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The Role of Subjective Norms on the Adoption of Information and Communication Technology in Health Care in Thailand

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In Thailand, Information and Communication Technology (ICT) needs to be taken into account when it comes to healthcare; healthcare plays a vital role for the advancement of the country, as it is responsible for most of the country's dedicated work. Also, ICT has become the main facilitator for conducting business activities. Therefore, it is now time to consider the adoption of internet-based ICT for healthcare. Public health care services in Thailand are funded by the Ministry of Public Health and monitored by the Department of Medical Services. Medical Services and government hospitals are under accountability of the Ministry of Public Health services. A total of 239 usable data sets proceeded for further analysis after screening the dataset and deleting missing data. Statistical Packages for Social Sciences (SPSS) version 24 was used for analysing the data. The ANOVA test was conducted to discover the differences of opinion among hospital staff in terms of intention to adopt ICT and subjective norms. Significant differences were not found for intention in terms of different educational background. Research also found that subjective norms is significantly influencing hospital staff's intention to adopt ICT.

Key words: *Information Communication Technology, Subjective Norms, Intention.*

Introduction

The health care facilities in h Thailand mostly provide decent medical care, but public hospitals are usually crowded and the waiting times may be longer than expected. Also, public hospital facilities may not be the same as non-government health care institutions in Thailand. The health service is free for Thailand citizens who have universal coverage health cards, except on weekends. Regardless of nationality and residency , everybody will be charged on Saturdays. The health card for universal coverage is distributed through the National Health Security Office. Since the 1970s, consistent political commitment to people's health has led to significant investments in improving health infrastructure, particularly in primary health care, referral hospitals in the provinces and regions, and overall operation of the health system.

Universal health coverage was attained by Thailand in 2002. Since then, public spending on health care has improved dramatically from 63% in 2002 to 77% of total health care spending in 2011, while the budget for health sector spending has been reduced from 27.2% to 12.7 %. Broad country-wide coverage of health care, a free integrated package at service points, and better public health facilities are the main factors contributing to improving weak support, low levels of basic health care and benefits to poorer citizens. The dominant final payment system, particularly captions, global budget and diagnostic sets, was cost-effective. The National Office for Health Protection has demonstrated its ability to manage strategic procurement.

Challenges in Thailand's health sector include: financial policies and services for seniors; major gaps in urban healthcare; the risk of relying on state taxes for health care during a recession; changes in the Ministry of Public Health in response to the mobilisation of health care. Health care service delivery for foreign patients has increased the number and problems of participants since the 2015 ASEAN Meeting. The economic community and the alterations made by the Ministry of Public Health in response to the dynamics of the management of the health system has increased the number of participants and the number of interests.

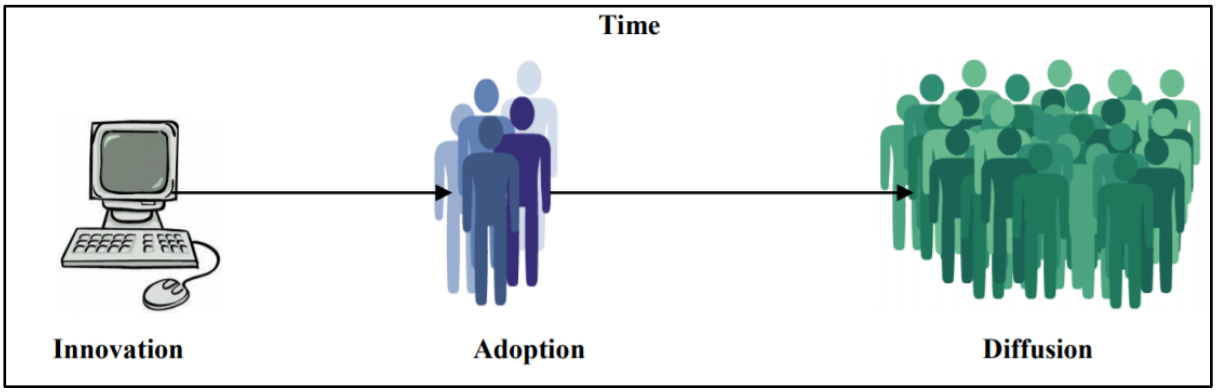
Table 1: Healthcare Spending by countries (% of GDP)

Country	2007	2008	2009	2010	2011	2012
Malaysia	3.8	3.8	4.6	4.7	4.5	4.7
Thailand	3.6	4.0	4.2	3.9	4.1	4.2
ASEAN	3.8	3.9	4.2	3.9	3.8	3.8
United States	16.1	16.5	17.6	17.5	17.7	18.0
Japan	6.7	6.8	7.0	7.2	7.3	7.4
Germany	10.5	10.7	11.7	11.4	11.3	11.5

As shown in Table 1, the United States has spent the highest percentage of their Gross Domestic Product (GDP) in healthcare compared to other nations. Germany is in the second position followed by Japan and Malaysia. However, Thailand is spending much less compared to the other countries on the list in Table 1. Therefore, it is necessary to look into how Thailand can improve its healthcare services by budgeting more on health facilities for citizens .

The adoption and diffusion of technologies is considered as one of the major aspects in IS studies. A widely used definition of innovation is "an idea, practice, or object that is perceived as new by an individual or other unit of adoption," while diffusion is "the process by which an innovation spreads" (Zi, 2017). Later, Zi defined the diffusion of innovation as "the process by which an innovation is communicated through certain channels over time among the members of a social system" (Pakarbudi, Mahananto, & Subriadi, 2018). The definition explains that, when a new technology is discovered, the individuals or organisations begin to feel its benefits; they will then be interested to adopt them and be the earliest adopters. Further, when the social system witnesses the advantages of the technology from observing the innovators or early adopters, they are encouraged to adopt and use the technology. This will appear as a chain as shown in Figure 1.

Figure 1. Innovation Diffusion Model.



Researchers define the adoption as physically acquiring the technical innovation and reliability to use it with the emphasis being on the decision to adopt (Ngongo, Ochola, Ndegwa, & Katuse, 2019). Adoption is defined as the first time use of an idea, product, technology, or program and the acceptance of it; meanwhile, innovativeness is "the degree to which an individual is relatively earlier in the adoption of a new idea than the other members of his social system"(Ud Din et al., 2017). The use of ICT allows the company to respond quickly to environmental pressures, meet customer demand, and continue globalisation of the business (Bernadas & Verville, 2005).

Literature Review

ICT Adoption in Developing Countries

Effective use of ICTs is hampered by the digital divide between developed countries and less affluent countries, indicating that additional ICT research is needed in underdeveloped countries to reduce the gap. The patterns of expanding ICT in developing countries are now tending to widen the digital divide, proposing launching technology in developing countries is not a complete answer (Cicibas & Yildirim, 2018). Scholars in developing countries face field struggles, both in the budget of limited technology and in a social context, to transform ICT into something useful for them (Sukkird & Shirahada, 2018). Although the introduction of ICT encourages economic development, the result depends on the role of the health sector in generating a skilled and technologically competent workforce (Ha, Nguyen, & Braa, 2017). However, developing countries are facing numerous problems in adopting and accepting technological innovations in the health care industry.

According to Zailani, Iranmanesh, Nikbin, and Beng (2015) Malaysian universities have discovered that the rapid development of technology, without spending enough time for testing and efforts to understand it, is seen as one of the barriers to rapid technological development. Zailani et al. (2015) explored further, that deficiency of network connectivity, as well as lack of support and reinforcement from management to use technology in teaching and learning, hindered technology adoption and integration into the healthcare system. The prevalence of the developing countries depends not only on infrastructure, high rise buildings, roads and highways, and communication technologies but also on health care development (Badru & Wainaina, 2018).

As discussed in the previous paragraph, literature reviews in the field of information systems (IS) showed a number of aspects that influence the adoption and acceptance of information technology. Topics that are widely studied include Attitude Towards Technology (ATT), Subjective Norms (SN), and Perceived Behavioural Control (PBC) (Tab, Jokar, Mollaei, Azad, & Ahmadzadeh Kh, 2017); (Nguyen et al., 2018); (Osman, 2019); (Hossain, Quaresma, & Rahman, 2019). Because of these reasons, behavioural intentions (BI) are the definitive goal that leads to the adoption of a technology. Therefore, the study uses three adoption theories to answer the question and develop a model to achieve its aims. Meanwhile, it considers the implementation of ICTs from a holistic perspective; Diffusion of Innovation (DOI) for technological perspective (Rogers, 1995), psychological perspective by using Theory of Planned Behaviour (TPB) (Ajzen, 2002)), and Decomposed Theory of Planned Behavior (DTPB) for management factors (Taylor & Todd, 1995). In addition, there are four main factors that were used to build the model: (i) BI for the use or abandonment of technology among Thai medical facility personnel, (ii) ATT in the teaching and learning

process, (iii) SNs that use or reject these technical advantages, and (iv) the PBC, which use or reject ICT in the process of teaching and learning.

Behavioural Intention

BI refers to the subjective probability that a person will behave in a certain manner. In this case, employees will decide whether they want to use certain technologies in the healthcare system or reject them. Mukred, Singh, and Safie (2017) argued that BI is an important element that influences employees to use the Online Course Management System (IBCMS). Relatively, Arakawa, Ota, Piyabanditkul, and Ishikawa (2018) and Ogbuabor and Onwujekwe (2018) ratified the significance of BI measurement in the use and adoption of ICT in medical institutions. BI, however, is considered an important aspect for the study as its endpoint is to accept or reject the healthcare technologies by medical practitioners.

Attitude towards Technology

Attitude refers to the general feeling or attitude of an individual towards or against an adverse view of the use of system in medical technology. Ateetanan, Usanavasin, Shirahada, and Supnithi (2017) noted that research was needed that sheds light on learners' feelings, attitudes, and intentions towards the use of medical technologies. According to Bonn, Cho, Lee, and Kim (2016), the attitude factor is significant for measuring BI for the use of technology in teaching and learning methods. Therefore, the relationship between ATT and BI for its use means that the people behave positively. Several studies have proven the importance of the relationship between ATT and BI for its use, such as (Bem, Prędkiewicz, Ucieklak-Jeż, & Siedlecki, 2015); (Nsanya, 2017) ; ((Lu, Wang, Li, Sun, & Zhang, 2018); (Banerjee, Nath, Dey, & Eto, 2018); (Alam, Masum, Beh, & Hong, 2016); (Marete, 2018). In Thailand, a recent study by Kohpaiboon (2019) has shown that the relationship between the two factors is very essential. ATT plays a vital role in the success of this research because of the provision of BI for acceptance or rejection by Thai employees in medical institutions.

Subjective Norms (SN) relates to a person's perception that most of his/her references seek to motivate the use of ICTs in the learning system, or to inspire non-fulfilment and observance of the views and desires of the audience. This is considered to be one of the factors affecting technology adoption and acceptance. This is reflected in many adoption theories, such as Theory of Reasoned Action (TRA) and Theory of Planned Behaviour (TPB). (Mayakul, Kiattisin, & Prasad, 2018) discovered that there is a positive relationship between social influences on SN with BI for using technology. Sharma, Jain, Gupta, and Sharma (2017) agreed on the importance of SN in adopting health care technology in healthcare facilities. In the case of Thailand, social effect is very important for influencing employees in accepting or rejecting new technologies in the healthcare system. In particular, Shahzad, Jianqiu, Zia,

Shaheen, and Sardar (2018) and Nilashi et al. (2019) found that socio-cultural problems are considered one of the biggest issues faced by the employees who accept or reject technologies in the healthcare system.

Perceived Behavioural Control (PBC) is an important element in the implementation of ICT in the health system among employees. It refers to "the perception of the individual of the ease or complexity of ICT implementation, as well as the confidence in the resources and opportunities to implement health technologies." There is an important relationship between individuals in the PBCs category, such as support, assistance and facilitation to use these technologies and their BI to use these technologies. Conversely, Shalannanda and Hakimi (2016) and Abandu, Kivunike, Okot, and Lamunu (2019) found the necessity of PBC on behavioural interactions to assent and use ICT in the health care systems. However, Thai healthcare providers see the PBC program as an important factor in increasing the use of ICT in the healthcare systems. Indeed, in order to stimulate the use of ICTs in the healthcare systems, universities have provided an enabling environment for creating an attractive environment in the form of technical support, resources, and government support. As a result, the study focused on the PBC factor for Thai medical staff to use ICTs and measure BI for their teaching and learning. However, the adoption of ICT will have an impact on improving the health system. In addition, the aim of the study was to create an appropriate research model that would help the management of a medical institution to use, support and reassure the use of information and communication technologies among medical personnel in the health care system.

Technology Acceptance Model

The Technology Acceptance Model (TAM) (Davis, 1989) was created on the basis of the TRA, especially for information technology users to understand adoption. In the early version TAM is analogous to the TRA, where social attitudes and norms are seen as direct determinants of behaviour as predictors of intention (Davis, 1989). The specialty of TAM is that the designs found in the previous models split into two separate factors: ease of use and perceived tool availability, but over time TAM was facilitated, and organisational elements and attitudes were excluded from the model, with PEU and PU units being the sole predictors of intention (Dennis, Venkatesh, & Ramesh, 2003). A number of studies have examined TAM to predict adoption behavious in many technologies, and TAM has been used by healthcare professionals to adopt ICT. The advantage of TAM is that it provides ICT-specific and many beliefs that can be measured between different user groups (Davis, 1989). However, some authors have criticised the applicability of TAM to study the behaviour of healthcare providers (Noimanee, Senavongse, Tantisatirpong, & Noimanee, 2015). By introducing variables from other theoretical models, or by examining previous and integrated

perceptions of ease of use and intended utility, several attempts have been made to expand TAM.

Recently, a unified model for the adoption of information technology, Unified Theory of Acceptance and Use of Technology (UTAUT) has been proposed, which contains most of the variables found in other theoretical models (Dennis et al., 2003). UTAUT can be effective in assessing the acceptability of ICT by healthcare providers, and some authors have already proposed its implementation. However, this model has not yet been empirically tested to understand the implementation of ICT among healthcare specialists (Ahmadi, 2015).

Methodology

This study used five items for subjective norms and four items for intention to adopt ICT in Thai hospitals. These items were adapted from Seok-Jae and Ji-Hyun (2006). A total of 239 hospital staff were interviewed by using self-administered questionnaires. Initially, 300 hospital staff were approached, and 277 questionnaires were returned from the respondents with a response rate of 83.9%. After screening the dataset and deleting the missing data, 239 usable questionnaires proceeded for further analysis.

Data Analysis and Findings

Reliability Test

In order to check the internal consistency of the items in subjective norm and intention to adopt ICT in hospitals, a reliability test was conducted. As shown in Table 2, the Cronbach Alpha values among the variables are in a good range and it shows high consistency of the measurements for further analysis.

Table 2: Results of Reliability Test

Variables	Number of items	Cronbach Alpha
Subjective norm	5	0.832
Intention	4	0.793

As shown in Table 2, the Cronbach Alpha for subjective norm is 0.832 and intention is 0.793. Thus, it can be concluded that, the internal consistency among the measurement of the variables shows considerable consistency and fitted for further analysis of the study.

ANOVA Test

The first ANOVA test was conducted to ascertain the mean differences among the items in terms of respondents' education levels. Education levels were categorised into eight which

are: “Never been to school”, “primary school”, “secondary school”, “skills certificate”, “diploma”, “Degree/Bachelor”, “Masters” and “PhD Doctoral.”

Table 3: ANOVA Test for Education Level and Items of ICT Adoption in Hospitals

			N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Between-Component Variance
							Lower Bound	Upper Bound	
My organisation is currently adopting ICT for hospital	Never been to school		2	4.5000	2.12132	1.50000	-14.5593	23.5593	
	Primary school		4	4.7500	1.25831	.62915	2.7478	6.7522	
	Secondary school		66	4.5000	1.48064	.18225	4.1360	4.8640	
	Skills certificate		10	4.1000	1.59513	.50442	2.9589	5.2411	
	Diploma		96	4.7188	1.31151	.13386	4.4530	4.9845	
	Degree/Bachelor		47	4.5532	1.77921	.25952	4.0308	5.0756	
	Masters		12	5.0000	1.20605	.34816	4.2337	5.7663	
	PhD/Doctoral		2	5.5000	.70711	.50000	-.8531	11.8531	
	Total		239	4.6192	1.46148	.09454	4.4330	4.8055	
	Model	Fixed Effects			1.47148	.09518	4.4317	4.8068	
		Random Effects				.09518[a]	4.3942[a]	4.8443[a]	-.04061
My organisation is planning to adopt ICT	Never been to school		2	4.5000	.70711	.50000	-1.8531	10.8531	
	Primary school		4	5.0000	1.41421	.70711	2.7497	7.2503	
	Secondary school		66	4.8333	1.04636	.12880	4.5761	5.0906	

	Skills certificate		10	4.7000	1.33749	.42295	3.7432	5.6568	
	Diploma		96	5.1979	.92475	.09438	5.0105	5.3853	
	Degree/Bachelor		47	5.2553	1.09282	.15940	4.9345	5.5762	
	Masters		12	5.5000	1.08711	.31382	4.8093	6.1907	
	PhD/Doctoral		2	6.5000	.70711	.50000	.1469	12.8531	
	Total		239	5.1046	1.04195	.06740	4.9718	5.2374	
	Model	Fixed Effects			1.02658	.06640	4.9738	5.2354	
		Random Effects				.12953	4.7983	5.4109	.04402
I would strongly recommend that others use ICT system for their hospitals	Never been to school		2	4.0000	1.41421	1.00000	-8.7062	16.7062	
	Primary school		4	4.7500	1.89297	.94648	1.7379	7.7621	
	Secondary school		66	4.6212	1.30990	.16124	4.2992	4.9432	
	Skills certificate		10	4.6000	1.50555	.47610	3.5230	5.6770	
	Diploma		96	5.0521	1.12736	.11506	4.8237	5.2805	
	Degree/Bachelor		47	5.1702	1.41911	.20700	4.7535	5.5869	
	Masters		12	5.5833	1.37895	.39807	4.7072	6.4595	
	PhD/Doctoral		2	6.0000	1.41421	1.00000	-6.7062	18.7062	
	Total		239	4.9582	1.29897	.08402	4.7926	5.1237	
	Model	Fixed Effects			1.28423	.08307	4.7945	5.1218	
		Random Effects				.14737	4.6097	5.3066	.05273

My organisation will enhance the ICT infrastructure in future.	Never been to school		2	3.5000	.70711	.50000	-2.8531	9.8531	
	Primary school		4	4.7500	1.89297	.94648	1.7379	7.7621	
	Secondary school		66	5.1212	1.17034	.14406	4.8335	5.4089	
	Skills certificate		10	5.1000	1.19722	.37859	4.2436	5.9564	
	Diploma		96	5.5104	1.12385	.11470	5.2827	5.7381	
	Degree/Bachelor		47	6.0000	1.19782	.17472	5.6483	6.3517	
	Masters		12	5.8333	1.46680	.42343	4.9014	6.7653	
	PhD/Doctoral		2	5.0000	.00000	.00000	5.0000	5.0000	
	Total		239	5.4644	1.22551	.07927	5.3083	5.6206	
	Model	Fixed Effects			1.18218	.07647	5.3138	5.6151	
		Random Effects				.21550	4.9549	5.9740	.14448

Warning: Between-component variance is negative. It was replaced by 0.0 in computing these random effects measure.

First the ANOVA test was conducted to know the mean differences for intention to adopt ICT among the items in terms of respondents' education levels. Education levels were categorised into eight, which are "Never been to school", "primary school", "secondary school", "skills certificate", "diploma", "Degree/Bachelor", "Masters" and "PhD Doctoral". For the first question of ICT adoption (My organisation is currently adopting ICT for its hospital), PhD holders consists of the highest mean value (5.500) and skill certificate holders consists of the lowest mean value (4.100). For the second question (My organisation is planning to adopt ICT), also PhD holder respondents consists of the highest mean value (6.500) and the lowest mean score is conceded by never been to school (4.500). For question three (I would strongly recommend that others use ICT systems for their hospitals), the highest mean score is also for PhD holders (6.000) and the lowest mean score is for never been to school (4.000). For the last question (My organisation will enhance the ICT infrastructure in future), the highest mean score is for degree/bachelor holder respondents (6.000) and the lowest score is for never been to school (3.500). Respondents with higher

qualifications have a higher tendency to adopt information and communication technology in hospitals compared to the respondents who have lower educational backgrounds.
From the summary of ANOVA in Table 4, no significant differences were found among mean values among different educational backgrounds and their opinions on adopting ICT.

Table 4: Summary of ANOVA Test

		Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
My organisation is currently adopting ICT for hospital	Between Groups	8.178	7	1.168	.540	.804
	Within Groups	500.173	231	2.165		
	Total	508.351	238			
My organisation is planning to adopt ICT	Between Groups	14.943	7	2.135	2.026	.053
	Within Groups	243.442	231	1.054		
	Total	258.385	238			
I would strongly recommend that others use ICT systems for their hospitals	Between Groups	20.607	7	2.944	1.785	.091
	Within Groups	380.975	231	1.649		
	Total	401.582	238			
My organisation will enhance the ICT infrastructure in future	Between Groups	34.611	7	4.944	3.538	.001
	Within Groups	322.837	231	1.398		
	Total	357.448	238			

According to the Robust Tests in Table 5, none of the items for intention to adopt ICT in hospitals of Thailand have shown a significant difference for education levels. From the Robust test, question number four was excluded because at least one group has 0 variance.

Table 5: Robust Tests of Equality of Means

		Statistic	df1	df2	Sig.
My organisation is currently adopting ICT for its hospital	Welch	.600	7	8.545	.743
	Brown-Forsythe	.528	7	10.916	.797
My organisation is planning to adopt ICT	Welch	1.746	7	8.478	.220
	Brown-Forsythe	1.854	7	28.807	.115
I would strongly recommend that others use ICT systems for their hospitals	Welch	1.077	7	8.343	.452
	Brown-Forsythe	1.366	7	17.631	.279
My organisation will enhance the ICT infrastructure in future	Welch	.	.	.	.
	Brown-Forsythe	.	.	.	.

a. Asymptotically F distributed.
b. Robust tests of equality of means cannot be performed for ICT_ADP4 because at least one group has 0 variance.

A second ANOVA test was conducted to discover the mean differences for subjective norms among the items in terms of respondents' education levels. Education levels were categorised into eight, which are "Never been to school", "primary school", "secondary school", "skills certificate", "diploma", "Degree/Bachelor", "Masters" and "PhD Doctoral." For the first question of subjective norms (others who influence my organisation's behaviour would think that I should use ICT), bachelor's degree holders consist of the highest mean value (4.9149) and never been to school consists of the lowest mean value (2.000). For the second question (others who are important to my organisation think I should use ICT), also PhD holder respondents consists of the highest mean value (5.000) and lowest mean scores were conceded by Master's degree holders (2.9167). For question three (most of the people who are important to my organisation think that using ICT is a wise idea), the highest mean score is also for masters holders (5.4167) and the lowest mean score is for Secondary School respondents (3.2727). For the last question (t is expected that by others that my organisation use internet-based ICT), the highest mean score is for never been to school respondents (5.500) and the lowest score is for secondary school respondents (3.6515). Respondents with higher qualifications have higher subjective norms while considering information and communication technology in hospitals compared to the respondents who have lower educational backgrounds.

Table 6: ANOVA Test for Education Level and Items of Subjective Norm

			N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Between-Component Variance
							Lower Bound	Upper Bound	
Others who influence my organisation's behavior would think that I should use ICT	Never been to school		2	2.0000	1.41421	1.00000	-10.7062	14.7062	
	Primary school		4	4.5000	1.29099	.64550	2.4457	6.5543	
	Secondary school		66	3.1061	1.85745	.22864	2.6494	3.5627	
	Skills certificate		10	4.6000	1.34990	.42687	3.6343	5.5657	
	Diploma		96	4.4583	1.69157	.17264	4.1156	4.8011	
	Degree/Bachelor		47	4.9149	1.59932	.23328	4.4453	5.3845	
	Masters		12	4.5833	1.83196	.52884	3.4194	5.7473	
	PhD/Doctoral		2	4.5000	.70711	.50000	-1.8531	10.8531	
	Total		239	4.1674	1.83031	.11839	3.9341	4.4006	
	Model	Fixed Effects			1.70886	.11054	3.9496	4.3852	
		Random Effects				.42364	3.1656	5.1691	.59527
Others who are important to my organisation think I should use ICT	Never been to school		2	4.5000	2.12132	1.50000	-14.5593	23.5593	
	Primary school		4	4.5000	1.73205	.86603	1.7439	7.2561	
	Secondary school		66	3.0758	1.83396	.22574	2.6249	3.5266	
	Skills certificate		10	4.9000	1.44914	.45826	3.8633	5.9367	
	Diploma		96	4.3854	1.66935	.17038	4.0472	4.7237	
	Degree/Bachelor		47	3.8298	1.98165	.28905	3.2480	4.4116	

	Masters		12	2.9167	1.92865	.55675	1.6913	4.1421	
	PhD/Doctoral		2	5.0000	1.41421	1.00000	-7.7062	17.7062	
	Total		239	3.8703	1.87081	.12101	3.6319	4.1087	
	Model	Fixed Effects			1.78899	.11572	3.6423	4.0983	
		Random Effects				.36041	3.0181	4.7225	.41466
Most of the people who are important to my organisation think that using ICT is a wise idea	Never been to school		2	3.5000	3.53553	2.50000	-28.2655	35.2655	
	Primary school		4	3.5000	2.08167	1.04083	.1876	6.8124	
	Secondary school		66	3.2727	1.88554	.23209	2.8092	3.7362	
	Skills certificate		10	4.3000	1.15950	.36667	3.4705	5.1295	
	Diploma		96	4.7292	1.82658	.18642	4.3591	5.0993	
	Degree/Bachelor		47	5.0213	1.90525	.27791	4.4619	5.5807	
	Masters		12	5.4167	2.23437	.64501	3.9970	6.8363	
	PhD/Doctoral		2	5.5000	.70711	.50000	-.8531	11.8531	
	Total		239	4.3766	1.98747	.12856	4.1233	4.6298	
	Model	Fixed Effects			1.87030	.12098	4.1382	4.6149	
		Random Effects				.43649	3.3444	5.4087	.62600
It is expected that by others that my	Never been to school		2	5.5000	2.12132	1.50000	-13.5593	24.5593	
	Primary school		4	5.0000	2.00000	1.00000	1.8176	8.1824	
	Secondary school		66	3.6515	2.18028	.26837	3.1155	4.1875	

organisation use internet-based ICT	Skills certificate		10	4.5000	1.26930	.40139	3.5920	5.4080	
	Diploma		96	4.7396	1.75466	.17908	4.3841	5.0951	
	Degree/Bachelor		47	4.6170	1.56807	.22873	4.1566	5.0774	
	Masters		12	4.7500	1.86474	.53831	3.5652	5.9348	
	PhD/Doctoral		2	5.0000	1.41421	1.00000	-7.7062	17.7062	
	Total		239	4.4184	1.88109	.12168	4.1787	4.6581	
	Model	Fixed Effects			1.84441	.11931	4.1833	4.6535	
		Random Effects				.25960	3.8045	5.0323	.18921

From the summary of the ANOVA Table 7, significant differences were found among mean values for different educational backgrounds and their opinions on all four items of subjective norms.

Table 7: Summary of ANOVA Test

		Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Others who influence my organisation's behaviour would think that I should use ICT	Between Groups	122.738	7	17.534	6.004	.000
	Within Groups	674.567	231	2.920		
	Total	797.305	238			
Others who are important to my organisation think I should use ICT	Between Groups	93.663	7	13.380	4.181	.000
	Within Groups	739.316	231	3.201		
	Total	832.979	238			
Most of the people who are important to my organisation think that using	Between Groups	132.064	7	18.866	5.393	.000
	Within Groups	808.045	231	3.498		

ICT is a wise idea	Total	940.109	238			
It is expected that by others that my organisation use internet-based ICT	Between Groups	56.328	7	8.047	2.365	.024
	Within Groups	785.831	231	3.402		
	Total	842.159	238			

As shown in the Robust Tests in Table 8, all four items for subjective norms while considering ICT in hospitals of Thailand have shown significant differences for education levels.

Table 8: Robust Tests of Equality of Means

		Statistic	**df1**	**df2**	**Sig.**
SN1	Welch	4.028	7	8.708	.030
	Brown-Forsythe	8.014	7	35.783	.000
SN2	Welch	3.011	7	8.424	.068
	Brown-Forsythe	4.220	7	17.187	.007
SN3	Welch	3.905	7	8.676	.033
	Brown-Forsythe	4.306	7	5.788	.050
SN4	Welch	1.280	7	8.434	.362
	Brown-Forsythe	2.505	7	16.541	.059

a. Asymptotically F distributed.

Regression Analysis for the Influence of Subjective Norms on Intention to Adopt ICT

Regression analysis was conducted to analyse the influence of subjective norms on intention to adopt ICT in hospitals. As shown in Table 9, subjective norms influence intention significantly.

Table 9: Summary of Regression Analysis for Subjective Norms and Intention to Adopt ICET

Variable	**Coefficients**	**Standard Error**	**t-value**	**p value**
Subjective Norms	0.231	0.034	6.762	0.000
R^2= 0.161; F= 45.721 **Sig. = 0.000**				

*Dependent variable: Intention to Adopt ICT

The subjective norm is explaining 16.1% variance on intention to adopt ICT in hospitals in Thailand. Standard error (0.034) is showing statistical accuracy of an estimate.

Conclusion

Thailand has better maternal and childcare services than other lower and middle-income nations. Nevertheless, the cheap health care with lower cost, the overall mortality rate with cheap medical care is not lower than neighbouring countries and indeed higher than in Central America. ICT adoption is a multidimensional and dynamic phenomenon that changes over time. In addition to personal beliefs and motivations for implementing ICTs, it is also important to consider how ICT applications interact with existing practice at the professional, organisational and systemic levels. More empirical evidence is needed to understand user acceptability in specific areas of health. This study provides an overview of some of the bestknown theoretical models used to study the application of ICT at the individual level and discusses some conclusions regarding their implementation. A meta-analysis of quantitative theoretical research on the implementation of ICT may serve as the basis for the development of interventions based on a combination of orientation strategies and changes for future research on the use of ICT by health professionals. Similarly, the synthesis of intensive qualitative research is also important for understanding the complex processes of integrating ICT into the health system. Thus, the field of ICT should be taken from the use of a theory to resort to an adoption process at the same time to evaluate the application of ICT in continuity on the basis of integrated theoretical framework.

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