

Factors Influencing the Intention to Use Telehealth Services: A Systematic Literature Review and Directions for Future Research

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Abstract

The paper aims to provide an overview of research works related to Telehealth services using a qualitative research approach and a systematic literature review. On that basis, the paper identifies significant research gaps and suggests future research directions.

Keywords: Behavioral Intention, Intention to use, Telehealth

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1. Introduction

In recent years, Information and Communication Technology (ICT) has been increasingly used in conjunction with traditional medicine, stimulating the growth of telehealth and numerous studies to be conducted. Telehealth is defined as “the use of information, computing and telecommunications technologies to provide medical services when providers of care and patients are separated by distance” (Fitzmaurice, 1998).

The rising development of society, together with the improvement of people's living conditions, coexists with an increase in the demand for routine health care. Furthermore, environmental pollution and population aging in many countries also raise people's health concerns (Hsieh et al., 2015; Alami et al., 2017; Tsai et al., 2019; Zhou et al., 2019). Mounting pressure in the healthcare sector, along with limited health-care resources, forces each country to change the way health-care services are delivered and organized (Cimperman et al., 2016).

Telehealth is considered as one of the potential solutions to meet these demands (Kamal et al., 2020), allowing clinicians to interact with, care for, advise, remind, intervene, and follow-up on their patients remotely. This not only saves patients money and time, but it also allows them to receive better medical services, wherever they are, thanks to the advice of a team of highly qualified specialists from afar. Therefore, people in rural regions, who regularly have difficulty accessing the most up-to-date health information, and people in remote regions can also use professional health services (Al-Fadhli et al., 2017). In addition, Telehealth offers remote clinical and non-clinical services, such as video conferencing with specialists, telemedicine diagnostics, and online medical education.

In particular, in the context of the global COVID-19 epidemic, Telehealth's practical significance has been highlighted. Telehealth is ideal for controlling infectious diseases by limiting person-to-person contact, supporting distant medical assessment, and giving care to infected people (Smith et al., 2020). At the same time, Telehealth helps the disinfectant to easily access routine healthcare without the risk of being exposed in medical facilities, which is especially important for the elderly or those who have a pre-existing medical condition (Smith et al., 2020).

The application of Telehealth has been supported by the governments of many countries around the world, typically by developed countries, such as the US, China, New Zealand...; resulting in a wide range of Telehealth studies from various perspectives in those countries. In Vietnam, this technology is still in its infancy with online clinical consultation services connecting provincial institutions and the Hanoi Medical University Hospital. In the process of development, Telehealth promises to help the Vietnamese health sector to solve long-standing problems, such as the overcrowding of upper-level hospitals; a scarcity of health staff, fast rising medical prices, and a lack of health-related investment resources. Telehealth has proven to be possible, acceptable and effective in Vietnam; however, this system concentrates on doctor-to-doctor communication rather than doctor-to-patient communication (Nguyen et al., 2021). The limitations of traditional medicine have been pointed out in many researches (Nga & Man, 2021; Nguyen et al., 2020; Vuong et al., 2013). However, only a few researches on the topic of Telehealth have been conducted in Vietnam, none of which studies on the factors influencing people's intention to use this service.

For the reasons stated above, the author performs a research review on Telehealth services to suggest future research directions to be conducted.

2. Research Methods: Systematic Literature Review

With the goal of providing an overview of the research conducted and published on the topic of telehealth, the

author undertook a systematic review. This study, in particular, employs a qualitative research technique to provide a broad understanding of Telehealth, as well as the research methods and theories being used in previous publications.

2.1. Search procedure

Multiple approaches were used to identify and categorize relevant articles during the review process. The author started by conducting a manual search and filtering of articles related to Telehealth. Through a process of manually checking keywords, article titles and abstracts to identify relevant articles, the author obtained a list of typical relevant articles.

The main databases were Scopus, Elsevier Science Direct, and PubMed. Keywords used in search included Telehealth related terms or variations to maximize reach, including “telehealth”, “telemedicine”, “m-health”, “e-health””, “remote healthcare”, “distance health” and “healthcare technology”.

In addition, the author expanded the search by reviewing the reference list of the Telehealth papers discovered in the previous step, which is also known as the Backward and Forward Reference Searching method (Johnson & Jaramillo, 2017).

2.2. Inclusion criteria

After that, all articles are further evaluated based on the following criteria:

First, international articles must be published in peer-reviewed journals to assure quality and increase research results' reliability. For studies in Vietnam, the scope was broadened, including certain articles from non-reviewed journals because of their significant impact in this sector in Vietnam.

Second, this paper focused on evaluating empirical studies, theoretical studies were eliminated in order to prioritize topic flexibility while researching in different aspects and contexts, as well as to assure high objectivity of research results.

2.3. Evaluation methods

After the above process of searching and selecting, relevant articles were synthesized and categorized into two perspectives: Article on telehealth in general and article on behavioral intention to use Telehealth. All of them are arranged in chronological order to present the growth of Telehealth in countries around the world. Then, the author outlines a few key factors that are considered to have a great influence on the acceptance of telemedicine services. From there, the author identifies the issues, levels, and scopes raised in relevant works, points out research gaps in previous research, and proposes some future research directions in the specific context of Vietnam.

3. Literature review

3.1. Research on Telehealth services

Telehealth services are a new trend that is becoming increasingly popular around the world, while also emerging as an effective solution that can overcome many shortcomings of traditional healthcare (such as access to people's health services, a lack of human resources, information, and so on). Researchers have been paying more and more attention recently as information technology has advanced.

Do et al. (2018) confirmed that the need for telehealth is significant for patients after they are discharged from the hospital, thus it is vital to develop home care services to cater to the demand from the patient.

Dobrubin et al. (2020) demonstrated that Telehealth improves access to healthcare and patient satisfaction by reducing time and costs during times of disruption in the healthcare system, such as the Covid-19 pandemic. The use of telehealth has grown dramatically in order to reduce disease spread and provide timely healthcare, which is especially important for elderly patients, people with weakened immune systems, and people with chronic diseases.

According to Hong et al. (2020), while telehealth did not solve all the problems created by the Covid-19 pandemic in China, the system allowed patients to quickly connect with doctors and easily monitor their health while ensuring social distancing requirements during the epidemic period. With the rapid growth of the Internet, Telehealth has transformed to a multi - modal model, which provides more options and convenience.

Furthermore, several factors, like financial resources and technological facilities, are required for the successful development of this system. Although there are clearly numerous potential benefits to telehealth, there are some drawbacks to the information exchange between doctors and their patients. These limitations can be overcome in the future by modern technology (for example, the use of 5G networks to improve video transmission efficiency), and Telehealth can become a sustainable solution for both emergency and regular medical services.

Nguyen et al. (2021) researched the needs and affordability of citizens in Hanoi, Vietnam, for home care services based on the Buurtzorg model with digital health. The analysis result showed that the majority of

consumers are willing to participate in and pay for Telehealth, even if they have health insurance and Telemedicine prices are fairly high.

Research by Tran et al. (2021) used a cross-sectional descriptive method to identify the percentage of people in Da Nang, Vietnam, who use medical services at home. Although telehealth is not widely used (only 18.4%), the majority of residents are ready to participate in this service in the future.

In addition to the new era's potentials, telehealth services are also quite unfamiliar to the majority of Vietnamese people, and research on Telehealth is still very limited, particularly research on intention to use Telehealth through influencing factors has not yet been searched. Patients' awareness of telehealth services is minimal, which means that survey respondents do not have enough information about the benefits of this service. Therefore, they are extremely careful to use telehealth services (Quach & Vo, 2021).

3.2. Research on the intention to use Telehealth services

Kijsanayotin et al. (2009) investigated community health centers in Thailand to analyze the reasons why people accept and use the Telehealth system, with six major factors including: performance expectancy, effort expectancy, facilitating conditions, social influence, voluntariness, and user experience. The findings show that all six factors have a significant influence on people's intentions to use the Telehealth system, with the effort expectancy having the most influence.

Boontarig et al. (2012) examined the factors affecting the elderly's intention to use smartphones for digital health services in Thailand. According to the studies, the respondents share the same concerns about smartphone use: performance expectancy and effort expectancy. Meanwhile, facilitation, social influence, and perceived value received less agreement from them.

Kohnke et al. (2014) researched people's intentions to use the Henry Ford telehealth system in the United States. This system is a platform with enormous potential for improving healthcare services and lowering patient costs. The author identified four most influencing factors and four control factors. According to the findings, performance expectancy, effort expectancy, facilitating conditions, and social influence all have a positive impact on customer behavioral intention. Furthermore, the model's control variables have a significant impact on the American people's intention to use.

Research by Tsai (2014) analyzed the relationship between the factors affecting the intention to use Telehealth. The results indicated that the elderly frequently have a favorable opinion of the telehealth system. In general, social capital factors (social trust, institutional trust, and social participation) have a significant positive influence on technology factors (ease of use and usefulness), also influencing intention to use. This study also demonstrates that system efficiency is a powerful indicator of ease of use.

Another study by Cimperman et al. (2016) analyzed the factors affecting the acceptance of telehealth use among older adults. Telehealth systems, which are easy to use and manage, are the main predictors of service acceptance among these users. Along with perceived usefulness and high security, are the key influences on the elderly's acceptance of Telehealth.

To further consider the use of Telehealth in developing countries, particularly in Africa, Adenuga et al. (2017) published a study aimed at promoting telemedicine adoption among doctors. Data was collected from 252 doctors and nurses working in six government hospitals in Ondo State, Nigeria. This result showed performance expectancy, effort expectancy, facilitating conditions and correlation value all have a significant impact on the behavior of clinicians who intend to use a telemedicine system. In addition, it also indicated that clinicians' use of telemedicine in Nigerian is viewed as a dual responsibility that requires appropriate reinforcement.

Al-Fadhli et al. (2017) aimed at improving the health care system in Yemen's rural places in the face of conflicts and severe material shortages in medicine. The study's findings showed that system quality, information quality, service quality, and user satisfaction all have a positive impact on the intention to use Telehealth. Furthermore, these findings indicated that medical professionals aim to adopt Telehealth to complete their tasks.

Alam et al. (2018) research the factors that influence the acceptance and use of mobile health services in Bangladesh. The survey was done by 304 patients in private and public hospitals. The research results revealed that social influence, perceived cost, performance expectancy, and perceived reliability are four key factors in predicting patients' willingness to use telehealth services.

Garavand et al (2019) conducted a survey on 300 university students of Lorestan medical faculty, in order to determine the factors influencing students' intention to use telehealth services. The results show that the age of the research respondents has no effect on the predictors of intention, whereas education level and gender have a direct influence on this intention.

Tsai et al. (2019) developed a research model based on motivating and preventing factors to explain users' intentions to use Telehealth. The authors expand on the study by introducing a technology anxiety to explain why patients accept or decline Telehealth. According to the studies, while usability and perceived usefulness are the primary motivators for people to use telehealth, technology anxiety and perceived cost are the main factors that discourage people from using Telehealth. However, technology anxiety can be overcome through perceived

usefulness to promote the use of Telehealth.

Bunnell et al (2020) studied the determinants that encourage mental health providers to use Telehealth, particularly during the COVID-19 period. Most healthcare providers believe that telehealth provides patients with improved access to services and greater flexibility in service delivery. These are the vital factors predicting an increase in the use of Telehealth in the long term. Other important predictors include telehealth program integration with other medical IT software.

During the same period, Alam et al. (2020) identified the factors influencing telehealth service acceptance in Bangladesh. The research results show that performance expectancy, facilitating conditions, social influence and perceived reliability all have a significant impact on the intention to use mobile health services. However, effort expectancy and perceived value had no impact on people's behavioral intentions in Bangladesh.

The research by Napitupulu et al., (2021) analyzes the factors influencing Telehealth acceptance during the Covid-19 outbreak in Indonesia. Using telehealth is one of the solutions for improving health care in remote and isolated areas, where medical services are still weakened by a lack of facilities. In addition, Telehealth is being used to improve community access to health care. The authors introduced the UTAUT model's factors (performance expectancy, effort expectancy, facilitating conditions, social influence) along with situational factors (doctor's opinion and computer anxiety). The results show that three factors, performance expectancy, effort expectancy, facilitating conditions, have a direct impact on users' decisions, whereas the social influence variable has no impact on people's intention to use. Furthermore, situational factors have a positive influence on the intention to use Telehealth services.

3.3 Factors influencing the intention to use Telehealth services

Studies have shown that factors influencing people's intention to use Telehealth are mainly focused on several key factors such as Performance Expectancy, Effort Expectancy, Facilitating Conditions, Social Influence, Perceived Cost, Perceived Risk.

- ***Performance Expectancy***

The degree to which an individual believes that employing a system would help them attain efficiency in their work is referred to as performance expectancy (Venkatesh et al., 2003). Simply said, Performance Expectancy refers to how people evaluate the usefulness of technology, as well as how they perceive the value of current technology. They save time and effort in their daily lives while still achieving the intended goals. Better health care, more proactive and simpler access to health information, upgraded health care services, and consequently increased overall quality of life are some of the benefits of Telehealth in healthcare (Rahimpour, 2008).

- ***Effort Expectancy***

Effort Expectancy refers to the simplicity with which technology, specifically telehealth services, may be used. Usability (perceived utilization) is a prelude to the major expected effort factor (Venkatesh et al., 2003). Effort Expectancy and the ambition to use new technologies are inextricably linked (Garavand et al., 2019). Doctors will utilize Telehealth because it is useful, and it should be a service that is simple to use and connect with existing work procedures; if Telehealth requires a lot of supporting equipment, it will be too complicated and time-consuming. As a result, one of the most important elements influencing the decision to adopt Telehealth is the expectation of effort (Clemmer et al., 2004).

- ***Facilitating Conditions***

The degree to which an individual believes there is an organization and technological infrastructure to facilitate the use of the system is known as Facilitating Conditions (FC) (Venkatesh and Partners, 2003). According to Kamal, Facilitating Conditions are made up of three key components: behavioral control perception, favorable conditions, and compatibility (2020). The availability of infrastructure needed for technology is critical to the successful use of Telehealth services. In addition, the utilization of telehealth in remote places necessitates ongoing contact between health care professionals, service providers, and end consumers. A prerequisite for boosting the adoption of telehealth is the ability of health professionals to monitor and provide healthcare feedback utilizing adequate healthcare infrastructure. The need for support infrastructure for the application of information technology to health services was highlighted by Bhattacharjee and Hikmet (2008). Furthermore, the role of FC is underlined by the survey participants, such as technical support systems, to assist users when they have difficulties with the Telehealth system, according to Napitupulu & Co. (2021). Independent technical support systems will be a valuable source of information for users when deciding whether or not to use the system.

- ***Social Influence***

The degree to which an individual believes others should utilize the new system is known as a social influence (SI) (Venkatesh & Partners, 2003). To put it another way, a person can accept the usage of a new service if his relatives and friends do. Individuals will be more amenable to utilizing technology if those around them gain from it, according to Napitupulu (2021). Furthermore, most people in developing nations have a large family system and social interactions. As a result, according to Kamal & Co, the opinions of others around them have a

significant impact on encouraging end-users to accept Telehealth services (2020).

- **Perceived cost**

The expense that customers believe they should incur when engaging in a specific activity is known as the perceived cost (PC) (Neuburger, 1971). When it comes to accepting technology, price is a huge influence in whether or not someone will utilize it (Stele & Partners, 2009; Chen & Chan, 2011). Because of the requirement to fulfill technological aspects on both the supplier and customer sides in the early phases of Telehealth deployment and application, the cost may be extremely expensive; as a result, many subjects will not be ready to use when prices surpass their affordability. Tsai & Co. (2019) found that conversion costs had an indirect negative effect on acceptance of behavioral intentions via Telehealth via attitudes in a study. However, several studies have pointed out telehealth's significant benefits, such as lower travel costs, hospitalization costs, opportunity costs of missed work days, waiting periods, and so on, as compared to traditional health care. (Al-Fadhli and Company, 2017; Delgoshei, 2017; Dobrusin & Company, 2020; Li & Company, 2022).

- **Perceived Risk**

According to Kamal (2020), Perceived Risk is a person's perception when he or she decides to perform an activity or an action. When using Telehealth, customers will be able to feel psychological, financial, and expressive risks. Among them, psychological risks are understood as perceived threats based on the fact that customers feel that using telehealth will not bring any psychological benefits that lead to psychological discomfort. Financial risk can be defined as the inability to bear the costs associated with the use of telehealth services. Expression risk is the probability recognition of a telehealth system that harms a patient due to insufficient information. This is a factor that can suppress customers' intention to use Telehealth.

4. Conclusion

Many studies on Telehealth have been carried out, revealing the elements that determine and how they influence users' inclination to utilize Telehealth.

With four primary elements: Performance Expectancy, Effort Expectancy, Facilitating Conditions, and Social Influence, the studies concentrated on assessing factors driving and hindering the intention to use Telehealth (Kohnke and Co., 2014; Adenuga and Co., 2017; Alam and Co., 2018). In addition, to ensure consumer happiness with the product, numerous elements of concern, service quality, and customer satisfaction were included in the assessment (Al-Fadhli, 2017). Furthermore, larger research that included demographic characteristics, technology fear, and doctor's comments all revealed that user acceptance was strongly influenced (Napitupulu and Partners, 2021). Telehealth, according to the majority of healthcare practitioners, provides patients with improved access to services, allows for more flexibility in service delivery, and has the potential to lead the way in modern healthcare. These are significant indicators that indicate a rise in the desire to use Telehealth in the future (Bunnell & Partners, 2020).

Many researchers in Vietnam have discovered the characteristics that influence the overall evaluation of health services. The efficiency of services, facilities, attitudes and professional qualities of doctors, and payment-related difficulties were the key factors investigated (Ti Phuong Thao, 2016; Wang Thi My An, 2015). At the same time, these studies have found traditional health-care restrictions, such as people's access to services, a lack of staff, and information from health-care facilities. (Nga & Man, 2021). These are barriers to people's use of health care that Telehealth can help overcome.

There have been many papers on Telehealth services in general, however, the majority of this research focuses on a specific set of patients (elderly, chronically ill,...) Tsai, 2014; Boontarig and colleagues, 2012). Simultaneously, the author discovered that technological aspects and doctors' opinions had a significant impact on people's inclination to utilize Telehealth (Napitupulu and collaborators, 2021), but that this had not been well researched in international literature. Furthermore, developed countries prioritize research and implementation of Telehealth services to increase the quality of healthcare services and reduce medical treatment times to suit people's requirements. However, in Vietnam, Telehealth is still a hazy idea that hasn't been widely promoted to the general people. Nonetheless, various research has pointed out the advantages of this service over other traditional medical services, but no in-depth studies on people's intentions or behaviors to use Telehealth have been conducted. As a result, limited Telehealth data sources and insufficient information make it difficult to identify the elements that influence people's decision to use Telehealth services.

The authors recommends that future studies can inherit and continue to expand the achievements of prior studies while exploiting gaps and identifying acceptable study areas, based on an overview of scientific research activity on Telehealth.

First, several new factors are considered to have a significant impact on Telehealth's intention to use, such as Usefulness, Ease of use, Security Risks, Doctor's Opinion, Technology Anxiety and Privacy, Transition Costs during Telehealth use, and so on, by combining factors appropriate to the Vietnamese context.

Second, broadening the scope of the study to include all Vietnamese people aims to examine the impact of various factors on users' intention to utilize telehealth and, as a result, provide some recommendations to

encourage future citizens' behavior.

Third, research on the state of Telehealth in Vietnam, as well as potential problems in a new setting, including the complex worldwide outbreak of the Covid-19 pandemic, has placed pressure on traditional health services, prompting governments to speed up their adoption. The development of Telehealth services is one example of new health.

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