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Developing Digital Citizenship in Municipality: Factors and Barriers

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ABSTRACT

Digital citizenship refers to people who can use technology appropriately. The purposes of this research are: (1) to examine personal factors influencing the digital citizenship of people, (2) to investigate the differences in digital citizenship of people between two municipalities, and (3) to examine the barriers to digital citizenship of people. This study employs a quantitative method using an online questionnaire. The sample size was 438 people in Hat Yai Municipality and Songkhla Municipality, Thailand. The results revealed that people with different personal factors, namely gender, age, occupation, income, and level of education, had different levels of digital citizenship. This study also found that people living in different municipal locations had different digital citizenship. Moreover, the most important issue of ethics in using digital media and social networks was emphasized, followed by adaptation/changing behavior towards technology, and knowledge and understanding of using digital media and social networks. The results led to the development of communication channels to educate the public on proper digital citizenship, and the development of the internet network system to fully support digital citizenship in the future.

1. INTRODUCTION

Current changes and people's adaptation to technological changes causing the use of social media among citizens in Thailand is increasing. According to Kemp [1] by We Are Social and the social media management platform. It found that in 2021, the Thai Consumer Behavior Report on social media used social media as their main channel to update news and ranked No. 1 in the world, accounting for 78% of all users. According to the ranking of social media in Thailand in 2021, Thai people used social media for 8 hours and 44 minutes a day, mostly via mobile phones or smartphones [2]. The following are the numbers of users on each platform: first is Facebook, with the most users in Thailand (51 million); second is LINE, with 45 million users (65% male, 35% female); and third is YouTube, with 40 million male users. 62% of the population is female, while 38% is male. The data shows the popularity of social media. As a result, people's usage habits change. Thailand's development in various aspects has made information technology development easily accessible to everyone.

The Thailand 4.0 policy is a commitment to change the economic structure to a "Value-Based Economy" or "Innovation-Driven Economy", with the main idea being to shift from producing "commodities" to "innovative" products. It concentrated on the transition from the industrial sector to being driven by technology. However, among the forces encouraging people to use more technology, barriers to using technology properly have inevitable consequences. Some dangers come with using the internet and social media. The perception of too much information, which affects health, as well as obtaining information without filtering sources and facts, is the awareness of using social media. Digital citizenship was defined as the ability to use technology, critically, and productively. The concept of digital citizenship refers to the responsible and ethical use of digital technologies and the Internet. It encompasses a wide range of issues, including online privacy, cyberbullying, digital literacy, and internet security.

Because of the COVID-19 epidemic, more people are using technology for telework and online learning. The usage of technology is on the rise and it is becoming more crucial to know how to utilize it properly. Business executives, educators, government employees, and activists can learn about digital citizenship to better understand how we should utilize technology. The role of "digital citizenship" is important for stepping up change and contributing to the development of the economy, society, and country. The phenomenon characterized by access to affordable broadband and skills for effective use is called "digital citizenship," or the ability to participate in society online [3]. People can use the internet to manage, control, and do right and wrong. It is the norm for the proper use of digital technology. Given the significance of digital citizenship in contemporary society, this idea has grown to play a significant role in the normative framework for people, local officials, and local leaders.

Thus, this study wants to compare the digital citizenship of people between Hat Yai Municipality and Songkhla Municipality which are preparing to become smart cities. The Hat Yai Municipality is the center of commercial activity and grows along with the development of physical infrastructure and social structure, whereas the Songkhla Municipality is the center of government offices and academics. In addition, both of these are important areas to drive the economy and tourism

of the country according to the strategy set by the government.

In addition, this study considered developing digital citizenship, which included factors influencing and barriers to digital citizenship. To encourage people to be aware of the significance of social media and digital media, relevant government organizations and private sectors must be given a push in the obvious policies. Therefore, the research has a lot of interesting implications for academics, practitioners, and policymakers to develop good digital citizenship in the future.

2. OBJECTIVE

The objectives of the study are as:

(1) To examine personal factors affecting the digital citizenship of people in Hat Yai and Songkhla Municipality.

(2) To compare the level of digital citizenship of people in Hat Yai Municipality and Songkhla Municipality.

(3) To examine the barriers to digital citizenship of people in Hat Yai Municipality and Songkhla Municipality.

3. SIGNIFICANT OF THE STUDY

(1) This study aims to know the level of digital citizenship of people and also the personal factors that affect the digital citizenship of people in Hat Yai and Songkhla municipal areas.

(2) These factors may serve as indicators for policymakers to formulate related policies and for educators to plan for the program in society. Suggestions are provided for practitioners based on the findings.

(3) Governmental organizations and the corporate sector will be able to use the greater knowledge of the barriers to digital citizenship and the challenges of being a digital citizen to formulate policies that will encourage and develop good digital citizenship in the future.

4. SCOPE OF THE STUDY

The study focuses on personal factors, namely gender, age, occupation, income, and level of education that influence the digital citizenship of people. In addition, the research emphasizes the barriers to developing digital citizenship. The empirical study in this research is restricted to two municipalities located in Songkhla Province, Thailand. Therefore, the scope of this study is limited to Thailand. The study's target population is people in Songkhla Municipality and Hat Yai Municipality. The study also involves analyzing factors influencing people's digital citizenship and the berries to it.

5. REVIEW OF THE LITERATURE

Digital citizenship is becoming increasingly important as technology continues to play a significant role in our daily lives. With the proliferation of social media, online communication, and the growing importance of digital skills in the workplace. Individuals need to understand the implications of their online behavior and how it affects themselves and others. Digital citizenship involves being aware of and adhering to online norms and expectations, respecting others and their opinions, protecting personal information and digital identity and using technology to promote positive social interactions and productivity. Many studies on digital citizenship aim to promote responsible and ethical behavior online, foster positive digital communities, and empower individuals to navigate the complex digital landscape.

Howland et al. [4] noted that technology has become essential to modern life and education. It serves several purposes in facilitating learning through creating knowledge, providing realistic context for learning by doing, visualizing, assessing, modeling, and so on. Digital citizenship refers to the behaviors and attitudes that are expected of individuals who use digital technologies and participate in online communities. There are various definitions of digital citizenship, but most agree that it involves ethical behavior online, media and information literacy, digital participation/engagement, and critical resistance. As a result, digital citizenship is defined as "the ability to effectively understand, navigate, and exist in the digital environment" [5, 6].

According to Choi [7], digital citizenship consists of four main components: digital ethics, digital media, information literacy, digital participation/engagement, and critical resistance. Ribble and Bailey [8] identified nine behaviors of digital citizenship: digital access, digital commerce, digital communication, digital literacy, digital etiquette, digital law, digital rights and responsibility, digital health and wellness, and digital security. These behaviors involve being responsible and ethical users of digital technologies, accessing and using digital tools and resources effectively, and being aware of the potential risks and benefits of using the internet.

Wang and Xing [9] studied the impact of parent training and economic and social factors on the digital citizenship of 270 young people in the United States. The study found that young people with parents who participate in technology and online activities have a higher level of digital citizenship in terms of appropriate behavior and safety when using technology. In addition, economic and social factors also influence the level of digital citizenship of young people.

According to the Council of Europe [10], digital citizenship can be defined as competent and positive engagement with digital technology and data (creating, publishing, working, sharing, socializing, investigating, playing, communicating, and learning); active and responsible participation at all levels (political, economic, social, cultural, and intercultural); participating in a dual process of lifelong learning (in formal, informal, and non-formal settings) and continuously defending human dignity and all attendant human rights.

Karaatmaca et al. [11] noted that digital citizenship is the act of transferring fundamental rights, obligations, and duties to the digital world and upholding these high standards there. According to Mossberger et al. [3], digital citizenship has been characterized as the capacity to engage in social interaction online. It also refers to those who often use technology, seek out political information to carry out their civic duties, and use technology at work for economic gain.

Jones and Mitchell [12] noted that it refers to the nature or quality of engaging in online activity, including responsible and secure online behavior that incorporates the ideas of accountability, rights, security, and safety. In addition, Hussain and Shah [13] confirmed that digital citizenship significantly lessens cyberbullying's component of cyber victimization.

6. CONCEPTUAL FRAMEWORK

This research explored theories and concepts related to digital citizenship. In addition, it concluded related research and then summarized it as a research conceptual framework. The variables used in the research are presented in Figure 1.

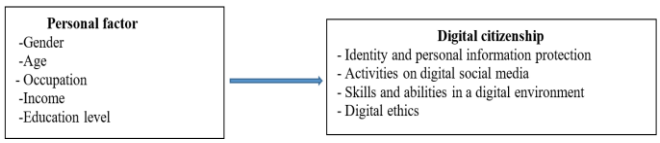

Figure 1. Conceptual framework

7. HYPOTHESES

Based on the literature reviewed, the hypotheses of this study are as follows.

H1: There are differences in the digital citizenship of people based on gender, age, occupation, income, and education level.

H2: There are differences in the level of digital citizenship among people in Hat Yai Municipality and Songkhla Municipality.

8. METHODOLOGY

8.1 Population

There were 150,054 people in Hat Yai Municipality and 63,324 people in Songkhla Municipality (December 2020). The population of this study was people with knowledge or ability to use the internet in Hat Yai Municipality and Songkhla Municipality, Songkhla Province, Thailand.

8.2 Sample size

The sample size for the study was determined from Krejcie and Morgan's [14] sample size table. The total sample size is 800 respondents from two municipalities. This research used simple random sampling and purposive sampling techniques by employing a questionnaire for people who were able to use the Internet.

8.3 Measurement

This study is quantitative research methods by using a questionnaire distributed to people in two municipalities**.** To create a tool used to collect data, the researcher has studied concepts, theories, conceptual frameworks, and variables used in the study as a guideline for constructing the tool. The measurement was developed in three steps. Firstly, the selection of measurement was based on reviewed literature and related previous research. Secondly, experts' opinions in related areas were considered to verify the content's accuracy and the questionnaire's suitability. Finally, a pilot study proceeded to determine the goodness of measurement. The questionnaire has a Likert scale of 5 levels [15], which allows the individual to express how much they agree or disagree with a particular statement. It provides five possible answers strongly agree with 5 points, agree with 4 points, neutral with 3 points, disagree with 2 points, and strongly disagree with 1 point. The criteria for translation of the Likert scale scores are as follows:

4.20-5.00	Very high
3.40-4.19	High
2.60-3.39	Moderate
1.80-2.59	Low
1.00-1.79	Very low

8.4 Goodness of measurement

The research instrument was created by studying details about concepts, theories, and research related to digital citizenship. The goodness of measurement was evaluated by testing validity and reliability.

8.4.1 Validity

The researcher established validity by performing literature reviews, identifying key terms, and developing a data-gathering questionnaire. Following that, the research instrument was provided to specialists for evaluation of the content validity, content coverage of the study issue, and consistency of the instrument's purposes [16].

8.4.2 Reliability

Before deciding on the actual measurement to be used, a pilot study was conducted on 30 respondents. To assess the reliability of the questionnaire, researchers used Cronbach's alpha approach. The measurement revealed that Cronbach's alpha findings for digital citizenship occurred at 0.85. The findings verified the questionnaire's dependability [17]. The results were presented in Table 1.

Table 1. Cronbach's alpha

Digital Citizenship	Items	Cronbach's Alpha
Identity and personal information protection	6	0.80
Activities on digital social media	8	0.91
Skills and abilities in a digital environment	5	0.83
Digital ethics	7	0.87
Total	**26**	**0.85**

9. DATA COLLECTION PROCEDURE

The data was collected from a sample group of people living in Hat Yai and Songkhla Municipalities. The researcher collected data by distributing 800 questionnaires to two areas, using online questionnaires (online surveys), and research assistants to distribute questionnaires. The questionnaires obtained from the data collection were checked for scores according to the criteria. The completed questionnaires were analyzed in the research process.

10. DATA ANALYSIS AND STATISTICS

After the data collection was complete, the researcher analyzed the data with a statistical package. Methods for statistical calculations based on data characteristics are as follows:

(1) For the data analysis of personal factors, which consisted of gender, age, occupation, income, and education level, this study used descriptive statistics, such as frequency and percentage.

(2) Inferential statistics, such as t-test statistic, was used to compare citizens' digital citizenship between people in Hat Yai Municipality and Songkhla Municipality and test the research hypothesis.

(3) An analysis of personal factors affecting the digital citizenship of people in the Hat Yai Municipality and Songkhla Municipality, including testing the research hypotheses, the t-test, and one-way ANOVA were used to analyze the data.

11. FINDINGS

The 400 questionnaires were distributed to each municipality and received complete answers from 204 people in Hat Yai Municipality, with a 51% of response rate, and from 234 respondents in Songkhla Municipality, with a 58.5% of response rate.

12. TO STUDY PERSONAL FACTORS AFFECTING THE DIGITAL CITIZENSHIP OF PEOPLE IN HAT YAI AND SONGKHLA MUNICIPALITY

The first objective of the study is to examine personal factors affecting the digital citizenship of people in Hat Yai and Songkhla Municipality. The findings are as follows.

12.1 Gender

The comparison of digital citizenship by gender of respondents is in Table 2. The Independent Sample t-test was used to compare the independent two groups' means. The results found that there are differences in digital citizenship due to gender significantly at the .05 confidence level (t=2.550). The result implied that people of different genders have different digital citizenship. Considering each aspect, it was found that there were only 3 aspects: identity and personal information protection (t=1.679), activities on digital media and social networks (t=1.207), and skills and abilities in the digital environment (t=1.723). While it found that there were no differences in the digital ethics aspect due to gender. However, the results confirmed that people of different genders had different levels of digital citizenship. The results indicated that female respondents considered activities on digital media and social networks but males emphasized skills and abilities in a digital environment.

12.2 Age, Occupation, Income, and Education Level

Comparison of digital citizenship classified by age, occupation, income, and education level of respondents using variance analysis using One-way ANOVA, the results showed that people with different personal factors such as occupation, and educational levels had different levels of digital citizenship statistically significant at the 0.05 level. However, there were no differences in digital citizenship among different ages and income levels. Therefore, the study concluded that personal factors influence digital citizenship. The research hypothesis H1 was accepted. The research results are shown in Table 3.

Table 2. Comparison of the digital citizenship of people by gender (N=438)

Digital Citizenship	Male		Female		t	p
	Mean	SD.	Mean	SD.		
Identity and personal information protection	3.99	.59	4.10	.66	1.679*	0.001
Activities on digital media and social networks	4.03	.51	4.20	.57	1.207*	0.005
Skills and abilities in a digital environment	4.22	.55	3.88	.61	1.723*	0.004
Digital ethics	4.02	.57	4.14	.58	4.321	0.058
Total	**4.06**	**.48**	**4.08**	**.56**	**2.550***	**0.006**

**Significant at 0.05 level*

Source: Primary data processed, 2021

Table 3. Comparison of the digital citizenship of people by age, occupation, income, and education level

		ANOVA				
		Sum of Squares	df	Mean Square	F	Sig.
age	Between Groups	1.920	4	.480	1.789	130.
	Within Groups	116.182	433	.268		
	Total	118.107	437			
occupation	Between Groups	4.355	4	1.089	4.145*	.003
	Within Groups	113.746	433	.263		
	Total	118.101	437			
income	Between Groups	.355	3	.118	.436	.727
	Within Groups	117.746	434	.271		
	Total	118.101	437			
education level	Between Groups	2.032	2	1.016	3.807*	0.023
	Within Groups	116.070	435	.267		
	Total	118.101	437			

**Significant at 0.05 level*

Source: Primary data processed, 2021

13. COMPARISON OF THE LEVEL OF DIGITAL CITIZENSHIP OF PEOPLE IN HAT YAI MUNICIPALITY AND SONGKHLA MUNICIPALITY

The second objective of the research is to compare the level of digital citizenship of people in Hat Yai Municipality and Songkhla Municipality. According to the result in Table 4, all four aspects were compared by t-test statistics. The overall result was significantly different at the 0.05 confidence level (t=7.656). When considering the comparison of digital citizenship in each aspect, it was found that identity and personal information protection (t=6.608), activities on digital media and social networks (t=4.415), skills and abilities in a digital environment (t=6.498), and digital ethics (t=7.750) were significantly different. Therefore, the research results supported hypothesis H2. In addition, the findings revealed that the level of digital citizenship of people in the two municipalities was at a high level. These results showed that people in Hat Yai Municipality considered digital ethics while people in Songkhla Municipality emphasized activities on digital media and social networks.

Table 4. Comparison of the level of digital citizenship of people in Hat Yai Municipality and Songkhla Municipality

Digital Citizenship	Hat Yai Municipality (N=204)		Songkhla Municipality (N=234)		t	p
	Mean	SD.	Mean	SD.		
Identity and personal information protection	4.10	.63	3.97	.66	6.608*	0.042
Activities on digital media and social networks	3.98	.54	4.14	.57	4.415*	0.010
Skills and abilities in a digital environment	4.05	.58	4.09	.61	6.498*	0.003
Digital ethics	4.15	.60	4.09	.58	7.750*	0.006
Total	**4.07**	**.51**	**4.08**	**.53**	**7.656***	**0.037**

**Significant at 0.05 level*

Source: Primary data processed, 2021

14. THE BARRIERS TO DIGITAL CITIZENSHIP OF PEOPLE IN HAT YAI MUNICIPALITY AND SONGKHLA MUNICIPALITY

The third objective of the study is to study the barriers to digital citizenship of people in Hat Yai Municipality and Songkhla Municipality. The results revealed that people in both areas attended to the problems and obstacles of digital citizenship. It was generally high (mean=4.02, SD=.78). Considering the details, it was found that the respondents emphasized the ethical use of digital media and social networks (mean=4.23, SD=.74), followed by behavior adaptation/adjustment to changing technology (mean=4.20, SD=.82), and knowledge and understanding of using digital media and social networks (Mean=4.16, SD=.74), respectively. However. The respondents placed the least importance on the loss of privacy when using digital media and social networks (mean=3.75, SD=.94) which is shown in Table 5.

Table 5. Barriers to digital citizenship (N=438)

Barriers to Digital Citizenship	Mean	S.D.	Level
Difficulties in using digital media and social networks	3.77	.97	High
Confidence in using digital media and social networks	4.04	.77	High
Knowledge and understanding of using digital media and social networks	4.16	.74	High
Absence of a smartphone or tablet	4.12	.79	High
The internet system is unstable and has a weak signal	3.89	.91	High
Security issues in the use of digital media and networks	4.01	.80	High
Loss of privacy when using social media	3.75	.94	High
Lack of caution in using digital media and social networks	3.85	.86	High
Behavior adaptation/adjustment to changing technology	4.20	.82	Very High
Ethical use of digital media and social networks	4.23	.74	Very High
Total	**4.02**	**.78**	**High**

Source: Primary data processed, 2021

15. DISCUSSION

15.1 Personal factors affecting the digital citizenship of people in Hat Yai and Songkhla Municipality

It was found that people with different personal factors, such as gender, occupation, and educational level, had differences in digital citizenship. The level of digital citizenship among people in both municipalities depends on their gender, occupation, income, and education level. However, people of different ages and incomes have no differences in digital citizenship. Thus, it concluded that personal factors impact digital citizenship. The findings are in line with a study by Jones and Mitchell [12], which found that younger youth exhibited less respect for others online. and females respect others more than males. The research results were different from Thungsong and Siriwat's [18] study, which found that the results of comparing digital intelligence at the level of digital citizens, classified by sex, academic performance, and family income, were no different.

15.2 Comparison of the level of digital citizenship of people in Hat Yai Municipality and Songkhla Municipality

The results showed that the people in the two areas had a significant difference in the level of digital citizenship at a confidence level of 0.05. In other words, people live in different municipal locations, their digital citizenship will also be different. In addition, the average digital citizenship of people in Songkhla Municipality was higher than that of people in Hat Yai Municipality. It implied that people in Songkhla Municipality had a higher level of digital citizenship. It showed that people had a better understanding of digital citizenship. They had the knowledge and ability to use digital media appropriately, especially in terms of activities on social media that involve digital media to build relationships with others. In addition, they emphasized the ability to manage financial transactions, including economic, social, and political participation. Moreover, people in Songkhla had skills and abilities in a digital environment. It is related to knowledge and techniques for using digital tools, as well as the ability to solve problems related to using digital media. While the people in Hat Yai Municipality have a higher level of citizenship than those in Songkhla Municipality in terms of maintaining their identity and personal information, which is about self-expression in society outside of presenting themselves in the online world. Finally, people in the Hat Yai Municipality had digital ethics, which is about digital responsibility, and respecting the privacy rights of others. They had more knowledge of copyright laws and computer crime laws than those in the Songkhla Municipality. Therefore, the different characteristics of the area of Songkhla Municipality where the government agencies are located and educational institutions with Hat Yai Municipality, which is an important economic area. As a result, the level of digital citizenship among citizens is also different.

This study is consistent with Supattanakula and Maliwan's study [19] which found the area factors that affect the use of technology and electronic transactions. It implied that people living in areas that are centers of business, trade, and finance are more likely to use technology or social media to conduct transactions than people living in areas that are government centers.

15.3 The barriers to digital citizenship of people in Hat Yai Municipality and Songkhla Municipality

The results of the study revealed that the people in both areas focused on problems and obstacles of digital citizenship at a high level. The results showed that the people in the two municipalities were ready, knowledgeable, and understanding of digital media and social networks. In addition, they had devices such as a smartphone or tablets that allowed them to access digital media easily, conveniently, and quickly, but they still lacked trust in the safety of electronic systems and had concerns about the safety of using digital media. Furthermore, most people are concerned about being ethical when using digital media and social media, as both are currently used. There were more results of the inappropriate use of digital media and social media nowadays. People habitually used digital and social media to deceive others for their benefit without regard for legitimacy or social responsibility. Currently, fake news is spread on social media by malicious people with bad intentions, such as causing controversy or spreading hatred, causing confusion and panic among the people. Furthermore, cyberbullying (bullying) refers to bullying, slander, cursing, expressing opinions and comments, or publishing or sharing information that is harmful to others via social media.

16. RESEARCH RECOMMENDATIONS

16.1 Implication

1) The government and private sectors must push through a clear policy to encourage people to recognize the importance of digital media and social media.

2) Increase publicity to show the benefits and penalties of using digital media and social media, especially to the target group or vulnerable groups such as youth and the elderly, to make people aware of the dangers of using digital media and social media.

3) The government should emphasize educating the public about computer crimes, including the penalties received for committing both civil and criminal offenses.

16.2 Suggestions for future research

1) Data should be collected by other means, coupled with the use of questionnaires such as in-depth interviews, to get more comprehensive and accurate information.

2) There should be research to compare digital citizenship from the standpoint of other samples, such as policymakers working on technology development to support digital citizenship in the future. or samples in different areas.

3) There should be research on government policy formulation or laws related to technology that will encourage the development of digital citizenship in the future.

17. CONCLUSION

This research focused on the digital citizenship of people in Hat Yai Municipality and Songkhla Municipality, Songkhla Province. It is a quantitative study that aims to examine the personal factors that influence digital citizenship, as well as the problems and obstacles that people in both areas face in becoming digital citizens. These results showed that people with different personal factors, namely gender, age, occupation, income, and level of education, had different types of digital citizenship. This study also found that people living in different municipal locations had different digital citizenship. In addition, the average digital citizenship of people in Songkhla Municipality was higher than that of people in Hat Yai Municipality. Thus, people in the Songkhla Municipality have a higher level of digital citizenship. Citizens have knowledge and understanding of digital citizenship. They were able to use digital media appropriately. Moreover, people gave the most importance to the issue of ethics in using digital media and social networks, followed by adaptation/changing behavior towards technology, and knowledge and understanding of using digital media/ social networks. The results led to the development of communication channels to educate the public on proper digital citizenship, promote public participation through digital media and social networks, as well as focus on the development of the internet network system to fully support digital citizenship in the future.

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