Determinants of Millennial's Continuance Intention for Mobile Banking Services in Johor

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Abstract **- Mobile banking services usage increasing in recent years, especially during the COVID-19 pandemic. The long-term development of mobile banking depends on the continuous usage of users. Therefore, the purpose of this study was to investigate the determinants that can influence the millennial generation's continuance intention (CI) to use mobile banking services, including perceived ease of use (PEOU), security (SEC), and trust (TRU). Besides, the researchers also evaluated the level of millennials' continuance intention for using these services. This study utilised quantitative methods by distributing the online questionnaires in Google form to the millennial users in Johor, Malaysia, by applying convenience sampling. The respondents are millennials born from 1981 until 1996 (between 27 to 42 years old in 2023). Multiple regression analyses were performed to investigate the relationship between the dependent and independent variables. The findings showed that PEOU, SEC, and TRU positively impacted CI and proved that mobile services play significant roles in customer continuance intention in service sectors, and banks are no exception. This study also intended to develop an informative idea for financial institutions to develop and enhance their performance.**

Keywords **-** *mobile banking, continuance intention, perceived ease of use, security, trust*

ARTICLE INFO

Received 15 April 2023
Received in revised form 20 May 2023
Accepted 10 June 2023
Published 25 June 2023

I. Introduction

Mobile banking services are described as the method of providing consumers with access to multiple banking services, such as paying bills via mobile communication equipment, including tablets, smartphones, and other devices, transferring funds, and checking account balances (Laukkanen, 2007; Dahlberg et al., 2008; Kim et al., 2010; Zhou et al., 2010; Oliveira et al., 2014). Mobile banking is the quickest and most convenient method to execute financial transactions compared to other bank services platforms. Suoranta (2003) described that in the mobile era, banks have virtualised, and people may utilise mobile banking services without thinking about location or time. From the banks' perspective, they may follow up with clients on their account statements through the applications by sending messages to them (Suoranta, 2003).

Bank Negara Malaysia's data in 2020 emphasised that the usage and subscribers for mobile banking increased significantly during the COVID-19 lockdown period. The volume of mobile banking transactions reached 82.1 million simultaneously, which was a 46% growth from 56.2 million in January 2020. The transformation of online transactions is also linked to reduced cash transactions (Goh, 2020). The COVID-19 pandemic has pressured financial institutions to rethink how they conduct their daily operation. Besides concentrating on the initial

adoption behaviour of new customers toward mobile banking services, each financial institution must give importance to current customer retention (Ling & Sng et al., 2021).

Various issues identified through the previous studies, such as less consideration, have been devoted to studying the continuance intention of the millennial generation towards mobile banking services. However, some researchers have paid attention to users' intentions toward mobile banking (Teo, Tan & Ooi et al., 2015; Baptista & Oliveira, 2016; Karim et al., 2020; Ling & Sng et al., 2021), but little is known about the level of continuance intention among millennial users (Karim et al., 2020). Karim et al. (2020) found that perceived usefulness, perceived ease of use, security, and trust significantly influence continuance. According to their study, there is a low level of continuance intention in trust at 0.422 towards mobile banking applications among millennial users in Klang Valley, compared to perceived ease of use at 0.693. Furthermore, although mobile banking subscribers have grown exponentially in Malaysia, the perspective of their continuance intention was still inadequate because actual mobile banking subscribers may not be active users (Karim et al., 2020). Karim et al. (2020) suggested that other independent variables may be adopted in further studies to investigate the continuance intention among millennial users in Malaysia accurately.

The growth of mobile transactions during the COVID-19 pandemic raised the risk of fraud (Alex, 2021). Customers spent more time online for both personal and work purposes. The increase has influenced mobile banking services in total transaction volumes. Customer participation from all age groups has been attributed to Malaysia's significant Internet penetration rate of 91.7% (Alex, 2021). The number of fraud opportunities expanded, becoming more challenging to identify as many customers lack awareness of scamming activities. Other than that, scammers are becoming more inventive. Federation of Malaysian Consumers (2021) emphasised that since January 2021, it has obtained roughly 450 complaints and inquiries linked to scams. The increased risk of fraud becomes a challenge to financial institutions when customers are worried that they will involve in scamming activities.

The applicability of the Technology Acceptance Model (TAM) has been established as a frugal model in several technology-related contexts in many studies (Davis & Bagozzi et al., 1989) referenced in Barry and Jan (2018). Furthermore, TAM was used in extensive studies to look into the continuance intention for using technology specifically in the field of electronic commerce, mobile banking, internet banking, and mobile services (Arenas Gaitan et al., 2015; Baptista & Oliveira, 2016; Barry & Jan, 2018; Gupta, Dogra & George, 2018). As a result, TAM is adopted in this study to evaluate the independent variables, such as perceived ease of use, security, and trust influence on the dependent variable, which is the continuance intention of millennial users towards mobile banking services.

II. Literature Review

Goyal et al. (2012) emphasised that banks can remind customers via mobile banking services to authorise required payment amounts, verify account balances, and offer upcoming loan repayment dates. Lin (2013) and Alalwan et al. (2017) discussed that superior services are given to the consumers when the banks involve mobile banking channels in the logistical structure, and the efficacy and effectiveness will also be enhanced.

Continuance intention is a psychological attitude that reflects a person's decision to simulate their current conduct, as opposed to the theory of marketing repurchase intention (Zhao & Othman, 2010). Table 1 shows previous studies on the continuance intention of mobile banking services.

Table 1: Previous Studies in The Continuance Intention of Mobile Banking Services

Authors (Year)	Title	Country	Method	Findings of Relationship
Akturan & Tezcan (2012)	Perceptions and Intentions of mobile banking adoption among the youth market	Turkey	Data were acquired from 435 non-users of mobile banking from university students in Turkey, but prospective prospects and evaluated using structural equation modelling (SEM).	The attitudes toward mobile banking adoption were influenced directly by perceived benefit, perceived performance risk, perceived social risk, and perceived usefulness.
Kang & Lee (2012)	The post-adoption determinants of sustained use of mobile-banking services	Korea	There had 370 Korean consumers of mobile banking from the post-adoption stage involved in this study, and the researchers used structural equation modelling (SEM).	The findings illustrated three main determinants of sustained mobile banking use: perceived value, channel preference, and perceived usability.

Zhou (2013)	A study of continuance intention of mobile payment services	China	Data was gathered from the 200 users of the two largest telecommunications companies: China Unicom and China Mobile. LISREL is a structural equation modelling software used to examine the validity and conduct a confirmatory factor analysis (CFA).	Trust was mainly influenced by service quality. Meanwhile, satisfaction was greatly influenced by system quality. Service quality and information quality influenced flow. The continuance intention was determined by satisfaction, flow, and trust.
Yuan, Liu & Yao et al. (2016)	Continuance intention of the users towards mobile banking in China	China	This study involved 434 users in China who had experience in mobile banking, and structural equation modelling (SEM) was used to evaluate the data.	The significant determinants of continuance intention (CI) were perceived risk (PR), perceived task-technology fit (PTTF), perceived usefulness (PU), and satisfaction (SA). Satisfaction was influenced by perceived risk, perceived usefulness, and confirmation. On the other hand, PTTF, perceived ease of use (PEOU), and confirmation were affected by perceived usefulness. Besides that, the direct relationship between PEU with CI is not substantial. Gender considerably moderated the influence of PR on CI.

Technology Acceptance Model (TAM)

Davis introduced the TAM as a paradigm for analysing the acceptance of users towards information services (IS), according to the theory of reasoned action (TRA) (Davis, 1989). The users' intention dictated the actual use of information services, as stated in the TAM. Users' attitudes on utilising an IS and its perceived usefulness, in turn, influenced the intention. Davis (1989) and Davis et al. (1989) emphasised that the factors of attitude against information services are perceived ease of use (PEOU) and perceived usefulness (PU). Furthermore, PEOU is influenced by PU, which also intervenes in the impact of PEOU on intention (David et al., 1989). Yusuf and Lee (2015) stated that an IS theory analyses how consumers use and adopt the technology. The TAM has been regularly explored and extended, with the TAM 2 (Venkatesh & Davis 2000; Venkatesh 2000), and Venkatesh et al. (2003) introduced the unified theory of acceptance and use of technology (UTAUT). In the context of e-commerce, a TAM 3 has been developed, which includes the effects of perceived risk and trust on system use (Venkatesh & Bala 2008). Table 2 illustrates the types of TAM.

Table 2: Types of Technology Acceptance Model

Types	Authors (Year)	Components
TAM	Davis (1989)	The perceived usefulness and perceived ease of use of a computer system are the two elements that decide whether its potential users will adopt it.
TAM 2	Venkatesh & Davis (2000)	Perceived usefulness and usage intentions regarding social influence and cognitive instrumental processes, but they omitted ATU, which are; (1) subjective norm; (2) image; (3) job relevance; (4) output quality; (5) result demonstrability.
Unified Theory of Acceptance and Use of Technology (UTAUT)	Venkatesh et al. (2003)	User intentions to use an information system and subsequent usage behaviour. The theory holds that there are four key constructs: (1) performance expectancy; (2) effort expectancy; (3) social influence; (4) facilitating conditions.
TAM 3	Venkatesh & Bala (2008)	In the context of e-commerce, with an inclusion of the effects of trust and perceived risk on system use.

Based on Table 2, TAM 3 was a theoretical basis model consisting of perceived ease of use, security, and trust used by the researcher in this study. TAM 3 gave practical, sensible justification for how and why people decided to accept and utilise information technology, especially the work on the perceived ease of use and usefulness, including facilitating conditions, social influence, system characteristics, and individual differences (Venkatesh & Bala, 2008).

Perceived Ease of Use

Davis et al. (1989) explained that one of the primary elements that significantly influence technology use is perceived ease of use, according to the TAM model. David (1989) stated that this term refers to the ease with which a system can be used effortlessly. On the other hand, consumers are more likely to utilise technology if it is beneficial and straightforward.

The previous study of Venkatesh and Davis (2000) extended TAM fields into four quadrants. The finding showed that users' behavioural intention (BI) and perceived usefulness were affected positively by perceived ease of use. Perceived ease of use has a significant and positive relationship with continuance intention to utilise the technology (Venkatesh, Speier & Morris, 2002). Based on Barry and Jan (2018), the TAM model was used to investigate mobile commerce (m-commerce). The findings illustrated a significant and positive relationship between PU and CI. However, a negative relationship between PEOU and CI. Furthermore, the study discovered a substantial correlation between PEU and BI. There was a significant and positive relationship between PEOU and BI, according to the research of Karim and Haque et al. (2020) about e-wallet applications.

Security

Security would become one of the most significant barriers to the adoption of mobile banking, as financial or personal information might be disclosed and exploited for fraudulent purposes (Karim et al., 2020). Based on Afshan and Sharif (2016), trust is essential in implementing mobile banking and assisting customers in solving privacy or security issues and illegal mobile activities. Security was revealed to be a necessary element in evaluating the continuance intention of youths to utilise technology-related items, including e-wallet applications, in prior research by Karim et al. (2020). Therefore, mobile banking services which offer security features will strengthen users' trust Karim et al. (2020).

Trust

Based on the study of Al-Ajam and Nor. (2013) trust became a significant factor preventing consumers from using Internet banking. Consumers' lack of trust has a detrimental effect on their intention to utilise online banking (Akhlaq and Ahmed, 2013). Akhlaq and Ahmed (2013) emphasised that users' higher security and privacy perceptions will boost their confidence and lead to a stronger intention to use the services when digital transactions involve the transmission of valuable cash over the Internet confidential details. Trust is a key indicator of repurchase intention (Chiu, Huang, & Yen, 2010), affects the purchase intention of customers (Xie, Batra, & Peng, 2015), as well as mobile shopping and payment adoption (Chong, 2013; Wang & Lin, 2017). Figure 2.1 below displays the conceptual framework of the study. These are three main factors that have been adopted by Akturan and Tezcan (2012), Alalwan et al. (2017), and Karim et al. (2020).

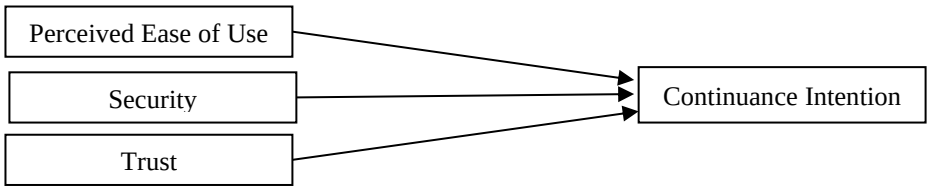

Figure 1: Conceptual framework of the study

The consideration above led to the following set of hypotheses:
Hypothesis 1: Perceived ease of use positively impacts continuance intention to use mobile banking services.
Hypothesis 2: Security positively impacts continuance intention to use mobile banking services.
Hypothesis 3: Trust positively impacts continuance intention to use mobile banking services.

III. Research Methodology

This study used a quantitative method involving a survey questionnaire to collect numerical data from the targeted population. Basic statistics such as frequency, mean, standard deviation, and percentages are used to analyse and clarify the particular phenomenon. The data were analysed using descriptive statistics. The researchers used convenience sampling for data collection. Krejcie and Morgan's (1970) sampling method was adopted in this study to determine the sample size for the population. Jabatan Perangkaan Malaysia (2021) states the population of millennials in Johor is the third-highest compared to other states in Malaysia, which are 943,400

people. Based on Krejcie and Morgan's table, the sample suggested is 384 respondents.

This research used a set of questionnaires in Google form distributed online to the millennial users of mobile banking services in Johor via social media such as WhatsApp, Facebook, Instagram, and WeChat. Each set of questionnaires is divided into three segments. The demographic factors that focused on Part A of the questionnaire were gender, age, employment, name of main bank use via mobile banking, frequency of mobile banking use, and others. Part B consisted of measurement questions related to the scale of the relationships between perceived ease of use, security, and trust toward millennials' continuance intention to use mobile banking services. Finally, Part C consisted of questions about millennials' continuance intention for these services. Likert Scale or 5-point Likert used in Part B and C. The data collected from the respondents were analysed using SPSS software version 26.

For the pilot study, 30 sets of questionnaires in Google form were distributed online to the respondents before the final questionnaires were finalised. Some improvements will make according to the feedback or comments of respondents. The data obtained from both pilot study and actual data collection have been checked their reliability using Cronbach's Alpha reading. The primary data of this research was obtained by distributing the questionnaire in Google form via social media to mobile banking users in February 2023. Survey questionnaires were distributed to the customers to collect and gather data about their demographic background, the relationships between the variables, and the level of continuance intention toward mobile banking services. Besides that, the written secondary resources used by the researcher were journals, books, and internet articles, which were more easily accessible than primary data.

IV. Results and Discussion

The response rate for this study was 90% with 407 out of 450 questionnaires returned. Based on the respondents' demographic profile, the findings showed that female respondents occupied 68% whereas male respondents occupied 32% only. Most respondents were between 26 – 30 years old, which was 73.2%, followed by 31 – 35 years old, which occupied 23.3%. The respondents between 36 – 41 years old achieved the lowest percentage, which was 3.5% only. There had 253 respondents who were employed, which represented 62.2%, while 154 were unemployed, representing 37.8%. Chinese achieved the highest amount, with 197 respondents, followed by 158 Malay and 52 Indian respondents. Half of them lived in the urban area, and another half lived in the rural area. 74% of the respondents used mobile banking services daily, 15% used mobile banking services weekly, and 11% used them monthly. In total, 192 respondents used Maybank the most which occupied 47.1%, 109 respondents used CIMB Bank which represent 26.8%, 60 respondents used Hong Leong Bank which represent 14.7%, Bank Islam with 36 respondents as the users which represent 8.8%, and Bank Rakyat achieved the least frequency 10 respondents which represent 2.6%.

A reliability test was done to make sure the reliability of this research. The researchers could determine the internal reliability by Cronbach's Alpha by identifying the questionnaires consisting of Likert scale questions (Bhatnagar, Kim & Many, 2014). The greater the value, the more desirable it was, as the reliability gave a value between 0 to 1.0. Some improvements are needed to improve Cronbach's Alpha value below 0.7 (Bhatnagar, Kim & Many, 2014). The following Table 3 shows the reliability test.

Table 3: Reliability test

	Variables	**Cronbach's Alpha (n=407)**	**N of Items**
	Overall	0.945	9
PEOU	Perceived Ease of Use	0.959	3
SEC	Security	0.948	3
TRU	Trust	0.927	3

Table 3 above shows the reliability test result for variables carried out. There had 407 respondents with nine items. The overall Cronbach's Alpha showed excellent internal consistency, which was 0.945. All the variables had remarkable internal consistency with Cronbach's Alpha of SEC at 0.948, and TRU at 0.927, respectively. Meanwhile, PEOU achieved the highest Cronbach's Alpha with 0.959.

Table 4: Normality test

	Kolmogorov-Smirnov[a]			**Shapiro-Wilk**		
	Statistic	df	Sig.	Statistic	df	Sig.
Mean PEOU	.294	140	.000	.800	140	.000
Mean SEC	.256	140	.000	.869	140	.000
Mean TRU	.251	140	.000	.880	140	.000

The researcher used the Kolmogorov-Smirnov test to decide if a sample comes from a population with a specific distribution (Karson, 1968). The results as shown on Table 4. All the p-value of the tested item were less than 0.05, which were not normally distributed. Hence, the skewness and kurtosis values were used to finalise the normality of all the tested variables. According to Hair et al. (2010), data can be considered normal if the skewness is between -2 and +2 and the kurtosis is between -7 and +7.

Table 5: Skewness and Kurtosis

Variables	Skewness	Kurtosis
PEOU	-1.069	1.596
SEC	-0.234	-0.787
TRU	-0.336	-0.283

All the variables' normality was accepted. The skewness of PEOU, SEC, and TRU was between -2 and +2, which were -1.069, -0.234, and -0.336, respectively, as presented in Table 5. Meanwhile, their kurtosis was between -7 and +7, which were 1.596, -0.787, and -0.283, separately. Multiple regression analyses were performed to investigate the relationship between the dependent and independent variables. For numerical variables, the Pearson correlation method is the most commonly used. It allocates a number between 0 and 1, with 0 representing no correlation, 1 representing total positive correlation, and -1 representing total negative correlation (Nettleton, 2014).

Table 6: Central tendency level measurement (Neuman, 2014)

Central of tendency level	Mean range
High	3.67 - 5.00
Medium	2.33 - 3.66
Low	1.00 - 2.32

Table 7: Descriptive statistics data of PEOU, SEC, and TRU

Factors	Attributes	Mean	Std. Deviation	Central of Tendency Level
Perceived Ease of Use	1. I feel that learning about mobile banking usage is simple.	4.01	0.818	High
	2. I feel that learning about mobile banking usage does not require much mental exertion.	4.04	0.864	High
	3. I find my interaction with mobile banking is understandable and clear.	4.14	0.853	High
Security	1. I believe that the privacy and confidentiality of my details are protected during mobile banking.	3.54	0.940	Medium
	2. I believe that all mobile banking transactions are secure.	3.53	0.933	Medium
	3. I believe that the mobile banking website possesses the technical ability to ensure that no other firm can supplant its online identity.	3.63	0.916	Medium
Trust	1. The bank service provider is trustworthy.	3.46	0.947	Medium
	2. The bank service provider is competent in its field.	3.71	0.861	High
	3. I believe mobile banking always provides safe financial services.	3.51	0.933	Medium

Table 7 shows a high central tendency level in perceived ease of use. The highest mean at 4.14 was "I find my interaction with mobile banking is understandable and clear." For security, the results show its medium central tendency level. "I believe that the mobile banking website possesses the technical ability to assure that no other firm can supplant its online identity" gained the highest mean at 3.63. Its standard deviation ranges from 0.916 to 0.940. Other than that, two trust attributes had a medium central tendency level. Meanwhile, "The bank service provider is competent in its field" had a high central tendency level with the highest mean at 3.71.

Table 8: The level of millennials' continuance intention

Variables	Mean	Std. Deviation	Central of Tendency Level
I intend to continue using mobile banking services in the future.	4.08	0.796	High
I will continue to use mobile banking services, although there are no incentives (e.g., cashback, rebates, promotions, or discounts offered).	3.80	1.012	High
I prefer to continue using mobile banking instead of other payment alternatives.	3.89	0.945	High
I strongly recommend that others use mobile banking services during the COVID-19 pandemic.	3.94	0.846	High

Table 8 shows that all the dependent variables above achieved a high central tendency level. One of the variables, "I intend to continue using mobile banking services in the future," reached the highest mean at 4.08 with a standard deviation of 0.796.

Table 9: The correlations between PEOU, SEC, and PR

	PEOU	SEC	TRU
PEOU	1		
SEC	0.444**	1	
TRU	0.302**	0.612**	1

Note: * Correlation is significant at the 0.01 level (2-tailed)
** Correlation is significant at the 0.05 level (2-tailed)

Table 9 shows a high correlation between SEC toward PEOU, which was $r = 0.444$, $p < 0.01$, and TRU towards PEOU, $r = 0.302$, $p < 0.01$. The highest correlation was between TRU and SEC which $r = 0.612$.

Table 10: Summary of Multiple Regression Analysis Buying (n=407)

Determinants	β	T	Sig.
Perceived Ease of Use	0.193	3.545	0.000**
Security	0.302	5.690	0.001**
Trust	0.107	3.012	0.002**

*Note: R=0.511; R^2= 0.325; Adjusted R^2=0.312; F=48.832; Sig. F Change=0.000; Durbin-Watson=1.553 *p<0.01; **p<0.05*
B=Unstandardized Coefficient; SE B=Standard error of coefficient; ß=Beta coefficient

Results shown in Table 10 suggest that all variables significantly influence continuance intention ($p \leq 0.05$). The factors were Perceived Ease of Use, Security, and Trust. All hypotheses i.e. Hypothesis 1, Hypothesis 2, and Hypothesis 3 are accepted since the three variables are statistically significant ($p \leq 0.05$) and positively related to continuance intention (Beta = 0.193, 0.302, and 0.107). Therefore, Perceived Ease of Use, Security, and Trust significantly contribute to Continuance Intention to use mobile banking services among Gen-Y in Johor.

Table 11: Hypothesis result

Hypothesis	Description	Result
H1	Perceived ease of use positively impacts continuance intention to use mobile banking services among Gen-Y in Johor	Supported
H2	Security positively impacts the continuance intention to use mobile banking services among Gen-Y in Johor	Supported
H3	Trust positively impacts continuance intention to use mobile banking services among Gen-Y in Johor	Supported

Based on the analyses above, the hypotheses of this study show that H1, H2, and H3 were supported. This can be concluded that perceived ease of use, security, and trust positively impact continuance intention to use mobile banking services among millennials in Johor.

V. Conclusion

Perceived ease of use, security, and trust positively impact continuance intention to use mobile banking services. Firstly, the respondents felt that mobile banking usage was simple for perceived ease of use. Thus, they preferred to use it in the future continually. Learning about mobile banking usage does not necessitate a lot of mental exertion. They found their interaction with mobile banking was understandable and clear. Previous research by Karim et al. (2020) showed that perceived ease of use positively impacted users' continuance intention, and this study also showed the same result.

Secondly, for security, the millennial respondents in Johor believed that the privacy and confidentiality of their details were protected during mobile banking. They thought that all mobile banking transactions were secure as well. Besides, they believed that the mobile banking website possessed the technical ability to ensure that no other firm could supplant its online identity. Singh and Srivastava (2018) found that security positively correlated with continuance intention. Thirdly, they also trust mobile banking providers. They thought financial services were always safe. The bank service provider was competent in its field. The study by Singh and Srivastava (2018) found that trust significantly influenced continuance intention to use these services in India.

Some recommendations are given to other researchers. For example, they can explore different generations and states in the future. They could conduct a comparative study, such as the determinants of continuance intention for mobile banking services among Generation X and Y. Apart from that, banks must give more attention to other aspects of banking services to make sure customers are satisfied with the added value offered, which then will turn into becoming loyal customers (Hasim et al., 2015). There is also a need to study customer knowledge in both conventional and Islamic banking services as they have influence and might be the reasons for the preferred bank choices by customers today (Adrutdin et al., 2020).

In conclusion, millennial users in Johor had a high continuance intention to use mobile banking services. Millennials who were born in the technological era are tech-savvy. Mobile banking usage is nothing new to them as they have extensive online and Internet knowledge. Mobile banking service providers must always provide secure and valuable services to users, especially during the COVID-19 pandemic. Customers have prominent vital roles in all service sectors, and banks are no exception. They continuously develop their performance by incorporating security and trust features to ensure users have a continuance intention to utilise mobile banking services.

Acknowledgement

The author would like to express appreciation to Universiti Tun Hussein Onn Malaysia for the research opportunity, particularly Dr. Muhammad Asyraf Hasim, for assisting in successfully completing this study. The author appreciated his caring and support through the encouragement, advice, suggestions, and guidance from the beginning to the end of this project. His comments and suggestions have contributed a lot to this study. The author received no financial support to complete this study.

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