

**THE INFLUENCING FACTORS IN HOW PEOPLE USING
SMARTPHONES UNDER COVID-19:
QUANTITATIVE METHOD**



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entitled
**THE INFLUENCING FACTORS IN HOW PEOPLE USING
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QUANTITATIVE METHOD**

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on
December 4, 2021



.....
Mr. Dongsheng Xue
Candidate

.....
Assoc. Prof. Dr. Chanin Yoopetch,
Ph.D.
Advisor

.....
Asst. Prof. Dr. Boonying
Kongarchapatara,
Ph.D.
Chairperson

.....
Assoc. Prof. Dr. Vichita Ractham,
Ph.D.
Dean, College of Management
Mahidol University

.....
Suthawan Sato,
Ph.D.
Committee member

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Dongsheng Xue

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DONGSHENG XUE 6349012

M.M.

THEMATIC PAPER ADVISORY COMMITTEE: ASSOC. PROF. CHANIN
YOOPETCH, PH.D., ASST. PROF. BOONYING KONGARCHAPATARA, PH.D.,
SUTHAWAN SATO, PH.D.

ABSTRACT

It is ubiquitous to see that people are grabbing their smartphones whenever they could no matter in public or private situations, which make this portable device to be a necessity in people's daily life. Here, this article aimed to tackle the real needs of smartphone usage under COVID-19, to make a comparison of the smartphone usage behavior of customers who live in Bangkok before and during a pandemic situation, whether any factors could these behavior lead to attitudinal or behavioral loyalty, which the quantitative method will be adopted to investigate related issues. The research has found that relatively lower-income smartphone users are more intended to use their smartphones to browse the website, social media, or addict to video games, together with younger generation interact with their smartphones at a higher frequency. Also, lower-income smartphone users in Bangkok are more apt to use the smartphone to relieve their anxiety, in line with Gen Y (25-40) smartphone users in Bangkok might rely less on the smartphone to release their stress compared to the younger age group. Additionally, during COVID-19, Gen Z (18-24) smartphone users have significantly higher inclinations to hold their smartphone whenever they experience boredom at home or outside than Gen X (41-56) smartphone users in Bangkok. Meanwhile, lower-income group of smartphone users as well as younger smartphone users arguably leaner to trust their smartphones to bring them psychological comfort. Furthermore, when acting as an independent variable, Psychological Comfort has an impact on the dependent variable behavioral loyalty as well as attitudinal loyalty.

KEY WORDS: Smartphone Usage/ COVID-19/ Psychological Comfort/ Attitudinal
Loyalty/ Behavioral Loyalty

82 pages

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CHAPTER I

INTRODUCTION

1.1 Smartphone Usage Overview

Smartphone nowadays is well acknowledged not only as a communication tool, but also as a medium to look into the world from another angle, such as shooting and sharing of photography, social media adoption, video games, cashless payment, and even health care services.

The telecommunications industry, particularly in smartphones, is entering a new era which compared with voice, people pay more attention to the smartness level of smartphones, such as surfing the Internet, video, games, and photography. That is to say, it is altering from purely communication-oriented services (such as voice calls) to more complicated content-oriented services (Vesa, 2005).

Since the COVID-19 pandemic has begun to sweep the world in 2020, the way people treat and use smartphones is quietly altering. Things are becoming more and more common such as cashless mobile payments that many people in Thailand would like to utilize cashless payment for monetary transactions (YAKEAN, 2020), remote meeting, distance learning, relaxation, and entertaining. For the moment, the limitation of social distance may push people more to communicate and connect with others through smartphones or other media, and it is still a mystery that where this pandemic will lead people regarding the way they adapt to the usage of the smartphone.

1.2 Macro Background of the Smartphone Industry

1.2.1 Global Smartphone Market

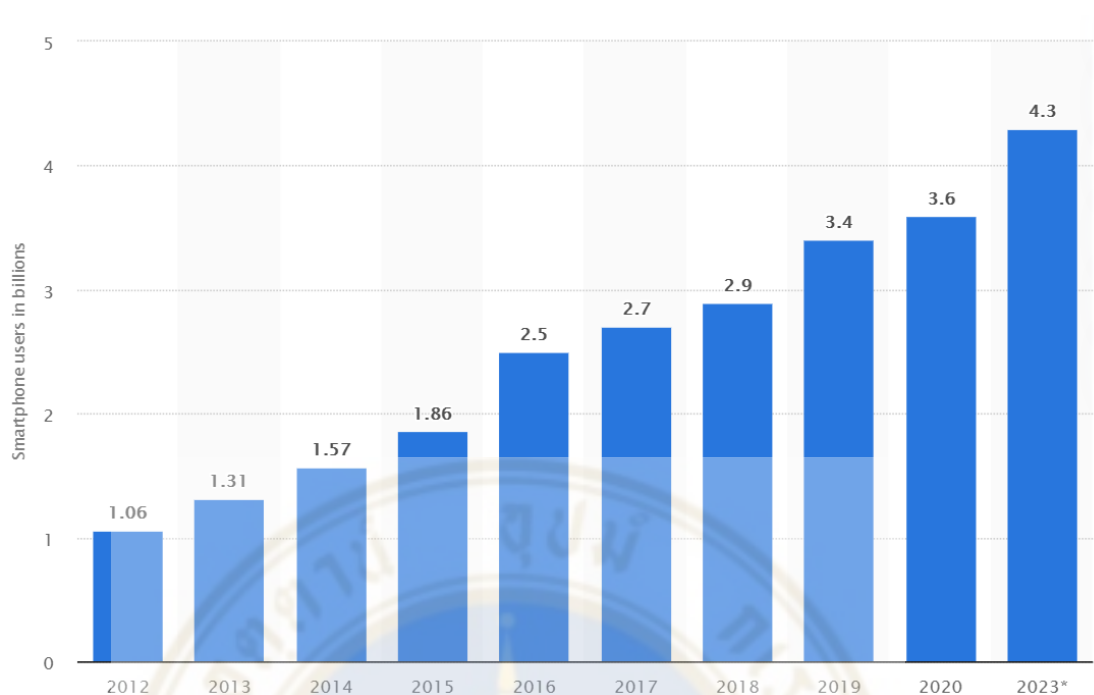


Figure 1.2.1 The Quantity of Global Smartphone Users From 2016 to 2023 (O'Dea, 2021)

Today, the quantity of global smartphone users has exceeded three billion, and it is expected to additional increase by hundreds of millions in the next few years. Countries such as China, the United States, and India have consisted of the largest number of smartphone consumers, with a total of 1.46 billion users (O'Dea, 2021).

Also, as O'Dea (2021) has mentioned in Statista, in many densely populated countries, especially China and India, the smartphone penetration ratio is still less than 70%, so the smartphone market yet has a great growth possibility. Meanwhile, today's prominent smartphone suppliers are Samsung, Apple, and Huawei. Collectively, these three technology giants elucidate half of the total global smartphone shipments. These three suppliers distributed 662.5 million smartphones in total in 2019 (O'Dea, 2021).

1.3 Micro Background of the Smartphone Industry

1.3.1 Thailand Smartphone Industry

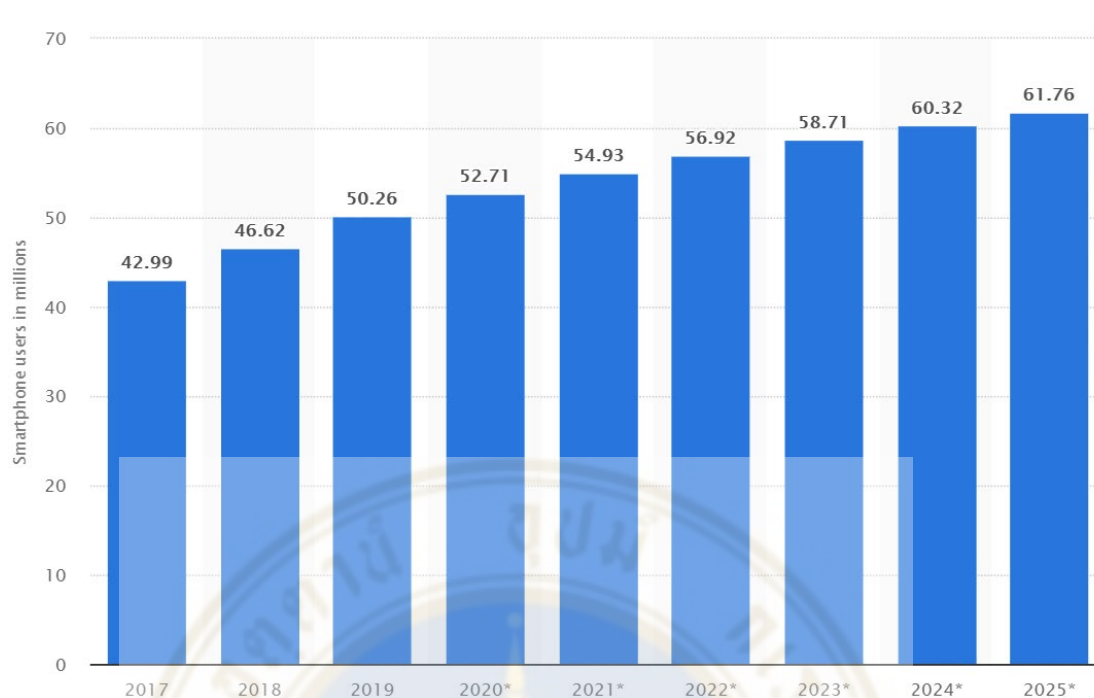


Figure 1.3.1 Thais' Smartphone Users Between 2017 to 2019 and an Estimate for 2020 to 2025 (Manakitsomboon, 2020)

By 2020, the quantity of smartphone users in Thailand is estimated to arrive at 52.71 million. In Thailand, the smartphone users have been expected to reach 52.71 million by 2020, which explosive growth can be witnessed since 2015, and this is partly due to the surge in Thailand's population and Internet penetration over the years (Manakitsomboon, 2020).

Also, Manakitsomboon (2020) has mentioned that over the last few years, Thailand's Internet dissemination rate has expanded progressively and firmly, and it is expected to increase further in the near future. Since Thais consume a lot of time on their smartphones, most Thais utilize smartphones for numerous online events, from leisure to financial activities, social media to e-commerce platforms, and so forth.

1.4 Statement of the Problem

1.4.1 Why Have Smartphones Become Mainstream in Recent Years?

Smartphone has definitely become more than a mere communication tool while a smartphone might be a more appropriate description to depict the wide usage and a crucial role of a Smartphone nowadays in people's daily life. That is to say, functions such as social media, gaming, music, web browsing, and even remote teaching can be realized through a palm-sized Smartphone. In Thailand, in other words, the smartphone has gradually become an excellent supplement and lifestyle to Thais' study, work, and life. This research will dig deeper into the reason behind the popularity of smartphone adoption and usage, especially under the COVID-19 pandemic, how the dependent variable smartphone brand loyalty is influenced by independent variables of attitude toward using, user interaction, smartphone usage behavior, smartphone perceived quality, and psychological comfort.

1.4.2 What Are the Real Needs of Users Under the COVID-19 Pandemic?

It is undeniable that the smartphone industry has moved into a new era in which innovative and cutting-edge technologies and software are springing up like bamboo shoots after the rain, whereas are smartphone manufacturers truly understanding customers' wants and needs? Or what kind of functions or applications do customers really need?

This article would like to investigate the genuine motivation why Thais take advantage of smartphones as their daily driver and what aspect of smartphone usage they care about most under the COVID-19 pandemic.

1.4.3 What Factors Would Affect Thai Smartphone Users' Loyalty to Smartphones under COVID-19 Pandemic?

It is ubiquitous to notice tons of factors that would alter or reverse consumers' choice to choose a smartphone brand, and attitudinal loyalty and behavioral loyal might be a combination that does exist while Thai people choose a smartphone as their daily driver.

In this research, five independent variables of attitude toward using, user interaction, smartphone usage behavior, smartphone perceived quality, and psychological comfort will be applied to observe whether these factors would have an impact on customers attitudinal and behavioral loyalty as to smartphone brand.

1.5 Research Objectives

In this research, such factors will be tested via the quantitative method to figure out the actual consumer needs in terms of their daily smartphone usage, what kinds of applications or built-in functions with smartphones (i.e., camera, call, clock, etc.) do customers use and care most in their daily life.

This paper will also address the issues of whether people's smartphone usage would drastically change after the hit of a pandemic since early 2020, do any hardware functions or applications in the smartphone that consumers are really concerned about under the pandemic circumstance, would behavior such as mobile payment alter since the pandemic. This research intends to explore how this crisis makes people use smartphones differently from the normal situation.

On top of that, this research will tackle the issue of Bangkok smartphone users' usage behavior would drastically change their lifestyle together with do this smartphone usage behavior will ultimately alter Bangkok consumers' smartphone brand loyalty or not under the COVID-19 pandemic.

1.6 Scope of the Study

The research scope states the extent to which the research field will be investigated in the work and identifies that the parameters within the research scope will operate. Different from qualitative research, quantitative research analyzes how numerical variables connect or correlate with each other, which will express the unbiased or targeted, elucidate the variables, and depict where the survey will occur.

Under the COVID-19 crisis, it is urgent to get to the bottom of people's smartphone usage behavior alteration, whether the choices of their brand loyalty will be

affected by attitude toward using, user interaction, smartphone usage behavior, smartphone perceived quality, and psychological comfort.

Due to the impact of the pandemic, in this study, smartphone usage under the COVID-19 pandemic will be conducted in Bangkok. And quantitation method will be adopted to develop relevant analysis. This research would like to reveal the current smartphone usage under the crisis in association with smartphone brand loyalty in the context of domestic smartphone users in Bangkok, Thailand.

1.6.1 Targeted Population

In this research, the smartphone users of generations X, Y, and Z who live in Bangkok will be targeted in order to figure out their smartphone usage behavior under the COVID-19 crisis.

1.6.2 Definition of Generation X, Y, and Z in This Study

Gen X: Gen X was born from 1965 to 1979/80 and they are presently between 41-56 years old.

Gen Y: Gen Y, or Millennials, were born from 1981 to 1994/6. They are present between the ages of 25 and 40 years old.

Gen Z: Gen Z is the newest generation, were given birth between 1997 and 2012/15. They are currently between 6 and 24 years old (Kasasa, 2021), but this survey will only focus on gen Z around 18-24 who can pay for their smartphones.

1.7 What Are the Benefits to Do This Research?

Smartphone producers and application developers would know better about customer wants and needs, to dedicate themselves to developing better products and applications to align with Thai customers' real concerns and expectancies.

Also, the Smartphone retailers would gain knowledge about customers' actual needs in terms of choosing a smartphone, especially under the COVID-19 pandemic, so that they could alter their marketing methods and focal point based on what consumers really care about, to increase product sales.

CHAPTER II

LITERATURE REVIEW

2.1 Attitude Toward Using (ATU)

The definition of attitude has been formed by researchers in various but parallel methods. attitudes normally are labeled as “predispositions to respond in a particular way toward a specified class of objects” (Rosenberg, 1960). Also, attitudes are defined as “a function of his/her salient beliefs at a given point in time” (Hill, Fishbein, & Ajzen 1977). Whereas attitude is argued by Mitchell and Olson (1981) as “an individual's internal evaluation of an object”.

Attitude toward use is described as the user's expectation of utilizing a specific system or technology (Malhotra & Galletta, 1999). Smartphones nowadays are routinely installed with various operation systems, such as IOS, Android, etc. The fruitful system acceptance is crucially impacted by a person's attitude toward using new technologies and systems (Davis, 1989; Venkatesh and Davis, 1996).

Also, users will not make full use of new technologies and systems if they are unwilling to admit it (Venkatesh and Davis, 1996), and a system's success is intuitively or subjectively measured by the degree of how the system alters a user's attitude to using it (Pikkarainen, Pikkarainen, Karjaluoto, & Pohnila, 2004). That is to say, an operating system might be the prerequisite to adopt a smartphone usage for ordinary customers, and the stability, ease of use, and other related factors of an operating system may contribute to the attitude toward using.

Therefore, a customer's biased attitude towards using the system is related to its efficacy which a system that the user does not intend to use will not be effectual. Meanwhile, when users are unwilling to take advantage of the system, their behavior towards the system may be adverse (Pikkarainen, Pikkarainen, Karjaluoto, & Pohnila, 2004).

As to application, attitude toward using applications in the smartphone are also desired to be concerned as a crucial factor that might affect mobile users' behavior

in terms of using their portable devices. Meanwhile, attitude toward using clarifies the evaluation of users' needs for using certain information system applications (Fishbein, Jaccard, Davidson, Ajzen, & Loken, 1980). Speaking of the usage of smartphone applications, a successful smartphone operation typically should bring enjoyment to its customers. Bologh (1976) has brought the idea that playfulness is flooded and common in daily life. Meanwhile, pleasure is seen as an element that can enhance user acceptance (Lin, Wu, & Tasi, 2005).

In this research, attitude toward using is defined into two parts. On the one hand, it can be implied as users' attitudes toward using smartphones based on their software. On the other hand, it illustrates how the application would alter smartphone users' attitudes toward using their devices. Consequently, it is about whether smartphone applications could bring customers entertaining and pleasant experiences and would this affects their attitude toward using the smartphone application.

2.2 User Interaction

Smartphone interaction is embodied in the daily behavior of people today. It is an action that includes listening, speaking, touching, and playing other tasks to communicate. Interactivity transforms the system into a communication channel by triggering the interaction between the user and the interface (Gatsou, Politis, & Zevgolis, 2012). As Buchanan (1985) has mentioned, the interface design of a smartphone application comprises a variety of logos, and the designer attempts to deliver the implication he expects to express via these signs. Besides, User interaction is directly verified on the smartphone, and the result data is dispatched to our server every day (Montag et al., 2015).

Speaking of user interaction, camera-based user interaction should not be neglected. 2D games, as well as 3D games' enhancement, can be applied via camera-based user interaction. And camera movement can be utilized to add additional interactive elements in games that involve accurate movement or very timely button presses (Haro, Mori, Capin, & Wilkinson, 2005). Besides, camera-based user interaction is widely applied worldwide under the COVID-19 situation to scan QR codes to enter public places via the camera-based user interaction between application and camera.

Following interacting with the user interface once, the user interaction signifies genuine user involvement.

As the touch gesture dominant smartphone operation and interaction in the recent decade, which implies that smartphone users may highly be dependent on this behavior, followed by specific attention related to smartphone interaction functionalities may need to be focused by software developers regarding application development on smartphones.

In this research, user interaction is described as the interaction of users to utilize their smartphones, the time span and frequency they have spent to interact with social media, taking photos, playing games, or other applications, etc., which in order to decipher the most time-consumed and highest frequency smartphone interaction between smartphone and user. Picturing if smartphone users have a positive attitude to these interactions and the differences among these users. Furthermore, whether these interactions would affect their attitudinal or behavioral loyalty.

2.3 Smartphone Usage Behavior

People make use of smartphones to entertain or alleviate strain. This utilization can produce instantaneous satisfaction, but it can also be tied in with a drop in will control and lead to continuous activity (Thomé, Härenstam, & Hagberg, 2011). Meanwhile, the anxiety of social interaction and the demand for touch are all associated to the motivation and the fun of using smartphones, which enhances the dependence on smartphones. People have discussed that social interaction anxiety is the incentive for using a smartphone, and lately, it has been reported in many media, especially for young people (Atchley & Warden, 2012).

A categorization of usage types is essential to test the correlation sandwiched between genres of smartphone usage and obsessive behavior (Van Deursen, Bolle, Hegner, & Kommers, 2015). Former findings have shown that Internet behavior is affected by social usage (Chou & Hsiao, 2000; Yang & Tung, 2007). So, it is intriguing to see whether the social utilization would drastically affect users' smartphone usage and will these applications bring users peace of mind or positive effects under the COVID-19 pandemic will be discussed in this research.

In this research, smartphone usage behavior is described as how could user allocate their time to treat their smartphones, what factors would drive them to reverse their decision to play or learn via their smartphones rather than doing other activities. To figure out do smartphone users enjoy being immersive in the smartphone usage in their daily life, whether these smartphone usages can bring them a positive feeling, and whether these factors would have influences on both independent variable psychological comfort and dependent variable loyalty.

2.4 Smartphone Perceived Quality

Quality and satisfaction are closely associated. Satisfaction is the divergence between consumer expectations and product-perceived performance (Heriyati & Siek, 2011). Perceived quality is described as the consumer's assessment of the general excellence or superiority of an entity (Zeithaml, 1987), and Rowley (1998) has explained that perceived quality is a type of attitude, which is related to satisfaction, but different from satisfaction, it is the result of comparing expectations with performance perception.

Speaking of perceived quality, it is one of the key notions of benefits (Klaus, 1985) and it is a conceptual perception that can be complicated to grasp (Garvin, 1984). Many times, product quality and nominal price are focused on by people regarding customer value (Snoj, Korda, & Mumel, 2004). When it comes to Benefits, they are measured by the level of perceived quality (level of job advantage), which is a series of characteristics compared to consumer expectations (Snoj, Korda, & Mumel, 2004).

Also, Su (2016) has mentioned that consumers' subjective assessment determines the perceived quality. At the same time, a quality clue can be observed from the brand name that has an encouraging influence on perceived quality (Collins-Dodd & Lindley, 2003; Richardson, Dick & Jain, 1994, in Gültekin, & Saraç, 2021).

Perceived quality together with perceived value is even associated by some authors, which has caused many specialists to fail to make a distinction between the concepts of perceived value and perceived quality, and frequently applied the two terms reciprocally (Caruana, Money, & Berthon, 2000).

In this research, perceived quality is defined as the customer awareness of a smartphone, whether the smartphone performance is aligned with their expectation, and do their perceived quality of smartphone will affect their smartphone choice in terms of their loyalty to specific smartphone brands.

2.5 Psychological Comfort

Psychological comfort characterizes a sense of safety, consolation, relaxation, and calmness (Lloyd & Luk, 2011), and it is a feeling of at ease (Simmons, 2001), which is described as a constructive feeling in the social psychology literature (Daniels, 2000; Storm and Storm, 1987). Hill and Garner (1991) have proved psychological comfort that anxiety can be lessened correlated with alleviating mental uneasiness.

In addition, owing to the complexity of professional services and the unevenness of information, and the uncertainty-avoidance nature of customers in eastern culture, psychological comfort is vital since customers are often incapable of confidently estimating essential services (technical results) and diminishing ambiguity (Sampet, Sarapaivanich, & Patterson, 2019).

Speaking of the smartphone, it is always debatable in recent years whether this portable device could offer psychological comfort, peace of mind to consumers or not. As Melumad and Pham (2020) stated, smartphones are no different from adult pacifiers. This psychological comfort comes from a distinctive mixture of features that convert the smartphone into a reassuring existence for its owner: the compactness of the device, its personalization, the biased perception of confidentiality practiced on the device, and the tactile satisfaction it provides.

In this research, psychological comfort is defined as the easiness and comfort that smartphone could bring to consumers under the crisis of coronavirus, whether the smartphone hardware or applications can gain the consumer confidence under this specific COVID-19 condition. Besides, does psychological comfort would affect consumer loyalty toward smartphone choice.

2.6 Brand Loyalty

2.6.1 Attitudinal Loyalty

Attitudinal loyalty is broken down by Bennett and Rundle-Thiele (2002) to indicate customers' possibility of repeat buying, fondness, promise, retention, and adherence. Also, according to the research, social media is a powerful way to raise confidence with customers, and it is also a medium to deliver personalization and improve the quality of interactions, which will increase trust and thereby lift attitudinal loyalty (Mainardes, Rosa, & Nossa, 2020).

Besides, Shankar and Jebarajakirthy (2019) have proved the findings on the mediating effects of trust on loyalty, which trust had a complete mediating impact between attitudinal loyalty and participation attitude.

Furthermore, longstanding relationships and the enlargement of positive word-of-mouth can be led by attitudinal loyalty (Anisimova, 2007).

Bandyopadhyay and Martell (2007) have utilized their method to measure attitudinal loyalty and behavioral loyalty, which provides more management intuitions than independent measurement of any kind of loyalty. In addition, As Bandyopadhyay and Martell (2007) mentioned in their research, the attitude loyalty measurement offers more perceptions into the potential explanations why customers exhibit behavioral loyalty.

Brand directors can be facilitated to recognize the notion through attitudinal loyalty methods of the reasons why customers buy their brands alongside competitors' brands, together with the pros and cons of their brands. And marketing proposals can be polished efficiently through these visions (Bandyopadhyay & Martell, 2007).

In the research, attitudinal loyalty is defined as how customers will think of their brand loyalty in terms of their attitude. Does a robust and optimistic attitude towards the brand can be a vital target market in the smartphone field? Also, do independent variables mentioned in this research would have an impact on attitudinal loyalty? And if it is the case, then what factors would impact this dependent variable? The affiliation between these independent variables and dependent variables in the smartphone field will be delved into this research.

2.6.2 Behavioral Loyalty

Behavioral loyalty is well-defined as the repetitive purchase of a brand by consumers, which uncovers through the model of continuous support and actual consumption behavior (Hammond, East, & Ehrenberg, 1996).

Besides, attitudinal loyalty can be regarded as merely an intermediary of marketing tools that influence behavioral loyalty. The assessment of attitudinal loyalty is a precondition for the realization of how spur affect cognitive and emotional processes that make customers develop or stay loyal to their behavior (Noordhoff, Pauwels, & Odekerken-Schröder, 2004).

Meanwhile, the proportion or share of purchase is another gauge of behavioral loyalty, described as the fraction of a consumer's total expenditure at a particular retailer (Gomez, Arranz, & Cillán, 2006).

Additionally, in the attitudinal or behavioral loyalty model, there is no significant difference between the impact of corporate image and the impact of customer satisfaction. In contrast, switching costs have a greater impact on behavioral loyalty than on attitudinal loyalty (Cheng, 2011). Curiously, satisfaction was verified by Reynolds and Beatty (1999) that will influence behavioral loyalty straightly. Meanwhile, Day (1976) has revealed that behavioral loyalty occurs because of opportunities, habits, or other aspects, rather than the inevitable cause of attitudinal loyalty. In this research, what factors can lead to behavioral loyalty will be analyzed in terms of customer choice in smartphone functionalities and brands, to figure out do customers' actual wants and needs are aligned with their thoughts and wills during the COVID-19 outbreak.

In this study, behavioral loyalty is characterized as the continual consumption of a smartphone brand by consumers, whether independent variables such as attitude toward using, user interaction and so on would have a significant effect on behavioral loyalty. Likewise, do these independent variables would make any differences when it comes to impacting customers' actions on attitudinal loyalty and behavioral loyalty in terms of specific smartphone brands.

2.7 Theoretical Framework

The theoretical framework contains six variables, which can be divided into independent variables of attitude toward using, user interaction, smartphone usage behavior, smartphone perceived quality, and psychological comfort. Together with dependent variables loyalty (attitudinal loyalty and behavioral loyalty).

In this research, the smartphone usage under COVID-19 in Bangkok, impact of attitude toward using, user interaction, smartphone usage behavior, and smartphone perceived quality on psychological comfort will be testified, while the influence of all independent variables on loyalty will be proven. Besides, the effect of psychological comfort on loyalty will be investigated as well.

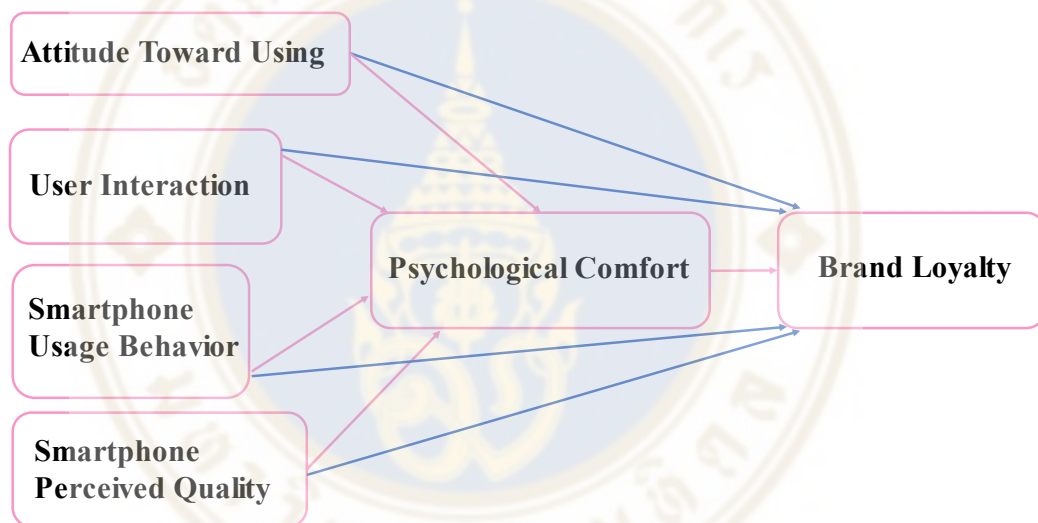


Figure 2.7 Conceptual Model of Smartphone Usage Under COVID-19

CHAPTER III

METHODOLOGY

3.1 Research Methodology

In this research, quantitative analysis will be conducted, the objective of this study is to examine under the COVID-19 pandemic, the smartphone usage behavior of people who live in Bangkok. Speaking of variables, the independent variables are attitude toward using, user interaction, smartphone usage behavior, smartphone perceived quality, and psychological comfort, while the dependent variable is brand loyalty.

3.1.1 Sampling Plan

The Cochran's sample size formula has been suggested by Cochran (1977) which is applied to analyze the sample size relate to the anticipated degree of confidence when population size is limitless. The rule is $n_0 = (z^2 pq / e^2)$; and " n_0 is the sample size, z is the selected critical value of the desired confidence level, p is the estimated proportion of an attribute that is present in the population, $q = 1 - p$ and e is the desired level of precision" (Sarmah & Hazarika, 2012). The confidence level (e) is typically 5 percent (0.05) which developed in z of 1.96. Presuming maximum variability of 50% ($p = 0.5$) will make $n_0 = 385$ ($n_0 = (1.96)^2(0.5)(1 - 0.5) / (0.05)^2$).

The sample (N=417) presumably consists of 417 Thai people who live in Bangkok, who would like to take part in the investigation of their smartphone usage behavior under COVID-19. The aim is to explore whether attitude toward using, user interaction, smartphone usage behavior, and smartphone perceived quality will influence their psychological comfort of smartphone usage, as well as if all these independent variables would draw an impact regarding Thai people's brand loyalty toward smartphone.

3.1.2 Research Instrument

The participants involve people who live in Bangkok and age between 18 to 56 years old. Besides, the online questionnaire survey is comprised of three parts: part one: screening question, to get rid of the unfit respondents; part two: variable questions; part three: information of respondents.

In the first part, the function of the screening question is to get rid of unfit and irrelevant respondents.

The second part is to dig into the methods theorized to inspire the role of the smartphone as a source of attitude toward using, user interaction, smartphone usage behavior, smartphone perceived quality, psychological comfort, and loyalty (Melumad & Pham, 2020). For attitude toward using, user interaction, smartphone usage behavior, smartphone perceived quality, psychological comfort, and loyalty, a 5-items scale is adapted from Lee, Tsao, & Chang (2015); Melumad & Pham (2020); Van Deursen, Bolle, Hegner, & Kommers (2015); Izogo (2016); Yeh, Wang, & Yieh (2016); Shi, Lin, Liu, & Hui (2018); Hsu, Chen, Yang, Lin, & Liu (2018).

In the third part, the information of respondents will be collected in order to analyze and make comparisons through SPSS software.

3.2 Data Collection (Quantitative Method)

The data collection method is implemented in an online questionnaire survey to examine the factors that affect the usage of smartphones under the COVID-19 situation in Bangkok. Questionnaires will be handed out to the respondents who are smartphone and its services end-users (Phan & Daim, 2011). The intention of this method is to comprehend appropriately the smartphone usage under COVID-19, whether any difference of the smartphone usage differences will occur during the specific period, and do these usage behaviors would affect customer loyalty toward smartphones or not. Meanwhile, if the respondents have no corresponding questions, they will be assumed to have fully understood the question in the questionnaire. Besides, in the analysis part, the questionnaire will be analyzed through Statistical Package Social Science (SPSS) software, methods like reliability analysis, regression analysis, and ANOVA test will be adopted.

3.3 Quantitative Analysis

3.3.1 Frequencies Analysis

As Arkkelin (2014) has mentioned, frequencies analysis is frequently utilized, particularly in survey exploration. It is an efficient number processing program for aggregated data (notably essential for sizable data files).

3.3.1.1 How Long Has the Smartphone Been Used

Table 3.3.1.1 How Long Has the Smartphone Been Used

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 year	102	24.5	24.5	24.5
	1-2 years	119	28.5	28.5	53.0
	2-3 years	110	26.4	26.4	79.4
	More than 3 years	83	19.9	19.9	99.3
	Do not know/unsure	3	.7	.7	100.0
	Total	417	100.0	100.0	

For this research under quantitative method, 417 valid samples are collected in total, within 417 respondents, 119 respondents' current smartphones have been used between 1-2 years (28.5%), which accounted for the largest percentage group of smartphone retention time, while the second-largest group at 110 people has owned their smartphone for 2-3 years (26.4%). Followed by 102 respondents who possessed smartphones for less than one year (24.5%).

3.3.1.2 The Time of Smartphone Usage on a Normal Day

Table 3.3.1.2 The Time of Smartphone Usage on a Normal Day

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 hour	2	.5	.5	.5
	1-3 hours	26	6.2	6.2	6.7
	3-5 hours	107	25.7	25.7	32.4
	5-8 hours	150	36.0	36.0	68.3
	Over 8 hours	126	30.2	30.2	98.6
	Do not know/unsure	6	1.4	1.4	100.0
	Total	417	100.0	100.0	

It can be seen that the majority of respondents at the number of 150 have spent 5-8 hours per day on their smartphone usage (36%), and 126 out of 417 people have used their smartphone more than eight hours on a normal day (30.2%). Next, 107 respondents spent between 3-5 hours on their smartphone usage normally on a day (25.7%). However, only 26 people out of 147 used their smartphone between 1-3 hours per day, which only accounts for 6.2%.

3.3.1.3 Gender

Table 3.3.1.3 Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	131	31.4	31.4	31.4
	Female	247	59.2	59.2	90.6
	Alternative gender	39	9.4	9.4	100.0
	Total	417	100.0	100.0	

More than half of the respondents have consisted of females, with exactly 247 people (59.2%). Then, male numbers account for 31.4% at the number of 131, followed by 39 people who are the alternative gender (9.4%).

3.3.1.4 Monthly Income

Table 3.3.1.4 Monthly Income (Thai Bath)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Lower than 15,000	63	15.1	15.1	15.1
	15,000-25,000	99	23.7	23.7	38.8
	25,001-35,000	86	20.6	20.6	59.5
	More than 35,000	169	40.5	40.5	100.0
	Total	417	100.0	100.0	

It is noticeable that 169 respondents earn more than 35,000 Thai baht monthly (40.5%), and 99 respondents' incomes are between 15,000 to 25,000 Thai baht (23.7%), together with 86 respondents' salary are range from 25,001 to 35,000 Thai baht (20.6%). For the salary below 15,000 Thai baht, the numbers of people are 63 out of 417 (15.1%).

3.3.1.5 Education Background

Table 3.3.1.5 Education Background

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Middle school or high school	15	3.6	3.6	3.6
	Bachelor	272	65.2	65.2	68.8
	Master or above	130	31.2	31.2	100.0
	Total	417	100.0	100.0	

For the education background, the majority of respondents have bachelor's degrees, at the number of 272 (65.2%), followed by 130 people who own master's degree or above (31.2%). At the same time, there are merely 15 (3.6%) respondents who have middle school or high school degrees.

3.3.1.6 Age Group

Table 3.3.1.6 Age Group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Gen X (41-56)	25	6.0	6.0	6.0
	Gen Y (25-40)	316	75.8	75.8	81.8
	Gen Z (18-24)	76	18.2	18.2	100.0
	Total	417	100.0	100.0	

When it comes to age group, the vast majority of respondents are consisted of Gen Y (25-40), at the number of 316 (75.8%), while only 76 (18.2%) and 25 (6%) people are fallen into the groups of Gen Z and Gen X respectively.

3.3.1.7 Marital Status

Table 3.3.1.7 Marital Status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	333	79.9	79.9	79.9
	Married	59	14.1	14.1	94.0
	Others	25	6.0	6.0	100.0
	Total	417	100.0	100.0	

It can be seen that single people have consisted of the majority of respondents in this research, at the number of 333 (79.9%). In contrast, the groups of married and others merely have 59 (14.1%) and 25 (6%) dividedly.

3.3.2 Descriptive Statistics - ANOVA Test

ANOVA test can be applied to analyze the data as differences of all descriptive questions with more than two groups can be told when the sig. < 0.05. A one-way ANOVA test will be adopted for scale questions in this research, which is specific to deal with fuzzy statistics (González-Rodríguez, Colubi, & Gil, 2012).

3.3.2.1 Attitude Toward Using

Six questions are related to this independent variable, and the outcome illustrates Cronbach's alpha = .810. Scales from 1-5 were utilized to verify the respondent's inclination to agree or disagree for each question, where number one refers to strongly disagree and number five means strongly agree. In this test, respondents agree on using smartphone hardware (phone call, camera, etc.) is valuable, with the highest mean at 4.37, while the lowest mean at 4.09 of agreeing on using smartphone app service is valuable. Besides, the average mean of variable Attitude Toward Using is 4.23.

3.3.2.1.1 Differences Among Genders

Gender has been classified into three groups in this research, which are consisted of male, female, and alternative gender. One-Way ANOVA test can be utilized to analyze the data as differences of all descriptive questions with more than two groups can be told when the sig. < 0.05.

Table 3.3.2.1.1 One-Way ANOVA (Gender) - Post Hoc Tests (Bonferroni)

Dependent Variable	(I) Gender	(J) Gender	Mean Difference (I-J)	Std. Error	Sig.
Using social media app service is beneficial, can add the fun in my life.	Male	Female	-.230*	.087	.025
		Alternative gender	-.400*	.147	.020

The Bonferroni illustrates that the most significant difference has appeared in the question "Using social media app service is beneficial, can add the fun in my life." between genders of the male and alternative gender. Thereinto, sig. = .020, mean difference (I-J) = -.400 (I: male, mean = 4.06; J: alternative gender, mean = 4.46).

In addition, the Bonferroni depicts that the second most significant difference is noticed between males and females, with sig. = .025, mean difference (I-J) = -.230 (I: male, mean = 4.06; J: female, mean = 4.29).

3.3.2.2 User Interaction

Five questions are related to this independent variable, and the outcome illustrates Cronbach's alpha = .835. Scales from 1-5 were utilized to verify the respondent's inclination to agree or disagree for each question, where number one refers to strongly disagree and number five means strongly agree. In this test, respondents agree on "It feels comfortable to touch or swipe my smartphone screen.", with the highest mean at 3.94, while the lowest mean at 3.12 of agreeing on "It is great to hold my smartphone and interact with it all the time.". Besides, the average mean of variable User Interaction is 3.68.

3.3.2.2.1 Differences Among Genders

Table 3.3.2.2.1 One-Way ANOVA (Gender) - Post Hoc Tests (Bonferroni)

Dependent Variable	(I) Gender	(J) Gender	Mean Difference (I-J)	Std. Error	Sig.
I am happy to browse website, use social media or play games through interacting with my smartphone.	Male	Female	-.189	.091	.116
		Alternative gender	-.426*	.154	.018

The Bonferroni illustrates that the significant difference is appeared in the question "I am happy to browse website, use social media or play games through interacting with my smartphone." between genders of the male and alternative gender. Thereinto, sig. = .018, mean difference (I-J) = -.426 (I: male, mean = 3.98; J: alternative gender, mean = 4.41).

3.3.2.2.2 Differences Among Monthly Income

Monthly income has been classified into four groups in this research, which are consisted of lower than 15,000 baht, 15,000-25,000 baht, 25,001-35,000 baht, and more than 35,000 baht. One-Way ANOVA test can be utilized

to analyze the data as differences of all descriptive questions with more than two groups can be told when the sig. < 0.05.

Table 3.3.2.2.2 One-Way ANOVA (Monthly Income) - Post Hoc Tests (Bonferroni)

Dependent Variable	(I) Monthly income (Thai Baht)	(J) Monthly income (Thai Baht)	Mean Difference (I-J)	Std. Error	Sig.
I am happy to browse website, use social media or play games through interacting with my smartphone.	Lower than 15,000	15,000-25,000	.237	.136	.493
		25,001-35,000	.382*	.140	.039
		More than 35,000	.387*	.124	.012

The Bonferroni illustrates that the most significant difference has appeared in the question “I am happy to browse website, use social media or play games through interacting with my smartphone.” between monthly income of lower than 15,000 baht and more than 35,000 baht. Thereinto, sig. = .012, mean difference (I-J) = .387 (I: lower than 15,000, mean = 4.43; J: More than 35,000, mean = 4.04).

In addition, the Bonferroni depicts that the second most significant difference is noticed between income of lower than 15,000 baht and 25,001-35,000 baht, with sig. = .039, mean difference (I-J) = .382 (I: lower than 15,000 baht, mean = 4.43; J: 25,001-35,000 baht, mean = 4.05).

3.3.2.2.3 Differences Among Age Groups

The age group has been classified into three groups in this research, which are consisted of Gen X (41-56), Gen Y (25-40), and Gen Z (18-24). One-Way ANOVA test can be utilized to analyze the data as differences of all descriptive questions with more than two groups can be told when the sig.<0.05.

Table 3.3.2.2.3 One-Way ANOVA (Age Group) - Post Hoc Tests (Bonferroni)

Dependent Variable	(I) May I ask which age group you fall within?	(J) May I ask which age group you fall within?	Mean Difference (I-J)	Std. Error	Sig.
I am happy to browse website, use social media or play games through interacting with my smartphone.	Gen X (41-56)	Gen Y (25-40)	-.320	.176	.207
		Gen Z (18-24)	-.516*	.195	.025

The Bonferroni illustrates that the significant difference is appeared in the question “I am happy to browse website, use social media or play games through interacting with my smartphone.” between age groups of Gen X (41-56) and Gen Z (18-24). Thereinto, sig. = .025, mean difference (I-J) = -.516 (I: Gen X (41-56), mean = 3.80; J: Gen Z (18-24), mean = 4.32).

3.3.2.3 Smartphone Usage Behavior (Before COVID-19)

Five questions are related to this independent variable, and the outcome illustrates Cronbach’s alpha = .768. Scales from 1-5 were utilized to verify the respondent's inclination to agree or disagree for each question, where number one refers to strongly disagree and number five means strongly agree. In this test, respondents agree on “I always hold my smartphone whenever I feel boring at home or outside.”, with the highest mean at 4.07, while the lowest mean at 3.65 of agreeing on “When I feel anxious, I use my smartphone to ease myself.”. Besides, the average mean of variable Smartphone Usage Behavior (Before COVID-19) is 3.84.

3.3.2.3.1 Differences Among Genders

Table 3.3.2.3.1 One-Way ANOVA (Gender) - Post Hoc Tests (Bonferroni)

Dependent Variable	(I) Gender	(J) Gender	Mean Difference (I-J)	Std. Error	Sig.
Using smartphone payment (e.g., LINE pay, True Money, Alipay) can decrease my anxiety and guarantee my safety.	Male	Female	-.133	.112	.710
		Alternative gender	-.463*	.189	.044
I always hold my smartphone if I were in an unfamiliar or uncomfortable social situation.	Male	Female	-.193	.115	.281
		Alternative gender	-.614*	.194	.005

The Bonferroni illustrates that the most significant difference is appeared in the question “I always hold my smartphone if I were in an unfamiliar or uncomfortable social situation.” between gender groups of the male and alternative gender. Thereinto, sig. = .005, mean difference (I-J) = -.614 (I: male, mean = 3.85; J: alternative gender, mean = 4.46).

In addition, the Bonferroni depicts that the second most significant difference is noticed in the question “Using smartphone payment (e.g., LINE pay, True Money, Alipay) can decrease my anxiety and guarantee my safety.” between male and alternative gender, with sig. = .044, mean difference (I-J) = -.463 (I: male, mean = 3.59; J: female, mean = 4.05).

3.3.2.3.2 Differences Among Monthly Income

Table 3.3.2.3.2 One-Way ANOVA (Monthly Income) - Post Hoc Tests (Bonferroni)

Dependent Variable	(I) Monthly income (Thai baht)	(J) Monthly income (Thai baht)	Mean Difference (I-J)	Std. Error	Sig.
When I feel anxious, I use my smartphone to ease myself.	Lower than 15,000	15,000-25,000	.104	.182	1.000
		25,001-35,000	.371	.187	.289
		More than 35,000	.491*	.167	.020
	15,000-25,000	Lower than 15,000	-.104	.182	1.000
		25,001-35,000	.267	.166	.656
		More than 35,000	.387*	.143	.042

The Bonferroni illustrates that the most significant difference is appeared in the question “When I feel anxious, I use my smartphone to ease myself.” between monthly income of lower than 15,000 baht and more than 35,000 baht. Thereinto, sig. = .020, mean difference (I-J) = .491 (I: lower than 15,000, mean = 3.95; J: More than 35,000, mean = 3.46). Followed by the second significant difference between monthly income of 15,000-25,000 baht and more than 35,000 baht. Thereinto, sig. = .042, mean difference (I-J) = .387 (I: 15,000-25,000, mean = 3.85; J: More than 35,000, mean = 3.46).

3.3.2.3.3 Differences Among Education Background

Education background has been classified into three groups in this research, which are consisted of middle school or high school, bachelor, and master or above. One-Way ANOVA test can be utilized to analyze the data as differences of all descriptive questions with more than two groups can be told when the sig.<0.05.

Table 3.3.2.3.3 One-Way ANOVA (Education Background) - Post Hoc Tests (Bonferroni)

Dependent Variable	(I) May I ask about your degree?	(J) May I ask about your degree?	Mean Difference (I-J)	Std. Error	Sig.
I always hold my smartphone whenever I feel boring at home or outside.	Bachelor	Middle school or high school	-.190	.271	1.000
		Master or above	.266*	.109	.044

The Bonferroni illustrates that the significant difference is appeared in the question “I always hold my smartphone whenever I feel boring at home or outside.” between education background of bachelor and master or above. Thereinto, sig. = .044, mean difference (I-J) = .266 (I: bachelor, mean = 4.14; J: master or above, mean = 3.88).

3.3.2.3.4 Differences Among Age Groups

Table 3.3.2.3.4 One-Way ANOVA (Age Group) - Post Hoc Tests (Bonferroni)

Dependent Variable	(I) May I ask which age group you fall within?	(J) May I ask which age group you fall within?	Mean Difference (I-J)	Std. Error	Sig.
Using smartphone helps me to get rid of daily stress.	Gen Y (25-40)	Gen X (41-56)	.090	.216	1.000
		Gen Z (18-24)	-.336*	.133	.035

The Bonferroni illustrates that the significant difference is shown in the question “Using smartphone helps me to get rid of daily stress.” between the age groups of Gen Y (25-40) and Gen Z (18-24). Thereinto, sig. = .035, mean difference (I-J) = -.336 (I: Gen Y (25-40), mean = 3.69; J: Gen Z (18-24), mean = 4.03).

3.3.2.3.5 Differences Among Marital Status

Marital status has been classified into three groups in this research, which are consisted of single, married, and others. One-Way ANOVA

test can be utilized to analyze the data as differences of all descriptive questions with more than two groups can be told when the $\text{sig.} < 0.05$.

Table 3.3.2.3.5 One-Way ANOVA (Marital Status) - Post Hoc Tests (Bonferroni)

Dependent Variable	(I) Are you single or married?	(J) Are you single or married?	Mean Difference (I-J)	Std. Error	Sig.
I always hold my smartphone whenever I feel boring at home or outside.	Single	Married	.362*	.144	.037
		Others	-.172	.211	1.000
I always hold my smartphone if I were in an unfamiliar or uncomfortable social situation.	Single	Married	.471*	.150	.006
		Others	-.079	.221	1.000

The Bonferroni illustrates that the most significant difference is appeared in the question “I always hold my smartphone if I were in an unfamiliar or uncomfortable social situation.” between the marital status of single and married. Thereinto, $\text{sig.} = .006$, mean difference (I-J) = .471 (I: single, mean = 4.08; J: married, mean = 3.61).

In addition, the Bonferroni depicts that the second most significant difference is noticed in the question “I always hold my smartphone whenever I feel boring at home or outside.” between the marital status of single and married. Thereinto, $\text{sig.} = .037$, mean difference (I-J) = .362 (I: single, mean = 4.11; J: married, mean = 3.75).

3.3.2.4 Smartphone Usage Behavior (During COVID-19)

Five questions are related to this independent variable, and the outcome illustrates Cronbach’s $\alpha = .845$. Scales from 1-5 were utilized to verify the respondent's inclination to agree or disagree for each question, where number one refers to strongly disagree and number five means strongly agree. In this test, respondents agree on “I always hold my smartphone if I were in an unfamiliar or uncomfortable social situation.”, with the highest mean at 3.99, while the lowest mean at 3.67 of

agreeing on “When I feel anxious, I use my smartphone to ease myself.”. Besides, the average mean of variable Smartphone Usage Behavior (During COVID-19) is 3.83.

3.3.2.4.1 Differences Among Genders

Table 3.3.2.4.1 One-Way ANOVA (Gender) - Post Hoc Tests (Bonferroni)

Dependent Variable	(I) Gender	(J) Gender	Mean Difference (I-J)	Std. Error	Sig.
I always hold my smartphone whenever I feel boring at home or outside.	Male	Female	-.210	.113	.192
		Alternative gender	-.693*	.191	.001

The Bonferroni illustrates that the significant difference is appeared in the question “I always hold my smartphone whenever I feel boring at home or outside.” between gender groups of the male and alternative gender. Thereinto, sig. = .001, mean difference (I-J) = -.693 (I: male, mean = 3.79; J: alternative gender, mean = 4.49).

3.3.2.4.2 Differences Among Monthly Income

Table 3.3.2.4.2 One-Way ANOVA (Monthly Income) - Post Hoc Tests (Bonferroni)

Dependent Variable	(I) Monthly income (Thai baht)	(J) Monthly income (Thai baht)	Mean Difference (I-J)	Std. Error	Sig.
Using smartphone helps me to get rid of daily stress.	Lower than 15,000	15,000-25,000	.231	.174	1.000
		25,001-35,000	.556*	.179	.012
		More than 35,000	.565*	.160	.003
When I feel anxious, I use my smartphone to ease myself.	Lower than 15,000	15,000-25,000	.190	.174	1.000
		25,001-35,000	.626*	.179	.003

Table 3.3.2.4.2 One-Way ANOVA (Monthly Income) - Post Hoc Tests (Bonferroni) (cont.)

Dependent Variable	(I) Monthly income (Thai baht)	(J) Monthly income (Thai baht)	Mean Difference (I-J)	Std. Error	Sig.
When I feel anxious, I use my smartphone to ease myself.	Lower than 15,000	More than 35,000	.576*	.159	.002

The Bonferroni illustrates that the most significant difference is appeared in the question “When I feel anxious, I use my smartphone to ease myself.” between monthly income of lower than 15,000 baht and more than 35,000 baht. Thereinto, sig. = .002, mean difference (I-J) = .576 (I: lower than 15,000, mean = 4.08; J: More than 35,000, mean = 3.50). Followed by the significant difference in the same question between monthly income of lower than 15,000 baht and 25,001-35,000 baht. Thereinto, sig. = .003, mean difference (I-J) = .626 (I: lower than 15,000, mean = 4.08; J: 25,001-35,000, mean = 3.45).

In addition, the Bonferroni depicts that the significant difference is noticed in the question “Using smartphone helps me to get rid of daily stress.” between monthly income of lower than 15,000 baht and more than 35,000 baht. Thereinto, sig. = .003, mean difference (I-J) = .565 (I: lower than 15,000, mean = 4.08; J: More than 35,000, mean = 3.51). Followed by the significant difference in the same question between monthly income of lower than 15,000 baht and 25,001-35,000 baht. Thereinto, sig. = .012, mean difference (I-J) = .556 (I: lower than 15,000, mean = 4.08; J: 25,001-35,000, mean = 3.52).

3.3.2.4.3 Differences Among Age Groups

Table 3.3.2.4.3 One-Way ANOVA (Age Group) - Post Hoc Tests (Bonferroni)

Dependent Variable	(I) May I ask which age group you fall within?	(J) May I ask which age group you fall within?	Mean Difference (I-J)	Std. Error	Sig.
When I feel anxious, I use my smartphone to ease myself.	Gen X (41-56)	Gen Y (25-40)	-.294	.227	.586
		Gen Z (18-24)	-.706*	.251	.016
	Gen Y (25-40)	Gen X (41-56)	.294	.227	.586
		Gen Z (18-24)	-.412*	.139	.010
I always hold my smartphone whenever I feel boring at home or outside.	Gen X (41-56)	Gen Y (25-40)	-.479	.218	.086
		Gen Z (18-24)	-.770*	.242	.005

The Bonferroni illustrates that the most significant difference is appeared in the question “I always hold my smartphone whenever I feel boring at home or outside.” between the age group of Gen X (41-56) and Gen Z (18-24). Thereinto, sig. = .005, mean difference (I-J) = -.770 (I: Gen X (41-56), mean = 3.48; J: Gen Z (18-24), mean = 4.25).

Aside from that, the Bonferroni depicts that the significant difference is noticed in the question “When I feel anxious, I use my smartphone to ease myself.” between the age group of Gen Y (25-40) and Gen Z (18-24). Thereinto, sig. = .010, mean difference (I-J) = -.412 (I: Gen Y (25-40), mean = 3.61; J: Gen Z (18-24), mean = 4.03). Followed by the significant difference in the same question between the age group of Gen X (41-56) and Gen Z (18-24). Thereinto, sig. = .016, mean difference (I-J) = -.706 (I: Gen X (41-56), mean = 3.32; J: Gen Z (18-24), mean = 4.03).

3.3.2.5 Smartphone Perceived Quality

Five questions are related to this independent variable, and the outcome illustrates Cronbach’s alpha = .824. Scales from 1-5 were utilized to verify the respondent's inclination to agree or disagree for each question, where number one refers to strongly disagree and number five means strongly agree. In this test, respondents agree on “I feel like I will lose a bit of myself if I lose my smartphone.”, with the highest

mean at 3.88, while the lowest mean at 2.42 of agreeing on “I feel hurt once someone laughs at my smartphone.”. Besides, the average mean of variable Smartphone Perceived Quality is 3.03.

For this independent variable, there is no significant difference among the groups of genders, income, education background, age groups, and marital status.

3.3.2.6 Psychological Comfort

Five questions are related to this independent variable, and the outcome illustrates Cronbach’s alpha = .845. Scales from 1-5 were utilized to verify the respondent's inclination to agree or disagree for each question, where number one refers to strongly disagree and number five means strongly agree. In this test, respondents agree on “It will constantly by my side whenever I need my smartphone.”, with the highest mean at 4.07, while the lowest mean at 3.54 of agreeing on “I believe my smartphone is a trustworthy companion.”. Besides, the average mean of variable Psychological Comfort is 3.88.

3.3.2.6.1 Differences Among Genders

Table 3.3.2.6.1 One-Way ANOVA (Gender) - Post Hoc Tests (Bonferroni)

Dependent Variable	(I) Gender	(J) Gender	Mean Difference (I-J)	Std. Error	Sig.
It will constantly by my side whenever I need my smartphone.	Female	Male	-.061	.100	1.000
		Alternative gender	-.453*	.160	.014

The Bonferroni illustrates that the significant difference is appeared in the question “I always hold my smartphone whenever I feel boring at home or outside.” between gender groups of the female and alternative gender. Thereinto, sig. = .014, mean difference (I-J) = -.453 (I: female, mean = 4.01; J: alternative gender, mean = 4.46).

3.3.2.6.2 Differences Among Monthly Income

Table 3.3.2.6.2 One-Way ANOVA (Monthly Income) - Post Hoc Tests (Bonferroni)

Dependent Variable	(I) Monthly income (Thai baht)	(J) Monthly income (Thai baht)	Mean Difference (I-J)	Std. Error	Sig.
It is comforting to see that I can use my smartphone at any time.	Lower than 15,000	15,000-25,000	.051	.175	1.000
		25,001-35,000	.512*	.180	.028
		More than 35,000	.314	.160	.303
	15,000-25,000	Lower than 15,000	-.051	.175	1.000
		25,001-35,000	.461*	.160	.024
		More than 35,000	.263	.137	.334
It always gets me to feel secure that know my phone is by my side.	Lower than 15,000	15,000-25,000	.087	.156	1.000
		25,001-35,000	.459*	.160	.026
		More than 35,000	.327	.142	.134

The Bonferroni illustrates that the most significant difference is appeared in the question “It is comforting to see that I can use my smartphone at any time.” between monthly income of 15,000-25,000 baht and 25,001-35,000 baht. Thereinto, sig. = .024, mean difference (I-J) = .461 (I: 15,000-25,000, mean = 3.95; J: 25,001-35,000, mean = 3.49). Followed by the significant difference in the same question between monthly income of lower than 15,000 baht and 25,001-35,000 baht. Thereinto, sig. = .028, mean difference (I-J) = .512 (I: lower than 15,000, mean = 4.00; J: 25,001-35,000, mean = 3.49).

In addition, the Bonferroni depicts that the significant difference is noticed in the question “It always gets me to feel secure that know my phone is by my side.” between monthly income of lower than 15,000 baht and 25,001-35,000 baht. Thereinto, sig. = .026, mean difference (I-J) = .459 (I: lower than 15,000, mean = 4.24; J: 25,001-35,000, mean = 3.78).

3.3.2.6.3 Differences Among Education Background

Table 3.3.2.6.3 One-Way ANOVA (Education Background) - Post Hoc Tests (Bonferroni)

Dependent Variable	(I) May I ask about your degree?	(J) May I ask about your degree?	Mean Difference (I-J)	Std. Error	Sig.
It will constantly by my side whenever I need my smartphone.	Bachelor	Middle school or high school	-.123	.246	1.000
		Master or above	.251*	.099	.035

The Bonferroni illustrates that the significant difference is appeared in the question “It will constantly by my side whenever I need my smartphone.” between education background of bachelor and master or above. Thereinto, sig. = .035, mean difference (I-J) = .251 (I: bachelor, mean = 4.14; J: master or above, mean = 3.89).

3.3.2.6.4 Differences Among Age Groups

Table 3.3.2.6.4 One-Way ANOVA (Age Group) - Post Hoc Tests (Bonferroni)

Dependent Variable	(I) May I ask which age group you fall within?	(J) May I ask which age group you fall within?	Mean Difference (I-J)	Std. Error	Sig.
It is comforting to see that I can use my smartphone at any time.	Gen Y (25-40)	Gen X (41-56)	.034	.225	1.000
		Gen Z (18-24)	-.458*	.138	.003
It will constantly by my side whenever I need my smartphone.	Gen X (41-56)	Gen Y (25-40)	-.228	.193	.708
		Gen Z (18-24)	-.529*	.214	.041

The Bonferroni illustrates that the most significant difference is be seen in the question “It is comforting to see that I can use my smartphone

at any time.” between the age group of Gen Y (25-40) and Gen Z (18-24). Thereinto, sig. = .003, mean difference (I-J) = -.458 (I: Gen Y (25-40), mean = 3.67; J: Gen Z (18-24), mean = 4.13).

In addition, the Bonferroni depicts that the second significant difference is noticed in the question “It will constantly by my side whenever I need my smartphone.” between the age group of Gen X (41-56) and Gen Z (18-24). Thereinto, sig. = .041, mean difference (I-J) = -.529 (I: Gen X (41-56), mean = 3.80; J: Gen Z (18-24), mean = 4.33).

3.3.2.6.5 Differences Among Marital Status

Table 3.3.2.6.5 One-Way ANOVA (Marital Status) - Post Hoc Tests (Bonferroni)

Dependent Variable	(I) Are you single or married?	(J) Are you single or married?	Mean Difference (I-J)	Std. Error	Sig.
It always gets me to feel secure that know my phone is by my side.	Married	Single	-.177	.137	.589
		Others	-.586*	.232	.035

The Bonferroni illustrates that the significant difference is appeared in the question “It always gets me to feel secure that know my phone is by my side.” between marital status of married and others. Thereinto, sig. = .035, mean difference (I-J) = -.586 (I: married, mean = 3.81; J: others, mean = 4.40).

3.3.2.7 Attitudinal Loyalty

Four questions are related to this independent variable, and the outcome illustrates Cronbach’s alpha = .791. Scales from 1-5 were utilized to verify the respondent's inclination to agree or disagree for each question, where number one refers to strongly disagree and number five means strongly agree. In this test, respondents agree on “I suggest my smartphone brand to anyone who seek out my advice.”, with the highest mean at 3.71, while the lowest mean at 3.38 of agreeing on “I will not consider any other smartphone brand except my favorite one.”. Besides, the average mean of variable Attitudinal Loyalty is 3.51.

For this dependent variable, there is no significant difference among the groups of genders, income, education background, age groups, and marital status.

3.3.2.8 Behavioral Loyalty

Four questions are related to this independent variable, and the outcome illustrates Cronbach's alpha = .820. Scales from 1-5 were utilized to verify the respondent's inclination to agree or disagree for each question, where number one refers to strongly disagree and number five means strongly agree. In this test, respondents agree on "Compared to other smartphone brand, I have spent more money at my favorite smartphone brand.", with the highest mean at 4.03, while the lowest mean at 3.16 of agreeing on "I will buy one if my favorite smartphone brand launches a new smartphone." Besides, the average mean of variable Behavioral Loyalty is 3.73.

3.3.2.8.1 Differences Among Monthly Income

Table 3.3.2.8.1 One-Way ANOVA (Monthly Income) - Post Hoc Tests (Bonferroni)

Dependent Variable	(I) Monthly income (Thai baht)	(J) Monthly income (Thai baht)	Mean Difference (I-J)	Std. Error	Sig.
Whenever I need to make a buying, my current smartphones brand is my first choice.	15,000-25,000	Lower than 15,000	.240	.179	1.000
		25,001-35,000	.280	.164	.532
		More than 35,000	.457*	.141	.008
I will buy one if my favorite smartphone brand launches a new smartphone.	15,000-25,000	Lower than 15,000	.381	.208	.403
		25,001-35,000	.404	.190	.202
		More than 35,000	.621*	.163	.001

The Bonferroni illustrates that the most significant difference is appeared in the question "I will buy one if my favorite smartphone brand

launches a new smartphone.” between monthly income of 15,000-25,000 baht and more than 35,000 baht. Thereinto, sig. = .001, mean difference (I-J) = .621 (I: 15,000-25,000, mean = 3.56; J: more than 35,000, mean = 2.93).

In addition, the Bonferroni depicts that the second significant difference is noticed in the question “Whenever I need to make a buying my current smartphones brand is my first choice.” between monthly income of 15,000-25,000 baht and more than 35,000 baht. Thereinto, sig. = .008, mean difference (I-J) = .457 (I: 15,000-25,000, mean = 4.30; J: more than 35,000, mean = 3.85).

3.3.2.8.2 Differences Among Education Background

Table 3.3.2.8.2 One-Way ANOVA (Education Background) - Post Hoc Tests (Bonferroni)

Dependent Variable	(I) May I ask about your degree?	(J) May I ask about your degree?	Mean Difference (I-J)	Std. Error	Sig.
I am willing to pay a higher price for my smartphone brand over other brands.	Middle school or high school	Bachelor	-.676	.306	.083
		Master or above	-.785*	.315	.039

The Bonferroni illustrates that the significant difference is appeared in the question “I am willing to pay a higher price for my smartphone brand over other brands.” between education background of middle school or high school and master or above. Thereinto, sig. = .039, mean difference (I-J) = -.785 (I: middle school or high school, mean = 3.00; J: master or above, mean = 3.78).

3.3.2.8.3 Differences Among Marital Status

Table 3.3.2.8.3 One-Way ANOVA (Marital Status) - Post Hoc Tests (Bonferroni)

Dependent Variable	(I) Are you single or married?	(J) Are you single or married?	Mean Difference (I-J)	Std. Error	Sig.
I am willing to pay a higher price for my smartphone brand over other brands.	Single	Married	.429*	.163	.026
		Others	.071	.239	1.000

The Bonferroni illustrates that the significant difference is appeared in the question “I am willing to pay a higher price for my smartphone brand over other brands.” between the marital status of single and married. Thereinto, sig. = .026, mean difference (I-J) = .429 (I: Single, mean = 3.75; J: married, mean = 3.32).

3.3.3 Reliability Test

Cronbach's alpha reliability (Cronbach, 1951) is one of the main broadly applied reliability measures in organizational and social sciences. Cronbach's alpha reliability depicts the q measurements' reliability of the summation (or average), and q measurements could signify q evaluators, alternative forms, occasions, or questionnaires/analysis objects (Bonett & Wright, 2015). Meanwhile, the alpha coefficient varies from 0 to 1, and alpha should be at least .70 or higher to retain an item on an adequate scale (Cicchetti, 1994).

Based on the reliability analysis, which is the correlation of an item, scale, or instrument with a hypothetical one that truly measures what it is supposed to. As all the Cronbach's Alphas in each variable's questions are higher than 0.7. Therefore, it represents that all the variables in this research are useful and acceptable, and the Cronbach's alpha values of each variable are as follows:

Attitude toward using (Cronbach's alpha = .810), user interaction (Cronbach's alpha = .835), smartphone usage behavior (before COVID-19) (Cronbach's alpha = .768), smartphone usage behavior (during COVID-19) (Cronbach's alpha = .845), smartphone perceived quality (Cronbach's alpha = .824), psychological comfort

(Cronbach's alpha = .845), attitudinal loyalty (Cronbach's alpha = .791), behavioral loyalty (Cronbach's alpha = .820).

3.3.4 Regression Analysis

Regression analysis employs a model that describes the relationships between the dependent variables and the independent variables in a simplified mathematical form (Schneider, Hommel, & Blettner, 2010). Regression analysis was adopted to test the relationship among each factor along with the model of this research, and three factors have been considered as dependent variables that are attitudinal loyalty, behavioral loyalty, and psychological comfort.

3.3.4.1 Attitudinal Loyalty

Table 3.3.4.1-1 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.520 ^a	.270	.260	.81142

Table 3.3.4.1-2 ANOVA^a (Dependent Variable: Attitudinal Loyalty)

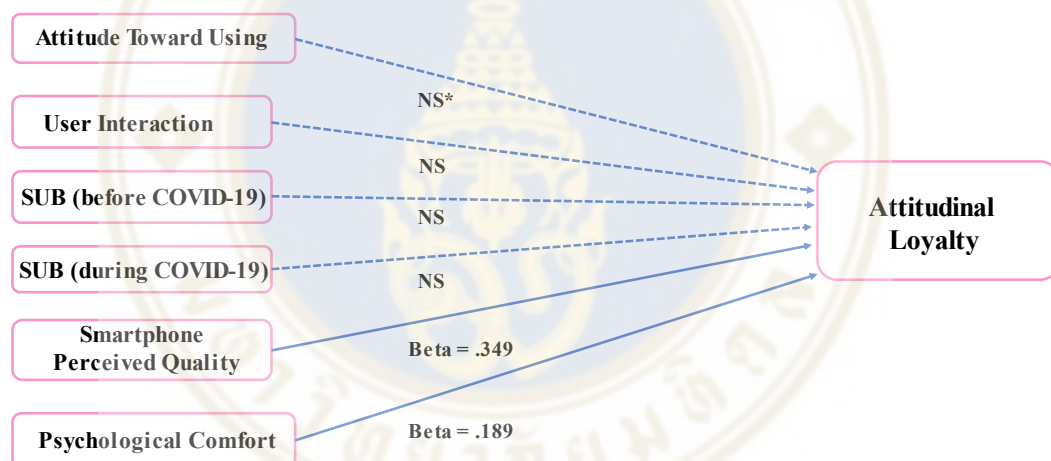
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	99.961	6	16.660	25.304	.000 ^b
	Residual	269.943	410	.658		
	Total	369.904	416			

Table 3.3.4.1-3 Coefficients^a (Dependent Variable: Attitudinal Loyalty)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.454	.307		4.737	.000
	Attitude Toward Using	-.014	.090	-.008	-.150	.881
	User Interaction	.086	.074	.072	1.166	.244

Table 3.3.4.1-3 Coefficients^a (Dependent Variable: Attitudinal Loyalty) (cont.)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Smartphone Usage Behavior (before COVID-19)	.059	.105	.048	.565	.572
Smartphone Usage Behavior (during COVID-19)	-.079	.089	-.071	-.887	.376
Smartphone Perceived Quality	.328	.053	.349	6.172	.000
Psychological Comfort	.226	.078	.189	2.911	.004



* NS = Not Significant

Figure 3.3.4.1 Regression Analysis – Model 1

In this case, the model summary refers that all independent variables can explain the dependent variable of attitudinal loyalty for 27% (R Square = .270). In the ANOVA^a table, sig. = .000^b, which refers to the regression model is acceptable because of the sig. < .05.

In the table of Coefficients^a, independent variables of attitude toward using (sig. = .881), user interaction (sig. = .224), smartphone usage behavior (before COVID-19) (sig. = .572), and smartphone usage behavior (during COVID-19) (sig. = .376) have

no effect on dependent variable attitudinal loyalty since both these variables' sig. $\geq .05$. Also, smartphone usage behavior (during COVID-19) has the highest negative influence on the dependent variable attitudinal loyalty because its beta = $-.071$. On the flip side, independent variables of smartphone perceived quality and psychological comfort have a positive impact on the dependent variable attitudinal loyalty because of both these two independent variables' sig. $< .05$, with the sig. = $.000$ and sig. = $.004$ respectively. Thereinto, smartphone perceived quality has the highest positive effect on dependent variable attitudinal loyalty (beta = $.349$).

3.3.4.2 Behavioral Loyalty

Table 3.3.4.2-1 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.516 ^a	.266	.255	.81500

Table 3.3.4.2-2 ANOVA^a (Dependent Variable: Behavioral Loyalty)

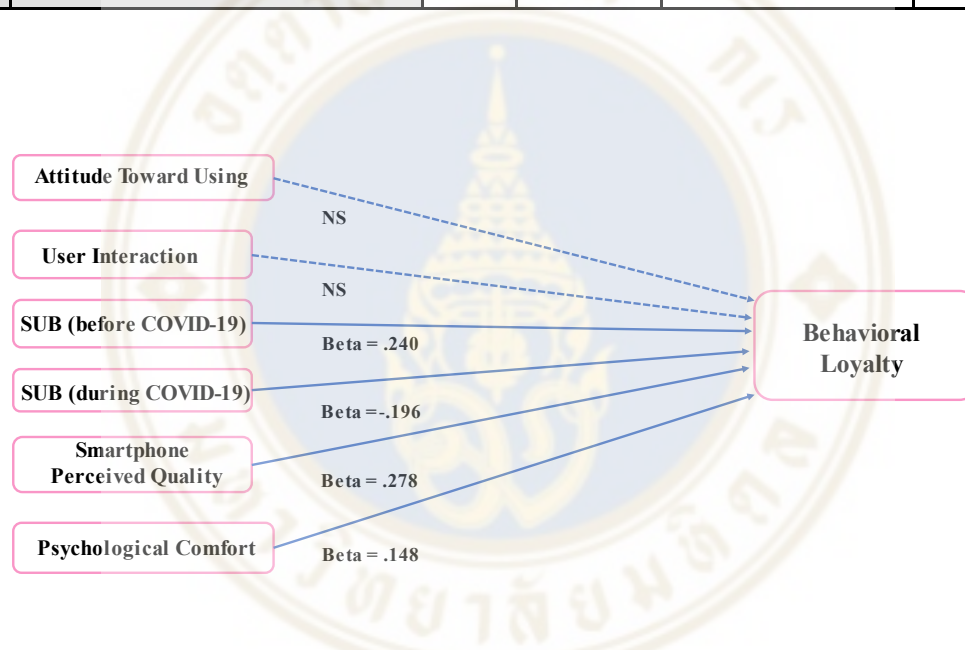
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	98.678	6	16.446	24.760	.000 ^b
	Residual	272.332	410	.664		
	Total	371.010	416			

Table 3.3.4.2-3 Coefficients^a (Dependent Variable: Behavioral Loyalty)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.388	.308		4.503	.000
	Attitude Toward Using	.032	.091	.019	.347	.729
	User Interaction	.117	.074	.098	1.586	.114

Table 3.3.4.2-3 Coefficients^a (Dependent Variable: Behavioral Loyalty) (cont.)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Smartphone Usage Behavior (before COVID-19)	.294	.105	.240	2.802	.005
Smartphone Usage Behavior (during COVID-19)	-.219	.090	-.196	-2.433	.015
Smartphone Perceived Quality	.261	.053	.278	4.896	.000
Psychological Comfort	.177	.078	.148	2.270	.024

**Figure 3.3.4.2 Regression Analysis – Model 2**

In this case, the model summary refers that all independent variables can explain the dependent variable of behavior loyalty for 26.6% (R Square = .266). In the ANOVA^a table, sig. = .000^b, which refers to the regression model is acceptable because of the sig. < .05.

In the table of Coefficients^a, independent variables of attitude toward using (sig. = .729) and user interaction (sig. = .114) have no effect on dependent variable behavioral loyalty since both these variables' sig. \geq .05. Meanwhile, smartphone usage behavior (during COVID-19) has the highest negative influence on

the dependent variable behavioral loyalty because its beta = $-.196$. Additionally, independent variables of smartphone usage behavior (before COVID-19) (sig. = $.005$), smartphone usage behavior (during COVID-19) (sig. = $.015$), smartphone perceived quality (sig. = $.000$) and psychological comfort (sig. = $.024$) have impact on dependent variable behavioral loyalty because both these independent variables' sig. $< .05$. Thereinto, smartphone perceived quality has the highest positive effect on dependent variable behavioral loyalty (beta = $.278$).

3.3.4.3 Psychological Comfort

Table 3.3.4.3-1 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.761 ^a	.579	.574	.51471

Table 3.3.4.3-2 ANOVA^a (Dependent Variable: Psychological Comfort)

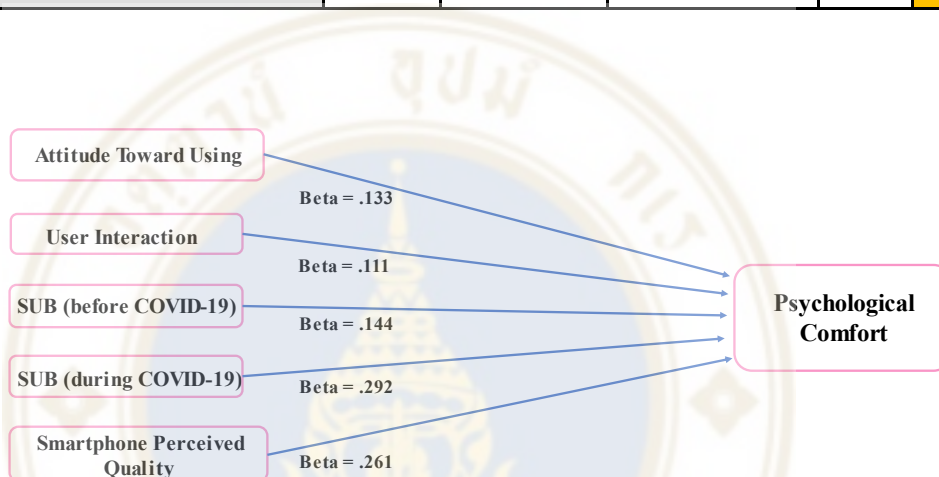
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	150.057	5	30.011	113.281	.000 ^b
	Residual	108.885	411	.265		
	Total	258.942	416			

Table 3.3.4.3-3 Coefficients^a (Dependent Variable: Psychological Comfort)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.455	.193		2.350	.019
	Attitude Toward Using	.186	.057	.133	3.291	.001
	User Interaction	.111	.046	.111	2.394	.017
	Smartphone Usage Behavior (before COVID-19)	.148	.066	.144	2.245	.025

Table 3.3.4.3-3 Coefficients^a (Dependent Variable: Psychological Comfort) (cont.)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	Smartphone Usage Behavior (during COVID-19)	.272	.055	.292	4.929	.000
	Smartphone Perceived Quality	.205	.032	.261	6.373	.000

**Figure 3.3.4.3 Regression Analysis – Model 3**

In this case, the model summary refers that all independent variables can explain the dependent variable of psychological comfort for 57.9% (R Square = .579), and this parameter is significantly lower when dependent variables are attitudinal loyalty or behavioral loyalty dividedly. In the ANOVA^a table, sig. = .000^b, which refers to the regression model is acceptable as the sig. < .05.

In the table of Coefficients^a, all independent variables of attitude toward using (sig. = .001), user interaction (sig. = .017), smartphone usage behavior (before COVID-19) (sig. = .025), smartphone usage behavior (during COVID-19) (sig. = .000), and smartphone perceived quality (sig. = .000) has an impact on dependent variable psychological comfort because both these independent variables' sig. < .05.

Thereinto, smartphone usage behavior (during COVID-19) has highest positive effect on dependent variable psychological comfort (beta = .292).



CHAPTER IV

RESULTS

The results of the questionnaire in this research will be analyzed in this chapter, to illustrate the factors which influence the smartphone usage behavior under the COVID-19 pandemic in Bangkok, and the authority of the factors was processed by using SPSS software.

4.1 Frequencies Analysis

The results from SPSS depict that in the frequencies analysis, 119 respondents have used their smartphone between 1-2 years (28.5%), which reported as the largest percentage group of smartphone retention time, and most of the respondents at the number of 150 have spent 5-8 hours per day on their smartphone usage (36%). Also, the majority of respondents are comprised of females, with 247 people (59.2%) as well as 169 respondents earning more than 35,000 Thai baht monthly at the highest 40.5% of all 417 valid respondents. Besides, the largest group of respondents have bachelor's degrees, at the quantity of 272 (65.2%). Visibly, the largest proportion at 75.8% can be seen to comprise of the respondents of Gen Y (25-40). And there are 333 respondents are singles of the highest percentage at 79.9% out of a total of 417 respondents.

4.2 Descriptive Statistics

ANOVA test is implemented to analyze the scale questions in this research. For independent variables, firstly, in attitude toward using, no significant differences in groups of income, education background, age, and marital status, and differences only appear among genders. Secondly, in user interaction, no significant differences in groups of education background and marital status. Thirdly, in smartphone usage behavior (before COVID-19), all groups have appeared significant differences. In

contrast, no significant differences in groups of education background, marital status under the variable smartphone usage behavior (during COVID-19).

Next, for the smartphone perceived quality, and attitudinal loyalty, no significant differences can be perceived in all groups of genders, income, education background, age groups, and marital status. Similar to smartphone usage behavior (before COVID-19), in psychological comfort, significant differences are shown in all groups. Lastly, in comparison with attitudinal loyalty, in behavioral loyalty, significant differences cannot be found only in the gender group and age group.

4.3 Reliability Test

Under the execution of the reliability test of SPSS, all the Cronbach's Alphas in each variable's questions are higher than 0.7. Therefore, it represents that all the variables in this research are useful and acceptable.

4.4 Regression Analysis

In regression analysis, model summary suggests that all independent variables (attitude toward using, user interaction, smartphone usage behavior (before COVID-19), smartphone usage behavior (during COVID-19), smartphone perceived quality, psychological comfort) can explain the dependent variable of attitudinal loyalty for 27%.

When the dependent variable is behavioral loyalty, all independent variables can explain behavior loyalty for 26.6%. Interestingly, once psychological comfort is set as a dependent variable, then independent variables (attitude toward using, user interaction, smartphone usage behavior (before COVID-19), smartphone usage behavior (during COVID-19), smartphone perceived quality) can explain the dependent variables of psychological comfort for 57.9%, and this parameter is significantly lower when dependent variables are attitudinal loyalty or behavioral loyalty at 27% and 26.6% dividedly.

CHAPTER V

DISCUSSION

5.1 Attitude Toward Using

As has been mentioned in the literature review, a system's success is intuitively or subjectively measured by the degree of how the system alters a user's attitude to using it (Pikkarainen, Pikkarainen, Karjaluoto, & Pohnila, 2004). In this research, this opinion is approved to some extent since the highest mean, in attitude toward using, is appeared in the question that respondents agree on using smartphone hardware (phone call, camera, etc.) is valuable at 4.37, while lowest mean at 4.09 of approving on using smartphone app service is valuable.

In the ANOVA analysis, within the group of genders, alternative gender has a higher mean at 4.46 than male (mean = 4.06) to agree more on using social media applications is beneficial and could gain fun in their life.

A loyalty project concerned with loyalty can be viewed as a robust monetary enticement to buy from a specific vendor. Clients may not inevitably feel favorably toward that vendor, but they recognize those gains and therefore buy from the vendor to boost those benefits in the long run (Evanschitzky et al., 2011). In the regression analysis of this research, it is proved that the independent variable attitude toward using has no effect on the dependent variable attitudinal loyalty and behavioral loyalty, but an impact can be seen when psychological comfort is the dependent variable (beta = .133, sig. = .001).

5.2 User Interaction

User interaction has been described as an action that comprises listening, speaking, touching, and playing other tasks to connect. (Gatsou, Politis, & Zevgolis, 2012). This research has investigated whether smartphone users have a positive mindset to these interactions and the disparities among these users.

It is noticed in the ANOVA test that the average mean of user interaction at 3.68 is obviously lower than the average mean of attitude toward using at 4.23. For the group of genders, the alternative gender has a higher agree level (mean = 4.41) than male (mean = 3.98) when it comes to browsing websites, using social media, or playing games through interacting with their smartphones. Next, within the group of monthly income, in the same question that smartphone users are happy to browse the website, use social media, or play games through interacting with their smartphones, respondents with monthly income lower than 15,000 baht have a higher agree level (mean = 4.43) than the respondents with monthly income between 25,001-35,000 baht (mean = 4.05) and income over 35,000 baht (mean = 4.04). In addition, still the same question, another significant difference can be found within the group of age groups, respondents of Gen Z (18-24) have a significantly higher agree level (mean = 4.32) than the respondents of Gen X (mean = 3.80) that they are happy to browse the website, use social media, or play games through interacting with their smartphones, which is in correspondence with Adıgüzel, Batur and Ekşili's (2014) theory that the Gen Z is also known as the internet generation.

Besides, through regression analysis, dependent variable user interaction does not affect dependent variable attitudinal loyalty and behavioral loyalty. Instead, the esthetics of hand devices may act as a crucial character in buying choices or selecting among comparable hand devices with general functionalities and physical interactions (Kuijt-Evers, Groenesteijn, De Looze, & Vink, 2004). Nevertheless, when psychological comfort is determined as the dependent variable, it can be found that user interaction has the lowest positive influence on psychological comfort (beta = .111, sig = .017).

5.3 Smartphone Usage Behavior (Before and During COVID-19)

In the literature review, previous discoveries have revealed that Internet behavior is affected by social manner (Chou & Hsiao, 2000; Yang & Tung, 2007). Likewise, Atchley and Warden (2012) proposed social interaction anxiety is the reason for using a smartphone, and lately, it has been stated in many media, especially among youngsters. In this research, some findings are presented as follows.

5.3.1 Smartphone Usage Behavior (Before COVID-19)

Under the ANOVA test, in the first place, within the group of genders, the alternative gender has a higher agree level (mean = 4.46) than male (mean = 3.85) concerning holding their smartphones if they were in an unfamiliar or uncomfortable social situation. Secondly, for the group of monthly income, respondents with monthly income lower than 15,000 baht and 15,000-25,000 baht have higher agree levels (mean = 3.95 and mean = 3.85 respectively) than the respondents with monthly income over 35,000 baht (mean = 3.46) that they will ease themselves from anxious via using smartphones, which in line with Atchley and Warden's (2012) viewpoint that social interaction anxiety is the motive for using a smartphone.

Next, in the group of education background, respondents with bachelor's degrees have a higher agree level (mean = 4.14) than the respondents' degree of master or above (mean = 3.88) that they always hold their smartphone whenever they feel bored at home or outside. Also, within the group of age group, respondents of Gen Y (18-24) have a lower agree level (mean = 3.69) than the respondents of Gen Z (mean = 4.03) of using smartphones to help them to get rid of daily stress. Moreover, within the group of marital status, respondents who are married have a lower agree level (mean = 3.61) than the respondents of single (mean = 4.08) of holding their smartphones if they were in an unfamiliar or uncomfortable social situation.

Besides, in the regression analysis, independent variable smartphone usage behavior (before COVID-19) has no influence on dependent variable attitudinal loyalty, but positive impacts do exist when dependent variables are behavioral loyalty (beta = .240, sig. = .005) and psychological comfort (beta = .144, sig. = .025) individually.

5.3.2 Smartphone Usage Behavior (During COVID-19)

In the descriptive analysis, respondents agree on "I always hold my smartphone if I were in an unfamiliar or uncomfortable social situation.", with the highest mean at 3.99. In comparison, the highest mean at 4.07 is noticed in the questions "I always hold my smartphone whenever I feel boring at home or outside." under the independent variable smartphone usage behavior (before COVID-19). In opposition, for both before and during COVID-19, the lowest mean at 3.65 and 3.67 respectively that respondents agree with "When I feel anxious, I use my smartphone to ease myself."

Followed by the average means of before COVID-19 and during COVID-19 are 3.84 and 3.83 individually.

Next, from the test of ANOVA, within the group of genders, the alternative gender has a higher agree level (mean = 4.49) than male (mean = 3.79) when it comes to holding their smartphones whenever they feel bored at home or outside. In comparison, when it comes to independent variable smartphone usage behavior (before COVID-19), the most significant difference is appeared in the question “I always hold my smartphone if I were in an unfamiliar or uncomfortable social situation.”, with a higher mean of alternative gender compared to male as well.

Besides, in the group of monthly income, respondents with monthly income lower than 15,000 baht have higher agreeable levels than the respondents with monthly income over 35,000 baht that they will ease themselves from anxiety via using smartphones, which is identical to smartphone usage behavior among respondents before COVID-19. Noticeably, the question “Using smartphone helps me to get rid of daily stress.” has no significant difference to smartphone usage behavior before COVID-19 but does have a significant difference during the COVID-19 situation.

In addition, in the age groups, visibly, the question “I always hold my smartphone whenever I feel boring at home or outside.” has no significant difference in smartphone usage behavior before COVID-19, but there is a significant difference during COVID-19. Meanwhile, the question “When I feel anxious, I use my smartphone to ease myself.” has no significant difference from smartphone usage behavior before COVID-19, but there is a significant difference during COVID-19, Gen Z (18-24) smartphone users in Bangkok has a significantly higher tendency to use their smartphone (Atchley & Warden, 2012) when they feel anxious (mean = 4.03) than Gen X (41-56) smartphone users (mean = 3.32) and Gen Y (25-40) smartphone users in Bangkok (mean = 3.61).

Furthermore, in the regression analysis, independent variable smartphone usage behavior (During COVID-19) has highest negative influence on both dependent variables attitudinal loyalty (beta = $-.071$, sig. = $.376$) and behavioral loyalty (beta = $-.196$, sig. = $.015$) respectively. Nevertheless, the independent variable smartphone usage behavior (during COVID-19) does have the highest positive impact on psychological comfort when it is the dependent variable (beta = $.292$, sig. = $.000$).

5.4 Smartphone Perceived Quality

Customer satisfaction, as well as perceived quality, are the two core concerns for improving the loyalty of customers (Darsono & Junaedi, 2006). After the survey is conducted, there are actually positive effects of smartphone perceived quality on attitudinal loyalty, behavioral loyalty, and psychological comfort, some findings are obtained as follows.

Firstly, under the ANOVA test, there is no significant difference among all the groups of genders, income, education background, age groups, and marital status.

Next, in the regression analysis, when attitudinal loyalty is the dependent variable, independent variable smartphone perceived quality has the highest positive impact on it (beta = .349, sig. = .000), Aside from that, if behavioral loyalty is the dependent variable, smartphone perceived quality also has a highest positive effect on dependent variable behavioral loyalty (beta = .278, sig. = .000), which Chuah, Marimuthu, and Ramayah (2014) have demonstrated related research that a thorough reflection of what genres of value are vital from the audience's perspective will significantly assist marketers in generating continuous competitive advantage and eventually reach a stronger rate of customer loyalty.

In addition, when it comes that the dependent variable is set as psychological comfort, the independent variable smartphone perceived quality has the second-highest positive effect on it (beta = .261, sig. = .000).

5.5 Psychological Comfort

These days, the opinion from Melumad and Pham (2020) has mentioned in the literature review that smartphones are not distinct from adult pacifiers, the biased perception of confidentiality performed on the smartphone, and the tactile satisfaction it provides. This research found that there are significant differences among different groups, and as an independent variable, psychological comfort has an impact on the dependent variable attitudinal loyalty and behavioral loyalty.

In the ANOVA test, within the group of genders, alternative gender has a higher agree level (mean = 4.46) than female (mean = -.453) when it comes to the question that smartphones will constantly be by their side whenever they need

smartphones. Next, in the group of monthly income, respondents with relatively lower monthly income have a higher mean to feel comfortable to use their smartphone at any time as well as to feel a sense of security to know the phone is by their side. When it comes to the group of education background, respondents with bachelor's degree have a higher agree level (mean = 4.14) than the respondents' degree of master or above (mean = 3.89) that to feel a sense of security to know the phone is by their side. In addition, for the age groups, respondents of Gen Z (18-24) have a significantly higher mean compared with groups Gen X (41-56) and Gen Y (25-40) for the questions that they feel comfortable if smartphones are always by their side, and they can use their smartphone at any time. Furthermore, within the group of marital status, respondents of others have a significantly higher mean (mean = 4.40) compare with groups of married respondents (mean = 3.81).

As what has been shown in the ANOVA test, different groups demonstrate distinctive feedback regarding different aspects of psychological comfort, which Ball, Coelho, and Vilares (2006) have stated that individuation enhances psychological comfort to interpersonal relations and raises the psychological hurdles to conversion. In line with this empirical support, after the regression analysis is conducted, when the dependent variable is attitudinal loyalty, psychological comfort has a positive impact on attitudinal loyalty (beta = .189, sig. = .004), which attitudinal loyalty is regarded as the degree of customer's psychological connection and attitude support for the group (Rauyruen and Miller, 2007). Meanwhile, psychological comfort also has a positive influence on behavioral loyalty if behavioral loyalty were set as a dependent variable (beta = .148, sig. = .024).

However, when it comes to that dependent variable is psychological comfort, the independent variable smartphone usage behavior (during COVID-19) has the highest positive effect on it (beta = .292, sig. = .000), which is higher than the influence of smartphone usage behavior (before COVID-19) on psychological comfort (beta = .292, sig. = .000). Besides, all independent variables (attitude toward using, user interaction, smartphone usage behavior (before COVID-19), smartphone usage behavior (during COVID-19), smartphone perceived quality) are both have a positive impact on the dependent variable psychological comfort.

5.6 Attitudinal Loyalty

After the ANOVA test is conducted, for this dependent variable, there is no significant difference among all groups of genders, income, education background, age groups, and marital status.

In the regression analysis, it is noticeable that all independent variables (attitude toward using, user interaction, smartphone usage behavior (before COVID-19), smartphone usage behavior (during COVID-19), smartphone perceived quality, psychological comfort) can explain the dependent variable of attitudinal loyalty for 27% (R Square = .270), but this figure is significantly higher when the dependent variable is psychological comfort (R Square = .579).

In addition, independent variables of attitude toward using (sig. = .881), user interaction (sig. = .224), smartphone usage behavior (before COVID-19) (sig. = .572), and smartphone usage behavior (during COVID-19) (sig. = .376) have no influence on dependent variable attitudinal loyalty.

Next, during the COVID-19 pandemic, smartphone usage behavior has the highest negative effect on attitudinal loyalty (beta = -.071), but the influence is positive before COVID-19 (beta = .048). Contrarily, independent variables of smartphone perceived quality and psychological comfort both have a positive impact on the dependent variable attitudinal loyalty with the sig. = .000 and sig. = .004 dividedly. Similarly, Mainardes, Rosa and Nossa (2020) have stated that social media is an influential means to lift customers' confidence, and it is also a medium to pass personalization and improve the quality of interactions, which will gain trust and thereby boost attitudinal loyalty. Herein, smartphone perceived quality has the highest positive influence on attitudinal loyalty (beta = .349).

The results substantiate Darsono and Junaedi's (2006) study for the assumption that correlations among perceived quality, loyalty, and satisfaction are tighter if perceived quality and satisfaction are assessed by comparative evaluation. Hence, the hypothesis that the strength of relationship amongst perceived quality, satisfaction, and loyalty is greater, which perceived quality and satisfaction are defined and measured by comparative evaluation, is satisfactorily substantiated.

5.7 Behavioral Loyalty

Liu-Thompkins and Tam (2013) have stated that even if attitudinal loyalty can prompt repeat purchases, not all repeat buys are caused by attitudinal loyalty. Consistent with the previous argument, in this research, instead of attitudinal loyalty, a couple of factors are observed which will affect behavioral loyalty.

In the ANOVA test, the highest mean at 4.03 can be found for the respondents agree on comparing to other smartphone brands, they have spent more money at their favorite smartphone brands, while lowest mean at 3.16 of agreeing on they will buy one if their favorite smartphone brands launch new smartphones. Next, within the group of monthly income, respondents with relatively lower monthly income between 15,000-25,000 baht have a higher mean compared to a higher monthly income of more than 35,000 baht in terms of buying one if their favorite smartphone brands release new smartphones, as well as their current smartphones brand, will be their first choice when they make a purchase decision.

After that, within the group of education background, respondents with degrees of master or above have a higher agree level (mean = 3.78) than the respondents' degree of middle school or high school (mean = 3.78) in regarding the willingness to pay a higher price for their smartphone brands over other brands. Rather than that, still for the same question, within the group of marital status, single respondents have a significantly higher mean at 3.75 compared with groups of married respondents (mean = 3.32).

In the regression analysis, it is still obvious that all independent variables (attitude toward using, user interaction, smartphone usage behavior (before COVID-19), smartphone usage behavior (during COVID-19), smartphone perceived quality, psychological comfort) can clarify the dependent variable of behavioral loyalty for 26.6% (R Square = .266), but this figure is significantly higher when the dependent variable is psychological comfort (R Square = .579).

Plus, independent variables of attitude toward using (sig. = .729) and user interaction (sig. = .114) have no effect on dependent variable behavioral loyalty, while smartphone usage behavior (during COVID-19) has the highest negative influence on dependent variable behavioral loyalty (sig. = .015, beta = -.196). Contrarily, independent variables of smartphone usage behavior (before COVID-19) (sig. = .005,

beta = .240), smartphone perceived quality (sig. = .000, beta = .278) and psychological comfort (sig. = .024, beta = .148) have positive impact on dependent variable behavioral loyalty. Thereof, smartphone perceived quality has the highest positive effect on the dependent variable behavioral loyalty (beta = .278). Remarkably, like what has been mentioned before, as an independent variable, psychological comfort has an impact on the dependent variable behavioral loyalty as well as attitudinal loyalty. And when it comes to psychological changing aspects, services in relation to personalization are a significant trigger of loyalty (Ball, Coelho, & Vilarés, 2006).



CHAPTER VI

CONCLUSION

This research is based upon three objectives that to figure out the actual consumer needs regarding their daily smartphone usage, to see if Bangkok smartphone users' usage behavior would radically change their lifestyle, and do the smartphone usage behavior will ultimately alter Bangkok consumers' smartphone brand loyalty or not under the COVID-19 pandemic.

For the first objective, it can be concluded from this study that under the independent variable user interaction, relative lower-income smartphone users may be inclined to browse the website, social media, or be addicted to video games via smartphones more often than higher-income smartphone users in Bangkok, and relative younger smartphone users in Bangkok more tend to interact with their smartphones at a higher frequency in contrast with older generations.

For the second objective, under the independent variable smartphone usage behavior (before COVID-19), it can be illustrated with the view that alternative genders are more agreeable than males in Bangkok that using smartphone payment (e.g., LINE pay, True Money, Alipay) can decrease their anxiety and guarantee their safety, lower-income group of smartphone users in Bangkok may be more inclined to use the smartphones to relieve their anxiety, and a lower degree in Bangkok may be more incline to hold their smartphones all the time, along with Gen Y (25-40) smartphone users in Bangkok might rely less on the smartphones to release their stress compared to younger age group Gen Z (18-24). Meanwhile, married smartphone users in Bangkok might rely less on the smartphones when they are in an unfamiliar or uncomfortable social situation compared to smartphone users who are singles in Bangkok as well as the same situation happens to the question "I always hold my smartphone whenever I feel boring at home or outside." as well.

However, for the independent variable smartphone usage behavior (during COVID-19), it is intriguing to see that compared with before COVID-19, smartphone usage behavior has less influence in the group of education background, which no

significant difference can be witnessed during COVID-19. Besides, during COVID-19, Gen Z (18-24) smartphone users have significantly higher tendencies to hold their smartphone when they feel bored at home or outside than Gen X (41-56) smartphone users in Bangkok.

Interestingly, during COVID-19, the smartphone usage behavior has is no significant difference in the question “Using smartphone helps me to get rid of daily stress.”, but there is a significant difference in smartphone usage behavior before COVID-19 between Gen Y (25-40) and Gen Z (18-24) smartphone users, which implies that smartphone users in Bangkok of Gen Z group might have a higher tendency to rely on smartphone usage to release their stress compare to Gen Y users before COVID-19 but not during the pandemic. What is more, in contrast with before the COVID-19 pandemic, smartphone usage behavior has less impact among the group of marital status during COVID-19, which no significant difference can be found during this period.

Next, in respect of variable psychological comfort, it can be concluded from this research that lower-income group of smartphone users in Bangkok may be more inclined to rely on their smartphone to bring them psychological comfort, and younger smartphone users in Bangkok age between 18 to 24 may also be more incline to rely on their smartphone to bring them psychological comfort. Also, except for the married and single smartphone users in Bangkok, the groups of others are more tentative to rely on their smartphones to bring them psychological comfort.

As to the third objective, for the dependent variable behavioral loyalty, under the ANOVA test, significant differences cannot be found only in gender groups and age groups. In contrast, for the dependent variable attitudinal loyalty, there is no significant difference among all the groups of genders, income, education background, age groups, and marital status. It can be winded up that relatively lower-income group of smartphone users in Bangkok have a higher behavior loyalty of their current or favorite smartphone brand in contrast with higher income group of more than 35,000 baht. Additionally, smartphone users in Bangkok with relatively higher degrees are willing to pay a higher price for their smartphone brand over other brands. Moreover, smartphone users who are single in Bangkok are more inclined to have behavioral loyalty rather than married smartphone users in Bangkok regarding paying a higher price for their smartphone brand over other brands.

Additionally, a deduction is obtained from the regression analysis that as an independent variable, psychological comfort has an impact on the dependent variable behavioral loyalty as well as attitudinal loyalty. To make a comparison, when the dependent variable is psychological comfort, the R Square is significantly higher than when dependent variables are attitudinal loyalty or behavioral loyalty, which means a higher power of explanation of the independent variables of attitude toward using, user interaction, smartphone usage behavior (before COVID-19), smartphone usage behavior (during COVID-19), and smartphone perceived quality on dependent variable psychological comfort rather than attitudinal loyalty or behavioral loyalty.

What is more, smartphone usage behavior (during COVID-19) has both the highest negative influences on dependent variables attitudinal loyalty and behavioral loyalty separately, while, remarkably, smartphone usage behavior (during COVID-19) has the highest positive influence on psychological comfort if it is the dependent variable. Furthermore, under the COVID-19 situation, the smartphone users in Bangkok link less of their smartphone usage behavior toward attitudinal and behavioral loyalty of their smartphone brands, whereas a tight positive connection is observed between smartphone usage behavior and psychological comfort during the pandemic rather than before the pandemic.

CHAPTER VII

RECOMMENDATIONS

As has been mentioned in the research before, a ubiquitous phenomenon is revealed that relatively lower-income and younger smartphone users have higher tendencies to stick with website browsing, social media, and video games via smartphones. Namely, smartphone application developers can target these groups of people in Bangkok to adjust their approaches so that these related applications can fit these smartphone users' needs pertain to freemium, subscription, advertisement push, etc.

Next, in comparison with the situation before COVID-19, Gen Z (18-24) smartphone users have significantly higher tendencies to hold their smartphone whenever they experience tediousness at home or outside than Gen X (41-56) smartphone users in Bangkok. So, smartphone services providers should target on Gen Z (18-24) group to build up better service to relieve their various uninspiring circumstances.

Meanwhile, smartphone services providers should keep an eye on the psychological comfort which brings to smartphone users in Bangkok, particularly for lower-income consumers and younger smartphone users, along with other groups except for married and single people.

Besides, smartphone manufacturers should pay attention to relatively lower-income smartphone users in Bangkok since they appear a higher behavioral loyalty than users whose income is higher than 35,000 baht. Actions related to branding, marketing services could be refined to target these comparatively lower-income groups of customers to enhance behavioral loyalty among these customers. Simultaneously, smartphone manufacturers can gain its benefits through charging relative premium prices to higher education background smartphone users since it is intriguing to see that higher degree customers are more willing to pay higher prices for their favorite smartphone brands.

What is more, smartphone usage behavior and psychological comfort also should be focused on by smartphone service providers since these two variables have a tight positive connection for smartphone users in Bangkok under the pandemic situation.



CHAPTER VIII

LIMITATIONS AND FUTURE RESEARCH

8.1 Limitations

In this research, Gen Y smartphone users with the number 316 accounted for almost 76% of total respondents, which means Gen X and Gen Z smartphone users are comparatively less at the number of 25 and 76 separately. Also, 80% of respondents have consisted of singles. For future studies, more numbers of other groups of respondents can be included.

Besides, this research cannot investigate smartphone usage in Bangkok in the post-COVID-19 period for the reason that currently Bangkok is still at the epicenter of the national epidemic. But post-pandemic smartphone usage behavior can still be a captivating potential research topic in the near future after the relief of the COVID-19 pandemic to see the shift which may occur for the residents who live in Bangkok.

Furthermore, due to this research being conducted with quantitative research, it is difficult to explain the reasons of questions under dependent variable behavioral loyalty such as why lower income group of smartphone users in Bangkok may have a higher behavior loyalty of their current or favorite smartphone brand in contrast with higher income of more than 35,000 baht; smartphone users who are single in Bangkok are more inclined to have a behavioral loyalty rather than married smartphone users in Bangkok regarding paying a higher price for their smartphone brand over other brands.

8.2 Future Research

As to the direction for future research, will these smartphone needs (e.g., QR code scanning before entering a building, online meeting, shopping, etc.) still exist after the pandemic? Also, what aspects of smartphone functions or application development should be focused on in the future? Anyhow, there is no doubt that the use of smartphones will advance over time, but identifying present usage is essential to

inform next-generation devices (Falaki et al., 2010). So, the related qualitative studies can be conducted for future analysis.



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APPENDICES

Appendix A Certificate of Exemption (COE)

COE No. MU-CIRB 2021/220.1708

Mahidol University Central Institutional Review Board <i>Certificate of Exemption</i>
Title of Project: The Influencing Factors in How People Using Smartphones Under COVID-19: Quantitative Method
Protocol Number: MU-CIRB 2021/343.2707
Principal Investigator: Mr. Dongsheng Xue
Co- Investigators: Associate Professor Dr. Chanin Yoopetch
Affiliation: College of Management, Mahidol University
The criteria of Exemption: Research involving the use of survey procedures and: <ul style="list-style-type: none"> - Recorded information CANNOT readily identify the subject (directly or indirectly/linked) OR - Any disclosure of responses outside of the research would NOT place subject at risk (criminal, civil liability, financial, employability, educational advancement, reputation)
Date of Determination: 17 August 2021
Signature of Chairperson: 
(Associate Professor Dr. Penchan Pradubmook Sherer) Acting MU-CIRB Chair
<hr/> <i>MU-CIRB Address: Office of the President, Mahidol University, 4th Floor, Room Number 411 999 Phuttamonthon 4 Road, Salaya, Nakhonpathom 73170, Thailand Tel: 66 (0) 2849 6224, 6225 Fax: 66 (0) 2849 6224 E-mail: mucirb@gmail.com Website: http://www.sp.mahidol.ac.th</i>
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Appendix B Questionnaire for Smartphone Usage Under COVID-19 in Bangkok context

I am Dongsheng Xue, the questionnaire is one section of my independent study for Master of Management (International program in Marketing and Management), College of Management, Mahidol University. It takes about 12 minutes to answer the questions.

This questionnaire comprises three sections. All the questions are required to answer. There are no correct or mistaken answers. The realization of this research cannot leave without your voluntary and sincere reply.

The Objective of the Study

- 1) What aspects of smartphones do customers use and care about most in their daily life during the pandemic.
- 2) Whether people's smartphone usage would drastically change after the hit of a pandemic since early 2020, do any hardware functions or applications in the smartphones that consumers are concerned about under the pandemic circumstance.
- 3) This research will tackle the issue of whether Thai smartphone users' usage behaviors would drastically change their lifestyle and do these smartphone usage behaviors will ultimately alter Thai consumers' smartphone brand loyalty or not under the COVID-19 pandemic.

(Please circle the number that represents the best answer to each question.)

Questions consist of 3 parts: Part 1-screening questions; Part 2-variables questions; Part 3-personal information questions

Part 1: Screening Questions

1. Are you a smartphone user in Bangkok?

Yes	1	No	2
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2. Do you use a network on your smartphone?

Yes	1	No	2
-----	---	----	---

3. How long has your current phone been used?

Less than 1 year	1	1-2 years	2
2-3 years	3	More than 3 years	4
Do not know/unsure	5		

4. Around how much time do you use your smartphone on a normal day?

Less than 1 hour	1	1-3 hours	2
3-5 hours	3	5-8 hours	4
Over 8 hours	5	Do not know/unsure	6

Part 2: Variable Questions

5. Which of the following were sources of information, and how much influence did they have towards your usage of smartphones?

(Please choose from 1 to 5; where 1= Strongly disagree and 5 = Strongly agree)

Attitude Toward Using	Strongly disagree				Strongly agree
I am happy to download and use App service.	1	2	3	4	5

Using social media App service is beneficial, can add the fun in my life.	1	2	3	4	5
Using smartphone App service is valuable	1	2	3	4	5
Using smartphone hardware (phone call, camera, etc.) is valuable	1	2	3	4	5
I feel good and positive effects when using the smartphone	1	2	3	4	5
Overall, my attitude toward smartphone App service and hardware function is favorable	1	2	3	4	5
User Interaction	Strongly disagree				Strongly agree
I like the physical feeling of touching or holding my smartphone	1	2	3	4	5
Physically interacting with my smartphone makes me feel happy	1	2	3	4	5
It is great to hold my smartphone and interact with it all the time	1	2	3	4	5
It feels comfortable to touch or swipe my smartphone screen	1	2	3	4	5
I am happy to browse website, use social media or play games through interacting with my smartphone.	1	2	3	4	5

The next 10 questions (Usage Behavior) are about before COVID-19 and during COVID-19 situations

Smartphone Usage Behavior (Before COVID-19)	Strongly disagree				Strongly agree
Using smartphone helps me to get rid of daily stress	1	2	3	4	5
When I feel anxious, I use my smartphone to ease myself	1	2	3	4	5
Using smartphone payment (e.g., LINE pay, True Money, Alipay) can decrease my anxiety and guarantee my safety	1	2	3	4	5
I always hold my smartphone whenever I feel boring at home or outside.	1	2	3	4	5
I always hold my smartphone if I were in an unfamiliar or uncomfortable social situation	1	2	3	4	5
Smartphone Usage Behavior (During COVID-19)	Strongly disagree				Strongly agree
Using smartphone helps me to get rid of daily stress	1	2	3	4	5
When I feel anxious, I use my smartphone to ease myself	1	2	3	4	5
Using smartphone payment (e.g., LINE pay, True Money, Alipay) can	1	2	3	4	5

decrease my anxiety and guarantee my safety					
I always hold my smartphone whenever I feel boring at home or outside.	1	2	3	4	5
I always hold my smartphone if I were in an unfamiliar or uncomfortable social situation	1	2	3	4	5
Smartphone Perceived Quality	Strongly disagree				Strongly agree
When I get a new smartphone with new functions (e.g., better camera, built-in Exposure Notifications System for COVID-19), it is important to me that people know about it	1	2	3	4	5
I feel like I will lose a bit of myself if I lose my smartphone	1	2	3	4	5
I feel hurt once someone laughs at my smartphone	1	2	3	4	5
The appearance of my phone in the eyes of others is important to me	1	2	3	4	5
It is a praise to me if someone flatters my phone	1	2	3	4	5

Psychological Comfort	Strongly disagree				Strongly agree
It is comforting to see that I can use my smartphone at any time	1	2	3	4	5
It always gets me to feel secure that know my phone is by my side	1	2	3	4	5
I believe my smartphone is a trustworthy companion	1	2	3	4	5
I often use my smartphone for positive/pleasant reasons	1	2	3	4	5
It will constantly by my side whenever I need my smartphone	1	2	3	4	5
Attitudinal Loyalty	Strongly disagree				Strongly agree
I tell positive things about my smartphone brand to other people	1	2	3	4	5
I will not consider any other smartphone brand except my favorite one	1	2	3	4	5
I encourage friends and relatives to use services and hardware of my smartphone brand	1	2	3	4	5
I suggest my smartphone brand to anyone who seek out my advice	1	2	3	4	5

Behavioral Loyalty	Strongly disagree				Strongly agree
I am willing to pay a higher price for my smartphone brand over other brands	1	2	3	4	5
Whenever I need to make a buying, my current smartphones brand is my first choice	1	2	3	4	5
I will buy one if my favorite smartphone brand launches a new smartphone	1	2	3	4	5
Compared to other smartphone brand, I have spent more money at my favorite smartphone brand	1	2	3	4	5

Part 3: Information of the Respondents

6. Gender:
- | | | | |
|--------------------|---|--------|---|
| Male | 1 | Female | 2 |
| Alternative gender | 3 | | |
7. Monthly income (Thai baht):
- | | |
|------------------|---|
| Lower than 15000 | 1 |
| 15000 - 25000 | 2 |
| 25001 - 35000 | 3 |
| More than 35000 | 4 |
8. May I ask about your degree?
- | | | | |
|---------------|---|------------------|---|
| Middle school | 1 | High school | 2 |
| Bachelor | 3 | Master and above | 4 |

9. May I ask which age group you fall within?
- | | | | |
|---------------|---|---------------|---|
| Gen X (41-56) | 1 | Gen Y (25-40) | 2 |
| Gen Z (18-24) | 3 | | |
10. Are you single or married?
- | | | | |
|--------|---|---------|---|
| Single | 1 | Married | 2 |
| Others | 3 | | |

