



**Revolutionizing Thailand's Rural Healthcare and Mental Health
Illness Treatments Through Telemedicine - Video Conferencing**

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**This Independence Study submitted in the partial fulfilment of the
requirement for the Degree of Masters in Business Administration.**

International Program, Graduate School of Business.

Siam University, Bangkok, Thailand.

2019



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Major: Information Technology

Academic Year: 2018-2019

This independent study has been approved to be partial fulfillment of the requirements for
Degree of Master in Business Administration 2019

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Abstract

This study is focused on providing background information of the general population in rural areas of Thailand, various parts of overall healthcare and mental illness when used in terms of telemedicine. The research will also show how the different components of telemedicine technologies can revolutionize the way healthcare coverage can be transposed throughout rural areas in Thailand and revolutionize the way healthcare is provided. For the past few decades, Thailand's intention has been to require the physical presence of medical personnel in rural and less urbanized locations across all provinces. By utilizing these technologies, it will still be possible to provide better access to treatments and care while allowing old and new doctors to maintain their plans to create grounding points wherever they choose to reside. Through proper planning, development, marketing, and security, the country's goals can be achieved, and positive patient-doctor relationships can be developed. Patients can receive health and mental care in the comfort of familiar surrounds while doctors can maintain their normal working hours and providing their free time hold appointments through video conferencing and continue grow their consumer base while gaining further knowledge, experience, and abilities.

Keywords – Telemedicine, Healthcare, Mental Illness, Security

ACKNOWLEDGEMENT

In this section, I would like to express my gratitude to Dr. Tanakorn Limsarun, advisor and Dr. Jomphong Mongkhonvanit, Dean, Graduate School of Business, Siam University, Bangkok, Thailand for their thoughtful and caring supervision by means of his educational excellence. I am most grateful to them especially for their deep understanding of the Independent Study and good communication skills.

Michael Slater
11 July 2019

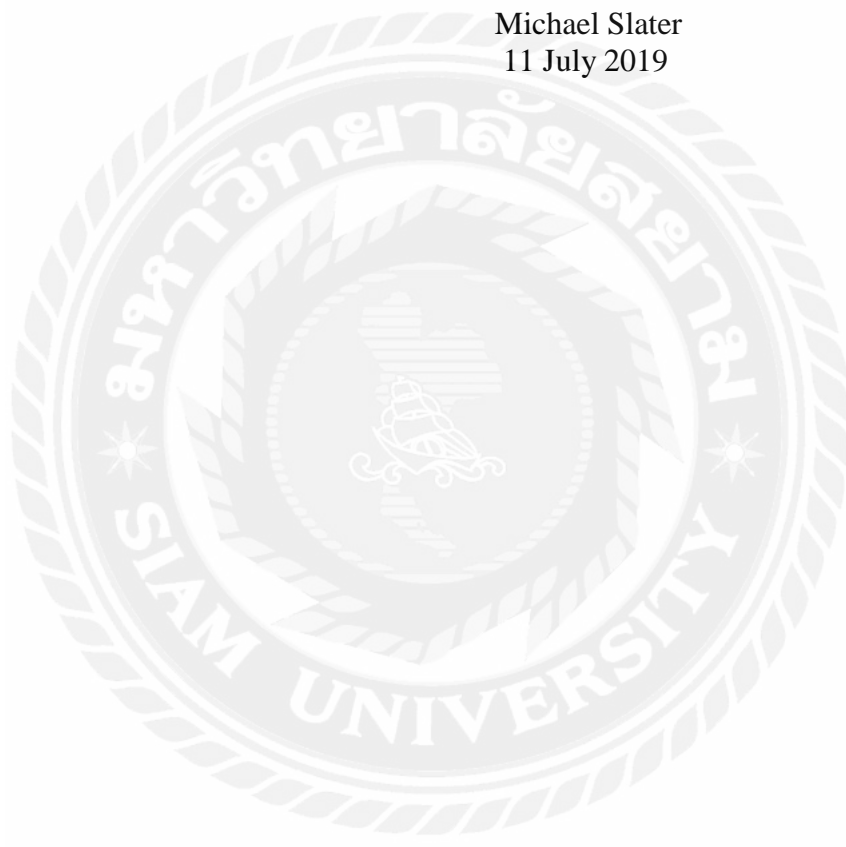
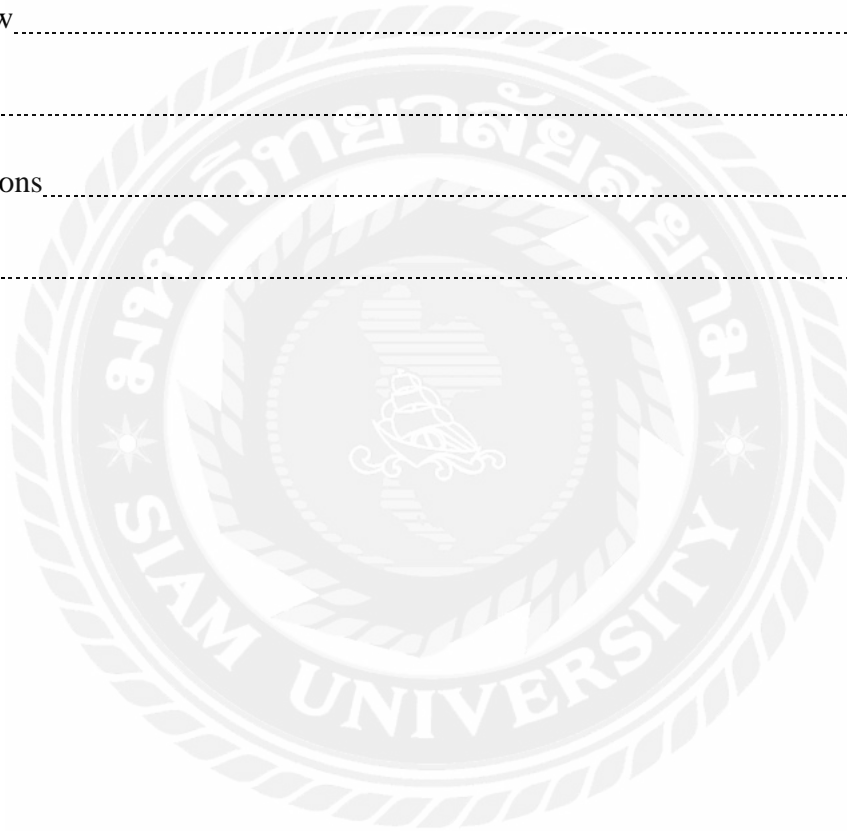


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Introduction

Advances in digitalization has become more evident in homes around the world and consumers are becoming much more acclimated to utilizing these technologies to satisfy the need to be connected at anytime from anywhere. Adoption of these technologies are at the forefront of change in society, and it is imperative that all forms of businesses keep up to maintain a competitive advantage and open the doors to a broader consumer base (Ramrathan & Sibanda 2017). Not only does this create a more extensive reach into consumers that were otherwise non-existent to a company's services, but it also offers a further stage to include more personalization into the services provided by creating a space online where the focus is consumer-oriented.

It should be assumed that information and communication technologies (ICT) and data security thereof are considered a critical success for dealing with significant public health issues, such as general health, aging populations, chronic diseases, and more importantly, shortages of health professionals (Pare, Modqadem, Pineau & St-Hilaire, 2010). Regarding the sector of healthcare, these technological innovations and advances are changing the way it is possible to connect with patients and deliver professional services. By utilizing these technologies, a forever change can occur with how doctors and patients engage in personalized healthcare and coverage. It no longer is a requirement to be able to treat many symptoms or diagnose problems in a face-to-face environment. These types of service technologies that take advantage of the Internet structure through video and audio within healthcare are referred to as telemedicine, which is within the umbrella of telehealth or eHealth and is reshaping the future for healthcare providers and patients. Although there are many different aspects to these technologies, for this report, telemedicine will refer to a "two-way interaction between a person and a provider using audiovisual technologies" (Luyegu 2017). Telemedicine provides a gateway for patients located in rural areas to meet with specialists that cover a broad range of symptoms, without leaving their homes or communities, which in turn allows Family Practitioners to take advantage of the knowledge of these specialists and expand their abilities through fuller coverage and removing the isolated feelings experienced by physicians and patients in rural areas (Jetty, Moore, Coffman, Petterson,& Bazemore 2018).

Most of the population in large cities across Thailand have access to clinics, hospitals, healthcare and specialists in a reasonably short time and distance. The rural areas of these cities, and even further distances, mostly travel into the larger cities to receive proper healthcare and treatments. One of the problems that is faced for both medical and mental many older adults in these areas face difficulties with traveling to visit their doctors' offices for frequent appointments and treatments (Agate 2017). This is a problem on a global scale and not limited to any one country or region and with connectivity, telemedicine can act as an entry point for increased healthcare services and access to a better quality of life for the patients.

For the first stage, this documented research will focus on the telemedicine sector of telehealth technologies and apply the structure to providing better healthcare in rural areas of Thailand through connecting new and experienced doctors with patients that need better-quality healthcare. The second stage is to tackle the availability of trained professionals in family healthcare in rural areas of Thailand. This sector would be able to connect patients and doctors across vast distances while creating more advantages for healthcare income and patient-centered diagnoses. Thirdly, this report will show potential to overcome the challenges faced in connecting patients and doctors on a regular basis to treat mental illness, which has significantly proven to be one of the top diseases in Thailand (Kongsuk, Supanya, Kenbubpha, Phimtra, Sukhawaha, & Leejogpermopoon 2017). Finally, will show that the data and information that is collected is protected through various protection techniques and programs, such as HIPAA, for the protection of the doctor and patient privileges and privacy of patient data (Wider 2017). Using these technologies that are available now and to harness the ability to use future ones is imperative, the rewards of telemedicine would help provide better overall availability of healthcare to patients throughout the entire country (Sanyal 2018). The idea is to take advantage of the current Internet and mobile connectivity situation across Thailand to seek to provide a solid solution to the current healthcare missions at present. The health care system in Thailand has been proven to be a complex topic, with continuous attempts to improve the quality of the patient-doctor relationships inside all dimensions of the healthcare system (Kentaro 2018). With the progressions in science and technology, access to better treatments have increased, and the vision of providing higher quality services and patient-centered healthcare becomes much more noticeable.

Simply defined by Merriam-Webster, Inc. 2019, rural is “of relating to the country, country people or life, or agriculture.” Rural can be considered any population of people that are not located inside a major city. This definition can be broken into many different aspects related to population number size and distance from major cities; however, as related to the country of Thailand, rural describes any city or province that does not contain a major city or host any advanced healthcare facility within its city limits.

The smallest social unit that people must be a part of is called family. Therefore, family medicine is an essential discipline in the medical community on a global scale. Within Thailand, family medicine is very young discipline, and rules and regulations for this practice present challenging aspects, but its necessity has become evident, and many schools have opened for training in this field. Family medicine is now viewed in the areas of medical education as one of the highest disciplines in Thailand with a board certification that is equivalent to a Ph.D. degree (Wiwanikit 2016). Family physicians are provided with the proper knowledge and backgrounds to act as a gateway for a family to receive referrals to specialists. Thailand’s initiative is to produce more family physicians, and strategically open offices covering all the rural areas in Thailand. Currently, many of these rural areas only have general practitioners that do not have specialized training or knowledge of family medicine, and they play this role without any formal training. As a result, Thais take on the trial of making trips to large cities to receive the treatments that they require. This can be a daunting task where these trips could take anywhere up to 4 to 5 hours to reach the proper clinics.

Information Communication Technology (ICT) advances, such as telemedicine, act as a comprehensive channel of information and offers promise to bridge the gap in healthcare services between large cities and rural areas. Telemedicine can theoretically enhance the cost efficiency and reach of healthcare services. “Possibly, telemedicine intends to enhance the effectiveness and efficiency of existing healthcare delivery systems or introduce a new system that is intended to be more effective and efficient than the existing one” (Chandwani & De’ 2017).

Literary Review

Telemedicine

Being a part of healthcare, and a fast-growing sector, several technologies are used to exchange information across locations, improve access, outcomes, and quality of many services. The term “telemedicine” is referred to as two-way video communication and consultations with specializing doctors from a variety of clinics or hospitals across different locations (Edmunds, Tuckson, Lewis, Atchinson, Rheuban, Fanberg, Olinger, Rosati, Austein-Casnoff, Capistrant & Thomas 2017). The idea of these technologies primarily has the patients’ needs as a priority, and it is the preservation of their well-being that helped spur the movement of telemedicine. It easily shortens the amount of time needed to connect with a validated physician and offers a way to facilitate healing much quicker in rural areas. Although this technology does not 100% change the need to face-to-face meetings, but it undoubtedly preserves the mobility of patients that are threatened by various types of disease that can receive continued treatments through video conferencing, and not having to force patients to travel far and wide to return regularly to see their physicians (Cheshire 2017). Cheshire goes on to say that the ethical principles of telemedicine should be the same as those applied to any medical technologies available, and they should satisfy the ideologies of providing patients with more benefits than harm, where harm should be foreseen, and measures should be provisioned to minimize the impact. These ethics are already found within clinics and hospitals, and the only difference from using such technologies should be how the meetings take place. Furthermore, technologies like telemedicine have the potential to reach much further distances for patients, as well as physicians that may be physically disabled which in turn allows them to remain practicing medicine.

Other advantages of utilizing telemedicine also include relief of staff shortages, empowers more knowledge transference, increases the availability of medical professionals, and reduces costs of services, travel, and offices. It is continually growing around the world to include mobile health, remote monitoring, video conferencing, online training, and increased the overall benefits between patients and their healthcare providers (Amirian, Maaz, & Phan 2017). It is furthering the reach for many sectors of healthcare, from general health, family healthcare,

pediatrics, gynecology, psychology, and neurology to name a few. Through creating the platforms needed to provide the medium to host these meetings, patient flow is increased along with the reduction of patients missing their appointments, and also increasing revenues of the physician. One of the barriers that present itself in the case of reaching rural areas is connectivity issues. To succeed in providing the options of telemedicine, a stable Internet connection must be attainable to provide patients with the best possible outcomes. It is also a necessity that users in rural areas of Thailand have access to smartphones, tablets, or desktop computers to gain connectivity to these services. It is currently estimated that by 2020, about half of Thailand's population will become smartphone users and have direct access to Internet services through their devices, and where urban regions have higher overall usage rates (Kressmann 2017). Internet providers in Thailand have been working diligently to connect the remote areas of Thailand to the internet, and educational institutions have been bringing these connections closer and making knowledge available to more and more students and people in general. These partnerships are vital to the people in the rural areas of Thailand, and regarding telemedicine, it opens access to better medical care for those located in these remote areas. It not only provides this access to care for elders, but also for the current and future generations of children, and more importantly access to more treatments for chronic conditions such as high blood pressure, chronic pain, mental illnesses, and diabetes (Smith 2016).

Healthcare

In terms of Western medical practices and the understanding these practices are still young in Thailand, primary and family care would normally be the first step in the progression of diagnosis (Reupert, Williamson, & Maybery 2017). The people of Thailand are shielded through traditional practices, a culture of consideration and respect, this creates the reluctance to criticize and express their true feeling of hospital and clinical visitations. However, when questioned with proper and non-intrusive questioning, self-styled family practices received higher scores through surveys because of cleanliness, comfort, and the politeness of doctors and staff. Nevertheless, immediate attention was a problem for family practices, which leads to overcrowding situation and is something that requires attention in both the private and public sectors. Through further study from Pongsupap and Van Lerberghe's (2006) the perception on Thai's regarding visits to family or primary care clinics showed that communication is very

important to the patient, personal consultation is one of the key features, and strengths, of family medicine. Family practices consistently scored higher than other facilities and the physical environment proved to be comforting to the patients much more than visits to hospital clinics.

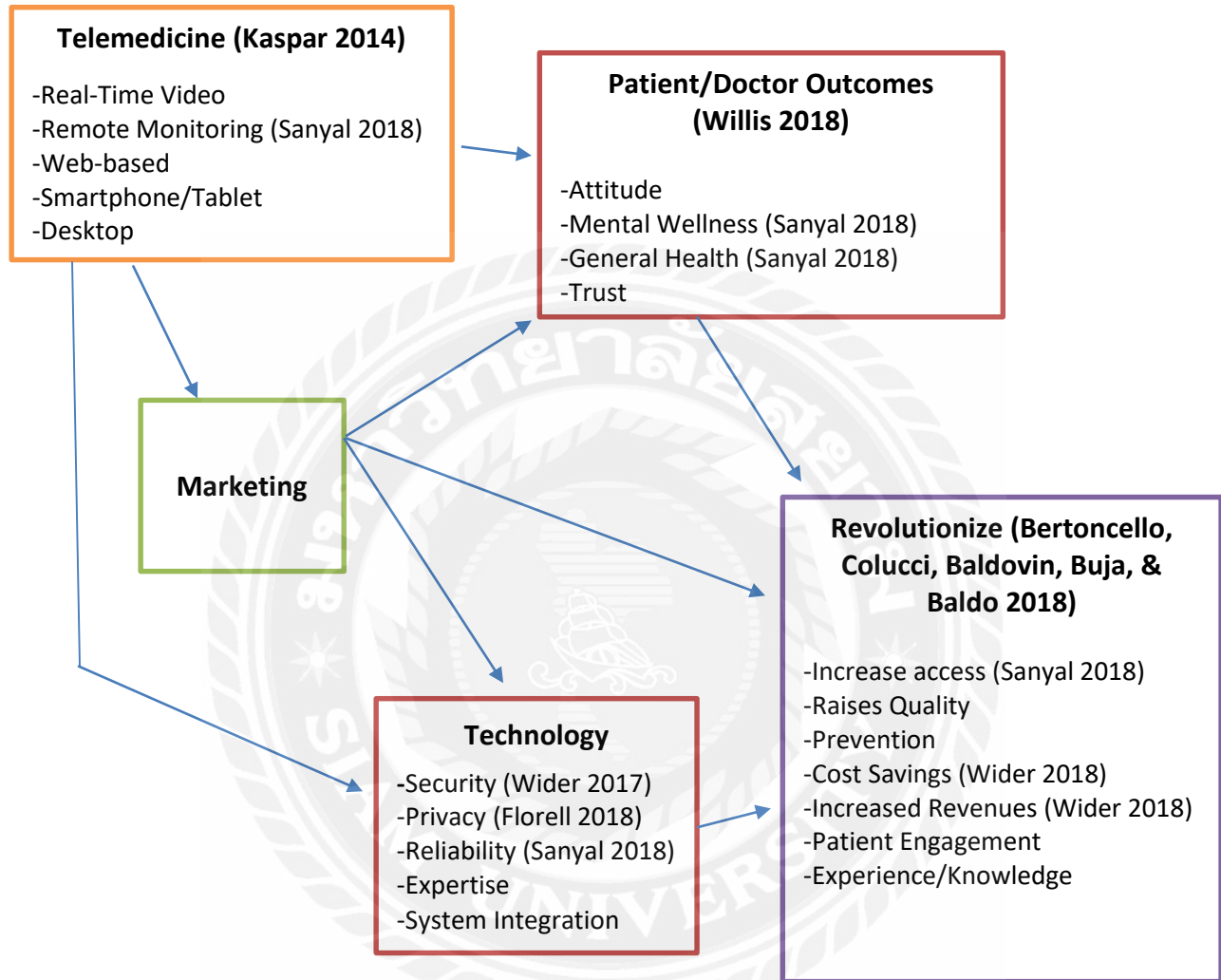
The value of family physicians show that the impact is greater to people that live in rural areas of Thailand. Since these family doctors get to know all members of the family, the areas they reside, and the reluctance of family members to travel the distance to seek regular treatments are simple and fundamental aspects that would prove that the impact of telemedicine would significant. Many of these rural regions of Thailand do have a family care clinic, but they only have one doctor very few times a week. These clinics are mainly staffed by nurses only, and doctors travel in from the main cities infrequently (Tomoki, Saiwalak, Takuii, Taro, Hitomi, Kazuhiro, Yukinori, Hiroyuki, & Hidekazu 2016). By integrating telemedicine into the systems that are already in place, more doctors can become involved with treatments and coverage would stretch throughout the entire week and possibly at all hours of the day, plus allow the rural population to receive treatments and medical advice from the comforts of their own homes.

Mental Illness

Mental illness has been a global concern for many years and will continue to be a growing problem as people with these illnesses continue to live in hiding, are parenting children, and do not seek treatments or interventions to help the recovery process. In the global perspective, according to WHO (2018), there are an estimated 300 million people living with depression, 23 million people suffering from schizophrenia and other psychosis, 60 million with bipolar disorder, and 50 million with dementia. These numbers show that there are many those that have been diagnosed and it is unknown how many people have yet to receive a diagnosis. This is not the only problem with mental illness, there is a secondary effect that correlates with any of these types of patients with children. Studies have shown that the chance of children to develop similar or the same mental disorder as their parents is estimated to be 41% to 77% (Tungpunkom, Maybery, Reupert, Kowalenko, & Foster 2017). They continue to explain that there are several risks and intervention indicators that may contribute to the above outcomes, however, intervention has a positive impact on reducing the risk for children.

Using depression as a primary example, there are several stages of diagnosis and many steps to recovery. They can begin with knowledge transference and continue forward with medication for more serious cases. In Thailand, accessibility seems to be the most difficult obstacle due to the lack of professional doctors available in rural areas. Thailand had initiated a program for depressive disorders in 2010 where only 3.7% of the population had access to healthcare. In 2016, the number has raised to 48.5%, but still lacks where 51.5% of the population without any access (Kongsuk, Supanya, Kenbubpha, Phimtra, Sukhawaha, & Leejogpermopoon 2017). From the point of using 51.5% of depressive disorders without healthcare access, telemedicine can clearly be an alternative to reducing this number and increasing access to treatments without displacing healthcare professionals. In the United States alone, 80% of the population conducts searched online for health care (Lotrakul & Ratana 2006). With the continued growth and coverage of Internet providers in Thailand, the number of people becoming connected to the Internet has increased through smart devices and possibly home computer systems and Internet cafes. As a result, it can be assumed by default, that over a short amount of time, users may search more online for solutions and services about their illnesses and by offering convenient and affordable services, telemedicine has the opportunity to become the most efficient solution to providing proper healthcare for people with mental illness.

Findings



The benefits of telemedicine have clearly proven itself many times over throughout the globe in many situations and specialties, the future is near, and it is vital to begin to offer medical services using advanced technologies. Several countries and regions that have taken the challenge of creating these platforms to connect doctors with patients, and doctors with specialists, and they have seen a proven increase of overall population wellness and satisfaction (Kaspar 2014). Video conferencing has created a grand simplified value to people both on a social level and an economic one. Now with its utilization in healthcare, patients are finding comforts in becoming connected from the comfort and security of their personal surroundings,

especially when referring to recurring visits for chronological treatments (Sanyal 2018). Patients have identified with its privacy, comfort, efficiency, convenience, and communication abilities in comparison to face-to-face encounters (Powell, Henstenburg, Cooper, Hollander, & Rising 2017). Many of the technologies in place may not meet the minimum standards required to utilize this technology, so infrastructures across regions and into rural areas are essential in order to take advantage of these systems. For the time being, there are various options available to create these links through less expensive means to connect with video conferencing in real-time through programs such as Skype, Zoom, Camfrog, Fuze Meeting, ooVoo, Zoom, and web-based programs like WebRTC (Jang-Jaccard, Nepal, Celler, & Yan 2016).

Marketing telemedicine properly in Thailand is key to creating a clear understanding of those in rural areas. Strategies should be focused on the needs of patients, the proper technologies being used, privacy, and security, in order to gain the much-needed trust of the patients and doctors. These lists can go on and on, but it is important to retain the fundamental methods in place in area hospitals and components clinics and marketing these methods to assure that technology and the patient and doctors needs are met (Willis 2018). Through the portrayal of confidence of the two general aspects of telemedicine, both technology and patient/doctor outcomes, successful implementation and overall satisfaction has the potential to revolutionize the healthcare world in rural Thailand (Sanyal 2018). As with face-to-face interaction, there are countless variables that determine the outcomes of satisfaction, however, telemedicine provides another option that is convenient, engagement centered, organizational balanced, cost-effective, among others (Bertoncello, Colucci, Baldovin, Buja, & Baldo 2018) that have direct impact on the perception of these technologies. Marketing cannot be only focused on the technology, but also the positive outcomes of both the patients and doctors' expectations in order to portray the specific ideas of medical services of Thailand's population.

Recommendations

This research is designed to provide academics, especially in Thailand, with the fundamental ideas and processes involved with the successful implementation of telemedicine usage in rural areas that are disconnected from mainstream healthcare facilities. Coverage of hospital and clinic visits in Thailand are non-emergency visits should be the focus for initiating value and significance for using telemedicine. From a business perspective, these types of diagnosis can be handled without physical visits to hospitals or clinics and can serve the purpose of knowledge and extended practice for new physicians that have recently graduated and seeking more work experience.

With the proven success of e-commerce in this entire Southeast Asian region, and the current usage rates of social media in Thailand alone, the promising future for the digital age of healthcare should see a higher rate of rapid growth (Kentaro 2018). The market for telemedicine is not only unique to the healthcare industry, but it offers an opportunity for people from many different sectors to work together to accomplish similar goals of gaining consumers and producing income. Through working with staff members from various backgrounds and specialists of the professional world, the conglomerate of these facets would become a part of the communal knowledge involved to develop and implement a unique type of application and a web-based system for telemedical video conferencing. In retrospect, this process is commonly referred to as ‘design thinking,’ and has taken hold in Thailand in several different industries, including healthcare (Kidjawan 2018). This type of innovative thinking process brings a higher standard to the satisfaction of patients, medical personnel, and care providers, which focuses on the specific problems of the needs, hopes and expectations of the patients.

Through the process of ‘design thinking’ and Thailand’s specific initiatives to require health workers to work in rural areas to provide healthcare, advantages of telemedicine are a 2-way street. The concept of using technology for medical purposes provides access to these services to patients and is designed based on the medical workforce in Thailand. Newly graduated students, under this initiative, have been required to work in rural areas of Thailand following their graduation, and received penalties if they did not complete their duty (Wiwanikit

2011). Through working with the government, Ministry of Public Health, and the deputies responsible for assignments to rural divisions, it could be possible that these students could reside at their homes and be available through the telemedicine platform for patients in rural areas of Thailand. If there is a way to come into agreement for new graduates to serve these requirements, then both access and availability of medical services and treatments will successfully become available to patients at an increased rate of hours and convenience. There will also be a vast amount of primary care doctors, mental illness treatments and specialists with a new ability to have a further reach to new patients without having to physically travel the distance.



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