

Evaluation on Computer Requirements for Senior Citizens

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Abstract — Negligence when comes to computer technology usage is considered a common problem faced by the senior citizens community. The study identifies some common difficulties while using computer and identifies the most popular computer technologies used among this community. Survey conducted with the targeted community where main issues were identified as requirements and opportunity of sharing knowledge among this community. 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. For future research, study on the content of a web portal and the design guidelines analysis for the portal is suggested. This paper examines a proposed knowledge sharing portal features to get it adapted for this community.

Keywords – computer technology; knowledge sharing; senior citizens

1. INTRODUCTION

The application and usage of Information and Communication Technology (ICT) remain some of the most powerful engines for the growth of organization. ICT also continues to be one of the best hopes for developing countries to accelerate the process of development, which is an emerging need for all sectors of society to find ways to optimize the opportunities which ICT presents. One of the ICT tools is Knowledge Management (KM). Basically, KM helps an organization to gain understanding and insight from its own experience. Specific KM activities help focus the organization on acquiring, storing and utilizing knowledge for such things as problem solving, dynamic learning, strategic planning and decision making.

The culture of Knowledge Sharing (KS) previously was highly motivated with incentives, rewards or loyalty. People look for something that can give them benefits in order to share information and knowledge that they have. In other words, people are motivated to share the knowledge if there is any means of incentives because of the competitive advantage among themselves to achieve the rewards.

Thus, we can see that to create a KS culture, we must first motivate people by means of giving them rewards. At present, there is no accessible platform for the senior citizens to contribute all of 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 are more interested in keeping all their knowledge that they have without considering the importance of sharing the knowledge. However, there are certain barriers that make the implementation of KS application difficult. The difficulties such as knowledge itself are hard to define, much of the useful knowledge is hard to share, and knowledge is difficult to measure.

As mentioned in conclusion (Section 8), the purpose of this study is to identify the IT- Based services and information requirements that will facilitate the senior citizens for KS purposes. Hence, a web-based portal named the Senior Citizens KS Portal is developed. The portal developed is proposed to help the senior citizens to share and contribute more knowledge in better ways. Thus, senior citizens will overcome their problems and sharing knowledge will work efficiently and systematically with the purpose of improving their knowledge.

In the following section, we briefly review the previous research on the issues of knowledge sharing and their relevance to the targeted community. We then present methodology of this study, followed by framework analysis and the data analysis. We then discuss and categorize the KS framework components that arise from the findings. Finally discuss the conclusion of this paper with our study.

2. KNOWLEDGE SHARING

According to [6] 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 KS 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.

[13] stated that sharing knowledge defined as the sharing of both implicit and explicit knowledge, as well as any form of knowledge located somewhere on the continuum between these extremes. The label ‘implicit’ refers to knowledge that cannot be expressed in words, such as skills that are to be observed or culture that is to be ‘sensed’. The label ‘explicit’ refers to knowledge that can be expressed in words, and, hence, can be considered ‘information’. What differentiates information-sharing from KS? The sharing of information covers a broad spectrum of exchanges and does not necessarily lead to the creation of new knowledge [12].

The sharing of information covers a broad spectrum of exchanges and does not necessarily lead to the creation of new knowledge [12]. KS intrinsically implies the generation of knowledge in the recipient. In face-to-face communication, an effective mechanism for gaining knowledge is to request help from another i.e. someone who may possess the knowledge or expertise required. This request may lead to a conversation that will facilitate the creation of new knowledge in the recipient.

This suggests that in face-to-face interactions, conversations can be an effective conduit for knowledge-sharing. Indeed it has been suggested that conversation may be the only effective means of sharing knowledge [9]. Conversation is framed by a unique common context that is built between participants. It is this common context that facilitates the transfer and development of the more deeply rooted tacit knowledge. The context is built through communication and is enabled by a shared perspective, language and common understanding. It is thus through conversation that we learn how to learn together [2].

Quality sharing is closely tied to personal identity- your perception of the value of your information, your social standing in the community and your motivation for engaging in negotiation and exchange. To share knowledge, people must find meaning that everyone can accept and build enough contexts to allow information to be used efficiently. If sharing is to become a way of life, a marker of the corporate culture, there must be active participation and example from top management. To make it work takes time, experimentation, and resources, and commitment to make it work. There are enough existing barriers without employees having to worry whether significant sharing is deemed appropriate "work" [4].

A. Process of Knowledge Sharing

Processes of KS take place between and within the various knowledge levels. This process of providing and obtaining knowledge between the three levels, takes place in two directions. Individual knowledge can become group knowledge when an individual shares his knowledge with other group members. In the other direction, group knowledge becomes individual knowledge when knowledge individually acquired from the group, combined with an individual stock of knowledge, becomes new individual knowledge.

In the beginning stage, distinction between implicit and explicit knowledge have been made. The processes of KS this distinction means that implicit or explicit knowledge can become implicit or explicit knowledge within the same level or at another higher or lower level been applied. Between and within two levels it is expected to find four different sub-processes of KS. The following sub processes are derived from different types of knowledge conversion, developed by [8]. These four sub-processes of knowledge sharing derived from four types of knowledge conversion.

Figure 1 attempt to shows the different sub-processes of KS which involved the transformation on implicit knowledge to the explicit knowledge and vice versa. As the researcher described at the KM model adopted from [7] the quadrants involved are in the context of socialization, explication, implication and the combination of all contexts.

	TO	Implicit knowledge	Explicit knowledge
FROM			
Implicit knowledge		Socialization	Explication
Explicit knowledge		Implication	Combination

FIGURE 1: Four Sub-Processes of Knowledge Sharing [7]

B. Maintaining the Integrity of the Specifications

There is no KS theory as such, but different views on what KS is, what the barriers and enablers for KS are, and suggestions for overcoming these barriers. KS is accepted to yield sustainable competitive advantage, since the process identifies and applies a better practice for exploiting knowledge that the organization already possesses or has access to. In Parnassian view KS is, hence, a valuable resource that is difficult to imitate [10].

Creating the valuable resource is, however, difficult, since organizations often lack a definition of what KS is, what the purpose of KS is, and how to evaluate and adjust the processes of sharing knowledge. The literature on KS addresses two basic problems: What are the barriers for KS, and how do organizations deal with these barriers in order to enable KS– or, in other words: what are the enhancers for sharing knowledge? Barriers and enhancers go, basically, hand in hand – the literature that highlights certain barriers for KS also offers some enhancers for overcoming these barriers. Broadly speaking, KS– as the process of reducing the invention of the wheel – encompasses four pairs of barriers and enhancers:

- The stickiness of knowledge ([5], [8], [11]).
- No sharing of identity ([1], [3]).

- No relation between the receiver and sender of knowledge ([3], [5]).

3. METHODOLOGY

The researcher conducted survey to collect information and identify the facilities and environment for knowledge sharing in order to develop a web based portal to serve the senior citizens. Besides that, the analysis was also done to identify a knowledge sharing framework as a guideline for the portal development. 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 and offline research which was conducted at various locations in Malaysia. 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 Malaysia has been used to determine the content and the design of the website for senior citizens. Researcher concentrates more on the knowledge process area of the framework whereby the senior citizens are above the age of 60 until death.

4. FRAMEWORK ANALYSIS

The analysis helped to achieve one of the objectives of this study, i.e. to identify the IT based services that can be beneficial to the senior citizens. Responses were accumulated and processed to fulfill the objectives of this study. The findings are gathered from a set of semi-structured questionnaire and the results will be used as a direction in developing the web-based KS portal prototype.

A. Senior Citizen Department of Community Welfare Association of Johor Bahru Website: Weaknesses and Problems

The aim of the website is to provide information on the services that are specially designed to assist them. It is generally known that the website functions as an intermediary media and a two-way communication channel for speedier and easier distribution of information. In view of the widespread use of information technology, websites have opened a new avenue as an alternative channel for all levels of society. Although there is a website to spread the relevant information to the targeted community, but the senior citizens still face many problems. Among the problems faced by them are there is no information on the useful resources such as below:

- Caregivers Resources
- Health
- Housing
- Money and Taxes
- Retirement
- Traveling

B. Comparison between Senior Citizen Department of Community Welfare Association of Johor Bahru Website and Proposed System

In order to have a good idea on what the KS portal should have, the researcher came up with some solutions for the problems faced by the senior citizens when they use the current senior citizen portal. About 50 copies of the questionnaire, which consisted of three sections of questions, were distributed randomly to the senior citizens various locations in Malaysia. Out of 50 copies distributed, only 40 respondents have given back their feedbacks.

However, the analyses on feedback from these 40 senior citizens are adequate to give the researcher understanding on identifying the senior citizens problems, the recommendations of portal's functions required for the design of a prototype web-based KS portal for senior citizens, and the knowledge needed to share among them. The research, using the questionnaire format, was constructed to gather information and identify the facilities for KS in order to develop a web based portal to serve the senior citizens. This questionnaire was prepared to gather information, feedback and views from the respondents regarding certain matters. The content of the questionnaire was divided into three sections which are:-

- The knowledge that needed to share among the senior citizens.
- Identifying the senior citizens problems.
- Portal recommendations.

The respondents include both males and females. The number of the males was 23 and the number of females was 17, Figure 2 shows the percent of male and female. In the questionnaire, age ranges of the respondents were asked to give their answers for the survey. The senior citizens from the age of 61-65 were the highest among the respondents which is 17 respondents. Figure 3 illustrate the age range of the respondents while figure 4 illustrates respondent's status of retirement.

The aspect of education level among the respondents was also identified in the questionnaire by asking them the highest education level that they have. The Figure 5 illustrates the number of respondents with their highest education level.

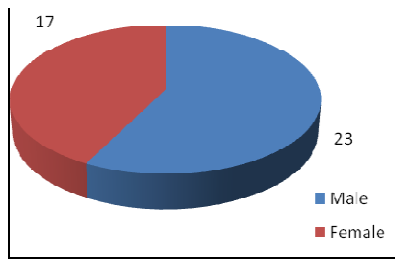


FIGURE 2: Respondents

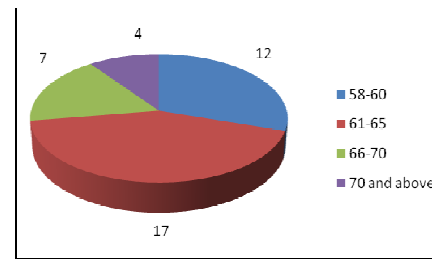


FIGURE 3: Age Range of Respondents

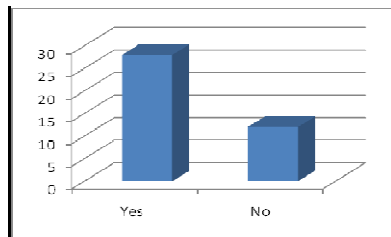


FIGURE 4: Status of Retirement

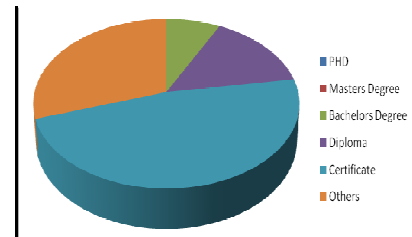


FIGURE 5: Education Qualification of Respondents

6. TYPE OF KNOWLEDGE TO BE SHARED

This section is about finding out what kind of information and knowledge respondents would like to have, on the other hand what information or knowledge they are willing to give. Each respondent has been asked to answer all the questions in this section. Through designing of the question, it divided to three parts. First part focused on the kind of knowledge or information needed by the senior citizens. This first part of questions is to meet with the one of the objectives of this study which is to identify the appropriate technology requirements needed by senior citizens. Figure 6 illustrates the findings for interest of senior citizens finding information using computer based on question view in Table 1.

TABLE 1: Question View 1

Q1	I am interested to find information about computers.
Q2	I am interested to find information related only to me from the internet.
Q3	I am interested to find other information besides information related to me from the internet.
Q4	I am interested to find information about senior citizens portals from the internet.
Q5	I am interested to find information on latest events about senior citizens from the internet.
Q6	I am interested to find information about senior citizens lifestyle benefits from the internet.
Q7	I am interested to use internet as a medium to find out about a place before I make a visit to the place.

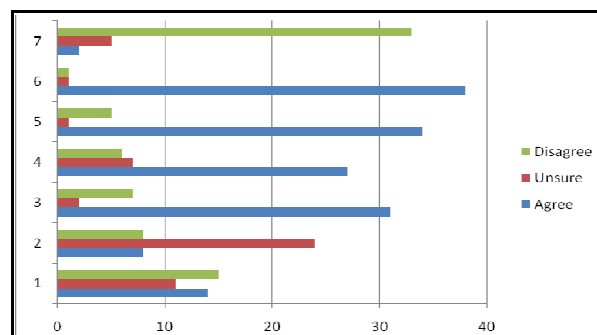


FIGURE 6: Interest of using computer

The next part was to identify the level of computer usage among the respondent. They were asked about the online usage on paying bills as well as e-banking. Table 2 shows the questions for this section and the Figure 7 illustrates the answers given by the respondents.

TABLE 2: Question view 2

Q1	I use internet for internet banking.
Q2	I use internet to pay bills online.
Q3	I use internet as a medium to share my feelings with others.
Q4	I use computer as a medium for me to learn new things.

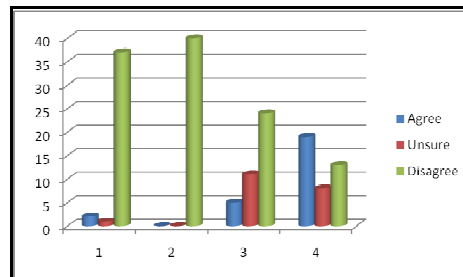


FIGURE 7: Computer Usage Purpose

The second part is to identify if the senior citizens are willing to share their experience and knowledge with others. As the third part is to identify what are the information or knowledge they are interested in looking for. The Figure 8 shows the percentage of the respondents' answers.

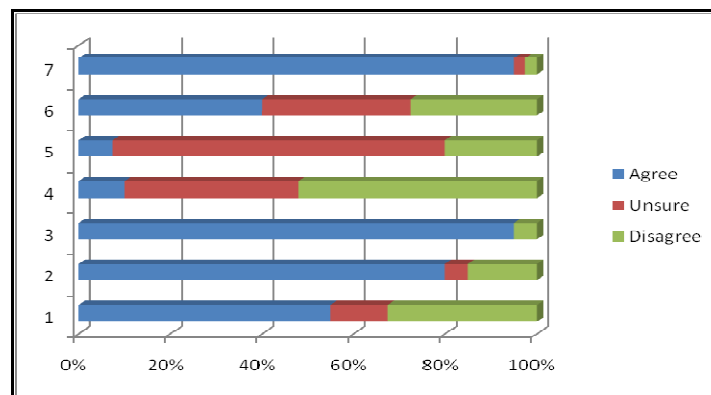


FIGURE 8: Willingness to Share Knowledge

From the answers given by respondents, it is shown that they are willing to share most of the knowledge among the others but still does not agree on going to the extent of travelling to get vast knowledge for any related information needed. This is shown clearly in Figure 8 at number 5 bar, where most of the respondents are not sure or disagree to travel to get knowledge. But almost all of them are willing to share their problems with others and get opinions from other parties when they want to.

A. Identifying the Senior Citizens Problems While Using a Computer

In this section, questions were asked about the senior citizens' problems when they use a computer, as well as the problems they face when visit any website in the internet. In the beginning of research, respondents were asked about the problems they faced using a computer in their daily tasks. The other questions were focus on the problems they are being confronted when they want to visit a website for information seeking purpose or any other purposes. From the Figure 9 we can see that the senior citizens are facing various problems when using a computer.

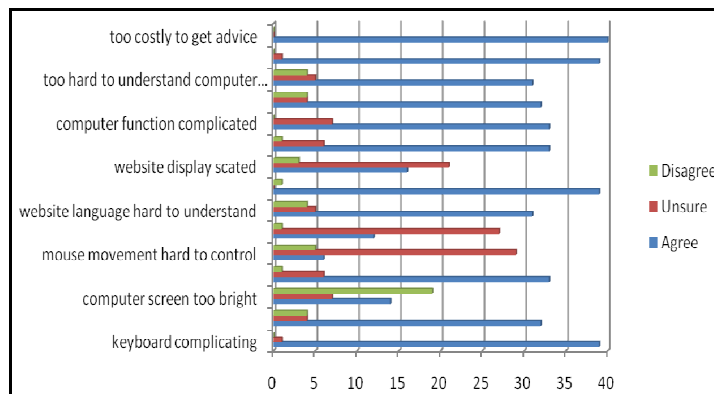


FIGURE 9: Common problem faced by senior citizens when using computer

B. Portal Recommendations

In identifying portal recommendations, the respondents have been asked about their opinions in identifying elements and features to include them into portal website. These features are important because they support communities. They also encourage the senior citizens to communicate through the use of the internet. This part of question probed on the suitability of the portal content, which will be developed based on the opinions gathered from the community members. The suggested content of the portal follows along the expectation of senior citizens in assisting them in formal or informal issues. The characteristics for this type of portal, as explained below:

- Manage documents and critical information in digital manner.
- Easy related-information finding and accessing.
- A medium for collaboration and sharing.

In this section, majority findings show that 52% senior citizens agreed that a working online portal is needed rather than just using E-mails as the sole medium. Majority of the senior citizen which are 23% fairly answered that the portal must integrate some characteristics that support collaboration and sharing activities, Emails, and communities, 95% senior citizens totally agreed that the portal must be made available online. When the respondents asked if they think that "Web-based system is sufficient and useful to support knowledge collaboration and sharing among senior citizens", 20% were disagreed and 74% agreed. Figure 10 shows contrarities in their opinion when they answered questions in this section (Questions view 3).

TABLE 3: Question view 3

Q1	An online portal is needed rather than just using email or any conventional ways as the sole medium.
Q2	The portal must integrate some characteristics to support collaboration and sharing activities, emails, and communities.
Q3	The portal must be made available online (Internet)
Q4	Web-based system is sufficient and useful to support knowledge collaboration and sharing among senior citizens.
Q5	It is better to retrieve or search any information or knowledge related to your interest or required knowledge through an established online medium such as knowledge sharing portal.
Q6	Knowledge portal can act as a platform to encourage the senior citizens to share and contribute their knowledge.
Q7	I would rather use other medium to collaborate and share knowledge than using the Knowledge Sharing Portal.
Q8	I need information about websites that provide information on senior citizens.
Q9	It is more effective and efficient to share ideas with others through online medium such as Knowledge Sharing Portal.
Q10	The portal must be secured to allow collaboration and sharing among intended users.
Q11	The portal must also have some degree of personalization.

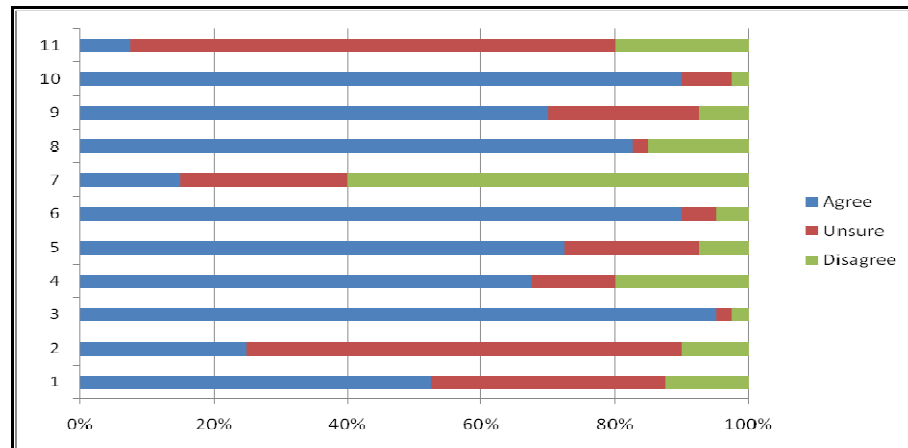


FIGURE 10: Portal Recommendations

7. SUMMARY OF ANALYSIS OF THE QUESTIONNAIRES

After looking at the results and analyzing it, the researcher came out with the perspective of the content of KS portal for senior citizens. Table 4 has listed those contents. Overall, the analysis provides a root for the researcher to get preliminary understanding on the importance of identifying type of knowledge and skills that need to be shared, knowledge info-structure, and IT infrastructure which the results are carried out for the development of KS Portal Purposes. Nevertheless, the analysis is quite important to the researcher in identifying the potential of using KSP among the senior citizens that going to be developed. By then, the researcher will be able to drill into details of certain criteria on type of knowledge and skills that need to be shared and the portal recommendations or proposals which have been analyzed from the feedback given by the selected community of practice.

TABLE 4: Knowledge Portal Contents (Proposed)

Category	Contents	KS Framework Components
Sharing Tools	<ul style="list-style-type: none"> ❖ Use KS tools like forum and chat. ❖ Allow users to upload and download documents. ❖ Use search engine to search for the relevant topic inside the portals pages. 	<ul style="list-style-type: none"> ▪ KS Tools ▪ Storage
Services	<ul style="list-style-type: none"> ❖ The portal should have links to the useful websites or government portals so the knowledge sharing portal can be start point to navigate the other senior citizens websites. ❖ Providing the senior citizens with recent announcement of activities in the state. ❖ Post latest news that is concern to the senior citizens. 	<ul style="list-style-type: none"> ▪ Service Provider
Portal Enhancement	<ul style="list-style-type: none"> ❖ The language that is going to be used in portal should be English so the information supported will help not just as portal for sharing knowledge, it also will be information website portal for the senior citizens. ❖ The portal should be easy to browsed and navigated by senior citizens so they can access to most frequency information looked by them. ❖ If it can be, it is better to make portal can be accessed whether offline or online and also to have the portal in Bahasa Melayu 	<ul style="list-style-type: none"> ▪ Knowledge dissemination
Information From Social Welfare Department	<ul style="list-style-type: none"> ❖ Download forms related to senior citizens from the government agencies. ❖ Providing information about latest activities in the states respectively. ❖ Benefits that are provided to senior citizens by the government and non-government sectors. ❖ Providing other related information that may be interested by the community. 	<ul style="list-style-type: none"> ▪ Service Provider ▪ Storage

Besides, the researcher also takes into consideration the knowledge info-structure and IT infrastructure, which may lead to the success of the KSP development. Therefore, the design of a prototype web-based KSP can be made accordingly based on the results gained from the analysis phase. As for the portal development, certain module, this out of the range of an analysis phase will be depicted from the previous research. The main reason is to make the portal more usability and effectively.

8. CONCLUSION

The main intention of this project is to identify some common difficulties while using computer and identifies the most popular computer technologies used among this community. For this reason, a web-based portal called the Senior Citizens KS Portal was developed. The portal developed is intended to help the senior citizens to share and contributing more knowledge in better ways. As a results, senior citizens will overcome their problems and share knowledge will works smoothly and thoroughly in order to improve their knowledge.

The IT based services that were identified through the survey that was conducted had given the overall idea to the researcher on the services that are beneficial for the community of practice. Based on the analysis, services such as online chatting, forum as well as the document sharing among the senior citizens helps them in sharing their knowledge among each other. Besides the services, the researcher also gets to identify the information requirements that are needed in the portal for the senior citizens. The services as well as the information requirements are shown in the prototype portal.

In conclusion, researchers found that majority of the respondents of this study are technology savvy because of the fact that they are actually using computers in their daily tasks. As analyzed by the researcher, it is up to the senior citizens that they want to use the computer technology or not but they prefer it if the computers and the technology is designed in such a way that they can use it easily. The features of a computer should satisfy the senior citizens in a way that the technology can be beneficial for them. The gap of technology is not identified consistently as the computer technology is used by most of the respondents and due to the scope of this study that only focus on senior citizens of Malaysia. Hopefully, the gap can be identified when the scope of the project can be expanded.

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