HARNESSING ICT TO ENHANCE COMMUNITY COMMUNICATION RESILIENCE: A CASE STUDY OF AN UNDERPRIVILEGED COMMUNITY AND A HOUSING ESTATE COMMUNITY, BANGKOK

Suwimon Vongsingthong[1]*, Akapat Bunyaratavej[2] and Songpon Nakharacruangsak[3]

Department of Information Technology Management,
Faculty of Management Science, Pacific Institute of Management Science, Thailand[1]
Department of Information Technology and Management,
Faculty of Business Administration, Krirk University, Thailand[2]
Department of Information Technology, Faculty of Digital Technology and Innovation,
Southeast Bangkok University, Thailand[3]
Corresponding author email: suwimonv@yahoo.com[1*], akapat.bun@staff.krirk.ac.th[2],
songpon@southeast.ac.th[3]

Received: May 25, 2024
Revised: June 13, 2024
Accepted: June 18, 2024

Abstract

As the need for seamless connectivity becomes paramount, ICT emerges as the catalyst for bridging distances and connecting individuals in the urban community instantaneously. This study aimed to explore how community communication resilience can be enhanced via the utilization of ICT. Through the lens of the Technology Acceptance Model, two Bangkok urban communities were explored; an underprivileged community and a housing estate community. Questionnaire responses were collected from 229 households of an underprivileged community, and 178 households of a housing estate community. The sample size was 160 and 137 respectively. A multiple linear regression model was constructed to explore the impact of the relationships of *perceived usefulness, perceived ease of use, perceived quality of life*, and *attitude toward technology*. The findings revealed that all four variables had a positive effect on community communication resilience. The predictive power of an underprivileged community and a housing estate community are 61.2% ($R^2 = .612, p < 0.01$) and 87.1% ($R^2 = .871, p < 0.01$) respectively. By addressing barriers to adoption and leveraging the potential of technology, ICT contributes to the resilience of robust communication.

Keywords: communication resilience, housing estate community, underprivileged community, ICT, Technology Acceptance Model

1. Introduction

Information and communication technology (ICT) is crucial for effective communication in the fast-paced urban environment, as it is deeply ingrained in all daily interactions. With urbanization on the rise, seamless connectivity is becoming increasingly important. ICT plays a key role in making this connectivity possible, whether it's by promoting inclusivity and improving accessibility, enabling instant communication across distances, or facilitating virtual meetings through high-speed internet and smartphones. In urban areas where time is of the essence and distances seem vast, ICT compresses space and time, allowing for swift dissemination of information and real-time collaboration. It streamlines communication channels, amplifying the efficiency of urban operations, whether it's for coordinating emergency response services, managing participation networks, or facilitating social interactions. Additionally, in diverse urban communities, ICT acts as a universal language, breaking down cultural, language, and socioeconomic barriers, thereby promoting cohesion and understanding. Through social media platforms, residents engage in dialogues, share ideas, and mobilize for collective action, nurturing a sense of belonging and civic engagement. Furthermore, in the fields of education and healthcare, ICT democratizes access to resources, empowering urban dwellers with knowledge and tools to lead healthier, more informed lives. Essentially, in the dynamic fabric of urban life, ICT emerges as an indispensable thread, weaving connections, fostering collaboration, and propelling communities towards a future of interconnectedness and progress.

The role of Information and Communication Technology (ICT) is crucial for facilitating effective communication in the fast-paced urban environment, as it permeates all aspects of daily interactions. With urbanization on the rise, seamless connectivity has become essential. ICT plays a vital role in enabling inclusivity, improving accessibility, and allowing instant communication across distances. From high-speed internet driving virtual meetings to smartphones buzzing with notifications, ICT serves as the catalyst for making this connectivity possible [1]. In urban areas where time is of the essence and distances seem vast, ICT compresses space and time, enabling swift dissemination of information and real-time collaboration. It streamlines communication channels, amplifying the efficiency of urban operations, whether it's coordinating emergency response services, managing participation networks, or facilitating social interactions [2-4]. Moreover, in diverse urban communities, ICT acts as a universal language that transcends barriers of culture, language, and socioeconomic status, promoting cohesion and understanding. Through social media platforms, residents engage in dialogues, share ideas, and mobilize for collective action, fostering a sense of belonging and civic engagement [4]. Additionally, in the domains of education and healthcare, ICT democratizes access to resources, empowering urban dwellers with knowledge and tools to lead healthier, more informed lives [2]. In essence, within the dynamic tapestry of urban life, ICT emerges as an indispensable thread, weaving connections, fostering collaboration, and propelling communities towards a future of interconnectedness and progress.

The urban areas may appear to be leading in technological progress, but their willingness to embrace new technologies is not always guaranteed. Specifically, in underprivileged and housing estate communities, which make up 51.3% of urban communities in Bangkok [5, 6], there are doubts about the

adoption of ICT by community members. By addressing barriers to adoption and harnessing the potential of technology, ICT can assist communities in generating information and making better decisions for managing disasters such as Covid-19, floods, storms, and more. ICT is also essential for enhancing adaptive capacity, facilitating feedback, ensuring access to information, promoting active participation, reducing vulnerability, providing access to services, creating economic opportunities, empowering communities, and fostering sustainable development, all of which contribute to the overall well-being and resilience of urban communities.

Successfully integrating ICT into urban life requires more than just technological innovation; understanding technology acceptance is essential. This study introduces the Technology Acceptance Model (TAM), a predictive framework aimed at identifying the factors influencing people's intentions to use technology [7]. The critical determinants of the TAM framework, such as "*perceived usefulness*" and "*perceived ease of use*", were thoroughly examined. Additionally, the study incorporates the concept of "*attitude toward technology*" from an economic, political, and social participation perspective within the indigenous communities of Bangladesh, as presented by Hossain et al. [8]. Furthermore, the role of "*perceived quality of life*" as a primary factor influencing people's actual use in disseminating information during disaster response scenarios, as proposed by Yeni et al. [9], was also explored. These four factors have been evidently proven to significantly influence urban dwellers' decision to embrace ICT for real-time collaboration in society.

2. Theoretical Framework

The most widely used model to figure out why people tend to use technology is the Technology Acceptance Model (TAM). It is based on several studies on individual adoption and acceptance of new technologies from the perspective of the users. Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB) are the foundations of TAM which states that the attitude within the TAM concept pertains to the user's approval or rejection of the system's use as a means of completing their work [10].

TAM posits that an individual's intention to use the technology is influenced by two primary factors: *Perceived Usefulness* and *Perceived Ease of Use*. *Perceived Usefulness* (PU) refers to the extent to which an individual believes that using a particular technology will enhance his/her performance or productivity. *Perceived Ease of Use* (PEU), on the other hand, refers to the degree to which an individual perceives a technology as easy to use and free of complexity [11]. However, there are more relevant factors that affect the successful implementation of ICT in communities such as *Perceived Quality of Life* and *Attitude toward technology* [12]. *Perceived Quality of Life* (PQL) refers to individuals' subjective evaluation of their overall well-being and satisfaction with various aspects of their lives, including subjective perceptions of happiness, fulfillment, and life satisfaction. *Attitude toward technology* (ATT) refers to individuals' readiness and willingness to adopt and utilize ICT tools, platforms, or services within their community [12]. These factors are crucial aspects of technology acceptance and play a significant role in determining the success of ICT

initiatives aims at improving community well-being, connectivity, and access to resources. Understanding the factors influencing the adoption of ICT in a community is essential for designing effective interventions and promoting widespread adoption.

Studies have demonstrated that ICT fosters collective intelligence, which involves large and distributed groups of individuals working together to solve intricate problems. Sinha et al. [11] detected that technology was an essential tool for community engagement during COVID-19 in Bangladesh. The study looked at marginalized communities who had struggled through the pandemic yet handled the difficult time when they could not access enough support from authorities. The study proved that ICT enhanced and increased the efficiency of community networks during the pandemic. Gulatee et al. [9] proposed the emergency preparedness and response (EPR) to distribute natural disaster information in the rural community in China based on TAM. During the rainstorm disaster, social media (WeChat, TikTok, and Weibo) was adopted as the general public communication. The indicators to evaluate citizens' acceptance included convenience and trust, creation and dissemination, emotion and communication, cooperation and collective action, and relief and release. Three social media platforms were categorized and TikTok was found to be of highest usage, WeChat had the highest variable scores and Weibo was in the middle for both the number of users and variable scores. William et al. [3] developed the theoretical model based on TAM to identify the operational elements and comprehend the relation between several variables; Farm Size (FS), Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitation Condition (FC), Attitude Toward (AT), Behavior Intention (BI), Use Behavior (UB). It was found that PE, EE, SI, FC, AT, BI, UB, FS were primary indicators for technology adoption. Rony et al. [2] explored the technology adoption scenarios of 6 indigenous communities in Bangladesh during the COVID-19 pandemic and technology was found to have a positive impact on people's lives. The participants were curious to learn the use of mobile phone operations and financial operations as technology-based communication was not only important to their lives but also aided them in social communication and solving local problems.

Tsai et al. [12] investigated the Taiwanese's adoption behaviors toward a new technology of streaming services, Netflix. TAM was used to identify the relationships between "Perceived Ease of Use", "Perceived Usefulness", "Perceived Value", and "Intention to Use". These four main factors were implicated to be essential factors for decision-making to use ICT. In addition, the young generation tended to prefer Netflix or other streaming services as they had more sufficient technology skills. Prasetyo et al. [13] determined factors affecting mobile banking loyalty in the Philippines by integrating the extended TAM and DeLone & McLean Information System Success Model. Factors considered included "social influence" (SI), "hedonic motivation" (HM), "self-efficacy" (SE), "behavioral intention" (BI), "actual use" (USE), and "customer satisfaction" (CS) to the "loyalty" (LOY). SE was found to be the best predictor of behavioral intention. The strong relationship between BI, USE, CS, and LOY was detected, and CS was found to have a strong relationship with LOY. Yan et al. [14] combined TAM and TPB to investigate college students' intention to participate in gamified online interactive platforms. Three mediating variables; "perceived usefulness", "perceived enjoyment", and "perceived behavioral control" were found to mediate between

visual learning style and engagement intention, respectively. Perceived usefulness and perceived enjoyment served as mediators between perceptual behavioral control and intention to interact, respectively. Tang et al. [15] deployed TAM and the combination of the Waking Lion digital virtual cultural IP to test on the control group, and the experimental group. The structural factors investigated were "Characterization" (DT), "Perceived Ease of Use" (PEU), and "Perceived Usefulness" (PU). The result showed that perceived ease of use did not significantly affect perceived usefulness, but perceived ease of use positively affected users' attitudes toward service.

Previous studies have focused on the use of TAM to analyze peoples' capacity to adopt technology and the acceptance of ICT for community engagement. However, in specific types of the community such as the underprivileged, and the housing estate that spreading around Bangkok, the factors propelling the readiness of urban communities are more variated from their education derived from income and living environment. Hence, crucial factors that significantly affect the intention to use ICT of the studied urban communities are identified as PQL, PU, PEU, and ATT as shown in Figure 1.

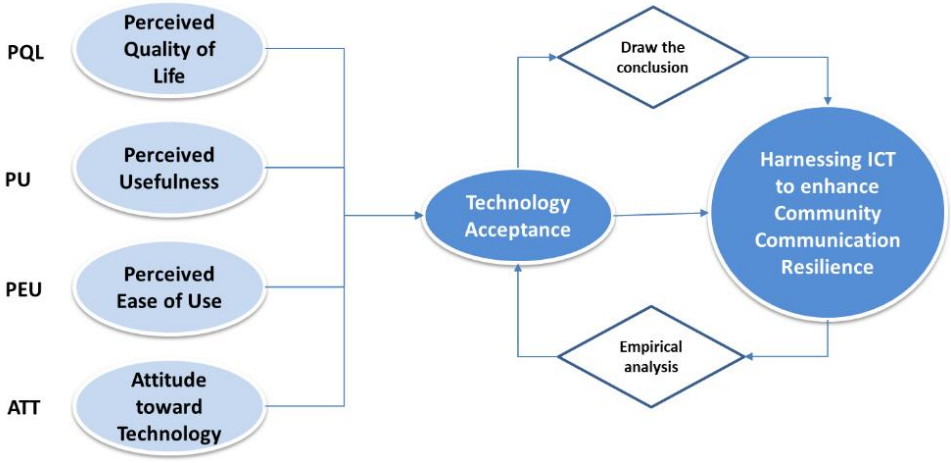

Figure 1. A model of ICT adoption in Bangkok urban communities

The definition of each independent variable is as follows: "*Perceived usefulness" (PU)* refers to the extent to which individuals believe that using ICT will enhance their lives or help them achieve their goals. "*Perceived ease of use" (PEU)* concerns the degree to which individuals perceive ICT as effortless and user-friendly. Both indicators have also been introduced in the UTAUT model, and have been defined as "the degree to which an individual believes that the system helps to improve job performance" [12].

Technology and quality of life also have a clear relationship", thus, *Perceived Quality of Life (PQL)* leads the digital citizen to live happier and values living in regions/cities with technological capacity, which are committed to achieving sustainable growth. *Attitude toward technology (ATT)* is considered a vital component driving people to use ICT as the widespread use of ICT has become indispensable in modern life, contributing significantly to performance, growth, and competitiveness.

3. Material and Methods

This research applied a questionnaire to collect data on relevant variables to guarantee that participants may be more willing to give longer period of time to respond. The questionnaire was divided into two parts: a basic personal information section and the main part. The anchor section was designed to measure the corresponding indicator variables of PU, PEU, PQL, and ATT. The questionnaire was administered using a uniform Likert scale (1-5) and respondents were asked to select “strongly disagree”, “disagree”, “undecided”, “agree”, and “strongly agree” after reading each question.

Based on theory and framework of thought above, the hypothesis were made as follows:

H1: *PQL* influences community communication resilience in urban communities.

H2: *PU* influences community communication resilience in urban communities.

H3: *PEU* influences community communication resilience in urban communities.

H4: ATT influences community communication resilience in urban communities.

3.1 Measurement of the Variables

A preprocessing step that captured the essence of the original questions for statistical analyses for regression models was set up by Maximum Likelihood Principal Component Analysis (MLPCA). The dimensionality of a dataset was reduced while preserving as much of the original variability as possible. The covariance of the variables was calculated to transform the variables into a smaller set of uncorrelated variables. The factor loadings, which represent the correlations between the original variables and the principal components were investigated to form the factor model that best explains the covariance structure of the variables.

Before launching the questionnaire, a reliability analysis, Cronbach’s coefficient was accessed. The reliability coefficient has a range of 0 to 1, with a higher value indicating greater reliability. In general, the stability of a dataset increases with the increase of the alpha value. According to the results of the reliability analysis (Table 1), the reliability coefficients of all indicators are high with the reliability coefficient of the overall questionnaire being 0.943 indicating that the survey and its results were reliable.

Table 1. Concepts, measurement items, and reliability.

Concept		Items Measuring the concepts	Reliability
Perceived Quality of Life (PQL)	X11	I can access appropriate information as needed	0.946
	X12	I can access Government agencies and stakeholders e-service	
	X13		
	X14	I can easily have social interaction with others via Line, Facebook	
	X15		
	X16	I am satisfied with news and information on the Internet	
		I can use smartphone, tablet, and communication tools	
		I believe community connection is better with ICT	

Concept		Items Measuring the concepts	Reliability
Perceived Usefulness (PU)	X21	Using technology improves the community performance in doing several tasks.	0.967
	X22	Using technology improves productivity	
	X23	Using technology enhances effectiveness	
	X24	I find the technology useful in my work	
Perceived Ease of Use (PEU)	X31	Learning technology is not too difficult for me.	0.949
	X32	It is easy to use technology to do what I want.	
	X33	I can save time and effort by using technology	
	X34	Using e-communication is not difficult	
Attitude Toward Technology (ATT)	X41	I use computer regularly for work and leisure.	0.956
	X42	I want to have skill in computer.	
	X43	Using computer feel refreshing me.	
	X44	I frequently touched smart phone to answer questions	
Overall			**0.943**

3.2 Data Sources

The population was households in Bangkok urban communities; **A**: an underprivileged community (N = 229) and **B**: a housing estate community (N = 178). Slovin's formula was adopted and sample size of A:146 and B:124 was indicated. Purposive sampling was deployed and the valid responses were 160 and 137 respectively. After the relevant data was collected, reliability and validity test, correlation analysis, and multiple regression analysis were processed to obtain the final results.

Table 2. Descriptive statistics of survey family (A: N = 229, B: N = 178)

Characteristics		A:Underprivileged community (n =160)		B:Housing Estate community (n=137)	
		Frequency	Percent (%)	Frequency	Percent (%)
Age of Family Members (Year)	<15	91	17.98	44	10.81
	15 - 20	52	10.28	5	1.23
	21 - 30	87	17.19	55	13.51
	31 - 40	72	14.23	61	14.99
	41 - 50	64	12.65	55	13.51
	51 - 60	52	10.28	67	16.46
	61 - 70	56	11.07	90	22.11
	>70	32	6.32	30	7.37

Characteristics		A:Underprivileged community (n =160)		B:Housing Estate community (n=137)	
		Frequency	Percent (%)	Frequency	Percent (%)
Employment	Working	193	62.26	196	79.03
	Studying	100	32.26	38	15.32
	Inability	17	5.48	14	5.65
	None	7	4.38	1	0.63
Monthly Income (Baht)	< 1,500	1	0.63	0	0.00
	1,500 – 3,000	1	0.63	1	0.63
	3,001 – 5,000	7	4.38	2	1.25
	5,001 – 10,000	31	19.38	16	10.00
	10,001 – 15,000	25	15.63	22	13.75
	15,001 – 30,000	56	35.00	31	19.38
	30,001 – 50,000	14	8.75	21	13.13
	50,001 – 100,000	8	5.00	27	16.88
	> 100,000	10	6.25	16	10.00

Table 2 displays the basic demographic details of the participants of communities **A** and **B**. Of the participants, 160 households out of a total of 229 households were citizens of **A** (69.86%) and 137 households out of a total of 178 households were citizens of **B** (76.96%). In **A**, 44.07% of respondents were 21-50 years of age, 94.52% of families were working or studying, 70.01% had an average income of 10,000-30,000 baht/month. While in **B**, 52.08% of respondents were 41-70 years of age, 79.03% of family were working, 49.39% had an average income of 15,000-100,000 baht/month.

3.3. Data Analysis

First, descriptive analysis (frequency distribution) was used to analyze people's perception of ICT for community communication events. Second, the overall score and perception of people to use ICTs (mean, variance) were assessed. The specific differences in the usage for each type of community were analyzed separately. Finally, multiple linear regression was used to explore the effect of TAM ("*PQL*", "*PU*", "*PEU*", and "*ATT*") that influences the urbanization's decision to use ICT for communication resilience.

4. Results

4.1. Perception level on adoption of ICT in communities

Significant disparities in technology adoption between A and B are revealed in Figure 2. Considering the context of each indicator, "*PQL*" (A: $\bar{x}$ = 2.73, SD = 1.101 (moderate); B: $\bar{x}$= 3.31, SD = 0.996 (moderate)) indicated *that* citizens in both communities used ICT for several purposes such as sending text messages, following news, online shopping and using messaging apps to communicate with friends and family. Those

citizens claimed that accessing fresh information was an important ingredient to boost their lives. Most used smartphone on a daily basis to access information and services, health monitoring, and get in touch with interesting information. These activities increased their quality of life. However, the barrier occurred from the lack of familiarity with contemporary digital tools and platforms, leading to challenges in navigating the internet and utilizing search engines to effectively enforce the quality of life to reach a moderate level.

"*PU*" (A: $\bar{x}$ = 3.30, SD = 1.018 (moderate); B: $\bar{x}$ =3.91, SD = 0.958 (high)) encounters heavy rainfall for both community citizens as they easily accessed smartphones and used ICT for entertainment and business. Community citizens consumed less information through traditional TV and news broadcasts, they more often used smartphones and computers. Social media platforms; Line, Instagram, and Facebook were more convenient to them to access and publish relevant information rapidly and in large volumes. **B** citizens felt that they could thoroughly contact, communicate, and share information with other members easily and on a regular basis as proven by the level of "Perceived Usefulness" was in a high level.

"*PEU*" (A: $\bar{x}$ = 2.36, SD = 0.796 (low); B: $\bar{x}$ = 2.60, SD = 1.003 (low)) gained the less satisfactory level among all indicators. One of the reasons was most respondents were the elderly. They faced a unique set of challenges that significantly impacted their ability to engage with digital platforms and tools. These challenges often stemmed from a lack of familiarity with new technologies, limited access to user-friendly resources, and sometimes physical limitations that make the use of devices more cumbersome. Some also had health problem, hearing or vision, lack of skills as well as computer anxiety.

"ATT" (A: $\bar{x}$ = 2.71, SD = 1.024 (moderate); B: $\bar{x}$ = 3.39, SD = 0.733 (moderate)) showed moderate level for both communities. It can be explained that most citizens had a positive attitude toward ICT with respect to their frequent use of ICT to locate the answers for specific requirement or unsolved health issues. Therefore, the positive attitude toward ICT drives them eager to learn more features to enhance their connectivity, efficiency, and overall quality of life.

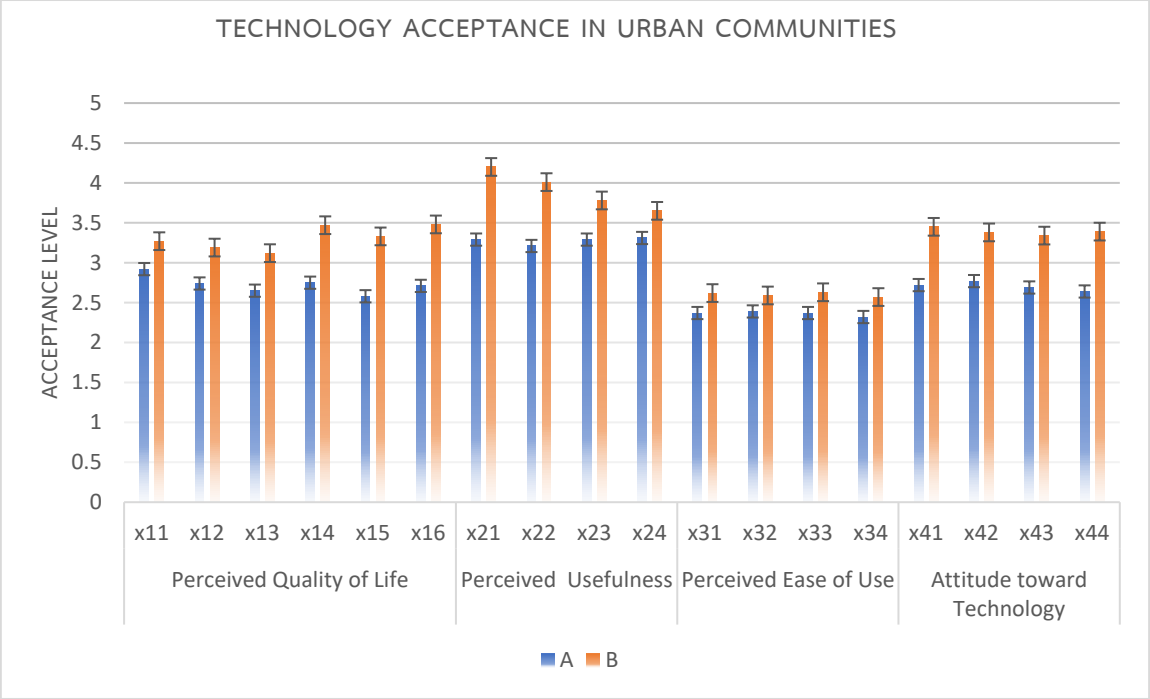

Figure 2. Acceptance Level of Bangkok urban communities in using ICT for community communication

The results indicate that B seems to be at proactive level for all indicators. These disparities are driven by differences in access, affordability, digital literacy, and the perceived value of technology. While citizens of A often face significant barriers to accessing and effectively using ICT, B can benefit from better resources, skills, and a broader range of uses.

4.2 Regression Analysis

In order to observe the relationships between the use of ICT and community resilience, the data was analyzed using multiple linear regression. The outcomes are displayed in Table 2. The results show that "*PQL*", "*PU*", "*PEU*", and "*ATT*" had positive effects on **A** resilience with a predictive power of 61.2% ($R^2 = .612, p < 0.01$) where factors to predict Community Communication Resilience were *PQL* (β = 0.233, ρ < 0.019), *PU* (β = 0.269, ρ < 0.027), *PEU* (β = 0.199, ρ < 0.012), *ATT* (β = 0.073, ρ < 0.014). Likewise, all four variables also had positive effects on **B** resilience with a predictive power of 87.1% ($R^2 = .871, p < 0.01$). Factors to predict Community Communication Resilience were *PQL* (β = 0.225, ρ < 0.022), *PU* (β = 0.188, ρ < 0.036), *PEU* (β = 0.151, ρ < 0.019), and *ATT* (β = 0.085, ρ < 0.042).

Table 2 Results of regression analysis (**A** and **B**).

Model of A		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R^2
Independent Variable	Dependent Variable	B	Std. error	Beta			
	PQL	0.105	0.044	0.233	2.377	0.019	0.105
Technology	PU	0.124	0.056	0.269	2.229	0.027	0.124
Acceptance	PEU	0.100	0.062	0.199	1.600	0.012	0.100
	ATT	0.036	0.054	0.073	0.655	0.014	0.036

Constant = 33.19, R^2 = 0.612, Adjusted R^2 = 0.607, F = 3.621, 3.529 <VIF< 4.386, 0.095 <Tolerance< 0.110, *p < 0.01

Model of B		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R^2
Independent Variable	Dependent Variable	B	Std. error	Beta			
	PQL	.116	.050	.225	2.321	.022	-.116
Technology	PU	.102	.057	.188	1.788	.036	.102
Acceptance	PEU	.076	.058	.151	1.305	.019	.076
	ATT	.053	.066	.085	0.805	.042	.053

Constant =13.77, R^2 = 0.871, Adjusted R^2 = 0.813, F = 3.545, 2.891 <VIF< 3.598, 0.072 <Tolerance< 0.138, *p < 0.01

5. Discussion

The results of all four indicators analysis showed that the use of ICT had a positive impact on the **A** and **B** community communication resilience.

First, in terms of "*PQL*", ICT provides media channels that potentially offer a more rapid and efficient means of disseminating accurate information [2]. In the face of communication within the community, governments and other communities must be the first to respond to the public's needs and communication efforts, which means ICT media platforms must continuously track the public's information needs, such as the need for information about the services offered, new help program. This can facilitate the community's access to this information while satisfying the citizens' requirements and trust.

Second, "*PU*" defines "the degree to which an individual believes that using the system will help him or her gains in job performance" [14]. This construct has been an important variable in the general technology adoption and acceptance literature. This means community people perceive advantages and disadvantages, and perceived performance impacts of technology [9], which is how technology affects the performance of their tasks reflected as effectiveness, productivity, and performance [13].

Third, in terms of *"PEU"*, this factor has also played a significant role in the technology adoption literature. An individual believes that a system is easy to use and won't have to spend excessive amounts of time learning the technology and figuring out what to do, it is more likely that he or she will use the technology. One of the foundation requirements when proposing a system to a community, it must be very easy to learn [12]. Communities need ICT that is easy to implement and use, as observed. Many studies revealed that the more individuals find technology easy to use, the greater the intention to use it among the communities and the greater the symbolic adoption of ICT [10, 14].

Last, in terms of "*ATT"* which is defined as the intensity or frequency of the user in using an information system. Attitude of an Individual behavior is an expression and desire or intention of a person. User behavior is completely dependent on user evaluation of the use of the system. If people think that new technology is easy to use, their behavioral intention toward using technology becomes positive [9]. Further, the attitude of a person can be explained as people's presence to act a specified behavior. TAM states that the attitude of people is the primary factor that determines people's actual use [16].

6. Conclusion and Recommendation

Technology acceptance within urban communities surrounding Bangkok is a multifaceted phenomenon influenced by socio-cultural, economic, and infrastructural factors. While technology holds the promise of enhancing urban living by improving efficiency, connectivity, and access to services, its acceptance is not guaranteed. Addressing the challenges of digital divide, privacy concerns, and social exclusion is crucial for fostering inclusive urban development. By understanding the dynamics of technology acceptance and its impact on community cohesion, policymakers, and stakeholders can design interventions that promote equitable and resilient urban communities in the digital age.

Though technology presents numerous opportunities for enhancing urban living, it also poses challenges that must be addressed to ensure inclusive development. Bridging the digital divide and promoting digital literacy is imperative for fostering equitable access to technology within urban communities. Furthermore, policymakers must prioritize data privacy regulations and cybersecurity measures to safeguard citizens' rights and mitigate risks associated with technological adoption. Collaborative efforts between government agencies, technology developers, and community stakeholders are essential for harnessing the potential of technology while mitigating its negative externalities.

In underprivileged communities, where awareness and understanding of ICT benefits may be limited, efforts to demonstrate how ICT can improve daily activities, access information, or connect with others can influence intention to use. Complex interfaces or unfamiliar technologies may discourage adoption. Therefore, providing simplified and intuitive ICT solutions tailored to the specific needs and capabilities of the community can increase intention to use. Next, access and infrastructure are critical factors as well. Limited access to reliable internet connectivity, affordable devices, or ICT training resources can hinder the intention to use ICT in uneducated urban communities. Therefore, efforts to improve infrastructure,

such as establishing community centers with free Wi-Fi or providing subsidized devices, can remove barriers and encourage adoption. Finally, cultural and contextual factors must be considered. Cultural beliefs, norms, and values may influence attitudes toward ICT in the communities. Tailoring ICT interventions to align with local customs and preferences, while addressing potential concerns or misconceptions, can enhance intention to use and ensure acceptance within the community.

7. Acknowledgment

This work is a part of a research “Community Wisdom in Management and Development of Urban Management Information System, Bangkhen, Bangkok”, supported by the National Council of Educational Research and Training (NCERT).

References

[1] N. Jøranson, et al., "Experienced barriers in the use of ICT for social interaction in older adults ageing in place: a qualitative systematic review protocol," *Systematic Reviews*, vol. 12, no. 192, pp. 1-7, 2023.

[2] R. J. Rony et al., "I Use YouTube Now in COVID: Understanding Technology Adoption of Indigenous Communities during COVID-19 Pandemic in Bangladesh," *presented at COMPASS '22*, Seattle, WA, USA, June 29–July 01, 2022, pp. 596-602, doi: 10.1145/3530190.3534847.

[3] A. Wiliam, et al., "A Review on Technology Adoption in Precision Agriculture: The Behavior and Use Acceptance," *presented at the 9th International Conference on Information Technology: IoT and Smart City (ICIT 2021)*, Guangzhou, China, Dec. 22–25, 2021, pp. 98-102.

[4] L. Penn, et al., "Management information systems for community based interventions to improve health: qualitative study of stakeholder perspectives," *BMC Public Health*, vol. 19, no. 105, pp. 1-8, Jan. 23, 2019.

[5] W. Cox, "*The Evolving Urban Form: Bangkok*," in Newgeography, [Online]. Available: https://www.newgeography.com/content/003367-the-evolving-urban-form-bangkok. [Accessed: Feb. 17, 2024].

[6] Policy and Planning Division, Office of Urban Planning and Development Bangkok, "*Community information statistics in Bangkok*," [Online]. Available: https://webportal.bangkok.go.th/public/user_files_editor/354/aboutcpud/study%20report/2562/8.สถิติข้อมูลชุมชนในเขตกรุงเทพมหานครพ.ศ.2561.pdf. [Accessed: Feb. 17, 2024].

[7] C. Meiryani, et al., "Examining User Acceptance and Adoption of the Internet of Things in Indonesia," *presented at the 6th International Conference on Information System and Data Mining (ICISDM 2022)*, Silicon Valley, CA, USA, May 27–29, 2022, pp. 126-130, doi: 10.1145/3546157.3546176.

[8] A. Hossain, "*Indigenous technology for adapting to water logging situation for sustainable livelihood security in low-lying areas of Bangladesh*," Soil Resource Development Institute, Ministry of Agriculture, Krishi Khamar, Farmgate, Dhaka-1215, Bangladesh, 2010. [Online]. Available: https://www.cabidigitallibrary.org/doi/pdf/10.5555/20113314609. [Accessed: Feb. 17, 2024].

[9] Y. Gulatee, et al., "Technology adoption for emergency preparedness and response in rural areas: identifying the main determinants," *presented at ICEGOV'2*0, Athens, Greece, Sep. 23–25, 2020, pp. 469-476, doi: 10.1145/3428502.3428574.

[10] P. Lai, "The Literature Review of Technology Adoption Models and Theories for The Novelty Technology," *Journal of Information Systems and Technology Management*, vol. 14, no. 1, pp. 21-38, 2017, doi: 10.4301/S1807-17752017000100002.

[11] A. Sinha , et al., "Roles of Technology for Risk Communication and Community Engagement in Bangladesh during COVID-19 Pandemic," *ACM Journal on Computing and Sustainable Societies*, vol. 2, no. 2, pp. 16:1-22, May 2024, doi: 10.1145/3648433.

[12] C. M. Tsai and L. Yi-Wei, "Understanding Intention to Use Netflix in Taiwan: Integrating Perceived Value into the Technology Acceptance Model," *presented at the 7th International Conference on Information Systems Engineering (ICISE 2022)*, Charleston, CA, USA, Nov. 04–06, 2022, pp. 63-69, doi: 10.1145/3573926.3573939.

[13] Y. T. Prasetyo, et al.,"Determining Factors Affecting Mobile Banking Loyalty in the Philippines: Integrating Extended Technology Acceptance Model and DeLone & McLean IS Success Model," *presented at The 7th International Conference on Education and Multimedia Technology (ICEMT 2023)*, Tokyo, Japan, Aug. 29–31, 2023, pp. 403-409, doi: 10.1145/3625704.3625770.

[14] H. Yan, et al., "Exploring college students' behavioral engagement intentions towards gamified online interactive platforms: based on Technology Acceptance Model and Theory of Planned Behavior," *presented at the 2023 7th International Conference on Digital Technology in Education (ICDTE 2023)*, Hangzhou, China, Sep. 08–10, 2023, pp. 43-50, doi: 10.1145/3626686.3626698.

[15] X. Tang, et al., "Exploring the Design of Digital Twin Virtual Space for The Awaken Lion Culture Based on Technology Acceptance Modeling," *presented at Chinese CHI 2023 (CHCHI 2023)*, Denpasar, Bali, Indonesia, Nov. 13–16, 2023, pp. 225-240, doi: 10.1145/3629606.3629627.

[16] S. Yeni and A. V. D. Meulen, "Students' Behavioral Intention to Use Gradual Programming Language Hedy: A Technology Acceptance Model," *in Proc. 27th ACM Conf. Innovation and Technology in Computer Science Education Vol 1 (ITiCSE 2022)*, Dublin, Ireland, July 8–13, 2022, pp. 331-336, doi: 10.1145/3502718.3524782.