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INVESTIGATES ICT ADOPTION AMONG SENIOR CITIZENS IN LOCAL COMMUNITY

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ABSTRACT

The study's main goal is to find out why older adults in Malaysian communities aren't utilising ICT as much as they should, which is a very important problem. The high cost of ICT devices and limited access to technology infrastructure make things very hard for senior citizens. This makes it harder to adapt on technology and highlights the urgent need for low-cost ways to more involved with ICT. Therefore, this study needs to highlight behavioural intention. In order to measure the impact full of behavioural intention, its need to factors technology anxiety and social influence. It shows a significant relationship between behavioural intention and technology anxiety and social influence. A survey conducted online with a quantitative method for the community. Survey questions were given to 160 residents but 110 data were collected from elderly local respondents in Klang Valley focusing on Puncak Alam. This study uses theory Technology Acceptance Model (TAM). Some suggestions include switching from quantitative to qualitative data collection, making events and programmes to get older people to use, and teaching seniors about online safety and security to keep them safe from scams and threats.

ARTICLE INFO

Keywords:

Behavioural Intention, Technology Acceptance Model (TAM), Technology Anxiety, Social Influence, ICT Adoption Among Senior Citizens

1.0 INTRODUCTION

The study on investigating ICT adoption among senior citizens in local communities aims to understand the factors influencing their willingness to embrace technology. Research has shown that a significant portion of the elderly population underutilizes ICT (Peek et al., 2015). Factors such as affordability, technological access, and infrastructure hinder the adoption of ICT among the elderly (Peek et al., 2015). The hypothesis of the study is based on the relationship between technology anxiety and social influence with behavioral intention (Peek et al., 2015). Understanding these factors is crucial to promote positive behavioral intentions and enhance ICT adoption among senior citizens, ultimately improving their engagement with technology in the community.

Studies have indicated that factors like self-satisfaction, perceived usefulness, cognitive ability, and social influence significantly impact the elderly's willingness to adopt gerontechnology (Peek et al., 2015). Additionally, it is essential to understand user requirements and implement features that cater to the needs of senior citizens to increase the adoption of mobile health applications and technology (Peek et al., 2015). Moreover, the utilization of e-government services and social media by the elderly is influenced by factors such as citizen trust, innovation, acceptance, and the technology acceptance model (Peek et al., 2015; Ugalde et al., 2023). In conclusion, by exploring the influencing factors of behavioral intention, such as technology anxiety, social influence, self-satisfaction, and perceived usefulness, researchers can develop strategies to promote ICT adoption among senior citizens. Addressing affordability issues, understanding the barriers to technology use, and tailoring technology to meet the specific needs of the elderly are crucial steps in fostering increased engagement with technology among this demographic.

2.0 LITERATURE REVIEW

Encouraging older adults to embrace new technologies and enhance their digital literacy is crucial for promoting active aging. Studies have shown that the adoption of Information and Communication Technologies (ICT) among older adults is increasing (Mao et al., 2022). Factors such as compatibility of needs, proficiency in use, and support play significant roles in promoting ICT use among the elderly (Mao et al., 2022). However, older adults may face barriers to technology adoption due to cognitive and physical decline, lack of exposure to technology, and limited relevance of technology to their daily lives (Lee & Coughlin, 2014; Lin et al., 2010). To address these challenges, techniques to promote technology learning and adoption in older adults are essential (Arthanat et al., 2018; Hur, 2016).

Research emphasizes the importance of providing technical support and proper coaching to older adults for successful technology adoption (Lee & Coughlin, 2014). Additionally, it is crucial to consider the financial aspects and workflow challenges associated with technology adoption among older adults (Wang et al., 2010). Despite potential barriers, older adults have shown positive attitudes toward technology adoption and have taken steps to embrace new technologies (Kim & Choudhury, 2020). Moreover, older adults are open to trading privacy concerns for increased independence through the adoption of smart home technologies (Dermody et al., 2021). In conclusion, promoting technology learning and adoption among the elderly is vital for active aging. By addressing barriers, providing support, and considering the needs and attitudes of older adults, it is possible to empower them to utilize technology effectively, thereby enhancing their quality of life and promoting active aging.

2.1 Behavioural Intention

Research on technology acceptance models, such as the Technology Acceptance Model (TAM), emphasizes the significance of perceived usefulness and perceived ease of use in determining individuals' behavioral intention to use a system (Venkatesh & Davis, 2000). These beliefs play a crucial role in shaping users' attitudes and behavioral intentions towards technology (Erasmus et al., 2015). Practical implications suggest that ensuring the ease of use of a new system and highlighting its usefulness can positively influence users' confidence and future usage (Erasmus et al., 2015). Attitudes are highlighted as a key predictor of behavioral intention, a concept often integrated into TAM, which is essential for elderly individuals' use of information and communication technologies (Davis et al., 1989). Additionally, behavioral intent testing can impact users' willingness to adopt technology, further influencing their actual usage behavior (Venkatesh & Davis, 2000)

Moreover, external variables like subjective norms and voluntariness can also influence core variables such as perceived usefulness, perceived ease of use, and usage intention, affecting actual usage behavior (Wang, 2018). This suggests that beyond individual desires, external factors can shape technology acceptance and usage. In conclusion, the synthesis of these references underscores the importance of perceived usefulness, ease of use, attitudes, and behavioral intentions in determining individuals' technology acceptance and usage behavior. Understanding these factors is crucial for designing systems that cater to users' needs and preferences, ultimately influencing their adoption and continued use of technology.

2.2 Technology Anxiety

Technology anxiety (TA) is a significant concern, particularly among the elderly, impacting their behavioral intention towards adopting new technologies. Middle-aged individuals, who have more exposure to technology at work, tend to exhibit lower levels of technology anxiety (Yap et al., 2022). Factors contributing to the elderly's technology anxiety include the digital gap, low proficiency, adherence to traditional culture, and information-seeking behavior (Yap et al., 2022). Studies have shown a negative correlation between perceived ease of use and technology anxiety, affecting the elderly's use of the internet for health information (Tsai et al., 2020). For seniors with cardiovascular disease, distrust in health technology often arises from heightened health concerns (Tsai et al., 2020). Perceived ease of use and perceived ubiquity are crucial factors influencing technology anxiety and resistance to change among older adults (Tsai et al., 2020). The elderly's intention to use technologies is influenced by the digital divide, limited technical skills, traditional culture, and information-seeking behavior (Yap et al., 2022). Additionally, technology anxiety is more pronounced among the elderly in developing countries compared to developed countries (Meng et al., 2021). Elderly individuals may face challenges in adopting new technologies due to technological anxiety, which refers to their apprehension when faced with the possibility of trying out a new technology (Hamid et al., 2023).

In conclusion, technology anxiety plays a significant role in the behavioral intention of the elderly towards adopting new technologies. Factors such as exposure to technology, cultural influences, proficiency levels, and perceptions of ease of use all contribute to the levels of technology anxiety experienced by older adults.

2.3 Social Influence

ICT plays a vital role in connecting individuals globally, benefiting both the younger and senior generations. Seniors, who are increasingly utilizing ICT, particularly for online shopping, are influenced by social factors (Alcalá et al., 2017). Government initiatives focusing on educational programs have been shown to enhance internet usage among seniors, promoting self-efficacy (Alcalá et al., 2017). Research based on the Technology Acceptance Model (TAM) indicates that behavior positively influences social influence on ICT adoption, with age having a negative impact (Sorce & Issa, 2021). Both younger and older generations confirm the TAM, emphasizing the importance of user-friendly technology (Sorce & Issa, 2021). Perceived value and social influence have been found to positively impact senior satisfaction, with perceived value having a stronger effect (Sorce & Issa, 2021). Egovernment portals have been implemented to enhance services, accountability, and efficiency, thereby affecting senior ICT usage (Sorce & Issa, 2021). During the COVID-19 pandemic, research by Andreas Oldeweme on ICT adoption for tracing apps revealed widespread usage, especially among seniors, driven by transparency, accuracy, social influence, and trust in the government (Sorce & Issa, 2021).

2.4 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), proposed by Davis in 1989, assesses technology adoption based on perceived benefits and ease of use. It predicts user intention and actual usage, emphasizing perceived usefulness and ease of use. TAM has evolved with extensions like TAM2 and TAM3, integrating factors like social influence and facilitating conditions. Despite critiques, TAM's consistent predictive power maintains its significance in understanding how users adopt and interact with evolving technologies.

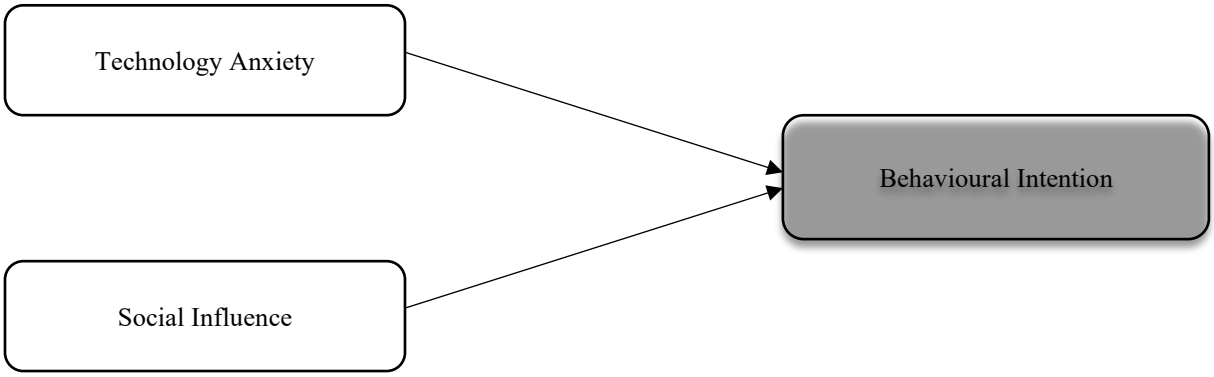

Figure 2.1 : Research Framework

3.0 METHODOLOGY

These local community studies on older ICT use frequently utilise quantitative methods to obtain broad ideas. This technique uses a demographics, technology anxiety, social influence, and behavioural intention questionnaire to study senior individuals' ICT use in daily life. Data on client preferences and purchase habits is more accurate and reliable when collected quantitatively, especially using a Likert scale.

Outside of race and geography, the study examined correlations between one dependent variable and two significant independent variables. The online English-Bahasa Malaysia questionnaire covered demographics, technology anxiety, social influence, and behavioural intention. Most Malays answered influential ICT adoption variables anonymously. The questionnaire assessed technological anxiety, social influence, and behavioural intention on scales. The expected completion time was 5–10 minutes to ensure qualified replies.

The thesis used efficient non-probability convenience sampling. Though fast and cheap, this method may bias. Google Forms was used to collect data from ICT-savvy Astana Alam Apartment 2, Puncak Alam people over 40. Community leaders sent questionnaire links from October 16 to 19, 2023, seeking 100 to 150 replies. Data comes from 110 respondents.

4.0 FINDINGS AND DISCUSSION

IBM SPSS (Statistical Package for the Social Sciences) is utilized for statistical analysis in this thesis, employing reliability analysis, descriptive analysis, and Pearson's correlation coefficient. SPSS facilitates the generation of charts, tabular reports, and various statistical analyses, including internal consistency measures like reliability analysis, which assesses how closely survey questions align with the same notion.

Descriptive Analysis

Descriptive analysis of section A in the questionnaire focuses on demographic data, including factors like gender, age, race, education, occupation, use of ICT, use of ICT devices, use of social media, and purpose use of devices for senior citizens. Utilizing tables and pie charts, this fundamental analysis provides a quantitative summary, offering a clear and insightful profile of the respondents.

Table 1: Demographic findings in descriptive analysis

CONTENT	QUESTIONS	FREQUENCY	PERCENTAGE (%)
Gender	Male	69	62.7
	Female	41	37.3
Age	40-50 years old	56	50.9
	50-60 years old	36	32.7
	Above 60 years old	18	16.4
Occupation	Government	57	51.8
	Non-Profit Sector	-	-
	Student	11	10.0
	Private	29	26.4
	Others	13	11.8
Education	Phd Degree	3	2.7
	Master Degree	11	10.0
	Bachelor Degree	39	35.5
	Diploma	29	26.4
	SPM	22	20.0
	Others	6	5.5
Race	Malay	102	92.7
	Chinese	1	.9
	India	5	4.5
	Others	2	1.8
Use of ICT	Yes	107	97.3
	No	3	2.7
Use of ICT devices	Smart phone	80	72.7
	Internet	16	14.5
	Personal computer	14	12.7
	Tablet computer	-	-
Use of social media	No account	1	0.9
	WhatsApp	68	61.8
	Facebook	24	21.8
	Instagram	12	10.9
	Twitter	4	3.6
	LinkedIn	1	0.9
Purpose use of device for senior citizens	Meeting new people	4	3.6
	Arranging hospital appointment	8	7.3
	Listening music	-	-
	Watching video, film, TV series etc	6	5.5
	Shopping	3	2.7
	Playing game	1	0.9

Using e-government services	10	9.1
Sending e-mail	1	0.9
Using banking services	6	5.5
Learning new information	12	10.9
Using social media accounts	8	7.3
Following news and latest developments	21	19.1
Contacting with family and friends	30	27.3

The results indicate that a significant proportion of the participants, specifically 69 individuals or 62.7%, were identified as men. The survey sample mostly consisted of those aged between 40 and 50, accounting for 56 respondents, equivalent to 50.9% of the total population. The government sector, including 57 replies or 51.8% of the total, has the highest number of inhabitants. The majority of the tables presented in the study indicate that 39 out of 110 individuals, accounting for 35.5%, possessed a bachelor's degree or higher educational qualification.

The research findings in the Puncak Alam community indicate that the Malay ethnicity has emerged as the predominant group, with a response rate of 92.7%. This result was obtained from a sample size of 102 individuals. The use of Information and Communication Technology (ICT) is prevalent among a vast majority of individuals, as evidenced by the fact that 97.3% of respondents, corresponding to a total of 107 individuals, affirmed their affirmative response to the inquiry on their usage of ICT. The smartphone is the predominant device utilized for information and communication technology (ICT), with about 80 individuals accounting for 73% of the user base.

In the realm of information and communication technology (ICT), it is observed that a significant proportion of individuals, specifically 68 individuals or 62% of the sample, employ the WhatsApp program. The data indicates that there is a singular

individual who exclusively utilizes LinkedIn as their sole social media platform, accounting for a mere 1% in terms of both proportion and quantity. The primary objective for utilizing the most widely adopted gadget is to engage in communication with family and friends, as indicated by 27% of respondents, which corresponds to a total of 30 individuals. Notably, no participants expressed a preference for utilizing the device for listening to music.

Reliability Analysis

Reliability analysis, specifically Cronbach's Alpha, assesses the accuracy and consistency of data-gathering methods. Cronbach's Alpha is commonly used to measure internal consistency, especially for Likert scales. This study employs Cronbach's Alpha to evaluate the dependability of the questionnaire, aiming for values above 0.5. With 110 valid responses from 160 elderly community residents, the research focuses on ICT adoption among senior citizens, ensuring definite validity and maintaining respondent anonymity. The Cronbach's Alpha, more than 0.9 is excellent and more than 0.5 can be accepted for the research. The unacceptable is lower than 0.5 and need do a new survey.

Table 3: Reliability Statistics

CONTENT	QUESTIONS	CRONBACH'S ALPHA	ITEMS
Technology Anxiety	I am not nervous to use ICT I am not worried to use ICT I am comfortable to use ICT I am not confused to use ICT	.927	4
Social Influence	People who influence my behaviour think that I should use ICT People who are important to me think that I should use ICT The people whose opinions think value that I should use ICT	.877	3
Behavioural Intention	I intend to continue using ICT in the future I will always try to use ICT in my day-to-day life I plan to continue to use ICT frequently	.925	3

Technology anxiety Cronbach's Alpha can be accepted because it is 0.927 that above 0.5. Social influence is 0.877 for Cronbach's Alpha, still can reliable. Behavioural intention Cronbach's Alpha is 0.925 and it's reliable. Thus, all constructs in the study achieved Cronbach's Alpha values exceeding 0.8, indicating extremely high and acceptable reliability. According to the result, the samples had a good reliability and internal consistency.

Correlation Coefficient

Pearson's correlation coefficient analysis assesses the strength and direction of the linear relationship between the independent variable (IV) and the dependent variable (DV). The study aims to determine if there is a correlation and, if so, the degree and direction of the relationship, crucial for understanding the strength of the association. Pearson Correlation Analysis was used to examine the linear relationship between technology anxiety, social influence, and behavioural intention in the study on ICT adoption among senior citizens. The correlation coefficient ranges from -1 to 1, indicating the strength and direction of the relationship between variables. 0.9 to 1.0 / -0.9 to -0.1 is very high for strength for correlation while 0.0 to 0.3 / -0.0 to -0.3 is little for the strength of correlation.

		Technology Anxiety	Social Influence	Behavioural Intention
Technology Anxiety	Pearson Correlation	1	.505**	.768**
	Sig. (2-tailed)		.000	.000
	N	110	110	110
Social Influence	Pearson Correlation	.505**	1	.555**
	Sig. (2-tailed)	.000		.000
	N	110	110	110
Behavioural Intention	Pearson Correlation	.768**	.555**	1
	Sig. (2-tailed)	.000	.000	
	N	110	110	110

Table 5: Overall correlation between technology anxiety, social influence and behavioural intention

The observed correlation value of 0.768 indicates a strong positive link between technological fear and behavioural intention. Both p-values are 0.000, indicating statistical significance at a significance threshold of 0.05. The data demonstrates a noteworthy statistical correlation between the perceived usefulness and the behavioural intention.

The findings suggest that there exists a moderate association between social influence and behavioural intention, as evidenced by a correlation value of 0.555. Both significance values are 0.000, which is lower than the predetermined significance level of 0.05. The findings demonstrate a noteworthy statistical correlation between the perceived utility of a given phenomenon and individuals' behavioural intention towards it.

5.0 CONCLUSION

In conclusion, this study utilized the Technology Acceptance Model (TAM) to explore ICT adoption among senior citizens in local communities. It focused on technology anxiety, and social influence as independent variables, with behavioural intention as the dependent variable. Conducted online through Google Forms and distributed in a Puncak Alam community WhatsApp group, the study addressed challenges faced by seniors in adopting ICT. Findings from SPSS analysis revealed significant relationships between various factors and behavioural intention. Notably, older adults often use ICT to stay connected with friends and family. The study provides insights and suggestions for enhancing technology adoption among seniors, contributing valuable information for future research in this area.

During an examination of ICT adoption, it is important to overcome technology anxiety among elderly persons in local communities by implementing user-friendly training programs that are customized to meet their needs. Commence by providing interactive seminars that concentrate on fundamental digital abilities, progressively advancing towards more sophisticated functionalities. Implement a peer-to-peer learning framework that facilitates the exchange of knowledge and fosters mutual support among senior individuals. Promote the establishment of a conducive atmosphere by collaborating with nearby community centres and senior organizations to cultivate a feeling of community involvement in the utilization of technology.

In addition, it is crucial to have accessible and fast technical support channels to swiftly attend to any problems or challenges encountered by senior individuals. The multidimensional method employed in this study is to enhance self-assurance, mitigate distress, and enable elderly individuals to adopt and get advantages from information and communication technology in their everyday activities.

Next, it is crucial to create positive role models among seniors who have effectively adopted technology to utilize social influence for researching ICT adoption among seniors in local communities. Create testimonials and success stories that showcase the practical advantages of utilizing ICT among older individuals. Emphasize the positive outcomes such as greater communication, increased access to information, and improved social ties.

Propose the establishment of community-based seminars and activities aimed at facilitating the exchange of knowledge and experiences among technologically proficient senior citizens. These individuals would serve as ambassadors, actively engaging with their peers to dispel misconceptions surrounding technology and foster inspiration. Promote intergenerational learning by engaging younger members of the community, such as students or technology enthusiasts, in the facilitation of mentoring programs. The objective of this method is to establish a conducive social atmosphere, alleviating concerns and motivating elderly individuals to acknowledge the societal benefits of adopting ICT within their local communities.

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