ROLE OF DIGITAL PLATFORMS TOWARD EXERCISE ENHANCEMENT

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ABSTRACT

This thematic paper aims to explore the relationship and motivation of health concern people using digital platforms for their exercise. The study is beneficial to the products and services providers in terms of gaining a better understanding about exercise personalities and their preferences. The modification of Technology Acceptance Model, plus academic papers, digital references, and research questions were approached to five focus groups discussion with 32 participants who were health concern and exercised frequently. Refer to the findings, exercise personalities can be analysed into 2 types according to exercise frequency which are beginning and intermediate and another 2 categories according to exercise activity which are cardio and non-cardio. The results show that intermediate group focus more on functional benefits while beginning exercisers value emotional fulfilment. On the other hand, numeric measurement features are essential for cardio exercisers whereas visual and entertainment features are more preferable for non-cardio people. In order to obtain the maximum business profitability, the research suggested that suitable strategic digital platforms as well as related marketing communication style need to be differentially created in order to response to specific group of exercisers.

KEY WORDS: Self-Health Management/ Exercise/ Digital Platform

52 pages

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CHAPTER I
INTRODUCTION

1.1 Background

"Health is Wealth" is one of the timeless proverbs that can perfectly express a fundamental need of human beings. Healthcare problem is also a challenging global issue in order to avoid productivity reduction, population mortality, and economic loss. Changing lifestyle leads to many health problem issues and one of the most chronic diseases during these couple decades is overweight and obesity which tend to get even more severe every year. According to the statistic of the International Diabetes Federation (IDF), 415 million people have diabetes in the world and there were 3.2 million cases in Thailand in 2015 and about 183 people are expected to die of the consequences of diabetes everyday (Novo Nordic, 2013).

Figure 1.1 6th ISPAH Congress Campaign Advertisement (2016)

In response to this critical issue, there is a collaboration between Mahidol University, National Economic and Social Development Board (NESDB), and Ministry of Public Health to develop "Thailand Healthy Lifestyle Strategic Plan 2011 – 2020". This plan has been trying to promote many exercise activities through various campaigns in order to enhance overall fitness and wellbeing of Thai people. On the other hand, the food consumption behavior and exercise behavior of Thai people have been remarkably changed according to change lifestyles, influence from celebrities, and increase of

popularity in athletes. People pay more attention on nutrition consciousness, calories intake, exercising activities, and calories burn.

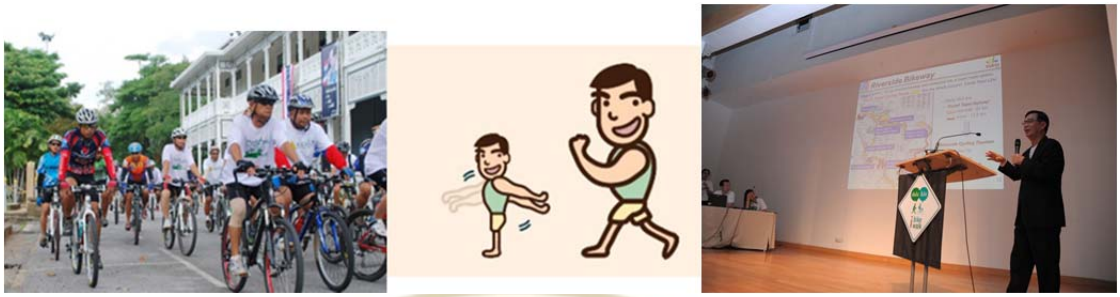

Figure 1.2 Exercise Improvement Activities

Source: http://en.thaihealth.or.th/NEWS/119/Bicycle%20City:%20A%20Lesson%20from%20Taipei/

At the same time, the concept of “Digital Economy” has been widely discussed when Prime Minister General Prayut Chan O-Cha identified “Thailand 4.0” economic model as a new direction to transform Thailand towards the value-based economy in his national address on the program “Return Happiness to People” on 1st of July 2016. The model focuses on technological innovation and digital development for 10 target industries and one important segment is still health care industry. Besides, the statistic shows that Thais have been spending more time online especially on mobile phone devices together with many websites as well as healthcare mobile applications are dramatically increasing.

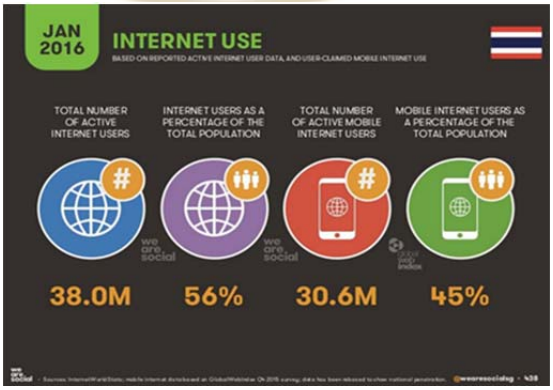

Figure 1.3 Number of Internet Users in Thailand

Source: http://tech.thaivisa.com/complete-insight-internet-social-media-usage-thailand/3147/

Regarding the current situation presented above, there is some positive correlation between digital platforms and healthcare industry. As the technology is widely and daily used, it can be a golden opportunity to investigate the possible and suitable methods of utilizing the usage of technology towards health enhancement for health concerned people. As there are many aspects regarding self-health management plus responding to the health development plan of the government, exercise can be an interesting scope of study, more specifically, it draws a new exploration of the problem statement on how digital platform can enhance exercise behavior and make it more adequate and more frequent for health-concerning people.

1.2 Research Objective

This study aims to explore the impact of advanced technological changes on human wellness concern and identify potential digital platforms to create more success for healthcare business including web-based information, mobile applications, and social networks for health concern people. Also, it aims to investigate the preferable type of experiences of exercise through digital interactions.

CHAPTER II
LITERATURE REVIEW

2.1 Health Care Situation in a Global and Thailand Perspective

Due to the change in lifestyle during economic growth, eating behavior as well as physical activity has been changed accordingly. These changes mainly impact to health maintenance methods (Walsh, 2014). The demand of unhealthy food such as fast food, processed food, high consumption of vegetable oil, or salty food are tremendously increasing during these past two decades (J Health Res, 2015). At the same time, the advanced technology and transportation model ease the difficulties in communication and motions, on the other word, they are one of the key issues that reduce human physical activity and encourage more sedentary in people's daily lives (Walsh, 2014). On the other hand, the effectiveness of economy of scale allows a tasty high-energy food to be sold in a cheaper price with more accessibility among the consumers, this definitely lead to easier chance of gaining weight and many health problems occur (Ferda, 2013). Overeating plus unhealthy food consumption is a fundamental health risk that can lead to various chronic diseases such as diabetes, heart diseases, cancers, mental disorder, many fatal diseases, and lower life expectancy (WHO).

Insufficient time of sleep as well as discontinuous exercising plus increasing sedentariness are also the main associations with obesity increasing (AJPH, 2016).

In order to respond to this economic phenomenon, the development of "Thailand Healthy Lifestyle Strategic Plan 2011 – 2020" has been approached by collaborating of Ministry of Public Health (MoPH), National Economic and Social Development (NESDB), and Mahidol University (Novo Nordic, 2013). This national strategic plan frames the proactive holistic program implementation at all levels to a new and healthy way of life. It aims to reduce risk factors related to chronic health problems that reduce life expectancy while increased mortality rate of Thai people. On the other hand, morbidity, complications, disability, and mortality are also substantial targets to be decreased.

These reductions will finally lead to a decrease in health care expenditure for individual, family, community, society, and nations (Novo Nordic, 2013).

It is believed that high portion of fruit, vegetable, and dietary fiber consumption can generate a better health condition and reduce the risk of health problems (Junyi Chaim 2015). In contrast, eating energy-dense food as well as animal-sourced ingredients increase possibility of gaining more weight and put the consumers in higher risk of having chronic diseases (Junyi Chai, 2015). Besides, duration of exercise time spending as well as having regular meal pattern express a negative relation to obesity and low level of health problem risk.

2.2 Digital Platform and Internet Users

The internet and digital platforms had a long history back to 1990s when the concept of e-commerce was firstly introduced to the world (Leeflang, 2014). At that time, the technology was infancy and gained low reputation until 2003 (Samuel, 2012). From that date, information technology has slightly shaped and it becomes the greatest element for the consumer behavior revolution by offering big data assessment, social media connectivity, new communication channels, and shifting in consumer behavior (Leeflang, 2014). On the other words, information technology is a new possibilities of connectivity between people and data by enabling user to access mass deployment (Norbayah, 2007). There are many devices available in the market and one successful story is smart phone. Under the concept of “anytime and anywhere” allows more flexibility and mobility contributing to the smartphone sales exceeded laptop sales in 2007 and it has been expected to replace personal computers shortly (Jun Mo Kwon, 2013). As the result, mobile internet has a stronger attraction by global internet development and it is set as a prior element to develop than PC internet (Jun Mo Kwon, 2013). Amy J Barton (2012) expressed in the research that the presence of mobile technology plays a significant role in developing infrastructure in low to middle income countries. Moreover, the mobile services is estimated to grow at a compound annual rate of 7.2 percent from 2011 to reach $419 billion in 2016 (Samuel, 2012). Referring the research of Michael (2015), it showed that over 5.6 billion people are global mobile device users while the number is estimated

to climb up to 84 percent of the world population by 2018. In Thailand, the number of mobile and internet users have been continuously increasing every year.

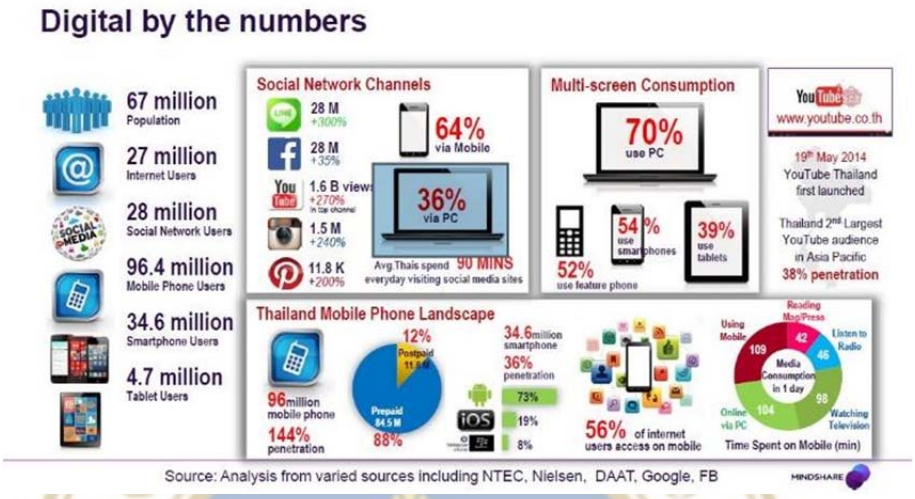

Figure 2.1 Number of Internet Usage in Different Platforms in Thailand

2.3 Web-Based Health Maintenance Information

Since the Internet allows people to access online information anytime and anywhere, the website is one of the priority digital platforms that pop up in consumers' mind. The recent statistic shows that there are monthly 32 billion searches on Google while it is approximately 50 million tweets every day (Leefang, 2014). The study also stated that 90 percent of consumers, nowadays, use online data as fundamental and supportive information for making decision of buying products. At the present, websites have been developed to provide more features rather being passive informative platform. Discussion board or content providing are the richest source of information where the learning atmosphere happen (Kreetta, 2014). The online presence can be responsive and serve 24/7 specific individual needs. The role of information and knowledge in web-based system is considered as a successful tool promoting self-health as it assists users' curiosity by displaying relevant information even though the shared information is accurate or not (Kreetta, 2014). Online available information can be divided into four characteristics which are Factual information, tailored information, monitored information, and experienced information (Kreetta, 2014). Factual information includes

academic texts as well as visuals provided by expertise, published articles, expert recommendation, and lessons from previous studies. In terms of tailored information, the results or feedback will be automatically analyzed according to the database from prepared systems and software such as relation between calories burn and physical movements or nutrition intake. Besides, tracking systems or self-monitoring systems such as food consumption calories record, historical data about exercise, weight gain and sedentary time spend data are categorized as monitored information. The last one is experienced information which is involved with individual or other's experience sharing such as role model behaviors and activities. Actually, this can be considered as the digital community platform that visuals and connects individuals to social interactions (Kreetta, 2014). The concept of Health Action Process Approach (HAPA) is another path for readers to access health care information via web boards or content blogs. The platforms encourages users to gain emotional support, share information, and answer possible questions. Its services generates more feasibility of appropriate health behavior change promotion.

2.4 Social Network

The significant role of social media and social network are more outstanding when comparing to other digital platforms as it changes the business model and revenue patterns for the companies (Leefang, 2014). Since there are approximately 50 million Facebook users after it had launched for only two weeks and the active Facebook users are approximately about one billions currently, the social network channels are a new gate for marketing communication. At the same time, over 70% of USA, Europe, India, and Brazil population have acquired more than one social network account. On the other side, the number of USD 4.3 is roughly calculated as a marketing expenditure on social network while 60% of online readers make a decision to buy products according to the review of user-generated content people (Leefang, 2014).

According to the study by Junyi Chai (2015), it identified that social network is formed by group of individuals who share specific similar interests and goals without the geographical limitation. The social relationship can be whether direct or indirect interaction (Nichols, 2006). Internet accessibility as well as smartphone prevalence

allow the 24/7 effective way of communication by exchanging self-health related information such as previous studies, sharing experiences, offering alternative solutions, including giving morale support among themselves. The discussed content associated with dietary consumption, exercising, including other healthy practicing such as meditation and sleeping behavior (Kreetta, 2014). Since good health condition requires a constant self-health practice and long-term monitoring, the percentage of failure is quite high if there is no social support during the processes, especially for the ones who focus on weight maintenance. Group practicing creates a better atmosphere of health improvement by encouraging the continuous adequate health practices, sharing success story as aspirational results, stimulating motivation, and promoting each other for better achievement (Kreetta, 2014). The group can be expanded by inviting more friends of members to join. Along the touch points, the organic reach will be approached. With better understanding and positive perception towards health care information obtained, internal motivation will be developed automatically. This will lead to set up the action plan and health behavior changes finally. (Kreetta, 2014).

In a meanwhile, celebrity endorsement via social networks such as Facebook, Instagram, or YouTube can be another critical factor to drive the self-health management to success as it is a different form of marketing communication (Hurmerinta, 2010). Each celebrity carries specific messages which are associated to their characteristics and, of course, these uniqueness can reflect more favorable result in terms of motivation and interest increasing (Austad, 2004). Good looking people can deliver more powerful ability to convince, develop positive attitude, and create emotional attachment (You Li, 2013).

2.5 Mobile Applications

Parallel to the growth of smartphone devices, numbers of mobile applications with specific objectives and contents have been tremendously developed in order to support the concerning social and medical problem (Empar, 2013). During past few years, mobile applications and social media have the considerably biggest growth during these couple years (Leeflang, 2014). In order to increase competitive advantage opportunity, firms are seeking alternative channels to interact and/or serve their existing customers,

at the same time, new customer segments. Therefore, mobile application is respected as one of firms' essential weapons to deliver a higher service level to their customers.

The mobile application in hospitality and tourism industry becomes very successful as it offers a new marketing and interaction channels by empowering users to access available locations on database, then making decision for their own travel experiences (Jin Young Im, 2014). Smartphones play a significant role and have contributed many changes in the hospitality industry (Jun Mo Kwon, 2013). It reported that smartphone is used by approximately 4o percent of US leisure travelers to search for travel information while 25 percent arranged their travel plan, reserved facilities, made online transactions, including accessed individual privilege via their smartphone (Jun Mo Kwon, 2013). Mobile applications are one of the most significant tools helping tourists to search for related contents which match to their travel behavior (Manuel, 2015). It does not only assist the decision making about possible activities and food ordering in advance but it also provides more enjoyable moment spending during their vacations (Jin Young Im, 2014).

The potential usefulness of specific content mobile applications also appear in smoking cessation in young people. Empar (2013) reflects that smartphone applications can be considered as a supportive tool that assists young smokers to quit. The apps can identify the current locations, encourage interactivity between users and experts, and provide instant required information. These utilities enrich the operation cost performance as well as provide a faster service to users.

However, existing mobile app about health maintenances mainly focus on basic features such as daily food consumption record, calories burn analysis related to activities, or heart beating record (Kreetta, 2014).

2.6 Technology Acceptance Model

Technology acceptance model (TAM) is widely used in tourism and hospitality industry to examine the attitudes (Manuel, 2015). It aims to examine the individual's attitude and intention at the same time in order to predict the consumers' behaviors on the use of new technology (Jin Young Im, 2014; Jun Mo Kwon, 2013). This theory explores that there are two critical components that influence or discourage the users'

motivation to use new technology which are perceive of usefulness (PU) and perceive ease of use (PEOU). There are positive correlation between functional benefits, emotional benefits which is ease of use, and new technology using intention. If the new technology can generates better performance but reducing users' effort, the potential of intention to use would be relatively higher (Manuel, 2015; Jin Young Im, 2014; Jun Mo Kwon, 2013). However, Jun Mo Kwon (2015) also explained that TAM model emphasizes only on individual cognitive rather than effect, it therefore has some barrier for some consumer context. The relationship between PU, PEOU, and intention of use can be expressed as TAM model shown below;

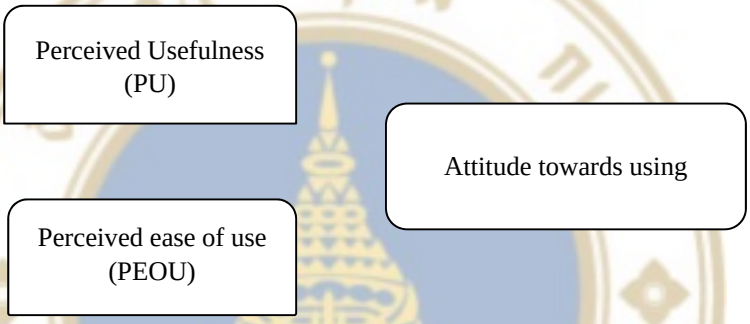

Figure 2.2 Technology Acceptance Mode

Source: David, 1989

2.7 The Relationship Between Technology And Health Care Industry

Unhealthy food consumption behaviors and insufficient physical activity pattern lead to many health problems. Thus, the trend of self-health management is timely becoming a highlight issue to discuss. At the same time, the impact of fast growing chronic diseases as well as aging population become more and more concerned in terms of political, social, and economical issues in many western countries due to high cost support requirement and insufficient specialized personnel (Cristiano, 2014). This shortage of medical expertise plus underdeveloped public healthcare system problem also deliver negative signal in many countries in South East Asia recently. The ratio of physicians per people is 0.6 per 1,000 which is remarkably lower than developed countries such as UK (2.8), Germany (3.7), and US (2.4) (Deloitte, 2014). This encourages competitive advantage to private healthcare service providers and makes a healthcare expenditure

continuously raised. The majority of healthcare spending in South East Asian countries come from the public sector and hospital-based business covers for 60 percent of all transaction during 2004 – 2013 (Deloitte, 2014).

In Thailand, estimated USD17.9 billion were spent for total health care domestically which is higher than other ASEAN countries in 2014 (Netherland Embassy, 2015) which is estimated as 3.3 percent of nation's GDP in 2013. During 2014 – 2018, this spending is expected to grow by 8 percent a year (Deloitte, 2014). One of the key drivers is increasing number of aging population which requires a huge financial support. On the other hand, data reveals that Thai's aging population is around 15 percent of total citizens and this number is expected to reach 25 percent by 2030 (Netherland Embassy, 2015).

In order to handle this challenge, information technology takes place as a significant jigsaw to uplift productivity and quality for health services industry. The medical administrations generates a proactive concept that encourages their citizens to control their sickness instead of depending on a centralized and hospital-framed care model (Cristiano, 2014). It turns the traditional healthcare system (hospitals, clinics, laboratories, universities, and professionals) to domestic environment (mobile-care and home care) by empowering people to access healthcare information and knowledge through the Internet. Information technology is a new paradigm that assists delivering health information to people quicker and wider (Barton, 2012). The increasing online availability of health information develop a better understanding of people towards health care, diseases, health condition and disease prevention. (Barton, 2012). Nowadays, the online health care services offering are far beyond the information providing. People can monitor their health condition by keeping individual records such as biology, historical calories intake, physical activities time spending, and utilizing these useful information to reduce health risks (Barton, 2012). However, another research, as a technology developer, argued that there are still some difficulties in implementing self-health care system (KMPG, 2016). In contrast, some successful implementations can encounter the failure as professional might question the efficiency in tem of information collecting.

At the same time, offering self-care system does not only empower consumers selecting specific and relevant services but it also helps to constrain health care spending and create more engagement with people along the application usage (Martha & Sarah &

Douglas, 2014). There is a clue that innovative and patient –centric approach strategy towards self-management can lead to quality of life improvement and hospital admission cost reduction (Maxine, 2015).

Recently, the mobile applications regarding the self-care still remain a small availability in the market due to the long period behind in information technology usage to productivity and quality enhancement comparing to other industries (KPMG, 2016). On the other hand, existing mobile applications still lack of efficient features as well as devices connection to monitor and deliver a better personal health care and wellbeing services (Banos, 2015). Even though the private sectors have developed over 1,500 mobile medical applications in US to help health care management between their patients and their clinicians, the safety issue as well as suitable regulations still be addressed to discuss (Barton, 2014). In order to deliver an innovative services, all mobile applications have to be patient oriented approach that ensure the patients' safety as well (Barton, 2014).

Weight loss application is one of the social networking activity (Anming, 2015). It is rich source of health-related information and social support where unite link-minded and share similar interests or goals among users. It reported that 90 percent reflects positive outcome while users assessed health-concern interactions such as dietary information, calories intake data, including some physical activities through social network (Anming, 2015).

CHAPTER III
RESEARCH METHODOLOGY

In this research, the qualitative method is used as a key tool for data collecting. As the major objective is to investigate the impact of digital platforms towards self-health management especially diets and health maintaining aspects, together with identifying over the most powerful platforms that can increase the frequency, as well as duration of exercise for users. Qualitative research is a more appropriate tool than the quantitative method which focuses mainly on numeric expression. The approach considers the ideal of various techniques which include group discussion, unstructured interview as well as observations. These are accommodated to reveal consumers' perception, insight, motivations, opinions, flexibility, or reasons underlying about efficient digital platforms towards self-health management behaviors. Besides, it aims to investigate the most preferable digital platforms which play the most significant role in terms of enhancing the exercise frequency as well as exercise duration increasing to generate both hypothesis plus specific concerning issues.

3.1 Population and Sample

There are five focus groups which are packed with six to eight people in one group arranged in this research. They are all Thais who live in Bangkok areas and have diversification in terms of ages, occupations, incomes, health-management behaviors, as well as digital platform interactions. On the other words, there are 32 research participants totally. The research is opened for all targets who are health concerned and are interested in self-health management.

In the health perspective, they are health-concerned people in terms of eating and exercising. They are all aware that eating is one of the critical factors that can positively or negatively impact to their healths. Healthy food and drinks such as cold-pressed juice, low sodium food, rice grain, or whole grain are preferable options for them.

All of them have a strong discipline in terms of having an annual checkup while majority are usually seeking for physical activities such as jogging, marathon, yoga, Pilates, boxing, hiking or even walking. The majority of samples usually exercise twice a month whereas some participants exercise once a week.

In a digital perspective, all participants own at least one smartphone, at the same time, some of them also own personal computers. In terms of familiarities towards Internet interaction, all of them, at least once a week, use basic applications such as LINE, Facebook, Photo Editing, Video Recording including search engines and other web-based information technology. All of them are familiar with the applications download via both AppStore and GooglePlay. Besides, there are some people who tried self-care mobile applications and some have been practicing specific exercises such as Yoga, Zumba dance, and cardio exercises via YouTube. The assessed content is related to health-monitoring, weight losing, diet and exercising. In terms of integrated devices with mobile application, the majority of focus group are aware of the existence of digital wearable devices such as smartwatch. It is noticed that there are some participants who own smartwatch monitoring their daily health records such as Samsung Geer, Garmin, Xiaomi, and FitBit. Participants use these wearable devices to measure their daily walking steps, heart beats, sleeping patterns, as well as calories burn. The data from devices can be automatically transferred to mobile phone via Bluetooth and visualize the comparable statistics of activities of each day as a report.

In the aspect of interest, all of participants realized that they are in a part of the research and they are willing to gain more knowledge, exchanging experiences, as well as sharing their preferable digital platforms that would reduce their inadequate health behaviors while leveraging their daily health maintaining.

3.2 Research Design

The conversation from focus group will be recorded by mobile phone recorder as well as written by hand-writing on paper by researcher. The discussion takes approximately 30-45 minutes depending on flows and information exchanging by participants. Prepared questions can be reordered and will be gradually asked according to situations.

3.3 Research Framework

In order to meet the research objectives, TAM is used as a fundamental model to explain motivation of users towards new technology adoption. The application of research framework is modified from two mixtures which are digital platforms and TAM model in order to reveal feasible aspects of digital platforms which enhance the exercise behavior of health concern people. The content for PU and PEOU are also adjusted to be associated with health care perspective. As digital self-exercise channels are also well—known among participants, the first discussion part aims to reveal their experiences assessing health-related content online. Then, the questions will lead to investigation on their opinions about usefulness of these online content as well as identifying on how and which digital type are currently used as key tools to influence their exercise behaviors. After that, the questions focusses on PEOU while they are exercising. This part includes the individual reasons on advantages and disadvantages together with their enjoyment and pain points of their current interactions. The last section aims to disclose exercises and digital using preference of participants. The preferable characteristics of platforms that can encourage the continuous exercise would be discussed among the groups

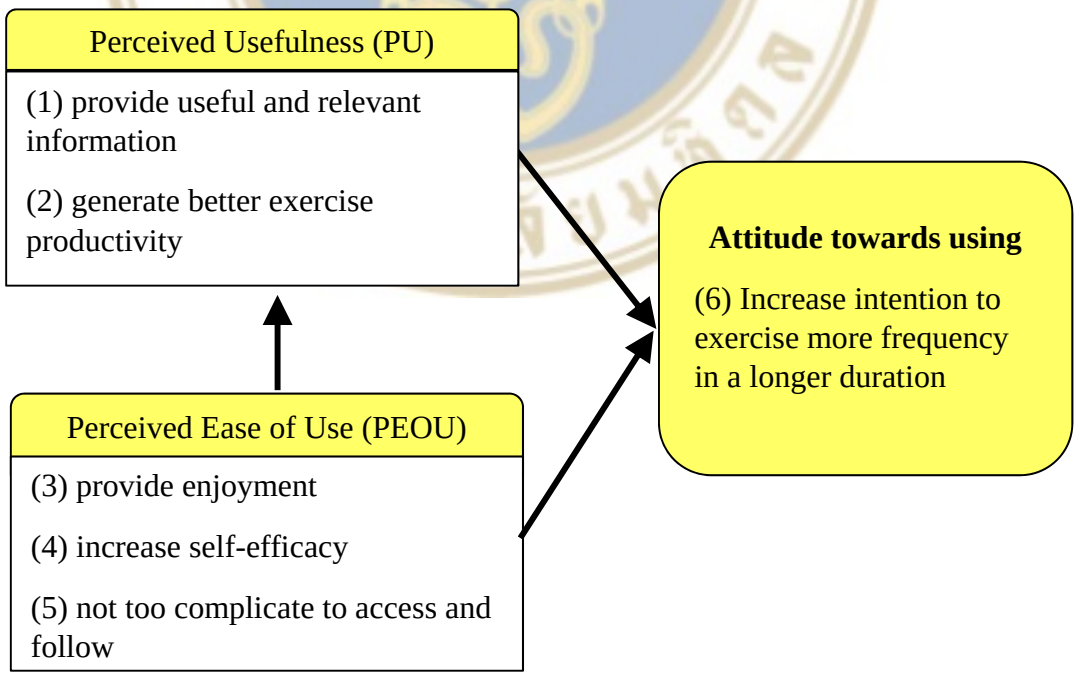

Figure 3.1 Modified Research Framework from TAM

3.4 Research Question

There are totally five questions would be addressed during the research. The designed questions aim to open a wide discussion among people in the focus groups in order to find feasibility of fresh idea and/or concept emerge. Practically, all prepared questions are open-ended in order to identify variable factors that can encourage and/or discourage people in using digital platforms in health care and wellness industry. On the other hand, prepared questions are expected to reveal insights information of focus group such as expectations, user preferences, and other in-depth perception through digital interactions.

Table 3.1 Research Question

No.	Questions	Purpose of the Questions	Framework
1	How do you normally do for personal health care management?		(6)
2	Have you ever use any digital platforms during your exercise? (YouTube, Websites, mobile applications, FB, IG, etc) <u>Follow up questions</u> - Which type of digital platform that is the most frequently use? - What purposes that you used digital platforms? - Which features that you like? please explain - Which features you do not like? please explain	To identify the attitude of participants towards digital health management - Examine the attitude of using - Identify the critical elements that engage customers to use digital tools for their health maintenance	(6) (1), (2), (3), (4), (5), (6)
3	In your opinion, can digital platforms enhance adequate exercising behavior as well as exercise frequency? <u>Follow up questions</u> - Among all available digital platforms, which one is the best one in your opinion? - Please share supportive reasons to your idea	-Investigate the possibility that digital platforms can assist the health management as well as encourages more frequency of exercise -Find out the important points that can encourage continuously using	(1), (2), (3), (4), (5), (6)

Table 3.1 Research Question (cont.)

No.	Questions	Purpose of the Questions	Framework
4	What preferable content, functions, and characteristics of platforms about self-health concern should contain? <u>Follow up question</u> - Among text, visual, stimulations, which is the most preferable options? - Does the language barrier impact on your exercise behavior? - Can wearable device such as smartwatch uplift motivation in exercising?	- reveal insights of participants about the preferable characteristics of healthcare digital platforms - reveal possible customers' preferences towards healthcare digital platforms - investigate whether language is one variable to use digital platforms	(1), (2), (3), (4), (5), (6)

CHAPTER IV
FINDINGS AND DATA ANALYSIS

Based on group discussion, the findings revealed that majority of respondents are female, as there are 20 people among 32 participants which is equivalent to 62.5 percent. While there are 12 male correspondent which is considered as 37.5 percent among all research participants. Their age are in between 25-35 years old.

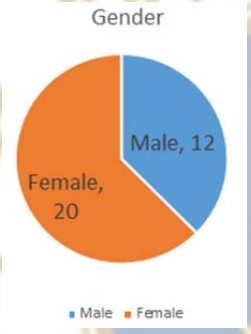

Figure 4.1 Correspondents Profile (people)

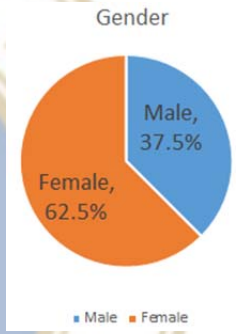

Figure 4.2 Correspondents Profile (percent)

In terms of exercise frequency, 60 percent of participants answered that they normally exercise once or twice a week while there are 40 percent who replied that they exercised more than three times a week. The major group explained that the exercise schedule can be adjusted according to their convenience. Normally, they would exercise with friends at nearby gyms or practice themselves at home. On the other hand, the exercise schedule would be more seriously practiced by the participants who answered that they exercise more than three times a week. Frequency, duration, exercise type, as well as nutrition can be periodically adjusted according to their exercise objectives. The findings also reflected that male are more serious on practicing exercise than female. Some respondents shared opinion that the physical appearance improvement can be easily noticeable in men rather than women. Therefore, male tends to put more effort and more frequently workout comparing to female.

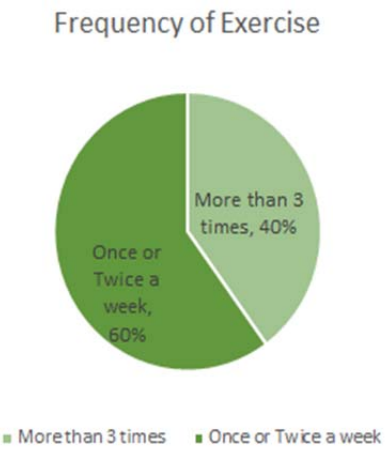

Figure 4.3 Correspondents (type of exercise)

In the aspect of exercise type, running is the most popular physical activity with 50 percent among all expressed exercises. The correspondents expressed that running is the easiest and most convenient to start exercising. It requires no specific skills but a pair of running shoes only. Unlike any other physical activities such as Yoga, swimming, or weight training, which require specific equipment and need more period to practice. Furthermore, there are plenty of supportive stuff available in the market such as run training schedule, running distance tracker, heart rate tracker, including many running events. The second popular exercise is aerobic exercise which gained 30 percent among all activities. This type includes aerobic dance such as Zumba dance and T25, swimming, boxing, and biking. The results revealed that exercisers would practice these activities at fitness centers or their homes. They became popular because it is easy for exercisers to practice at home by following online channels at any time. Besides, Yoga and weight training were ranked as the third which obtained 15 percent. This group of people do not focus on burning calories but they concerned more about having desirable body shape and increasing muscle flexibility. Yoga is normally practiced at exercisers' houses while weight training is practiced at both gyms and exercisers' houses. Lastly, the remaining 5 percent represents other physical activities such as squat and NEAT (Non-Exercise Activity Thermogenesis). These people have not seriously practiced exercise but they are trying to find opportunity to increase any bodily movement in order to keep themselves healthier. For instance, they prefer to walk for lunch instead of taking a taxi or they try to use stairs instead of taking elevator.

Figure 4.4 Correspondents (type of exercise)

Taking a relationship between TAM framework and exercise behavior into consideration, the results show that each specific platforms can fulfill exercise needs and expectation in a different way. Even though all platforms can deliver both functional benefit and emotional advantage, they achieved in a different levels in distinctive dimensions. Further findings are grouped into each specific digital platforms and classified into five aspects based on TAM framework.

4.1 Web-based Platform

There are four groups mentioned that website is one of the useful digital platforms for exercising while there is only one group who did not mention about this platform during the focus group discussion. The websites have positive correlation to the application of TAM theory in term of both functional advantage and PU together with emotional achievement or POEU in different aspects. There are four groups mentioned that website can (1) provide useful and relevant information. Other three groups agreed that website can deliver (4) increase self-efficacy. On the other hand, there are two groups mentioned about that website can be a useful digital platform for (2) generating better exercise productivity while there is only one group expressed that accessing website is not too complicate to follow for users. According to these findings, there is only one issue which did not mentioned during the focus group discussion. It is (3) provide enjoyment.

4.1.1 Provide usefulness and relevant information

There are four groups which contributed 80% of participants, agreed that website serve their perceived usefulness in terms of delivering useful and relevant information for their exercise. Google, the most well-known search engine, is the first platform mentioned by every focus group. Also, it was used as the fundamental portal for exercise information searching. In term of responding to the users' requirement, the participants described that it showed the preferable information as well as provided alternative websites for people to connect in order to obtain deeper information. Moreover, it showed nearby exercise locations such as parks, badminton courts, fitness center, football fields, and others. These results assisted exercisers to select the most suitable locations according to their criteria. Some of respondents mentioned as following samples.

"When I would like to exercise such as running or playing Yoga, I use Google to search for nearby locations for Public Park or fitness center".

Besides, website is regarded as a reliable platform which offered more detailed information on sports equipment. One group mentioned that exercise equipment such as running shoes, badminton racquets, or gadget shops usually have their own online shops. Therefore, they preferred to visit official websites searching for new exercise equipment and its features as well as price comparison and distribution channels. However, people still search for multi-brands comparison websites prior to make a decision to purchase in order to find the most suitable equipment in terms of features, designs, and budget. Besides, there is a group raised that website saves a lot of their time and money for gathering information. Some participants explained that they normally workout at gyms and they need to obtain more information about activities before deciding to join. For instance, course-class detail, duration, timetable, availability, as well as teachers' background information. Website can be a good assistant by displaying desired data after a quick search. Some of respondents mentioned as following samples.

"I can compare the features and prices of each sport equipment as well as nearby locations to buy via websites".

"It helps a lot in terms of information searching because people would like to save cost and accessing website is low cost. On the website, we can compare prices of activities, teachers' background information, and available schedule. Without the

websites, we have to call and ask for more information which wastes a lot of time and money".

4.1.2 Generate better exercise productivity

Only two groups which are considered as 40% of correspondents, shared that web-based platform can be one of important assisting tools to increase exercise productivity. Again, the result emphasized that web-based platform is outstanding in delivering rational advantage to users which is perceived usefulness in TAM framework. It offered new exercise techniques, appropriate nutrition loading, and exercise programs to serve individuals' needs. Furthermore, the participants expressed that content published on websites lead to more accurate and productive exercise behavior. The participants felt that following those instructions and methods was helpful because it extended their exercise durations, reduced possibility of injury, generated better holistic health in term of health condition, physical appearance, and mental relaxation. Nevertheless, there were some participants stated that nutrition is also one of significant tools that helped increasing exercise success rates for exercisers. They obtained plenty of nutrition knowledge available on websites and applied to improve their exercise productivity. It helped shortening their practice to achieve exercise goals. Some of respondents mentioned as following samples.

"Website is a complete platform for me getting to know new things such as new exercise lessons, new exercise equipment, new exercise community as well as finding the suitable type of cardio that I should practice".

"Information on website is really useful tool to improve my running performance. I have learnt from that running performance can be improved by loading lots of carbohydrate prior. I tried and found out that it really works".

4.1.3 Increase self-efficacy

There is only one group among five focus groups shared that website platform can enhance self-efficacy stage of users. As the Internet is easily connected, the participants agreed that it is very convenient and would save a lot of money. For instance, they normally go running and practice Yoga at fitness center. The platform empowered them to check course-class schedule, fitness visitor density, teachers' background as well as allow

them to make a class reservation in advance. If available classes do not match to their interests, they can find alternative exercise options such as Zumba Dance or basic Yoga methods which can be practice at their houses. In terms of cost saving, the participants expressed that in the traditional way, they have to make a phone call to check all branches of fitness to check and manage their bookings which consumes a lot of time and costs a lot of money. The reference from the group discussion is expressed as follow.

"Website makes my life easier. Instead of calling to branches checking schedules and teachers' expertise, these can be quickly completed by myself alone. Online interaction via website allows me more time to make a decision whether I will go or not, what activity I will join, or the location where I go".

4.1.4 Not too complicate to access and follow

Again, there is only one group mentioned that web-based platform is not complicate to access and follow while other four focus groups did not mentioned this issue. The participants discussed further that they only connect and access online information at their convenient time on daily basis. All participants in this group expressed that they are familiar with this platform because they access every day. It is the easy path to access to preferable information with minimum information technology knowledge requirement. In the aspect of fitness centers' website, the participants said that the platform is easy to understand. The class schedule is real time displayed as well as being easily reserved. Furthermore, preferable information such as teachers' background, prices, promotion, fitness branches are clearly displayed by clicking a few steps.

"The path of information searching and making reservation are very easy to understand and follow."

As the findings reflected above, it can be summarized that web-based platform generated rational benefit more than emotional achievement. On the other words, it reflected more dimension of perceived usefulness rather than perceived ease of use in TAM framework. Although, there were some evidences showing that this digital tools can offer emotional benefit to its users, it still was not an essential factor to drive the intention using technology of people. People access this platform in order to find useful and relevant information for their better exercise productivity and frequency enhancement.

For instance, nearby exercise locations, sports equipment, as well as class and teachers' detailed information and reservation.

4.2 Social Media Platform

All focus groups agreed that social media plays a significant role in order to generate both physical and emotional benefits for users during exercise. YouTube is the first channel mentioned among five groups while Facebook comes second, Instagram ranked as the third, and Pantip is the fourth one. Regarding the discussion, 100% of participants revealed that social media can (1) provide useful and relevant information, (2) generate better exercise productivity, (5) not too complicate to access and follow. In a meanwhile, there are three groups expressed that this platform can enhance their exerciser behavior in terms of (3) provide enjoyment while there are four groups mentioned that they can gain self-efficacy increasing from this platform.

4.2.1 Provide useful and relevant information

Social Media is regarded among all participants in the focus group as a significant platform which provide useful and relevant exercise information, especially Facebook and Instagram. All participants own at least one Facebook account whereas some participants own both Facebook and Instagram accounts. They informed that they accessed these two platforms many times a day so these two channels are considered as the easiest way obtain updated information. They explained further that there is plenty information available on FB and IG database which are quickly displayed by the search option. Exercise related content will sometimes automatically shown up on their wall by being sponsor or being shared from their friends. If the content attracts their interest, they will visit the page, then becoming fanpage in order to receive exercise contents such as exercise trends, new techniques, accurate methods, performance or shape improvement, new equipment, updated exercise locations, including supplementary or nutrition intake for preferable outcome. Moreover, the video content as well as comments published on FB, IG, and YouTube including review on Pantip are also considered as a rich source of information for users searching for exercise information. There are some references from the group discussion explained as follow.

"Once you are their fan page, you can access many interesting information such as new exercise techniques, appropriate food and calories intake for specific reason. You can also get the news of upcoming events like Marathon or Mini Marathon so that you can get ready and prepare yourself in advance".

"I subscribe international body builders, fitness models, or Mr. Olympia in order to obtain information about their eating behavior, exercise behavior, including their additional supplement intake. It is a shortcut way to learn from successors before you start to practice".

4.2.2 Generate better exercise productivity

It is 100% of participants among five focus groups agreed that their exercise performance can be enhanced by social media in terms of accuracy and exercise duration prolonging. One group revealed that published pictures on FB, IG, and reviews on Pantip including video uploaded on YouTube are the powerful elements to leverage their exercise productivity to be more accurate exercise procedures together with more frequency of exercise practicing. Majority of participants expressed that YouTube is one of the most essential platforms for their exercise improvement. As video conveys a clearer exercise instruction than other media, people can do exercise more correctly in terms of gesture, maintaining exercise speed and duration, and being motivated by following the videos.

"I am FB fanpage of many exercise-related content page. There are many expertise share their experiences and knowledge that can be adaptive to improve my exercise performance".

"Follow the exercise videos published by expertise on YouTube improves my exercise performance a lot".

However, there is one contrastive issue raised during the focus group discussion. One participant shared her idea that obtaining content from social media while exercising can reduce the productivity of exercising. From her observation, she explained that running performance will drop when people watch entertaining content from YouTube, especially series with subtitle because runners will focus on reading subtitles rather than concentration on exercise achievement.

"I think sometimes social media reduces the exercise productivity but it is still necessary for some specific target in order to keep motivation and extend exercise duration".

In addition, social media can be a helpful tool for increasing exercise frequency for people. A focus group mentioned that they are afraid of exercising at fitness center because the fitness trainer is too strict. Some participants said that they exercise because they would like to improve their health condition but the fitness trainer observed and tried to correct their movements and gestures. This creates awkward feeling while reducing intention to exercise. On the other hand, they are afraid of being embarrassed if they expressed some strange physical movements or showed that they are not familiar to the fitness equipment. Therefore, practicing according to the methods from YouTube is a preferable choice for them. There are some references shown as follow.

"I want to exercise because I just want to be healthy but the fitness trainer always forces me to move my body to be in a right angles and right position. This is annoying".

"I don't want to show stupid things in front of fitness trainer or exercisers if I cannot turn on the machine, adjust it, or get along well playing it".

4.2.3 Provide enjoyment

There are three groups, which is equivalent to 60% of all participants, presented that social media platform can provide enjoyment during their exercise. Majority of respondents accepted that entertainment is an importance factor for their exercise. It is obvious that when researcher asked about the relationship between digital platforms and enjoyment providing for exercise, YouTube is number one platform regarding enjoyment creator aspect in participants' minds especially for aerobic activity such as Zumba dance, T25 workout (well-known DVD full-body routine exercise within 25 minutes), and T26 dancing (T26 is a parody dance of T25 – researcher). The respondents explained that they are happy and found it entertaining to follow the dancing steps from videos. The content kept them alert, being motivating and challenging to overcome their limitations to complete the whole dancing process. Moreover, their exercise performance record, sometimes, can be shared via FB and IG. This proud achievement encouraged them to continue exercise more frequency and prolonged duration.

Further from the group discussion, the participants also mentioned that listening to songs, watching videos, surfing on FB and IG page, or reading Pantip blogs can help extending their exercise to be longer.

"Running is boring and I cannot concentrate on same specific fitness equipment in a long time. Watching series during running makes me lost track in time. Without this entertainment, I would focus on my exercise performance like running distance, burnt calories, or running duration".

In addition, data sharing among friends via social media platform is also significant and must-have feature for majority of participants. In this study, content sharing can be from any platform including users' record from mobile applications, especially for the Challenge feature. This feature allows users to share their running performance and users can challenge each other among their peers. 100% of participants expressed that they enjoyed using this feature and they were disappointed when it was taken out after the latest program update. As exercise is considered as another way of competition, beating one another's record is another way to communicate the superior feeling. More than 60% of correspondents said that they are happy and enjoy sharing their exercise performance via social media. It is noted that people tend to prefer sharing their exercise record via Facebook because it is the most convenient and requires minimum effort. This finding obviously reflects the positive relationship between PEOU or emotional fulfillment and users' attitude towards using technology in TAM theory. If the platform create joyful feeling to users, the possibility of continue using that platform will be respectively higher. When researcher asked the reason of record sharing, the participants explained that it does not only help keeping record to see their performance but it also communicates their healthy concern reputation to others. Sometimes, it helps emerging them another community. Some references are as follow.

"I feel good to myself when my friends want to follow the activities that I shared on Facebook".

"I practice running alone previously. After I shared my running score on Facebook, many friends want to join and now our running group is growing."

"Beating friends' records and sharing ours is a kind of fun."

4.2.4 Increase self-efficacy

There are three groups sharung their opinions that social media is a great alternative source to enhance their exercise self-efficacy level for their health management both in terms of financial benefit and non-financial benefit. As YouTube can be easily connected at users' convenience wherever and whenever, it therefore helps to save a lot of time in term of transportation, waiting time, as well as fitness course expenditure.

In the research, YouTube is the top favorite platform because the content empowers participants to practice many different types of self-exercise according to difficulties, their objectives, health condition, and limitation. Aerobic types such as Zumba dance, T25, Victoria's Secret Workouts, and Mr. Olympia are the most popular exercise content which had been searched by participants. In their perspective, Aerobic or dancing require many things such as body movement speed and agility, multi-movements, including healthy physical requirement. Thus, video demonstration leverages their self-learning curve and they gradually improves self-exercise to be better finally. Many of them expressed that they can develop unique exercise techniques based on exercise content they have learnt from YouTube. The platform assisted users to achieve the self-esteem level so they would have positive attitude towards the platform. On the other word, emotion of self-success would automatically bring about higher intention level of users to continuously use the social media.

On the other hand, Pantip also reflects positive impact towards users' self-efficacy. Four groups from total five groups identified that they like to follow the exercise schedule together with nutrition program on Pantip, especially for running and Yoga practice. They also explained deeper that this platform greatly assists their health maintaining and self-health management. On the other hand, many participants said that they are also proud of themselves once the exercise is accomplished.

"The additional fee of fitness membership together with personal trainer cost would be unnecessarily high if the social media platform is not available to assess."

"I learn the techniques and tips from both YouTube and Pantip. Then I adjusted the program a bit to suit my body limitation. When it is done, I feel proud of myself. It is the feeling like I can do it by my own".

4.2.5 Not too complicate to access and follow

From the research findings, there are four groups exchanged idea about this perceived ease of use whereas there is only one group did not mention about this issue during the discussion. The participants agreed that this platform is really easy to connect because they daily access to their FB page or IG account, there is no difficulty found regarding the platform assessment. The preferable content as well as alternative results could be easily shown up according to their keyword searching. In the perspective of content, the participants agreed that exercise is easier to understand and more attractive to follow when the content is created to be video form as video conveys a clearer visual of step-by-step practicing.

Based on the findings, it can be summarized that social media platform have many critical features which can fulfill both functional (PU) and emotional benefit (PEOU) to users. In the aspect of rational advantage, shared content on social media were found as useful weapons to improve exercise accuracy plus exercise productivity for some participants. They said that stories of successors basically motivated them to practice. In order to achieve desirable results, they tried to follow the instructions strictly so their exercise discipline automatically enhanced. Simply, it can be explained that social media helps leveraging exercise behaviors of users to be more adequate and more frequent. These leaded to a better exercise productivity achievement finally. However, the most powerful reason which enhances the intention of using social media is emotional fulfillment. More than half of focus groups participants agreed that they prefered to use this platform along their exercise experiences because it was more enjoyable comparing to other platforms which were website and mobile application. Entertaining content absolutely extended exercise duration for many participants while enhancing the level of self-esteem for some. Getting information from Facebook or Instagram post, searching for more opinion from Pantip, then following the instruction from YouTube, these channels reduced boredom and offered enjoyable path for their workouts. More importantly, challenging and sharing exercise performance were another way of fun. 100% of correspondents were happy with this feature and they all agreed that it definitely helped enhancing their workout frequently and productivity.

4.3 Mobile Application

According to the research, results is obvious that mobile application is the only digital platform among the rest that covered all aspects of TAM framework both positive and negative attitude. All five focus groups, which contributed to 100% of all participants, agreed that mobile application can (1) provide useful and relevant information (2) generate better exercise productivity, (3) provide enjoyment, (4) increase self-efficacy, (5) not too complicate to access and follow.

4.3.1 Provide useful and relevant information

100% of participants among five focus groups expressed that mobile applications is respected as fundamental useful tool to generate valuable and relevant health management information for them. There are some interesting features such as heart rate tracking, calories burn expenditure, sleep tracking, and exercise program offering, and built-in GPS platform. The data from mobile application can be analyzed and adaptive for their health improvement. Here is reference from the group discussion.

"Data from mobile application can really enhance people's health. One of my friend feels sleepy all the time so he uses sleep tracking feature in mobile application as a tool to investigate his sleeping behavior such as light and deep sleep duration and awaken time during the night. The data shows that he doesn't have a great sleep and many awaken times so he decided to see a doctor for cardiograph checking. The doctor suggested him to do more exercise in order to improve his health condition".

Even though there are many useful applications from mobile applications, the participants decided to quit using some applications if the generated data is not accurate. Distance tracking data retrieving from Nike Run and Garmin applications are raised to discuss as a clear example. Two groups shared that they used both applications and they discovered that the running distance goal is faster achieved via Nike Run application while there are still approximate 200 meters more to achieve running target captured by Garmin. It is because Nike Run uses the Internet to calculate the exercise distance while Garmin uses GPS which is more accurate in terms of distance measurement. On the other hand, calories intake and calories burnt calculation feature are also another pain point for participants. They said that the data is not complete as well as incorrect because there are many variables involved for calories calculation such as ingredients,

usage amount, and recipes. Here are some references from group discussion displayed as follow.

"I prefer to use Garmin because it offers more accurate information than Nike application".

"I do not believe in calories calculation data because there are many factors involved. Information offering is just gathered from big data so it is not absolutely correct".

4.3.2 Generate better exercise productivity

From the focus group discussion, all participants confirmed that using mobile applications can enhance their exercise performance and productivity. Again, Nike Run is the first health management application raised among the five group discussion. In the perspective of participations, tracking feature obviously improves their exercise productivity in terms of further distance and longer duration, especially for running. In the past, the participants can stop running at any time when they felt exhausted from exercise. Once the numeric distance and duration of running performance show, they were aware of their current status and gap to achieve their setting target. This motivated them to keep running until getting achievement. Also, the running distance tended to extend or at least be set at the same level of their latest running performance in order to reflect their exercise improvement in terms of gaining a better exercise productivity as well as keeping a good exercise disciplinary.

"With numeric data displayed on the applications, it keeps motivating me to beat my past record or achieve the certain number that I set".

On the other hand, heart rate feature has a great impact on users' exercise performance enhancement in order to monitor heart rate during exercise to achieve the preferable outcome. During the discussion, it was revealed that there are some association between the calories burning and heart rate. They explained that exercise can be divided into many zones according to exercise objective and heart rate. For instance, if people would like to stimulate fat transformation, their heart rate should be at least 120 bpm. In contrast, if exercisers would like to strengthen their lungs performance, they would monitor their heart rate in a tempo zone according to different speeds of their running. The reference is shown as follow.

"As calories burn expenditure is related to heart rate and the body fat burn level will start from 120 bpm of heart rate so that this feature helps me monitoring my heart rate to be in this zone all the time during exercise".

Notification features is also a nice-to-have function to lift exercise frequency up and disciplinary. The participants shared that this feature is applicable in many applications such as Xiao Mi - the wireless health tracker watch manufacture, 7 minutes – exercise the whole body within 7 minutes, SHealth – a free exercise application created by Samsung, and Garmin application. The platform will alert when users have been inactive for a specific period of time. One group also shared that this feature can be more practical and improve a lot of users' exercise performance if it contains similar features to webmail calendar. For instance, the exercise program will automatically notified so users can be reminded their running goal, heart rate zone, duration and distance for practice, including the running speed. Thus, they can prepare themselves in advance. The sample of reference is explained as follow.

"It encourages me to make physical movement like arms swinging exercise or stretching after a long period of working".

"It would be good if the practicing schedule as well as its detail can be notified like calendar feature in webmail so that I can clear my jobs and get ready for running".

4.3.3 Provide enjoyment

Refer to the findings from this research, it is obvious that users enjoy using this platform for their exercise. Again, Nike Run is raised as the most well-known exercise application about running that can keep individual records, challenge among peers, and track historical data. These similar features become basic functions in many mobile applications. In Nike Run, performance data will be synchronized and shared via external platform such as FB or IG. This challenge feature creates a lot of entertainment for users to express their running data and try to beat their friends' records. All participants enjoyed this feature because exercise is considered as another kind of competition and socialization. Some participants stated that they quited using Nike Run once this feature was taken out after the latest upgrading. It shows that providing enjoyment can be a

direct impact to the attitude of continuous using technology. Here are some references quoted as below.

"I am frustrated when my challenge score and record automatically disappeared after the new version of Nike Run is updated. I have to start beating friends' record all over again"

I am super unhappy when the Challenge feature is taken out of Nike Run application. It means that all of my previous performance were gone".

There are three groups identified the mobile applications called 'Just Dance' while there is one focus group mentioned about 'Vokamon'. For Just Dance application, it is a stimulator application requiring users to hold smart phones or remote control on their hands and dance according to the movements of cartoon characters displayed on the screen. Users will earn points from their dancing performance and they can share this point to challenge others internationally. On controversy, earning points for Vokemon can be gathered from users' walking steps or movements. The platform will transform the points into energy, food, and any necessary items to grow up the digital pets. This innovation and creative applications encourage users to increase their physical movement and frequency of exercising. There are some references shown as follow.

"I am happy to feed my pets with my steps. I think I exercise more often because I would like my pet is growing up".

However, the participants also reflected some unpleasant features which reduce their intention to use. One of them is paid applications. There are four groups among five groups indicated that they would not download and discontinue using the mobile application if the payment is required. Due to tremendous choices available in the market, they therefore preferred to use a free-of-charge application. Interestingly, this fact is totally opposite to the intention to pay for the individual health tracker gadgets such as Garmin Watch, Xiao Mi Band, or Apple Watch. The gadget encourages more frequent of exercise in many aspects. In terms of emotion, they are obsessing over their new gadget so they enjoy to use it. Some participants mentioned that they used these gadget all-day-long in order to track their heart rates, calories burn, walking steps including sleep behavior. Even though, the participants never bike so often, they found some opportunity to practice bicycle because they would like to try its features. At the same time, as these equipment are quite expensive which cost around 1,200 Baht up to

12,000 Baht, they therefore would like to get the most use of it. There are some of references as follow.

"I don't want to try paid applications because there are still many other choices in the market."

"Garmin watch motivates and increases my exercise frequency because it is a new toy for me. Sometimes, I try unfamiliar exercise because I would like to keep record. As I paid a lot, I'd like to use it as more as possible."

Many advertisements plus many program bugs strongly deliver a negative impact towards enjoyment of users while using applications. Almost 50% of participant shared that that they are frustrated when the pop-up ads periodically showed up because it blocked their vision and interrupted their concentration on exercise continuity. Too many advertisement together with program bugs shorten the mobile phone's battery life and force it to restart. Some are quoted as below.

"Advertisements really disturb my exercise and it is difficult to close."

Too many program bugs make the application is automatically closed. It also forces my mobile phone to restart."

4.3.4 Increase self-efficacy

Everyone among five focus groups discussion, which is comparative to 100% of participants, agreed that their sense of self-efficacy was higher when they used mobile applications for their exercises. The participants mentioned that mobile application allows customized setting so they can design their individual exercise program according to their objectives and health condition in order to match to each specific period of time.

"Mobile application allows us the customized setting to suits to each tasks and goal."

"It guides me to exercise correctly."

Although increasing self-efficacy, it can also give a negative impact to users. Too much information input requirement is also considered as another pain point while using mobile application platform. Three from five groups explained that some applications required a lot of input data, especially calories calculation and nutrition fitness applications.

There are many tasks for users to manually complete in order to show the results such as type of food intake, consumption amount, including estimated ingredients.

"I felt impatient when the applications require many manually information input."

"It is annoying when the apps asked for too much of input."

4.3.5 Not too complicate to follow

Majority of correspondents indicated that mobile applications are easy to follow and data is automatically synchronized in every device if they used the same username to log in. The instruction is offered systematically step-by-step which is easy to follow. When the researcher asked whether the language created some limitation or not, the respondents replied that it did. However, Thai language is now available in many mobile applications, especially for popular ones. Thus, this issue is assumed to be a minor influential factor for the intention of using mobile applications during the exercise.

Nevertheless, the metric setting is sometimes founded as a paint point for the users. One group complained that the data is wrongly analyzed due to the wrong metric setting. As majority of mobile applications are developed by international people, the measurement indication default is western such as mile for distance and pound for weight.

"I wrongly analyzed my exercise performance because the default metric was mile instead of kilometer."

Apparently, mobile applications generated both functional (PU) and emotional (PEOU) advantage but in different dimensions comparing to social media and website platforms. With its unique capability to track physical movement, generate numeric record, and be synchronized to other devices, these characteristics leverage the intention of users by assisting them to achieve a longer period of exercise, increase accuracy and frequency, including receive a higher exercise performance outcome. With plenty choices of applications, this platform can serve individual's needs by delivering useful data for some participants such as heart rate tracking, running distance tracking, calories burnt level, plus customized training programs setting. At the same time, it offered entertainment

for some correspondents such as games, challenge function, tasks, and even updated features to reduce boredom during using the platforms.

CHAPTER V
DISCUSSION

In order to investigate how digital platforms increase frequency and enhance the adequate exercise behavior for health concerned people, modification of TAM is applied to examine the intention and attitude of using technology during exercising of five focus groups. The model explained that there are two independent influential factors which are PU and PEOU. However, there are multiples subjects in many dimensions involved in order to measure the intention and attitude of users toward digital platforms. The results from this study shared some similarities to the model, yet it still reflected some contrastive aspects against the theory too.

From the data collection, it can be analyzed that there are four quadrants of exercise personalities according to their exercise types, objectives, frequency, and preferable outcome expectation. Considering the physical activity type, there are cardio and non-cardio exercise. The cardio style is correlated to heartbeat and oxygen transformation through blood vessels systems. The faster the heartbeat, the more blood is pumping, and of course, the more oxygen is delivered throughout the cells. In this research, running is found as the most popular cardio exercise while dancing or aerobic dancing like Zumba dance and T25 are ranked as the second place. This group of people concern about tracking their performances such as running distance, heart rate, sleeping data, as well as calories burn. On the other side, non-cardio is any activity which helps increasing bodily movement, strengthen muscles strength, including improve flexibility of muscles. The weight-training and Yoga are identified as the most popular non-cardio exercise in this research. This group of people don not concern much about calories intake calculation, tracking performance record, and challenging. They concern more about exercise procedures and physical outcomes.

When taking exercise objective and expected results into consideration, it is found that exercisers among focus groups can be identified into two segments which are beginner and intermediate. The ultimate goal of the beginning exercisers is to maintain

overall fitness and health condition. They are not serious about the exercise accuracy, strict schedule, suitable nutrition, or unsafe practices during exercise. On the opposite side, the intermediate exercisers are serious about exercise practicing. They regarded the exercise as an important training that can enhance their physical appearance, agility, body endurance, speed, including energy and power. In order to encourage that results to be emerged, they therefore strictly follow exercise instructions, keep on schedule, try to monitor and control their performances, as well as preparing suitable nutrition in advance for specific exercise tasks to ensure the desirable performance and exercise outcomes.

In order to express a clearer exercise characteristics, detail of four quadrants are displayed in the table as follow;

Table 5.1 Exercise Personality according to frequency and type of activity

Type of Exercise / **Personality**	**Cardio**	**Non-cardio**
Beginners	**Functional Benefit** - gain useful and relevant information - track and analyze personal records **Emotional Benefit** - get motivation and obtain entertainment to have a better exercise productivity	**Functional Benefit** - gain useful and relevant information to increase frequency **Emotional Benefit** - achieve self-esteem
Intermediates	**Functional Benefit** - gain accurate, safe, and update exercise methods - get holistic health maintenance information - analyze personal records for better productivity - increase exercise frequency and consistency **Emotional Benefit** - socialize with online community - enjoy creating individual exercise plan	**Functional Benefit** - gain accurate, safe, and update exercise methods for better exercise outputs **Emotional Benefit** - get motivation for more frequency and consistency

The first quadrant, cardio beginning exercisers, is the largest group in this study. It is approximately 50% of all correspondents. Most of them exercise once or twice a week at fitness center or at home. Along the group discussion, the results revealed that getting emotional fulfillment is the major influential element to enhance attitude and uplift intention to use technology continuously during their exercise. In their perspective, entertainment would encourage them to exercise more frequent with a prolonged duration. Exercise is considered as an activity to maintain their health in a normal condition as well as a kind of arts to socialize with others. Digital platform assists them in the aspects of providing entertainment plus being respond anyplace and anytime. Entertaining content makes them lose all senses of time, therefore the exercise duration automatically extend. Following the dancing instructions via YouTube, watching videos or listening to the songs while running, redeeming rewards are some examples that had been raised during the focus group discussion. In accordance with exercise frequency, Facebook and Instagram posts can influence cardio-beginners to start exercising. It is because they get motivation and would like to follow the successors. Moreover, exercise frequency can be higher due to boundless connection via the Internet allowing them to run or dance anytime and anywhere that are easy and convenient for them to assess. More importantly, challenge feature is one of the most joyful tactics to enhance exercise productivity for the beginner group in terms of frequency and performance. It is because they are trying to beat their friends' records and share theirs on social media. In this case, rational advantage and emotional fulfillment are interdependent factors. Even though, functional advantage is still an important factor that assists improving their exercises in terms of providing preferable content such as exercise locations, new exercise techniques, together with keeping their personal records for the future improvement, emotional fulfillment still remains the most powerful factor leading them to a real better exercise productivity. On the other word, emotional fulfillment is definitely the main leader to increase intention to use technology during exercising for the cardio-beginning exercisers in this study.

The non-cardio beginning exerciser is the second group to be discussed. It takes a small part which is comparative to 10% of all correspondents. This group is seeking for "every time exercise" or NEAT (non-exercise activity thermogenesis) during doing other activities. For example, they would practice squat when they are showering

or they prefer walking up the stairs instead of taking elevator or they would exercise while watching TV. The non-cardio beginners do not pay much attention about exercise accuracy, proper equipment, or exercise performance and sharing theirs on social media. It is totally different from the first group, cardio-beginning exercisers that exercise performances should be good enough to share on social media. The non-cardio beginners focus more on their feelings during exercising. They would concern about how often and how much time they spend for exercising during a day. Due to its easy to connect characteristic, digital platforms assists these people by offering new exercise tips and techniques which enhance their daily exercise frequency. Based on the data collection, it is obvious that emotional achievement is still the key element to leverage the attitude and leverage intention of users to use the digital platforms of the non-cardio beginner group. The correspondents agreed that they would like to spend more time using digital platforms, especially social media if they are enjoy and it helps reducing some difficulties for their exercises. The social media urges them to exercise more frequently because they have fun trying new exercise ways according to the posts that are automatically displayed on their walls. Regarding functional benefit, as they are not serious about the accuracy as well as exercise outcome, the informal way of providing information is preferable. Digital platforms are respected as a convenient huge library where they can easily search for updated exercise techniques and other preferable content. Again, social media such as Facebook and Pantip are ranked as the first two popular platforms to gain exercise knowledge for this group. Taking the relationship of functional benefit and emotional achievement into consideration, it can be noted that these two elements are independent for non-cardio beginning exercisers. This reflects the contrastive result against the theory of TAM.

On the contrary, rational advantage has the strongest impact in shaping users' attitude towards intention to use digital platforms for cardio intermediate exercisers. The population of this group is about 30% which is in the second ranking among the whole correspondents. Based on the data presented, it is obviously that cardio-intermediate exercisers pay much attention on rational benefit rather than emotional advantage. Digital platforms are supportive tools to improve their exercise productivity in many dimensions, particularly social media and mobile applications. The results revealed that social media, especially Facebook, is used as the major digital path to gain useful exercise information

for cardio-intermediate exercisers. For instance, specific nutrition, suggested supplement, updated exercise techniques and tips, and other relevant exercise knowledge. These information helps enhancing their exercise accuracy together with productivity. Besides, mobile applications are considered as the best assistant for exercise productivity improvement. The intermediate exercisers used application to measure their running distance and speed, calories burned, exercise duration, including monitor and control heart rate in the training zone. These records would be used as fundamental data to analyze and plan for more efficient exercise in the future. In addition, notification feature also improves self-disciplines and exercise frequency. These supportive evidences confirmed that the condition of attitude and intention to use digital platforms for cardio-intermediate exercisers are bounded with rational advantage. The more rational benefits they get, the higher intention to use the platform. However, the findings indicated that some features related to emotional achievement still remain useful. The customized setting and challenge functions are good examples of providing enjoyment and increasing self-efficacy. The fact expressed that cardio-intermediate exercisers also enjoyed challenging among their friends. This is another way to improve their exercise capability to beat challenging goal all the time. It differs from the cardio-beginners as they would like to beat friends' score for their enjoyment. More importantly, the exercise programs can be modified associated with specific objectives. For instance, slow running for strengthening heart and muscles or tempo running (slow-quick-slow-quick) for increasing fat burn capability and body endurance. Nevertheless, all emotional achievement features are only nice-to-have but they are not the main reasons to leverage attitude and uplift intention to use digital platforms for them. Therefore, rational advantage and emotional achievement are independent factors for cardio-intermediate exercisers.

The non-cardio intermediate exercisers is the last quadrant brought into discussion. They are approximately 10% of all focus group discussion. The sample size is similar to the non-cardio beginner group. In this segment, functional benefit is the critical driver for leveraging attitude and intention towards using digital platforms. Their interest and requirement significantly differ from the cardio intermediate team. Although, numeric measurement is one of important elements taken into account, it is useful in order to avoid any injury and ensure safety during exercise. For instance, blood pressure measurement, glucometer, including alcohol stage measurement. More

importantly, they concern about nutrition and supplement, holistic wellness, muscles flexibility, together with accurate body gestures. Again, social media is preferable platform because it is regarded as the major fruitful source of exercise information and experiences. It does not only help exercisers to practice more accurate but it also motivates them to exercise more frequent. Functional benefit and emotional benefit are independent variables for non-cardio intermediate exercisers in this study.

5.1 Recommendation

According to the research findings, it suggested that online presence plays more essential role in business nowadays. As digital platforms can be one of the most powerful weapons which help enhancing business competitive advantage, exercise products and services providers should develop their own platform in order to capture the market opportunity. Non-digital platform providers such as fitness center, exercise consultants, Yoga teacher, personal trainers should be aware the importance of digital existence. Some digital tools can be selected to improve the exercise performances during the class. They should have online presence to demand fulfillment when people are searching for information.

Besides, based on four quadrants of exercisers presented, it is obvious that different groups of exercise personalities require different digital platform and different communication style approach. In order to obtain the results maximization, business providers should carefully select and approach different platform to specific targets. For instance, business providers should emphasize on creating functional value to intermediate exercisers while focusing on entertainment offering to the beginning exerciser groups.

Detailed information is illustrated as the table below.

Table 5.2 Recommended Digital Platforms According to Each Exercise Characteristics

Type of Exercise / **Personality**	**Cardio**	**Non-cardio**
Beginners	**Suitable Platform** : 1. Social Media - YouTube & Facebook 2. Mobile Application **Focus :** Emotional Fulfillment **Prefer** : entertainment content, redeem awards **Avoid** : paid apps & require a lot of manual inputs	**Suitable Platform** : 1. Social Media - Facebook & Pantip **Focus :** Emotional Fulfillment **Prefer** : NEAT & video content **Avoid** : strict and formal style
Intermediates	**Suitable Platform** : 1. Social Media - Facebook 2. Mobile Application **Focus** : Functional Benefit **Prefer** : accurate data generation, numeric measurement and records, notification, holistic health maintenance data **Avoid** : inaccurate and unreliable data	**Suitable Platform** : 1. Social Media - YouTube, Facebook, Instagram 2. Mobile Application **Focus** : Functional Benefit **Prefer** : video content, numeric measurements **Avoid** : inaccurate and unreliable data

First of all, it is outstanding that social media is recommended for all types of exercisers because it can deliver preferable values in terms of functional benefit and emotional benefit to users. Users are familiar to this easy-to-use platform while enjoy using to serve their specific multi-purposes. Due to the fact that shared content on social media is intendedly exchanged by both content generators as well as content receivers. This unique characteristic formed a natural communication way like friends talk to

friends. It creates sense of reliability together with intimacy among the community. People easily get information with a low level of resistance feeling even though the posts are paid to be displayed. Therefore, it is a powerful platform to leverage the intention using technology for their workout. However, social media are still available in many channels such as Facebook, Instagram, Pantip, and YouTube. These share some similarities as well as owning some unique characteristics. Furthermore, the same platform can offer different value for different group of exercise. For instance, Facebook fulfills rational benefit for intermediate exercisers whereas it is used as an entertaining tool for the beginning exercisers group. Therefore, shared content plus the communication ways on Facebook need to be specifically designed to serve specific exercise personality.

5.1.1 Cardio-Beginning Exercisers

Entertainment is a key factor that drives the intention of using technology for this group. The business providers should focus on delivering emotional fulfillment to them. It can be analyzed that YouTube is the first recommended platform for this group and Facebook is the second suggested tool. As people enjoy using them as major channels to gain preferable exercise information, obtain motivation, practice cardio exercises as well as sharing their achievement among friends. They are easy to be assessed as well as served as a joyful entertaining exercise. These two essential emotional advantages would leverage the attitude and intention of people to use social media platform more frequent in a longer period of time. It is also beneficial to exercise productivity to be more frequent and duration prolonging. In addition, mobile applications are the second priority offering as the supporting tool in order to enhance their exercise to be more frequent with better performance outcome. With its unique features such as GPS tracking, statistic generating, and data synchronizing with other devices and platforms, these can enhance the intention of users to use this platform. Besides, it can uplift exercise performance by providing relevant data such as historical records, calories burned, and heart rate measurement. These data would be beneficial to monitor and control for the individual health maintenance improvement. However, the features plus content should emphasize more on generating emotional advantages than functional benefits because emotional achievement is more powerful influential element for this group. Also, too much advertisement, input requirement, and paid applications should be avoided in

order to maintain the high intention level while using the platforms. The possible style of content can be game exercising, challenging features, social media sharing, and redeem awards.

5.1.2 Non-Cardio-Beginning Exercisers

Again, enjoyment during exercise is an influential element that enhances intention of using technology for this quadrant. Facebook and Pantip are highly suggested to uplift attitude and increase intention to use digital platform for their exercise. It is because their exercise is comparable to any activity they normally do so they do not much spending time to study or seek for exercise information. The content should be visualized, easy to understand, and friendly such as infographics, short video clips, or exercise drawing. More significantly, those content should be indirectly communicated in a natural and informal way. Facebook is the suitable path because it is the easiest connection that the exercisers assess every day. Moreover, the posts can be automatically displayed on their walls by paying sponsorship or being shared from others. Once their intention is arise, the opportunity that they would spend more time using this platform would be also relatively higher. In a consequence, the motivation for practicing exercise would be higher and finally it leads to more frequent exercise. On the other side, Pantip is another good alternative to create more exercise frequency. With its user-generated-content style, the content is delivered into a friendly and natural way. As it is realized that these exercisers are not happy with serious instructions or formal communicating style, instead of doing that, business providers should emphasize more on practical and easy-to-follow exercise instructions and try to communicate in an informal way. These can attracts their attention and raises their intention to use the digital platforms for their workouts.

5.1.3 Cardio-Intermediate Exercisers

Functional benefit offering is the main element to raise up the level of intention to use technology for this group. In order to recommend the most suitable digital platform, it is outstanding that both social media and mobile applications are essential choices that emerge a better exercise productivity together with better intention for this group. Currently, Facebook is the main channel for them to share both exercise

knowledge and experiences in their community. Therefore, it is the most influential digital path to communicate with them. In accordance with their exercise objective, the content should emphasize on functional benefits such as proper nutrition, great sleep behavior, or updated exercise programs. More significantly, it should be detail-oriented and has some supporting reliable references to ensure effective and accurate exercise procedures for them. In the part of mobile application platform, there are many critical required features. First of all, numeric measurement functions such as heart rate, running distance, activity time spending, including calories burned are needed according to the findings of this study. The statistical records do not only clarify a better understanding about self-exercise performance each time but it is also useful for exercise productivity improvement. Moreover, notification feature is also a must in order to encourage exercise frequency and consistency to be higher. Exercise schedule and detail of training programs should be displayed and synchronized to mobile phone calendar. Different colors for different exercise tasks are also preferable. For instance, green represents slow running in a short period of time or orange stands for prolonged exercise in a heavier practice. However, the published content should be accurate and generated from reliable sources only. Therefore, the content should be studied pros and cons in order to increase exercise productivity outcome as well as reducing physical injury during working out.

5.1.4 Non-Cardio-Intermediate Exercisers

Rational benefit is also a key critical factor that drives intention of using technology for this group. YouTube is the most appropriate digital platform while Facebook and Instagram come the second. As their exercise style needs step-by-step demonstration, video content can generate the accurate exercise methods and deliver better exercise outcome while increasing self-esteem for them. The subscribe feature is found useful to engage and keep them updated with new workout content. On the other hand, Facebook and Instagram can be a rich source of useful information and experiences sharing among their community. The published content should also focus on providing rational achievement which is related to holistic health maintenance improvement such as suitable nutrition, new techniques of weight training, or breath practicing for Yoga. On the other hand, mobile application can be a good assistant in terms of keeping personal numeric records and offering guidelines for exercise improvement in the future. As the

majority of this group practice Yoga and weight training, the content in applications should contain a demonstration in video, animated characters, or drawings. Daily or weekly schedule together with duration of practice are also founded preferable. Furthermore, notification or alert can help increasing the exercise frequency too. Again, the exercise products and services providers should avoid publish incorrect content from unreliable sources in order to increase exercise productivity outcome as well as reducing physical injury during working out.

5.2 Limitation and Future Research

The current study still has some limitations in terms of data generalizability. In this research, the data was collected from specific sample of 30 exercisers, 25 to 35 year-of-age, who are living in Bangkok. It can be analyzed that the sample size is too small and narrow in terms of age. Therefore, it would create limitations to reflect some significant data in a wider perspective. Future research should replicate the relationship between TAM and proposed findings from a larger sample size with more variety of age in order to offer other essential preferable features that meet specific preferences for a wider customer segmentation.

Furthermore, majority of exercise types among the correspondents in focus group discussion were running and Yoga. Even though, the physical activities in the study can be categorized into cardio and non-cardio groups, yet it has a low diversification in the aspect of exercise type. The similar activities may lead to similar requirements. Future research should confirm the results by taking more types of physical exercises into account. For instance, swimming, hiking, playing tennis, muscles flexibility training, including therapeutic exercise. The findings should be more practical and wider coverage for all types of exercise.

Besides, the technology experience of all participants are in the same level. All of them own one mobile phone and access many digital platforms everyday. They knew and used quite similar platforms and mobile applications so there are some gaps for further research to develop and examine. The gap can be new technology such as stimulator, online games, or other upcoming gadgets.

In addition, there are many concerning aspects to investigate regarding the relationship between health management and technology acceptance. The exercise is only one part of overall health maintaining concepts and the proposed results can be useful fundamental information for the future research. The future study can involve nutrition facts, eating habits, as well as sleeping in a consideration in order to figure the deeper facts about how and which digital platforms can enhance the health maintaining for health-concern people.

5.3 Conclusion

This study investigated the influencing of digital platforms towards exercise behavior for health concern people. Web-based, social media, and mobile application are digital platforms had been discussed among the focus group. On the other hand, Technology Acceptance Model of TAM is used as a major framework in order to examine how digital platform enhance the frequency and adequate exercise behavior for health concerned people. The literature about TAM explained that there are two major factors which create either direct or indirect impact to the attitude and intention of using technology. The first factor is perceived of usefulness (PU) focusing on rational benefit or functional benefits. In this research, they are (1) provide usefulness and relevant information plus (2) generate better exercise productivity for users. Another factor is perceived ease of use (PEOU) indicating that emotional fulfillment is also a key success factor to enhance the users' attitude and intention while using technology. There are three dimensions of PEOU had been deeper discussed in this study which are (3) provide enjoyment, (4) increase self-efficacy, (5) not too complicate to follow. The existing research reviewed that these two elements are interdependent factors in order to enhance the attitude and intention in using technology.

Based on the focus group data collection, the findings showed clearly that digital platforms give positive influence in many aspects for their exercise in terms of frequency and accuracy enhancement. However, the components of functional benefit and emotional fulfillment are independent according to the results in this research.

Web-based platform, the primary digital platform that people are familiar to, reflects the aspect of easy to use and not complicate to follow. At the same time, it

is the most popular platform in terms of generating relevant and useful exercise information. It can be analyzed that functional achievement is a key determinant of increasing attitude and intention to use this platform for both beginners and intermediate exercisers.

On the other hand, the intention of using social media during exercising tend to leverage mainly because it fulfils both rational and emotional advantages for users but in different dimensions for different exercise personality. 100% of correspondents in the group of beginners agreed that social media is a key path creating enjoyment during their exercise plus increasing their self-esteem in terms of completing exercise by themselves and socializing with their friends. This particular fact expressed that the intention of using digital tool is mainly based on PEOU more than PU for this group. In contrast, social media is regarded as a rich source of relevant and useful information for the intermediate exerciser. This platform is liked online learning center where they can share, learn, and get motivation among their community to improve their exercise productivity. Thus, PU is more powerful than PEOU for this group in terms of influencing users' attitudes toward using social media during their exercise.

Nevertheless, the fact expressed that both PU and PEOU play a significant role in shaping users' attitude toward the intention to use mobile applications for their exercise. Due to their unique features such as notification, GPS tracking, activities statistic, and customized setting, lead to the higher satisfaction and increasing intention to use. However, too many advertisements together with input requirement would create unpleasant feeling and lead to quit using that application finally. On the other word, users prefer to get both PU and PEOU during their exercise from mobile applications.

In conclusion, social media is the most powerful digital platform towards intention of using technology enhancement for all types of exercisers. However, different physical activity personalities need different digital platform in a different approach. As the fact reflected in four themes of exercisers, the business providers should select the appropriate platforms and communication style to specific group for the result maximization. Rational benefits such as holistic health maintenance, accurate and safe exercise methods should be emphasized and delivered to intermediate exercisers. In contrast, entertaining content or emotional fulfillment style should be offered to beginning exercisers.

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