Structural equation model of information technology acceptance, e-service quality, and trust affecting consumer's decision to use telepharmacy in the health region 12, Thailand

Somsak Leelang* and Phakrada Kerdprathum

Western University, Thailand.

ABSTRACT

The objectives of this research were to study the components, relationships, and influences of factors affecting consumer's decision to use telepharmacy in the health region 12, Thailand, and to develop a structural equation model of information technology acceptance, e-service quality, and trust affecting consumer's decision to use telepharmacy in the health region 12, Thailand with the mixed methods research. The samples of qualitative research by in-depth interviews were drawn from key informants including pharmacists, technology experts, and consumers in the study area, totaling 24 persons. The population used in the research were persons aged 18 years and over in the health region 12 of Thailand, with a sample size of 420 persons, using a non-probability random sampling method. Data were collected by interviews and quantitative questionnaires. The statistics used for data analysis were frequency, percentage, mean, standard deviation, and Structural Equation Modeling (SEM). The qualitative research results found that the components and relationship of various factors. The results obtained from the empirical data were consistent with the hypothesized model synthesized from the literature review. Related theories and research that were appropriate for generating a quantitative research concept. For the quantitative research result, it was found that the structural equation model developed was harmoniously consistent with the empirical data. The index values passed all acceptance criteria were χ^2/df = 0.287, CFI = 1.000, GFI = 1.000, AGFI = 0.989, RMSEA = 0.000, and RMR = 0.001, factors affecting consumer's decision to use telepharmacy in the health region 12, Thailand through descending order of importance were trust, information technology acceptance, and e-service quality.

Keywords: E-service quality, information technology acceptance, telepharmacy, trust.

*Corresponding author. Email: morya100@hotmail.com. Tel: +66 815412120.

INTRODUCTION

Telepharmacy services are provided by pharmacists using information technology to deliver pharmaceutical care and health information to patients remotely. This includes providing health information to patients who are geographically distant from the pharmacy or located in different areas than the pharmacist (National Association of Boards of Pharmacy, 2020). This aligns with the definition of the Pharmacy Council of Thailand, which states that telepharmacy services provide remote pharmaceutical care and related services to patients (service recipients or consumers). Pharmacists can communicate with patients using communication technology and facilitate medication delivery (The Pharmacy Council of Thailand, 2020). Many agencies and business organizations in Thailand are implementing telepharmacy services, such as private hospitals and drug stores. These entities are in the early stages of developing channels and applications to support patient service

provision. Currently, the utilization of telepharmacy services by consumers is still relatively low. This may be attributed to several factors, including service providers' views. While they recognize the need for pharmacists to be proficient and prepared to provide telepharmacy services adhering to professional standards, some hesitation and concerns regarding patient confidentiality remain. However, concerns and caution persist regarding the protection of patient confidentiality. Furthermore, ensuring sufficient access to necessary information for service recipients and the development of standardized service delivery systems by responsible agencies is crucial. The goal is to establish a service quality that is comparable to or even superior to traditional services (Nalampang, 2021). Consumer-related factors influencing the decision to utilize telepharmacy services include the perceived limited scope of services offered compared to traditional settings. Further research is needed to clarify the specific reasons behind this perception.

Thailand's public health system is divided into 13 health zones, each offering services to the public across various levels, including primary, secondary, tertiary, and specialized centers. This division is based on geographical considerations, transportation networks, administrative boundaries, and government inspection zones. Private pharmacies function as primary health service units, providing medications and basic health services to consumers. They leverage the professional knowledge and skills of pharmacists. Serving as the first point of contact for health needs, consumers in the community readily utilize these services. Within the 12th health region of Thailand, encompassing the provinces of Songkhla, Satun, Trang, Phatthalung, Pattani, Yala, and Narathiwat, the distribution of private primary health service units reveals a concentration within municipal areas compared to rural settings. The number of health service units per capita in this region is significantly lower compared to other health regions. Moreover, due to the geographical landscape of the health region 12, characterized by limited urbanized areas, consumers primarily reside in remote locations. Accessing various health services, including pharmaceutical services, may present greater challenges for residents in this region compared to those residing in large urban areas (Nitikarun and Upakdee, 2020).

Several factors contribute to this extravagant drug use. One factor is the growing emphasis on self-care among consumers. Additionally, easy access to medications plays a significant role. Consumers can readily purchase a wide range of drugs over-the-counter at pharmacies, including common household remedies even at convenience stores. This self-medication, often involving the simultaneous use of multiple drugs without professional guidance, can lead to overuse and associated problems. The Thai healthcare system also plays a part in this issue. Consumers generally do not have to worry about the cost of medical treatment from government hospitals. This can lead to decreased motivation among some individuals to actively manage their health before falling ill. Consequently, they may rely on medications more than necessary (Ruangritchankul, 2022). However, a valuable alternative exists in the form of the Sufficiency Economy Philosophy. This concept, based on moderation, reasonableness, and good immunity, encourages individuals to take responsibility for their health and well-being (Office of the National Economic and Social Development Board, 2007). This includes practices like self-care, improved healthcare practices, and ensuring sustainable and appropriate use of medications. While modern medicine remains essential for treating and curing illnesses, receiving comprehensive and timely pharmaceutical services can further contribute to optimal health outcomes. This concept encourages everyone to become self-reliant in managing their health, including actively improving their healthcare practices. Sustainable and appropriate use of medication is crucial for achieving optimal health outcomes. Therefore, proper medication use requires knowledge, moderation, and willingness to seek expert advice. While modern medicine remains essential for treating and curing illnesses, timely and comprehensive pharmaceutical services can significantly improve patient outcomes.

This underscores the growing relevance and potential of telepharmacy services. As a pharmaceutical professional and healthcare service provider, I am committed to conducting research that benefits both service providers and recipients. This new service necessitates rapid adaptation and development from pharmaceutical professionals and businesses to cater to the evolving needs of society.

LITERATURE REVIEW

Information technology acceptance concept

Researchers and academics have offered numerous definitions of information technology, encompassing the capabilities provided to organizations by computers, application software, and telecommunications (Attaran, 2003). As Brynjolfsson and Hitt (2000) explain, information technology refers not only to computers but also to the broader realm of digital communication technologies. These technologies possess immense power to reduce coordination costs, streamline communication and information processing, and ultimately drive economic restructuring and the evolution of modern industries. More recently, Laudon and Laudon (2013) expanded this definition to include all hardware and software necessary for a company to achieve its business objectives. This encompasses not only computers and storage devices, but also portable mobile devices and software like Windows, Linux, and various productivity suites, Microsoft Office, and many other computer programs that can be found online. Therefore, it can be concluded that Information technology means software and hardware that

are designed for the purpose of processing, analyzing, managing, storing, and transmitting information to other people or related devices. The final goal is to enable users or organizations to achieve their goals efficiently.

Understanding information technology acceptance. The concept of modeling to explain technology acceptance has emerged. Davis (1989) presented the Technology Acceptance Model: TAM in MIS Quarterly, which is a widely used model. It aims to describe the factors that influence user acceptance of new systems or technologies, among the many variables that may influence the level of adoption. He has focused on 3 main factors: (1) Perceived Usefulness is the starting point of interest. People tend to choose new systems or technology only if they believe that they will. Those systems or technologies will help solve problems or increase their work efficiency. (2) Perceived Ease of Use is another factor that affects the decision to adopt a new system or technology. This is because such systems or technologies come with conditions or difficulties that outweigh their expected benefits. They will not choose to use those systems or technologies. (3) Attitude Toward Using is the assessment of individuals regarding product use. Service or technology is an important concept for running a business. This is because understanding customer attitudes towards usage is essential for developing a successful marketing strategy. Overall, the information technology acceptance model most discussed the link between emotional variables and technology use. This type of model has several strengths. One example is its simplicity there is a model that focuses specifically on information technology. It has sufficient theoretical foundation and empirical support. It can be used to predict the success of a system or technology. This will help researchers or developers to save on costs. This is because there are cases where even a system or technology is highly effective and is seen as useful. However it has fallen out of favor with users because the technology was developed without an adequate understanding of its target users (Holden and Rada, 2011; Huang and Huang, 2017).

E-service quality concept

E-services have different meanings and considerations. Researchers should consider many perspectives, such as electronic services encompass online services that are provided via the internet, that is, contact occurs between the service provider and the service recipient via electronic channels. These electronic channels usually involve such an environment that resides on the internet and can provide services to a large number of users (Taherdoost et al., 2015). Many researchers have defined the meaning of e-services refer to services through information and communications technology (Kvasnicova et al., 2016). Tiwana and Ramesh (2001) view electronic services as Internet-based applications that meet service needs. By combining various service formats seamlessly to create a complex service model. This is usually real-time, for example, customer relationship management, accounting, order processing, etc. which in general e-services involve parallel transactions. Whether it is searching for negotiation delivery of various requests, it will help facilitate and increase efficiency in the operations of service providers and users alike.

Service quality is often understood as customer perception. This will vary from person to person. And service quality that customers perceive is often understood to be the result of experience. Actual performance: how well it can meet customer expectations. This concept is based on adaptation-level theory, when performance is at the same or higher level than expected service quality will be viewed as being at a good or excellent level. On the contrary, if the performance is lower than what the user expects, it will show that the service quality is inferior or at a poor level (Ojasalo, 2010). E-service quality. It is a new development for research. This is strategically important for businesses trying to deal with customers in electronic markets. The quality of electronic services is a basic requirement for the good performance of electronic channels. The researchers therefore summarized the meaning of electronic service quality as follows: e-service quality refers to the use of websites to facilitate efficiency and effectiveness in the purchase and delivery of services and products (Askari et al., 2016).

Trust concept

Several researchers have defined trust as a factor that reduces a customer's potential concerns. Makes customers feel comfortable and trust the service provider (Coulter and Coulter, 2002). Rita (2019) stated that trust is the main factor for customers in deciding whether to buy products from online stores or not trust is the result of the buyer's beliefs, confidence, feelings, or expectations. High trust in customers lead to increased intention to use e-commerce systems. A business-oriented study examined trust and loyalty factors that influence the decision to use e-commerce usage. In such research, it has been defined that trust means that consumers will have a positive attitude towards a brand only if they have confidence in that brand. In a situation where you want to buy a product, if the consumer has no confidence in any brand before. Consumers will search for information to build confidence before making a purchase. If there is a brand that builds trust consumers know the next time they want to buy a product, they will not waste time searching for further information and have established trust, which means a close relationship arises from what the customer receives from the product or service provider in a positive light. Customers who have trust will feel confident or believe in the components of the product or service (Seangsawat,

2013).

Trust is a very important factor in starting an online purchase. This is because both the personal and financial information of buyers are sent to unknown merchants over the internet. Factors for building consumer trust in e-commerce include: (1) User interface related to the quality of the design. Picture of professionalism usability, effectiveness, and ease of navigation if the website uses the native language (2) Site information involves transparency and annotation of company information. This will include your physical address and contact details. Links to trusted companies and secure payment channels (Tasin, 2017).

Decision concept

Consumer decision-making refers to the process in which a person has several choices. There is a decision to choose one option from all possible alternatives, such as choosing a product. Choosing various services, etc. In making such purchase decisions, the consumer will play the role of both the buyer and users of that product or service and payers (Schiffman et al., 1994). Johnston (2016) explains further: Consumers decide to purchase a product or decide to use a service. It is understanding consumer behavior that makes entrepreneurs or service providers understand what the consumer decision-making process for using services is like. According to Kotler (2000), the consumer decision-making process for using services can be broken down into five key steps: (1) Problem or need recognition (2) Information search (3) Evaluation of alternatives (4) Purchase decision and (5) Post-Purchase behavior after purchasing a product or using a service. Understanding the service's benefits can lead to brand loyalty. This encourages repeat purchases and fosters loyalty among existing customers. Can maintain the existing consumer base or introduce new consumers. But if consumers become dissatisfied and causes them to stop using products and services. In addition to having a negative effect on the existing customer base. It also has a negative effect on the dissemination of information to other consumers, causing the selection of services by new consumers to be reduced.

Traditional pharmaceutical services in health region 12 of Thailand found that health region 12 suffers from a low density of primary private pharmacies, especially outside municipalities. The region's geography, with its dispersed rural population, further complicates access to healthcare services, including traditional pharmaceutical services. Accessing various health services. In addition, receiving pharmaceutical services may have more obstacles than in large urban areas. Telepharmacy services, therefore, emerge as a promising solution, potentially alleviating these challenges and improving overall healthcare delivery in the region (Nitikarun and Upakdee, 2020).

Research objective

1. To study the components, relationships, and influences of information technology acceptance, e-service quality, and trust affecting consumer's decision to use telepharmacy in the health region 12, Thailand.
2. To develop a structural equation model of information technology acceptance, e-service quality, and trust affecting consumers' decision to use telepharmacy in the health region 12, Thailand.

Research hypothesis

Hypothesis 1: Information technology acceptance has a direct influence on the decision to use telepharmacy.
Hypothesis 2: Information technology acceptance has an indirect influence on the decision to use telepharmacy with trust as a mediating variable.
Hypothesis 3: E-service quality has a direct influence on the decision to use telepharmacy.
Hypothesis 4: E-service quality has an indirect influence on the decision to use telepharmacy with trust as a mediating variable.
Hypothesis 5: Trust has a direct influence on the decision to use telepharmacy.

METHODS

Research design

This research utilized mixed methods research, employing in-depth interviews with three key informant groups to explore the composition and relationships of latent variables. The quantitative research employed a field survey method, collecting primary data from a simple sampling of the target population using a self-administered questionnaire. Structured questionnaires served as the instruments for quantitative data collection.

Key informants

Key informants in this research include (1) community pharmacists, seven representatives for pharmaceutical services in each province in the educational area. (2) Software engineers, three representatives of information technology systems experts and (3) Consumers aged 18 years and over, fourteen people, including in total, 24 key informants were selected, representing essential information providers across all three groups. Data collection will continue until information saturation is reached, ensuring comprehensive insights from all key informant groups. A group of key informants will be selected using purposive sampling from key informants that are consistent with the research objectives. Who are

willing and able to provide in-depth information.

Population and sample

The target population for this research includes 3,689,302 people aged 18 years and over in health region 12, Thailand (National Statistical Office, 2023). Sample size calculation using structural equation modeling (SEM) considers the number of observable variables. This can determine the sample size approximately 10-20 times per question of the observed variable (Wiratchai, 1999). The sample size for this research was calculated to be 650 samples. There were also conditions to determine the minimum sample size. Hair et al. (2010) suggests a minimum of 100 samples when the model has five or fewer latent variables, each measured by at least three observed variables. Therefore, in order to be comprehensive in collecting data, the researcher determined the sample size for this research to be 420 samples in total, using convenience sampling or accidental sampling methods.

Research instruments and measurement

In-depth interviews, a staple of qualitative research, played a crucial role in this study. To ensure the interview guide's alignment with the research objectives, it was first reviewed by academics and experts. Their invaluable feedback helped refine the questions and enhance clarity. Pilot interviews with academics and experts further fine-tuned the guide, identifying and resolving. This meticulous process ensured the final interview tool was well-equipped to gather accurate and comprehensive data from key informants, laying a strong foundation for subsequent analysis and processing.

The quantitative research tool was a self-administered questionnaire designed to measure the Index of Item Objective Congruence (IOC). This measure assesses whether each question accurately reflects the intended concept. An excellent IOC value of 0.94 was achieved, indicating strong content validity of the instrument. The researcher then conducted a pilot test with a non-sampled target group of 30 participants. The pilot test data was then analyzed using Cronbach's alpha to assess the questionnaire's internal consistency. Items with a Cronbach's alpha of 0.70 or higher were retained, resulting in a final alpha of 0.88. This exceeds the acceptable criterion of 0.70 (Nunnally, 1987), confirming the instrument's reliability and suitability for data collection with real samples.

Data analysis

Qualitative research data analysis of user experiences through in-depth interviews with key informants exploring the components and relationships of latent variables, informing the design of quantitative research questionnaires. Subsequent quantitative research data analysis, which conducted by 2 statistical methods: (1) Descriptive Statistics including Frequency, Percentage, Mean, Standard Deviation (2) Inferential Statistics including Confirmatory Factor Analysis (CFA), Path Analysis (PA), and Structural Equation Modeling (SEM). Model fit in Structural Equation Modeling (SEM) is assessed by considering several criteria. The chi-square value should be non-significant at the 0.05 level. Alternatively, the chi-square to degrees of freedom ratio ($χ^2/df$) should be less than or equal to 2. Root Mean Square Error Approximation (RMSEA) and Root Mean Square Residual (RMR) ILss than 0.05, Goodness of Fit Index (GFI) and Comparative Fit Index (CFI) Greater than or equal to 0.95, and Adjusted Goodness of Fit Index (AGFI) Greater than or equal to 0.90.

RESULTS
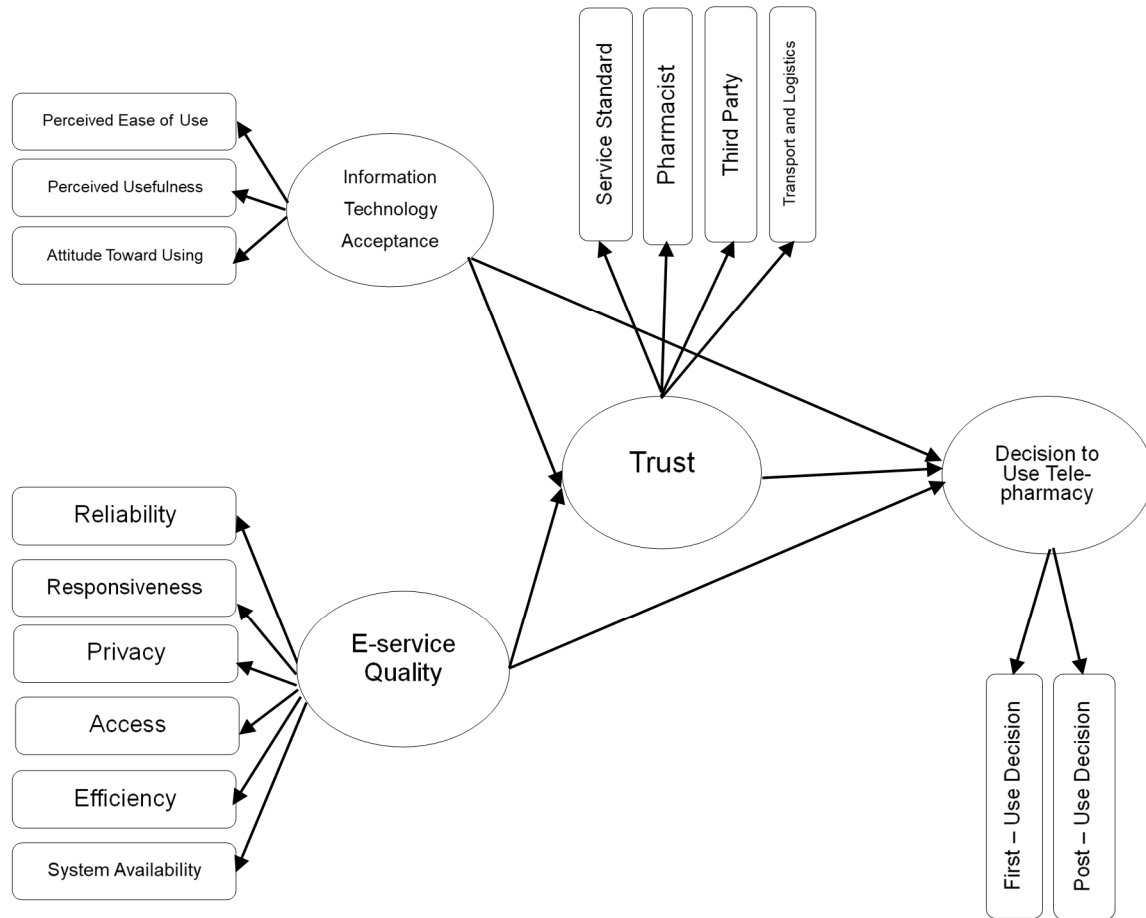
Result of qualitative research

In-depth interviews revealed that the components of latent variables affected the decision to use telepharmacy. Consisting of exogenous latent variables include: 1) Information Technology Acceptance (ITA) with components: Perceived Ease of Use (PEU), Perceived Usefulness (PUF), and Attitude Toward Using (ATT). 2) E-Service Quality (ESQ) with components: Reliability (REL), Responsiveness (RES), Privacy (PRI), Access (ACC), Efficiency (EFF), and System Availability (SYS). Endogenous latent variables include: 1) Trust (TRU) with components: Service Standard (SER), Pharmacist (PHA), Third Party (THI), Transport and Logistics (TRA). 2) Decision to Use telepharmacy (DEC) with components: First-Use Decision (FIR) and Post-Use Decision (POS). The qualitative analysis results align with the core conceptual framework of the quantitative research, which was synthesized from a review of relevant concepts, theories, and previous studies. Figure 1, therefore, provides a suitable framework for designing research tools and gathering data from sample groups

Demographic characteristics of sample group

Based on the questionnaires, the demographic characteristics of the 420 respondents revealed a female majority (50.48%, n = 212). The most common age group was 31 to 40 years old (41.90%, n = 176). Over half (42.14%, n = 177) had an average monthly income between 15,001 and 30,000 baht. Services from modern drugstores were used by all respondents (100%, n = 420). Nearly all (99.52%, n = 418) engaged in online purchases or utilized various online services, and respondents spent

an average of 1 to 4 hours per day on the Internet (46.44%, n = 195). Interestingly, 73.57% (n = 309) indicated having used telepharmacy services via the electronic system.

Figure 1. Conceptual framework derived from qualitative research, intended for quantitative research.

Results of direct and indirect effects exogenous variables affecting endogenous variables

According to Table 1, the consumer's decision to use telepharmacy (DEC) in health region 12, Thailand, was directly influenced by Trust (TRU), E-Service Quality (ESQ), and Information Technology Acceptance (ITA), with direct effect sizes of 0.72, 0.46, and 0.45, respectively, all significant at the 0.01 level. DEC was also indirectly influenced by ITA and ESQ, mediated by TRU, with indirect effect sizes of 0.23 and 0.25, respectively, also significant at the 0.01 level. Overall, DEC's total influence was determined by TRU, ESQ, and ITA, with total effect sizes of 0.72, 0.70, and 0.69, respectively, all significant at the 0.01 level. Furthermore, the model fit statistics indicate strong agreement with the empirical data. The index values passed all acceptance criteria were χ^2/df = 0.287, CFI = 1.000, GFI = 1.000, AGFI = 0.989, RMSEA = 0.000, and RMR = 0.001.
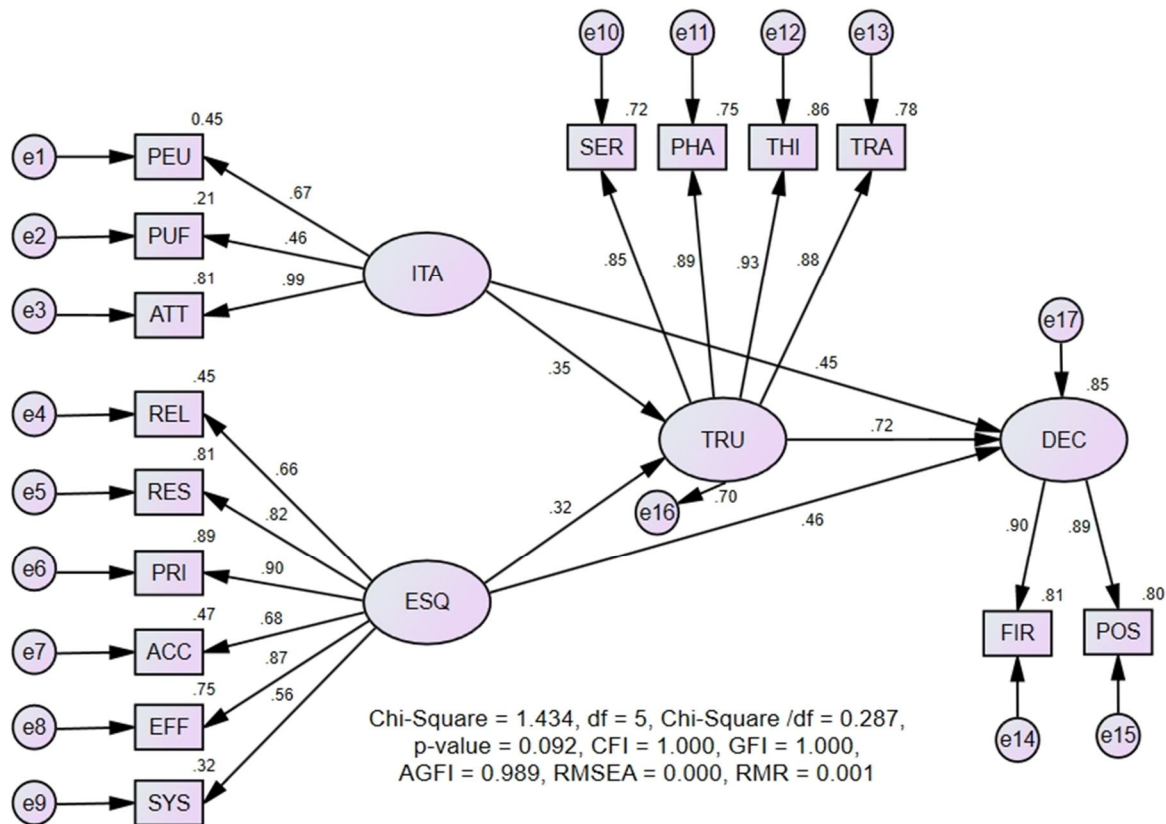
Analysis results of structural equation model development

Figure 2 reveals strong model-data agreement, with six harmony index values surpassing acceptance criteria, indicating strong agreement between the model and the empirical data. Notably, the chi-square to degrees of freedom ratio (χ^2/df) of 0.287 highlights excellent model-data consistency (recommended < 2.00). Similarly, the Comparative Fit Index (CFI) of 1.000 exceeds the recommended threshold of 0.95, indicating excellent relative fit. The Goodness of Fit Index (GFI) and the Adjusted Goodness of Fit Index (AGFI) values of 1.000 and 0.989, respectively, demonstrate excellent absolute fit (recommended > 0.90). Further confirming the model's excellent fit, the Root Mean Square Error of Approximation (RMSEA) of 0.000 is significantly below the ideal value of 0.01. Finally, the Root Mean Square Residual (RMR) of 0.001 is also consistent with good model fit (recommended < 0.05).

Table 1. Direct and indirect effects of exogenous variables on endogenous variables.

Resulted variables	DEC		
Causal variables	(Direct Effects: DE)	(Indirect Effects: IE)	(Total Effects: TE)
ITA	0.45** (0.07)	0.25** (0.04)	0.70** (0.11)
	7.92	5.84	13.76
ESQ	0.46** (0.08)	0.23** (0.02)	0.69** (0.10)
	6.57	4.98	11.55
TRU	0.72** (0.12)	-	0.72** (0.12)
	5.75	-	5.75

Chi-square = 1.434, df = 5, Chi-Square /df = 0.287, p-value = 0.092, CFI = 1.000, GFI = 1.000, AGFI = 0.989, RMSEA = 0.000, RMR = 0.001. **p < 0.01

Figure 2. Structural equation model of information technology acceptance, e-service quality and trust affecting consumer's decision to use telepharmacy in the health region 12, Thailand.

Results of analysis to answer research hypotheses

Figure 3 shows that every latent factor affecting telepharmacy use in the health region 12, Thailand, (Trust, E-Service Quality, and Information Technology Acceptance) has parameter values exceeding the critical t-value of 1.96 for a two-tailed test at the 0.01 significance level. This confirms that all identified factors significantly influence consumers' decision to use telepharmacy in the health region 12, Thailand, at the 0.01 level (as further detailed in Table 2): (1) Information technology acceptance has a direct influence on the decision to use telepharmacy. (2) Information technology acceptance has an indirect influence on the decision to use telepharmacy

with trust as a mediating variable. (3) E-service quality has a direct influence on the decision to use telepharmacy. (4) E-service quality has an indirect influence on the decision to use telepharmacy with trust as a mediating variable. (5) Trust has a direct influence on the decision to use telepharmacy.
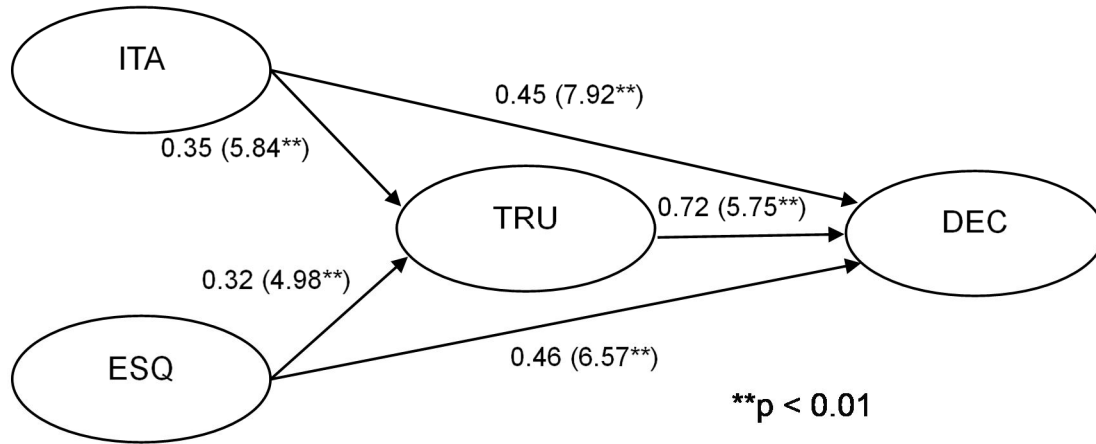

Figure 3. Hypothesis model to analyze research hypotheses with t-statistics (t-test).

Table 2. Results of research hypothesis testing.

Item	Hypothesis	t-value	Test results
1	ITA → DEC	7.92**	Accept the research hypothesis
2	ITA → TRU → DEC	5.84**	Accept the research hypothesis
3	ESQ → DEC	6.57**	Accept the research hypothesis
4	ESQ → TRU → DEC	4.98**	Accept the research hypothesis
5	TRU → DEC	5.75**	Accept the research hypothesis

**p < 0.01

DISCUSSION AND CONCLUSION

The present study highlights trust (TRU) as a critical factor directly influencing consumer's decision to use telepharmacy in the health region 12, Thailand. Trust not only exerts a direct influence but also acts as an intermediary through information technology acceptance and electronic service quality variables. When navigating sensitive matters like health and medicine, trust becomes paramount. Consumers are far more likely to embrace telepharmacy when they trust aspects such as adherence to high treatment standards, the presence of qualified pharmacists, secure payment systems, rigorous data privacy protections, and reliable delivery services. Therefore, it becomes imperative for service providers (drugstore operators, pharmacists, and telepharmacy developers) to prioritize building and maintaining trust. This can be achieved through consistent delivery of high-quality services exceeding regulatory standards, Regular

system updates and enhancements, and transparent communication with clear protocols and policies. This aligns with Rita's (2019) observation that trust serves as the primary decision factor when choosing online services. In essence, high trust, often born from positive user experiences, fosters greater e-commerce system adoption, as further supported by Coulter and Coulter (2002).

Studies highlight the importance of information technology acceptance (ITA) as a key factor influencing consumers' decision to use telepharmacy in the health region 12, Thailand. ITA revolves around recognizing the benefits and value of technology, with ease of use playing a crucial role. Consumers are more likely to accept a system that they perceive as convenient and user-friendly, fostering a positive attitude towards its use. Therefore, service providers must focus on understanding the real needs and preferences of their target audience. By analyzing these needs, they can develop telepharmacy

systems and interfaces that are intuitive, accessible, and address specific user concerns. This tailored approach not only enhances user experience but also leads to better acceptance and adoption of the technology. ITA further extends beyond individual user experience. It can also benefit service providers by optimizing resource allocation and cost efficiency. A well-designed system with high user acceptance can reduce training requirements, minimize support needs, and streamline operational processes. This aligns with findings from Holden and Rada (2011), who emphasize the importance of designing user-centered technologies that minimize resistance and ensure user satisfaction. Similarly, Huang and Huang (2017) note the strengths of ITA models, particularly their simplicity, strong theoretical foundation, and predictive power. These models act as valuable tools for researchers and developers, enabling them to forecast the success of a telepharmacy system before its implementation. This helps avoid situations where a potentially efficient system fails to gain traction due to user dissatisfaction, ultimately saving time and resources. In conclusion, understanding and fostering information technology acceptance is crucial for successful telepharmacy adoption. By prioritizing user needs, designing user-friendly systems, and utilizing predictive models, service providers can maximize user satisfaction and optimize their operations, contributing to a thriving telepharmacy landscape in the health region 12, Thailand.

Studies consistently emphasize the crucial role of e-service quality (ESQ) in influencing consumers' decisions to use telepharmacy services. This focus on ESQ stems from understanding the importance of consumers: their satisfaction directly impacts the trajectory of any business organization. Therefore, service providers across sectors prioritize delivering high-quality, multi-dimensional services to stimulate continued consumer engagement. This aligns with Weeraphong's (2022) observation that exceptional e-service quality serves as a vital online marketing strategy. Weeraphong further emphasizes the importance of e-service quality for building a stable, successful online retail business, highlighting its connection to user satisfaction, loyalty, and ultimately, competitive advantage in the e-commerce landscape. Similarly, Hossain and Hossain's (2011) study corroborates the critical role of e-service quality. They argue that it stands as one of the primary determinants of a service provider's success or failure. Their research, emphasizing the significance of bridging the gap between expected and perceived service levels, underscores the importance of continuously adapting and improving services to meet evolving consumer expectations. In conclusion, e-service quality emerges as a cornerstone for successful telepharmacy adoption. By prioritizing user satisfaction through delivering high-quality, multi-dimensional services and continuously bridging the gap between expectations and perceptions, service providers can ensure long-term user engagement and contribute to

the flourishing of telepharmacy services in the health region 12, Thailand, and beyond.

This study delves into the decision-making process of consumers in health region 12, Thailand, as they consider using telepharmacy services. We recognize that decision-making is a complex mental process involving awareness, interest, evaluation, and final choice. In this context, we identified key internal latent factors that influence this decision, categorized into two dimensions: Initial adoption: Factors motivating consumers to try telepharmacy for the first time. Continued usage: Factors influencing consumers to repeat using telepharmacy and recommend it to others. It's crucial to remember that each consumer is unique, leading to diverse decision drivers. Some factors that consistently emerged in our study include High service quality and product standards, responsive and personalized service, and trust in the service provider. These findings align with Kurukijwanit's (2015) concept of service providers playing a crucial role across sectors. This includes Business unit or pharmacy operators: Ensuring high service standards and implementing continuous improvement processes. Pharmacists: Providing personalized care and building trust with consumers. Electronic service system developers: Designing user-friendly and reliable platforms. Regulatory agencies: Overseeing service quality and upholding consumer safety. Therefore, service providers in all facets of telepharmacy must prioritize delivering consistent, high-quality services. This includes establishing clear service processes, actively seeking feedback, and promptly addressing any user concerns. By prioritizing these aspects, service providers can cultivate consumer trust and loyalty, ultimately contributing to the sustainable growth of telepharmacy in the health region 12, Thailand.

RECOMMENDATION

1. Nationwide study: Conducting a nationwide study to gather data from diverse consumer groups would provide a more comprehensive understanding of telepharmacy adoption across Thailand. This could allow for identifying regional differences and tailoring interventions accordingly. However, it's important to consider the cost and logistics of such a large-scale study.
2. Focus on private hospitals: Investigating telepharmacy adoption within private hospitals could offer valuable insights into a specific segment of the healthcare system. This could be particularly relevant for understanding factors influencing higher-income consumers and exploring potential collaborations with private healthcare providers.
3. Vulnerable populations: Studying underprivileged groups like the elderly, those with limited education, or individuals with communication difficulties is crucial for ensuring equitable access to telepharmacy services. This research could inform targeted interventions and

accessibility improvements to bridge the digital divide.

4. Model adaptability: Testing the developed structural equation model in other telehealth contexts like telemedicine or tele-nursing is a great way to assess its generalizability and potential for broader application. This could offer valuable insights for optimizing telehealth service delivery across various healthcare settings.

REFERENCES

Askari, M., Kazempoor, M., Saedi, H. R., Eslamirad, A., and Lajevardi, M. (2016). Measuring e-service quality from the customers' perspective: An empirical study on banking services. *Journal of Marketing and Consumer Research*, *24*, 57-68.

Attaran, M. (2003). Information technology and business-process redesign. *Business Process Management Journal, 9*(4), 440–458.

Brynjolfsson, E., and Hitt, L. M. (2000). Beyond computation: Information technology, organizational transformation and business performance. *The Journal of Economic Perspectives: A Journal of the American Economic Association*, *14*(4), 23–48

Coulter, K. S., and Coulter, R. A. (2002). Determinants of Trust in a Service Provider: The Moderating Role of Length of Relationship. *Journal of Services Marketing, 16*(1), 35-50.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly: Management Information Systems, 13*(3), 319-339.

Hair, J. F., Black, W. C., Babin, B. J., and Anderson, R. E. (2010). Multivariate Data Analysis. 7th ed. Upper Saddle River, NJ: Prentice Hall.

Holden, H., and Rada, R. (2011). Understanding the influence of perceived usability and technology self-efficacy on teachers' technology acceptance. *Journal of Research on Technology in Education*, *43*(4), 343–367.

Hossain, M. Y., and Hossain, M. (2011). E-service Quality and Consumer Loyalty: A Study on Consumer Electronic Retail Industry. Umea School of Business.

Huang, L. S., and Huang, C. F. (2017). A study of using technology acceptance model and its effect on improving road pavement smoothness in Taiwan. *Eurasia Journal of Mathematics Science and Technology Education*, *13*(6), 2181–2195.

Johnston, E. (2016). *5 Steps to understanding your customer's buying process [Online]*. 2016 [Cited March 15, 2023]. Available From: https://www.b2bmarketing.net/en/resources/blog/5-steps-understanding-your-customers-buying-process.

Kotler, P. (2000). *Marketing Management Millenium Edition* (Tenth Edition). New Jersey: Prentice-Hall, Inc.

Kurukijwanit, N. (2015). *Factors affecting decision making to use mobile banking service of government saving bank in region 3*. Graduate School, Silpakorn University.

Kvasnicova, T., Kremenova, I., and Fabus, J. (2016). From an analysis of e-services definitions and classifications to the proposal of new e-service classification. *Procedia Economics and Finance*, *39,* 192–196.

Laudon, K. C., and Laudon, J. P. (2013). *Management Information Systems, Global Edition* (13th ed.). London, England: Pearson Education.

Nalampang, V. (2021). *Development of Telepharmacy Effected to New Normal Pharmaceutical Care Services in Thailand.* Medical Unpublished Thesis, Mahidol University, Thailand.

National Association of Boards of Pharmacy. (2020). *Model Pharmacy Act/Rules [Online]*. 2020 [Cite September 15, 2023]. Available from: https://nabp.pharmacy/resources/model-pharmacyact/.

National Statistical Office (2023). *Demographic statistics - population classified by age, gender, region, and provinces [online]*. 2023. [Cite July 26, 2023]. Available from: http://statbbi.nso.go.th/staticreport/page/sector/th/01.aspx

Nitikarun, S., and Upakdee, N. (2020). The Distribution of Community Pharmacies in the Context of Health Need in Thailand. *Journal of Health Systems Research, 14*(1), 71-87.

Nunnally, J. C. (1987). *Psychometric Theory.* New York: McGraw-Hill.

Office of the National Economic and Social Development Board (2007). *Philosophy of Sufficiency Economy.* 1st printing. Bangkok: 21st Century Printing House.

Ojasalo, J. (2010). E-service quality: A conceptual model. *International Journal of Arts and Sciences*, *3*(7), 127-143.

Rita, P., Oliveira, T., and Farisa, A. (2019). The impact of e-service quality and customer satisfaction on customer behavior in online shopping. *Heliyon*, *5*(10), 1-15.

Ruangritchankul, S. (2022). Use of multiple drugs together in elderly people. *Ramathibodi Medical Journal, 2561; 41*(1), 95-104.

Schiffman, L.G., Leon, G., and Kanuk, L. L. (1994). *Consumer Behavior* (fifth edition). New Jersey: Prentice-Hall, Inc.

Seangsawat, M. (2014). *The confidence and loyalty that influence the decision to access the department services. A case study of the department stores in Bangkok*. Graduate School, Bangkok University.

Taherdoost, H., Sahibuddin, S., and Jalaliyoon, N. (2015). A review paper on e-service: Technology concepts. *Procedia Technology*, *19*, 1067–1074.

Tasin, N. B. (2017). Factors influencing customer's trust in online shopping among executives in a bank. *Malaysian Journal of Social Sciences and Humanities, 2*(3), 46–59.

The Pharmacy Council of Thailand (2020). *Pharmacy Council Announcement No. 56/2020 on Setting Standards and Procedures for Telepharmacy Services. [Online].* 2020 [Cite September 15, 2023]. Available from: https://pharmacycouncil.org

Tiwana, A., and Ramesh B., (2001). *E-services: Problems, opportunities, and digital platforms, [Online]*. 2001 [Cited March 24, 2023] Available: http://jepelet.free.fr/studies/MBA/strategie/doc/chap5/tiwana.pdf

Weeraphong, P. (2022). *The effect of e-service quality application delivery service on customer satisfaction and customer loyalty case study: GRAB FOOD.* Graduate School, Mahidol University.

Wiratchai, N. (1999). *LISREL model: Statistical analysis for research*. 3rd printing, Bangkok: Chulalongkorn University.