difficult to discriminate; and keeping text simple.

It is important to avoid technical jargon at all cost. However, if you employ newer functionality such as tagging for example, don't try to rename it, but provide an easy-to-understand explanation for it. Include instructions in plain English or Bahasa Melayu where necessary and always try to reduce the number of words displayed on the page.

Use simple and short sentences and include bullet points where possible. For links on the homepage or landing pages include a short description to tell site visitors what to expect when following the link.

Buttons must also be made as large and prominent as possible so they become a clear call to action. 3D effects for buttons can help to make them stand out. Also, make links and buttons easy to target and hit by increasing their clickable area.

A dropdown menu can be fiddly and time consuming for site visitors, and can result in people selecting the wrong item by accident. If you have less than 10 items in a dropdown menu use radio buttons if possible. These have the advantage of showing the number of options at a glance without having to click.

A site map gives users a good overall picture of how the site is organized and clearly defines all the resources the website has to offer. The link to the site map can usually be found near the top or the bottom of the page and frequently placed near the link to 'contact us'. Internet savvy senior surfers are aware of site maps and make use of them to gain an overview of the site. They will also likely click on a sitemap link when they get lost on the site or if they can't find what they want while browsing.

Web adaptation technology that allows users to personalize their Web interface by altering colors, size, and spacing, as well as turning off animation is very helpful to this community of practice. The technology also can convert text to speech, and eliminate repeated keystrokes caused by hand tremors.

Active phrases should be used in websites -- "view accounts," for example, rather than just "accounts". Besides that features that provide a short pop-up description of where each link will take the user can also be included. Users can opt to have those descriptions read aloud. Seniors also sometimes have trouble finding links. One solution to consider is color change on each link that is already been visited by the user.

Lastly, it is necessary to make the website trustworthy. Senior surfers tend to be more cautious when browsing and can get confused when something unexpected happens such as a new window opening or an application installing.

Firstly, clearly state the purpose of your site on the homepage. Also, offer a brief description with content links, so users know what to expect when following them. Explain in 'large print' how personal information will be handled before asking users to enter it. Make use of the well-known padlock icon to indicate a secure part of the site. Show words such as 'secure', 'safe' and 'confidential' in bold. Offer a content section on security when your site offers financial services.

5.0 DISCUSSIONS AND CONCLUSION

Computers are becoming pervasive throughout society. Since several years, a trend towards an increased distribution of vital information via the Internet can be observed and this trend is unlikely to stop in the near future. With the current work the researcher can understand why older citizens do not use the computer or other ICT technologies. Additionally, some answers are sought as to how individual socioeconomic background determines the likelihood of the technology usage among the older adults.

Overall, the analysis done provides a root for the researcher to get preliminary understanding of the problems that are faced by senior citizens when using a computer as well as in identifying the ICT requirements that suits this community. The researcher hopes to look into the criteria of contents in a website especially for the senior citizens and design the guidelines to be followed to be used for the next study.

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