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THE RELATIONSHIP BETWEEN TECHNOLOGY ANXIETY AND ICT ADOPTION

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ABSTRACT

Seniors often encounter barriers to embracing digital tools due to technology anxiety, hindering their ICT adoption. Investigating this issue aims to uncover strategies to alleviate anxiety, promote greater ICT adoption, and enhance digital inclusivity. This understanding is pivotal in empowering seniors to leverage technology for communication, information, and services in today's fast-paced digital world. Technology anxiety, representing seniors' emotional and cognitive concerns when using technology, is the independent variable. ICT adoption, measuring the integration of digital tools into seniors' daily lives, serves as the dependent variable. The Unified Theory of Acceptance and Use of Technology (UTAUT) framework helps comprehend the factors influencing seniors' technology adoption decisions. Data from 158 senior residents at Apartment Harmoni, Petaling Jaya, Malaysia, reveals a correlation between personalized support and reduced technology anxiety. This correlation leads to increased ICT adoption rates among seniors. By offering tailored assistance, such as one-on-one training and ongoing support, seniors experience reduced anxiety levels, making them more receptive to digital tools. Addressing technology anxiety through personalized support strategies is key to fostering greater ICT adoption among seniors. This approach not only promotes digital inclusivity but also facilitates access to essential resources and services in an evolving digital landscape.

ARTICLE INFO

Keywords:

ICT adoption, technology anxiety, Unified Theory of Acceptance and Use of Technology (UTAUT)

1.0 INTRODUCTION

In today's rapidly evolving digital landscape, the issue of technology anxiety among senior citizens has emerged as a critical concern Russell et al. (2015). As society progresses towards increased digitalization, it is essential to address the challenges faced by older individuals in adopting Information and Communication Technology (ICT) (Kim, 2019). This topic holds significant importance as it directly impacts the well-being and social inclusion of senior citizens in an increasingly technology-driven world. The ability of older individuals to engage with technology shapes their overall quality of life, influencing various aspects from healthcare services to social interactions and access to information (Truby et al., 2018).

Moreover, the significance of addressing technology anxiety among seniors extends beyond individual well-being to societal cohesion (Tajaldeen & Al-Ghamdi, 2020). With the digital divide widening, bridging the gap for older adults in accessing and utilizing ICT is crucial for fostering a more inclusive and connected community (Esmaeilzadeh, 2020). Understanding the perceptions and barriers faced by seniors in embracing technology is vital for promoting digital literacy and ensuring equitable participation in the digital age (Kim et al., 2022). The concept of technology anxiety among senior citizens influences various aspects of the current societal landscape, emphasizing the need for tailored educational programs and support systems to alleviate anxiety and promote digital literacy among older populations (Zhao et al., 2022).

In today's environment, the topic of technology anxiety among senior citizens is viewed as a key factor in enhancing the quality of life for older individuals. Narrowing the information divide for senior citizens is not only important from an ethical and social perspective but is also critical for pragmatic reasons as the population ages rapidly, particularly in developed countries. Studies have highlighted the differential impact of theoretical explanations on constructs related to technology anxiety, emphasizing the need for targeted interventions to address the diverse needs of seniors in adopting technology (Lu et al., 2023).

2.0 LITERATURE REVIEW

2.1 Technology Anxiety

The investigation into technology anxiety among senior citizens has progressed significantly, reflecting the growing acknowledgment of digital inclusion for older populations. Initial studies identified emotional and cognitive obstacles faced by seniors in adopting ICT, while recent research has incorporated advanced theoretical frameworks such as the Unified Theory of Acceptance and Use of Technology (UTAUT) to comprehend the factors influencing technology adoption among older individuals (Petralia et al., 2017). Methodologies have shifted towards quantitative approaches, utilizing surveys and statistical analysis to explore the relationship between technology anxiety and ICT adoption (Askari et al., 2020). Recent studies highlight the interconnectedness of technology anxiety, health anxiety, and trust in ICT adoption decisions among seniors, leading to the utilization of multidimensional frameworks and mixed-method approaches that combine surveys with qualitative interviews (Orrenius & Zavodny, 2015). These advancements indicate a move towards more comprehensive approaches to examining technology anxiety among older adults, with an emphasis on personalized interventions and tailored support for seniors in adopting ICT (Orrenius & Zavodny, 2015).

Research has demonstrated a positive correlation between technology anxiety and ICT adoption among seniors, emphasizing the need for targeted interventions to alleviate anxiety and promote technology acceptance (Askari et al., 2020). While

methodologies have varied from surveys to hypothesis testing, limitations include sample size restrictions, limited generalizability, and potential biases in self-reported data (Askari et al., 2020). Individual studies have made unique contributions by exploring specific factors influencing technology anxiety, such as gender variations, health anxiety, and perceived cost, yet gaps remain in addressing the intricate interplay of age-related changes, cognitive abilities, and social factors in shaping technology anxiety among seniors (Askari et al., 2020). Future research directions could focus on tailored interventions that consider the multifaceted nature of technology anxiety and its implications for digital inclusivity among older adults (Askari et al., 2020).

In conclusion, the evolving landscape of research on technology anxiety among senior citizens underscores the significance of comprehending and tackling the obstacles faced by older populations in adopting ICT. By integrating advanced theoretical frameworks, employing quantitative methodologies, and investigating nuanced factors influencing technology acceptance, researchers are laying the groundwork for more personalized interventions and enhanced digital inclusivity for seniors.

2.2 ICT Adoption Among Senior Citizens

The research on ICT adoption among senior citizens has made significant progress. Early studies focused on identifying barriers and benefits, leading to the incorporation of theoretical frameworks such as the Unified Theory of Acceptance and Use of Technology (UTAUT) (Keränen et al., 2017). Recent trends have highlighted the need to refine concepts and constructs to better understand technology adoption among older adults, including factors like perceived usefulness and ease of use (Sirirak et al., 2011). Methodologically, there has been a shift towards employing mixed-method approaches, combining qualitative interviews with quantitative surveys to gain a comprehensive understanding of seniors' perspectives (Keränen et al., 2017). Moreover, there is an increasing emphasis on exploring individual differences such as cognitive abilities and prior technology experience in influencing seniors' attitudes towards ICT (Sirirak et al., 2011).

Research has demonstrated that technology can improve seniors' quality of life by facilitating communication and social connections. However, challenges such as limited device access and usability concerns still exist (Alam & Shaba, 2022). Methodologically, studies have varied in their approaches, with some utilizing quantitative surveys to assess technology usage patterns and others using qualitative interviews to delve into attitudes and experiences (Alam & Shaba, 2022). Despite these advancements, there is a need for further research to address gaps in knowledge, such as the impact of social support networks on ICT adoption among seniors (Alam & Shaba, 2022).

In summary, while there is substantial evidence supporting the benefits of ICT adoption among senior citizens and ongoing efforts to enhance theoretical frameworks and methodologies, there remain challenges and gaps that necessitate further exploration to better facilitate technology adoption in this demographic.

2.3 Theory of Acceptance and Use of Technology

The Unified Theory of Acceptance and Use of Technology (UTAUT) offers a valuable theoretical framework (Venkatesh et al., 2003). The UTAUT model, initially proposed by (Venkatesh et al.2003), amalgamates elements from various technology acceptance theories, including the Technology Acceptance Model (TAM) and the Theory of Reasoned Action (TRA), to create a unified and holistic theoretical approach. The central constructs of UTAUT encompass Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), and Facilitating Conditions (FC), each of which plays a crucial role in shaping an individual's intent to adopt ICT. Performance Expectancy (PE) is a fundamental construct, representing a user's

belief regarding the enhancement of their performance through the use of ICT (Venkatesh et al., 2003). It is derived from constructs such as perceived usefulness, extrinsic motivation, job-fit, relative advantage, and outcome expectations. Research by (Wang, 2023) and (Thong, 2016) affirms that Performance Expectancy is a strong predictor of use intention, significant in both voluntary and mandatory ICT adoption settings. Next, Effort Expectancy (EE), as defined by (Venkatesh et al.,2003), is the perceived ease associated with the use of the system. Effort Expectancy is constructed from perceived ease of use and complexity driven from TAM, MPCU, and IDT. (Venkatesh, 2016) and (Thong, 2016) note that the effect of the Effort Expectancy construct becomes nonsignificant after extended usage of technology.

3.0 RESEARCH FRAMEWORK

To determine the relationship between ICT adoption among senior citizens and technology anxiety towards ICT adoption at Apartment Harmoni, Petaling Jaya, Selangor, Malaysia, is depicted in Figure 1.

Figure 1: Conceptual framework

4.0 METHODOLOGY

The study on ICT adoption among senior citizens in local communities utilized a quantitative research method, aiming to gather comprehensive insights from a broad pool of data. Quantitative research involves systematically collecting and analyzing numerical data to measure people's perspectives statistically. In this study, the target population comprised residents at Apartment Harmoni, Petaling Jaya, Malaysia, with a sample size of 158 respondents participating in the survey.

Data collection was conducted through an online questionnaire administered via Google Form, with distribution facilitated solely through the community's leader on Whatsapp. This approach ensured efficient dissemination of the survey link to a large number of potential participants within the target community. The questionnaire consisted of two sections: Part A included demographic questions to gather background information, while Part B focused on assessing technology anxiety using a set of four items.

Following data collection, analysis was conducted using the Statistical Package for the Social Sciences (SPSS), a widely-used tool for analyzing psychological and social science data. The analysis was structured around a logical explanatory model, incorporating both empirical data from the survey and secondary data sources. SPSS facilitated the mathematical-statistical analysis of the collected data, enabling researchers to identify correlations and relationships among variables.

The primary source of information for this study was the community at Apartment Harmoni, Petaling Jaya, Malaysia, which has a history of utilizing SPSS for various social science research projects. By leveraging SPSS, researchers were able to analyze the data accurately and derive meaningful insights into the factors influencing ICT adoption among senior citizens

in the local community. This methodological approach enhances the rigor and reliability of the study findings, contributing valuable knowledge to the field of technology adoption among older adults.

Table 4.1 Summary of Research Method

Research Design	The quantitative method was used in this study to investigate ICT Adoption Among Senior Citizens in Local Communities. Quantitative research involves acquiring broad insights from large amounts of data through the use of a logical and data-driven approach to measuring people's perspectives statistically and numerically.
Target Population	Residents at Apartment Harmoni, Petaling Jaya, Malaysia
Sample Size	A total of 158 respondents anticipated in the survey
Data Collection	The questionnaire was administered online by Google Form and shared by the link only through the community's leader on Whatsapp as he will be the main distributor to receive a large number of samples
Instrument/ Questionnaire	The instrument consists of (2) Sections: Part A: Demographic questions (9 Items); Part E: Technology Anxiety (4 Items)
Data Analysis	Built around a logical explanatory model produced with empirical data and secondary data sources related to SPSS and data analysis. The SPSS application assists psychologist specialists in analyzing psychological data for accuracy with the formalization of empirical findings in mathematical-statistical analysis and relationships are formed by correlations. The primary source of information is on the communities at Apartment Harmoni, Petaling Jaya, Malaysia that has previously utilized SPSS for numerous purposes projects involving social science research.

5.0 FINDINGS AND DISCUSSION

The results of the regression analysis, the responses to the study's research question and hypothesis, and the demographic data of the respondents are all presented in this section.

Table 5.1: Demographic Data

Demographic	Categories	Frequency	Percentage (%)
Gender	Male	107	67.7
	Female	51	32.3

Age	Less than 20 years old	3	1.9
	20-30 years old	32	20.3
	30-40 years old	52	32.9
	40-50 years old	58	36.7
	Above 50 years old	13	8.2
Occupation	Government	34	21.5
	Non-profit sector	2	1.3
	Student	13	8.2
	Private	76	48.1
	Others	33	20.9
Education	PHD degree	2	1.3
	Master degree	17	10.8
	Bachelor degree	54	34.2
	Diploma	34	21.5
	SPM	41	25.9
	Others	10	6.3
Race	Malay	156	98.
	Chinese	0	7 0
	India	2	1.83
	Others	0	0
Use of ICT	Yes	149	94.3
	No	9	5.7
Use of ICT Devices	Smart phone	152	96.2
	Internet	119	75.3
	Personal computer	84	53.2
	Tablet computer	53	33.5
Use of Social Media	No account	1	0.6
	Whatsapp	148	93.7
	Facebook	115	72.8
	Instagram	107	67.7
	Twitter (X)	59	37.3
	LinkedIn	36	22.8
Purpose Use of Senior Citizen	Meeting new people	53	33.5
	Arranging hospital appointments	76	48.1
	Listening music	47	29.7
	Watching video, film, TV series	81	51.3
	Shopping	78	49.4
	Playing game	32	20.3
	Using e-government services	83	52.5
	Sending e-mail	79	50
	Using banking services	105	66.5
	Learning new information	83	52.5
	Using social media accounts	86	54.4
	Following news and latest developments Contacting	121	76.6
	with family and friends	127	80.4

Table 5.2 Variable – Technology Anxiety

No.	Measurement Item	1	2	3	4	5	Mean Standard Deviation
1.	I am not nervous to use ICT	3	9	52	61	33	3.7025
		1.9%	5.7%	32.9%	38.6%	20.9%	0.92736
2.	I am Not Worried to Use ICT	2	12	55	60	29	3.6456
		1.3%	7.6%	34.8%	38%	18.4%	0.91049
3.	I am comfortable to use ICT	0	12	37	81	37	3.9557
			7.6%	23.4%	51.3%	23.4%	0.74308
4.	I am not confused to use ICT	0	9	54	67	28	3.7089
			5.7%	34.2%	42.4%	17.7%	0.83173

Shows the independent variable, which is the technology anxiety towards the use of ICT among senior citizens, and the result of mean and standard deviation analysis. Item 3 had the highest mean, 3.9557, and the standard deviation was 0.74308. The respondent agreed that the people whose opinions that they value think they should use ICT. Item 2 has the lowest mean of 3.6456 and the lowest standard deviation of 0.91049.

Table 5.3 : Correlation Analysis

Correlation analysis was used to determine the relationship between technology anxiety and ICT adoption among senior citizens as follows:

		Technology Anxiety	ICT adoption among senior citizen
Technology Anxiety	**Pearson Correlation**	**1**	**.582****

	Sig. (2-tailed)		**<.001**
	N	**158**	**158**
ICT adoption among senior citizen	**Pearson Correlation**	**.582****	**1**
	Sig. (2-tailed)	**<.001**	
	N	**158**	**158**

****. Correlation is significant at the 0.01 level (2-tailed).**

This study shows that the relationship between technology anxiety and ICT adoption among senior citizens is highly positive with a correlation coefficient of 0.582. Both significant values are <.001, which is less than the highly significant level of 0.05. It shows a significant statistical relationship between technology anxiety and ICT adoption among senior citizens. Studies show that M-technology anxiety is a fact and commonly occurs among older adults. It is assumed that elderly users have lower self-efficacy and technical skills than more youthful users. It was also found that technology anxiety among older adults is caused by declining cognitive and physical abilities and capabilities, resulting in negative intention toward adopting new technology (Zhang, 2023). A significant number of studies were carried out to measure psychological reactions like anxiety towards using computers through traditional measurement systems. Technology anxiety is often found high, which can trigger a lack of use of mHealth services (Rajak, 2021). Rendering with the negative emotions, users easily perceive technologies negatively and show resistance to adopting new technologies. For instance, in the context of using computers, prior research found that technology anxiety makes users fear using computers and making mistakes, leading to fewer possibilities of using computers. Technology anxiety should also have negative influences on their perceptions and trust.

Reliability Analysis

Reliability test including Cronbach's alpha is a coefficient tool to measure the internal concept consistency of Likert scale question, examining the reliability of all the statements in scaled questions (Goforth, 2015). The data result was presented which was the reliability of 4 and 3 Likert scale questions.

Reliability Statistics

Cronbach's Alpha	N of Items
.917	4

Figure: Technology Anxiety

The Cronbach's Alpha coefficient of 4 Likert scale questions was .917, suggesting that the 4 items have relatively "Excellent" internal consistency. In other words, the 4 questions were of Technology Anxiety. According to the result, the samples had an excellent reliability and internal consistency.

6.0 CONCLUSION

Technology anxiety among senior citizens regarding the use of Information and Communication Technology (ICT) is a big and complex issue that originates from a number of sources. It is apparent that many older persons have doubts about adopting and using digital technologies, and these fears can have serious consequences. Despite the rising digitalization of modern life, overcoming the technology allocate for elders remains a critical concern. In conclusion, the following main points arise from the topic of technology anxiety among senior citizens and their involvement with ICT.

First of all, it is essential to recognise that technology anxiety is a real and widespread problem among senior citizens. This concern is frequently caused by a lack of exposure to technology during the early stages of life, as well as the belief that ICT is complicated and hard to learn. The rapid speed of advancements in technology may overwhelm elderly people, leading to a hesitation to engage with ICT devices and applications.

Furthermore, the implications on technology anxiety are significant. Senior citizen who are hesitant to accept technology may become socially isolated, as many social interactions and services are becoming increasingly digitalized. This might have a negative impact on their general well-being as they become more reliant on digital platforms to sustain interactions with others and access important services.

Additionally, handling technology anxiety among senior adults has implications for their empowerment and inclusion in the digital era. There is an increasing awareness that technological literacy programmes and support customised to older people may significantly decrease this source of anxiety. These programmes can give seniors with the skills and information they need to effectively navigate the world of technology. Educational initiatives should be approachable, patient-centered, and flexible to individual learning preferences.

In conclusion, technology anxiety among senior citizens throughout their use of ICT is an acceptable concern that demands targeted consideration. Society may encourage elderly persons to harness the benefits of ICT while lowering anxiety and improving their quality of life by recognising the problem, adopting targeted interventions, and promoting a culture of digital inclusivity. Furthermore, it is critical for policymakers, technology developers, and communities to work together to create an environment that embraces and encourages older individuals on their journey to becoming digitally literate and active members of the modern digital society.

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