

UNDERSTANDING FOREIGN STUDENTS' CONTINUANCE INTENTION TOWARD MOBILE TELECOMMUNICATION SERVICE: AN INTEGRATED THEORETICAL MODEL

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ABSTRACT

Mobile telecommunications service providers are facing greater pressure to increase continuance intention among their customers. At the same time, the number of foreign students studying Mandarin in Taiwan is increasing. However, there is no research on and discussion of factors affecting these students' continuance intention in Taiwan's mobile telecommunications industry. This study therefore uses the theory of planned behavior (TPB) and the expectancy disconfirmation model (EDM) to explain the factors affecting foreign students' intention to continue using mobile telecommunications services. A web-based questionnaire survey is used to collect the primary data, and structural equation modeling (SEM) is used to test the proposed research model. The empirical results find that the three constructs of TPB (i.e. attitude, subjective norms, and perceived behavioral

control) and the satisfaction construct of EDM have a significant and positive impact on foreign students' continuance intention toward mobile telecommunications services. This study will enable Taiwan's mobile telecommunications companies to adjust their marketing strategies to increase foreign students' continuance intention.

Keywords: Mobile Telecommunication Service Provider, Continuance Intention, Theory of Planned Behavior (TPB), Expectancy Disconfirmation Model (EDM), Foreigner in Taiwan

1. INTRODUCTION

The cell phone has become an essential part of everyday life, and the number of cell phone users has increased rapidly. In 2014, there were estimates 6,915 million¹ mobile users worldwide; few people can claim that they have never used a cell phone. As many telecommunications service providers are available, telecommunications operate in a competitive market. A successful company needs to understand users' needs to drive successful marketing programs. Companies that understand their markets and conduct business according to their users' needs dominate the marketplace², because they know how to keep their users and win new ones³.

Taiwan has a large telecommunications network⁴. The number of cell phone subscriptions in Taiwan rose from 25.4 million in 2008 to 26.5 million in 2014⁵. International long distance call usage reached 1,434 million minutes of total call time in the first quarter of 2016⁶. This information shows that international services for foreign users are important for telecommunications service providers' profit margins. The number of foreigners (i.e. business travelers, workers and students) coming to Taiwan grew from 418,802 in 2010 to 647,138 in 2016⁷. Therefore, to increase their profits, telecommunications service providers could tailor their marketing strategies to foreigners. The first opportunity for telecommunications service providers starts at the airport because airports are a convenient place for anyone who does not speak Chinese to purchase a cell phone. However, even though the staff of telecommunications service providers most likely speaks English⁸, many other factors could affect a user's intention to buy or use a product. Some people may be influenced by their family or peers, others by a group of people with experience using that product, and others might be influenced by their own perceptions of the ease of use of a product⁹.

Among the theoretical models used in predicting an individual's intention to engage in a particular behavior, the theory of planned behavior (TPB) has been used to predict and explain how different factors affect people's intentions^{10, 11, 12, 13}. TPB, based on the theory of reasoned action (TRA) proposed by Ajzen and Fishbein^{14, 15}, was designed to explain human behavior across various contexts¹⁶ and has been applied in proposing marketing contexts as a predictor of intention^{12, 17, 18, 19}. Three determinants can influence behavioral intentions: attitude, subjective norms, and perceived behavioral control (PBC). Using TPB to explain users' intention toward telecommunications service providers can help companies to understand the needs of users and develop appropriate marketing strategies.

The expectancy disconfirmation model (EDM) has had a decisive impact on the success of marketing²⁰. Many researchers have applied EDM to different fields to achieve a better understanding of users' expectations and requirements and to sway their satisfaction^{21, 22, 23, 24, 25}, which then influences their behavioral intentions. EDM consists of two key variables: expectation or desire and experience or perceived performance²⁶. In the pre-purchase stage, a user has expectations or desires about the performance of a product. For example, users want it to have a certain level of quality. In contrast, experience or perceived performance follows the purchase of a product or service and is based on its actual quality.

The difference – positive or negative – between the initial expectation or desire and perceived experience or performance is known as disconfirmation of expectation or desire²⁰. Positive disconfirmation occurs when a user's perception of the performance of the quality of a specific product or service is higher than his or her expectations or desires. Conversely, negative disconfirmation occurs when a user's perception of the performance of the quality of specific product or service is lower than his or her expectations or desires. According to the study of Yi²⁷, positive disconfirmation leads to satisfaction, and negative disconfirmation leads to dissatisfaction. Negative disconfirmation means that the perceived performance of the product or service does not meet the user's expectations. Consequently, the user will likely opt to not use the service again. As a reliable way to measure users' product satisfaction, EDM also evaluates users' satisfaction with the marketing program in terms of the quality of the product or service.

Since Taiwan has many telecommunications service providers, it is an effective way for exploring the various factors affecting foreign users' intention to continue using a service. This study therefore has two research objectives: to explore the factors affecting users' continuance intention toward mobile telecommunications services among foreigners studying

Mandarin in Taiwan, and to make suggestions to marketers on how to design marketing strategies that will increase users' satisfaction and continuance intention toward mobile telecommunications services.

The remainder of this article is organized as follows. Section 2 reviews the literature is reviewed and proposes hypotheses. Section 3 presents the research methods involving the sample, data collection and measurement. In Section 4, the results of this study are analyzed. Sections 5 and 6 discuss the conclusions and suggestions. Section 7 concludes with the limitations and future directions of this study.

2. RELATED WORK

2.1 Theory of planned behavior

The theory of planned behavior (TPB) was derived from the theory of reasoned action (TRA)¹⁵. Ajzen²⁸ stated that TPB, when added to perceived behavioral control (PCB), explains situations in which an individual lacks substantial control over a targeted behavior. In other words, TPB explains an individual's intention to perform that behavior. TPB predicts behavioral intentions using three attitude, subjective norms, and PBC. According to Ajzen and Fishbein¹⁴, attitude is the positive or negative assessment of behavioral performance. Subjective norms are based on an individual's perception of whether important people in their life would want them to engage in the behavior. PBC reveals the degree to which an individual's responsiveness to their behavior is under their volitional control.

TPB has been used to explain the acceptance of instant messaging in online user behavior²⁹. Lu et al.²⁹ demonstrated that the three components from TPB have a significant impact on the continuance intention of the user to use instant messaging services. Cheon et al.³⁰ used TPB as a theoretical framework to explain the perception of and need for mobile learning, and showed that attitude, behavioral control, and subjective norms positively influence the acceptance of mobile learning. This study also uses TPB to explore and predict users' continuance intention toward mobile telecommunications services.

2.2 Expectancy disconfirmation model

Proposed by Oliver²⁰, EDM has been used to explain user satisfaction and has been applied to the adoption of information technology and information systems^{24, 25, 29}. In this model, satisfaction is an affective state representing the emotional reaction to a product or service. After experiencing the product's actual performance, expectations serve as a key

component in the comparative process for judging satisfaction³¹. Therefore, the incongruity between the actual performance of the product or service and the user's expectations of that product/service is termed expectancy disconfirmation³². Notably, the expectancy disconfirmation can be positive or negative.

Several studies have tested EDM^{24, 25} to explain user continuance behavior when purchasing products/services, and to compare users' pre-purchase and post-purchase experiences. Bhattacharjee and Premkumar²⁶ defined disconfirmation as the difference between a user's initial expectations of a product/service and its actual performance. Accordingly, disconfirmation depends on the user's expectations and the product's or service's performance. If that performance meets or exceeds expectations, the post-purchase satisfaction should be positive, and user will likely continue to use that product/service. However, if a product/service fails to meet the user's expectations for its performance, the post-purchase satisfaction will be negative³³ and the user might decide not to use that product/service again.

Churchill and Surprenant³⁴ defined satisfaction as a post-purchase evaluation of a product/service by the consumer with respect to their pre-purchase expectations. In other words, satisfaction can be explained as an evaluation of prior expectations and the actual performance of the product, as indicated by Oliver³⁵. Rush and Oliver³⁶ suggested that satisfaction reveals the extent to which a user believes that the product/service elicits positive feelings. Satisfaction has been studied broadly over the past 30 years, especially in the service sector³⁷. According to Hennig-Thurau and Klee³⁸, satisfaction with a product/service is the most significant factor driving companies to sustain competitiveness and success, and it can therefore influence a user's loyalty to a mobile telecommunications service. Customer satisfaction is the key for companies' survival in this fiercely competitive market³⁹. Thus, this study uses EDM to explain and predict users' continuance intention toward mobile telecommunications services.

2.3 Hypotheses development

Figure 1 shows the five hypotheses embodied in this model. The directionality stated in each hypothesis is derived from the basic structure of TPB and EDM. TPB comprises three variables associated with users' continuance intention toward mobile telecommunications services: attitude, subjective norms, and PBC. Shook and Bratianu⁴⁰ stated that attitude comes from a person's belief in the possible outcomes. The more favorable one's belief in a positive outcome, the greater the possibility of an intention to

perform the behavior. Conversely, the less favorable the belief in a positive outcome, the weaker the possibility of an intention to perform the behavior. Furthermore, several empirical studies have shown that attitude has a positive impact on continuance intention^{10, 11, 12, 13}. Several empirical studies have shown that subjective norms have a significant effect on intention^{10, 12, 13, 41}.

PBC is an important part of TPB, which refers to an individual's perception of the ease or difficulty of performing a behavior. Bandura^{42, 43} described PBC as the judgement of how well a person can perform an action to deal with future situations. Bandura also found that people's behavior is strongly influenced by their trust or confidence in their ability to perform a given task, and this essentially describes PBC. PBC can affect people's preference for or preparation for activities, effort during its performance, and emotional reactions. George⁴⁴ identified the relationship between PBC and intention, proposing that people who are self-confident or who have positive feelings regarding their behavioral control are more likely to make internet purchases.

Han, Hsu, and Sheu⁴⁵ used TPB to explain the formation of consumers' intention to stay at a 'green' hotel, and the results revealed that all variables within TPB positively affected their intention. Huang and Chuang⁴⁶ found that attitude, subjective norms, and PBC affected employees' use of information systems. In addition, Kim, Lee, Sung, and Cho⁴⁷ found that the three constructs of TPB have a significant effect on users' behavioral intention. Thus, the following hypotheses are proposed:

H1: Attitude has a positive impact on users' continuance intention toward mobile telecommunications services.

H2: Subjective norms have a positive impact on continuance intention toward mobile telecommunications services.

H3: PBC has a positive impact on continuance intention toward mobile telecommunications services.

Within EDM, disconfirmation is generally regarded as a link between what is observed and what is experienced, and this has been amply studied in the context of user satisfaction^{16, 48}. According to Ayanso et al.²¹, disconfirmation has a significant and positive impact on satisfaction. When a user purchases a new product, satisfaction is likely to be considered; meaning that the formation of satisfaction based on the pre-consumption experience can affect a consumer's satisfaction or dissatisfaction with the product/service. If the perceived performance of a product or service forms a positive disconfirmation, the user will experience an increase in

satisfaction; conversely, if the perceived performance forms a negative disconfirmation, the user will experience a decrease in satisfaction.

Oliver and Burke⁴⁹ found that disconfirmation significantly influences the formation of satisfaction. In other words, disconfirmation helps to shape users' attitudes toward their satisfaction judgments about a service. Oghuma et al.²⁵ proposed that EDM enables service providers to find the key factors for attracting and satisfying the users of mobile instant messaging. The results showed that disconfirmation directly affects users' satisfaction. It can thus be assumed that disconfirmation and satisfaction work in tandem, leading to the following hypothesis:

H4: Positive disconfirmation has a positive impact on satisfaction.

According to Eshghi, Haughton, and Topi⁵⁰, satisfaction can help brands to build long and profitable relationships with their users. If users are dissatisfied, they are likely to have diminished loyalty toward a company⁵¹. Therefore, satisfaction is based on direct experience and is likely to influence continuance intention. Fan and Suh⁵² applied EDM to examine users' intention to switch from an incumbent to a disruptive technology. The results indicated that dissatisfaction influenced by disconfirmation of previous experience. Thus, the following hypothesis is posited:

H5: Satisfaction has a positive impact on continuance intention toward mobile telecommunications services.

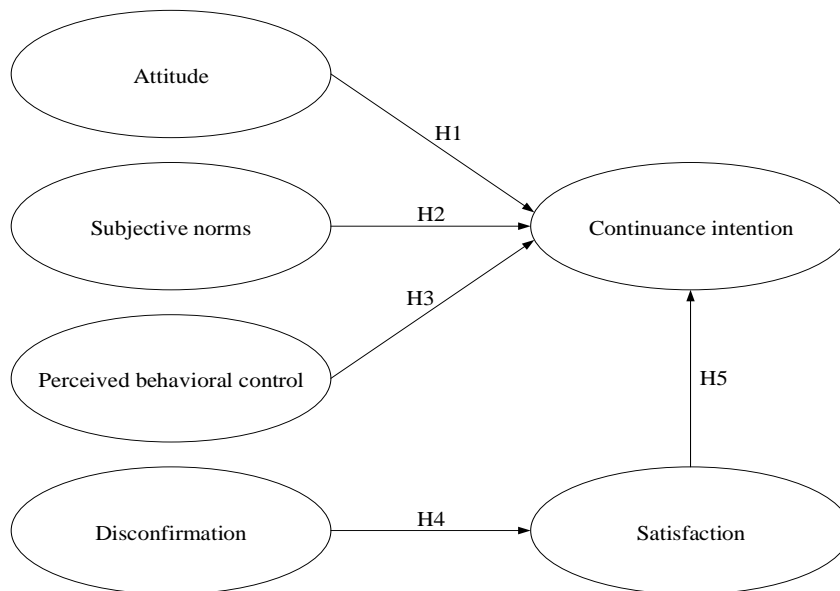


Figure 1. The research model

3. METHODOLOGY

3.1 Sample and data collection

According to the Taiwan Ministry of Education, from 2009 to 2014, the number of foreign students studying Mandarin in Taiwan in each year was 11,612, 12,555, 14,480, 13,898, 15,510 and 15,526, respectively⁵³. If a mobile telecommunications service provider can satisfy foreign users' real needs, they will have intention to continue using that company's services. Thus, this study selected foreign students studying Mandarin in Taiwan as the subjects of this study.

The questionnaire contains two parts. The first part gathers information about attitudes, perceptions of subjective norms, PBC, disconfirmation, satisfaction, and continuance intention. The second part characterizes the respondents' backgrounds in relation to their current mobile telecommunications service and demographic variables such as gender, age, educational background, occupation, income, and the use of mobile telecommunications services. Four hundred useable responses were included in the sample for analysis. Table 1 shows a profile of the respondents.

Table 1. A profile of the respondents

Demographic characteristics		Frequency	Percent
Gender	Male	188	47.00
	Female	212	53.00
Age	Less than 20 years old	34	8.50
	21-30 years old	320	80.00
	31-40 years old	43	10.75
	More than 41 years old	3	0.75
Education	High School	20	5.00
	Bachelor Degree	285	71.25
	Master Degree and Higher	95	23.75
Monthly Income	Less than 10,000 NT	17	4.25
	10,000-20,000 NT	176	44.00
	20,001-30,000 NT	194	48.50
	More than 30,000 NT	13	3.25
Recent Mobile Telecom Service provider	Chunghwa Telecom	132	33.00
	Far Eas Tone	137	34.25
	Taiwan Mobile	131	32.75

3.2 Measurement of the research constructs

The items to measure the research constructs were derived from the literature (see Appendix A). The questions for attitude, subjective norms and PBC were slightly modified from a study by Taylor and Todd⁵⁴. Disconfirmation and satisfaction were measured using questions modified from Bhattacharjee's⁵⁵ work. Continuance intention was evaluated using questions modified from Putzer⁵⁶. Each item was measured on a five-point Likert scale ranging from "1 = strongly disagree" to "7 = strongly agree".

3.3 Pretest

A pretest was conducted to ensure the questionnaire was free from grammatical errors and ambiguous key terms. Thirty reviewers were selected using convenience sampling—the same method planned for selecting participants for the final data collection—and the reviewers were asked to provide responses to the survey⁵⁷ and make suggestions for improving the survey items. After the pretest, all items in the questionnaire were confirmed based on a reliability analysis of the pretest data.

4. RESULTS AND ANALYSIS

4.1 Reliability and validity analysis

The construct reliability of all variables was between 0.708 and 0.908, which is greater than the standardized acceptance level of 0.70, thus indicating good reliability. Furthermore, to test the convergent validity of measurement items, three indicators proposed by Fornell and Larcker⁵⁸ needed to be assessed: the item reliability of each measure, the composite reliability of each construct, and the average variance extracted for each construct. The item reliability of a measure was evaluated using factor loading. The results showed that the factor loading of all measures on their underlying constructs was greater than the acceptance level of 0.5⁵⁹. Furthermore, the average variance extracted from each construct was greater than the acceptance level of 0.5⁵⁸. Additionally, the composite reliability of each construct exceeded the acceptance level of 0.7. In summary, the convergent validity for the proposed constructs of the measurement model is adequate, as shown in Table 2. Table 3 depicts the squared inter-correlations among the study variables, which represent the shared variance among the variables and do not surpass the square root of average variance explained. Thus, the results confirmed that discriminant validity was achieved.

Table 2. The results of convergent validity

Latent variable	Item	Standardized factor loading (>.50)	Average variance extracted (>.50)	Composite reliability (>.70)
Attitude			0.519	0.930
	ATT3	0.671		
	ATT2	0.628		
	ATT1	0.862		
Subjective norms			0.503	0.784
	SUB2	0.947		
	SUB1	0.471		
Perceived behavioral control			0.504	0.921
	PBC3	0.872		
	PBC2	0.582		
	PBC1	0.675		
Disconfirmation			0.512	0.905
	DIS3	0.793		
	DIS2	0.625		
	DIS1	0.728		
Satisfaction			0.516	0.956
	SAT3	0.706		
	SAT2	0.689		
	SAT1	0.574		
	SAT4	0.904		
Continuance intention			0.613	0.980
	BEH3	0.991		
	BEH2	0.573		
	BEH1	0.575		
	BEH4	0.992		

Table 3. Measures of discriminant validity

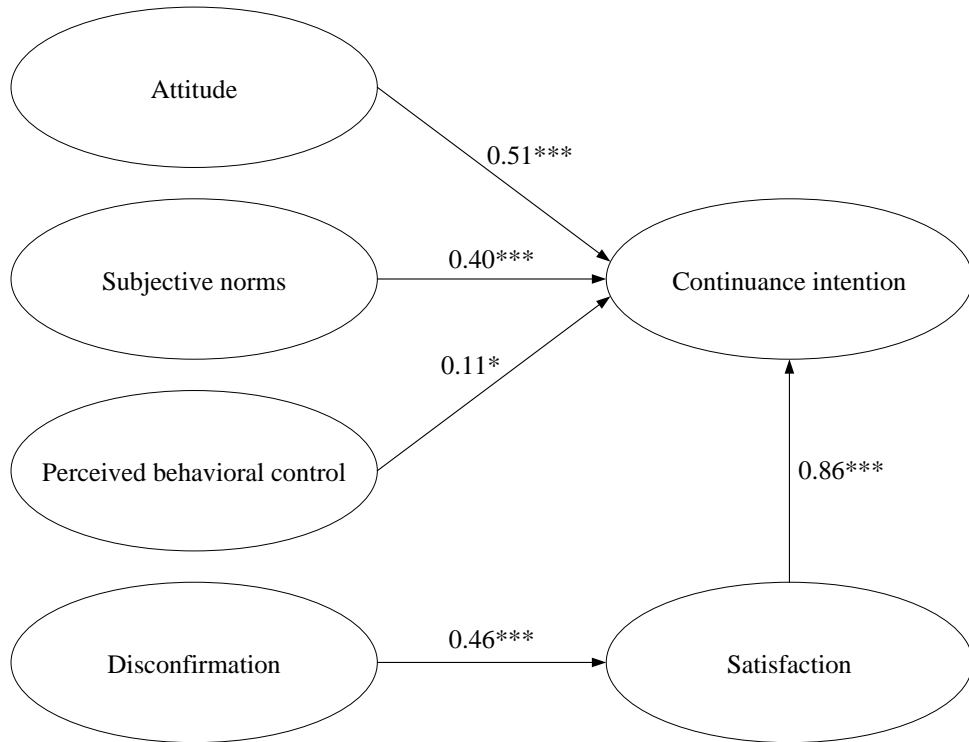
	1	2	3	4	5	6
1. Attitude	0.720					
2. Subjective norms	0.467	0.710				
3. Perceived behavioral control	0.566	0.514	0.710			
4. Disconfirmation	0.454	0.510	0.502	0.716		
5. Satisfaction	0.404	0.643	0.607	0.575	0.718	
6. Continuance intention	0.591	0.604	0.594	0.602	0.555	0.783

Note: All correlations are significant at the 0.05 level.

The diagonals represent the square root of average variance extracted (AVE).

4.2 Structural equation modeling analysis

We used structural equation modeling to test and analyze the hypothesized relationships in the proposed research model. All of the items are standardized. We have used the tolerance values and the variance inflation factors (VIF) to check the multicollinearity among the variables. The results found no evidence of multicollinearity among the variables. As Figure 2 shows, the structural model yielded a chi-square value of 63.975 with 56 degrees of freedom ($p < .001$). The ratio of the chi-square to the degrees of freedom was 1.142, below the recommended upper limit of 5⁶⁰. A comparison of all fit indices, with their corresponding recommended values, indicated good model fit (CFI=0.99, GFI=0.98, AGFI=0.95, NFI=.99, RMR=0.078, RMSEA=0.019). Figure 2 displays the estimates of the structural model in which the estimated parameters are standardized path coefficients, and all path coefficients are significant at the 95% level. The structural model showed that all hypotheses were accepted (H1, H2, H3, H4, and H5).



Note: *** : $p < 0.001$; * : $p < 0.05$

Figure 2. The results of structural model analysis

5. DISCUSSION AND CONCLUSIONS

This study uses the theory of planned behavior (TPB) and the expectancy disconfirmation model (EDM) to explain the factors affecting foreign students' continuance intention regarding mobile telecommunications services. The results confirmed that three variables from TPB — attitude, subjective norms, and PBC — and two variables from EDM — disconfirmation and satisfaction — significantly affect users' continuance intention regarding mobile telecommunications service.

The results show that a user's attitude has a direct positive relationship with intention to continue using a mobile telecommunications service. The results are consistent with Wang, Fan, Zhao, Yang, and Fu⁶¹; a person will intend to perform a certain behavior when he or she receives a positive effect from it. Bhattacharjee⁵⁵ concurred that a person is more likely to form

a positive attitude when they perceive a product as useful.

The results are consistent with the findings of Hsu et al.⁶² The effect of subjective norms is determined by the influence of important people in users' lives such as family and friends. If the user finds that people around them express a positive opinion about a product or service, they will be more eager to continue to using it. Conversely, without influential family and friends, users will have a low intention to continue to use the product or service.

When a situation or behavior affords a person complete control over their behavioral performance, they will be more likely to continue using a product or service⁶³. This effect refers to the perceived ease or difficulty of performing the behavior; the greater the PBC, the stronger a person's intention to perform the behavior²⁸.

In addition, disconfirmation was found to have a direct positive relationship with a user's satisfaction with their mobile telecommunications service. The user will adopt a service or product by comparing their experience with their expectation. According to Ofir and Simonson⁶⁴, if the user's evaluation is lower than their expectation, the user experiences negative disconfirmation, resulting in dissatisfaction. Conversely, if the user's evaluation is higher than their expectation, the user experiences positive disconfirmation, resulting in satisfaction. Unlike natives, however, foreign students have limited information and can be easily biased. According to social judgment theory, less-involved persons (such as foreign students) will exhibit more assimilating judgments and readily accept new information, whereas highly involved persons will exhibit more contrasting judgments and readily reject new information^{65, 66, 67}. Thus, less-involved persons are more likely than highly involved persons to experience higher negative disconfirmation and lower satisfaction⁶⁸.

Further, the results show that disconfirmation drives users' overall satisfaction and will therefore influence their continuance intention toward mobile telecommunications services. If users have a high level of satisfaction, their intention to reuse the service or product in the future will be higher⁶⁹. However, as noted earlier, users who have lower involvement are more likely to experience lower satisfaction. Therefore, foreign students' continuance intention toward mobile telecommunications services will also be reduced because of their lower satisfaction.

6. THEORETICAL AND MANAGERIAL IMPLICATIONS

The number of foreign students who come to Taiwan to study Mandarin has been increasing each year. Cell phones are becoming indispensable, as they enable these students to communicate. However, unlike native Taiwanese, the way in which foreign students with limited information choose a mobile telecommunications service provider from the many firms in Taiwan's market has seldom been explored. From a theoretical perspective, this study uses the frameworks of TPB and EDM to propose an integrated model that will explain the factors affecting foreigners' continuance intention toward mobile telecommunications services. Thus our research enriches previous findings by examining the effects of an integrated framework on foreigners' continuance intention. The results indicate that foreign students' intention to continue using a telecommunications service can be explained by our integrated framework (including the factors of his or her attitude, subjective norms, PBC, disconfirmation, and satisfaction). Specifically, the different situation that foreign students face (i.e. being less-involved persons with more limited information) will result in higher negative disconfirmation and therefore lower satisfaction and lower continuance intention toward mobile telecommunications services.

In practice, mobile telecommunications service providers find it increasingly difficult to predict which factors influence foreign students' behavioral intention to use their products or services. From a managerial perspective, our results suggest that mobile telecommunications service providers consider foreign students' attitudes, subjective norms, PBC, disconfirmation, and satisfaction. When designing their marketing strategies, telecommunications service providers should incorporate an understanding of the factors that determine users' continuance intention. Specifically, the results verified that satisfaction is the most influential factor in foreign students' inclination to continue using mobile telecommunications services. Therefore, marketers should consider satisfaction first. Mobile telecommunications service providers should provide excellent service (e.g., friendly and knowledgeable staff and quick response) to improve user satisfaction⁷⁰.

In terms of attitude, mobile telecommunications service providers should try to maintain or increase the positive value of their products and services. Linking users' attitudes to their brands' evaluation will give marketers a more detailed picture of how current users view their product or service offering. According to Venkatesh and Goyal⁷¹, users develop their attitudes when they recall historical experiences with products or services by asking themselves how their feelings in the past compare to those in the

present. Wanous, Poland, Premack, and Davis⁷² emphasized that attitude and disconfirmation level can influence a user's intention to continue using a system.

Likewise, the results of the present study show that disconfirmation has a significant positive impact on foreign students' satisfaction. In contrast to locals, however, foreign students have limited information and therefore lower involvement with mobile telecommunications service. This leads to higher negative disconfirmation and lower satisfaction⁶⁸. Therefore, marketers should try to enhance their involvement (e.g., promote product or service features through fan pages or websites) or meet users' pre-purchase expectations to generate better perceived performance. That is, the formation of positive disconfirmation will result in satisfaction, and stronger continuance intention. Conversely, if the mobile telecommunications service provider fails to meet users' pre-purchase expectations, the possibility of losing users will be high. Richard⁷³ stated that knowing what users expect is the first and most worthwhile step in delivering good quality service. This knowledge is important because misjudging users' expectations not only pushes customers to rival companies who offer goods and services that meet their expectations but also wastes money, time, and other resources that are not necessary to users and can even result in a failure to survive in a fiercely competitive market.

In terms of subjective norms, the results imply that users are likely to believe influential people in their lives and consequently favor these sources when deciding whether or not to continue using mobile telecommunications services. Marketers should therefore use or promote a positive word-of-mouth strategy to advertise their services. Royo-Vela and Casamassima⁷⁴ suggested that not only is it necessary to build a close social community among influencers, but it is also useful to look for influencers outside of that community. For example, as some common types of influencers, such as bloggers, keep abreast of telecommunications news, marketers should persuade those influencers to market the company's products or services to their followers. Marketers can also select aspects of a product or service that they want to highlight and promote them more aggressively.

This study also reveals that while PBC has a significant and positive impact on continuance intention, it is the least influential factor among those considered in this study. Thus, marketers should emphasize PBC. They should increase users' understanding about the ease of use or knowledgeableability of their products or services by offering facilitating conditions (e.g., guidance, specialized instructions and human support), which aid users to access telecommunications services more easily⁶⁵. This

approach might also promote user retention, as prior research has indicated that the perceived ease of use or adoption plays an important role in the intention to continue using any product or service⁷⁵. Thus, to increase adoption rates and encourage continued usage, companies should inform new users of the potential benefits of using their products and services and educate existing users about how to use the products or services more effectively.

7. LIMITATIONS AND FUTURE RESEARCH

When designing this study, efforts were made to minimize its limitations; however, some limitations remain. The first limitation is that this study focuses only on foreign students studying Mandarin in Taiwan, not other foreign nationals. Future studies may examine foreign students studying for university degrees, students from China taking short-term courses, or foreign students attending conferences. The second limitation is that this study is most concerned with the main variables affecting users' continuance intentions (attitude, subjective norms, PBC, disconfirmation, and satisfaction); however, it may not include all possible factors involved in the decision to continue using mobile telecommunications services. Future studies should explore new variables to gain a deeper understanding of the topic. Lastly, this study uses a short-term snapshot research approach. Future studies might apply a more longitudinal research approach to obtain a clearer picture of how the sample and relationships among variables change over time.

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APPENDIX

Scale items.

Attitude

1. Using this mobile telecommunications service provider is a good idea.
2. I like using this mobile telecommunications service provider.
3. Using this mobile telecommunications service provider is wise.

Subjective norms

1. People who are important to me suggest that I should subscribe to this mobile telecommunications service provider.
2. People who influence me think that I should subscribe to this mobile telecommunications service provider.

Perceived behavioral control

1. Using this mobile telecommunications service provider is entirely within my control.
2. I have the knowledge and ability to use this mobile telecommunications service provider.
3. I am able to use this mobile telecommunications service provider skillfully.

Disconfirmation

1. My experience with using this mobile telecommunications service provider was better than I expected.
2. The service level provided by this mobile telecommunications service provider was better than I expected.
3. Overall, most of my expectations regarding using this mobile telecommunications service provider were confirmed.

Satisfaction

1. I was very satisfied with my overall experience of the use of this mobile telecommunications service provider.

2. I was very pleased with my overall experience of the use of this mobile telecommunications service provider.
3. I was very contented with my overall experience of the use of this mobile telecommunications service provider.
4. I was delighted with my overall experience of the use of this mobile telecommunications service provider.

Continuance intention

1. Assuming that I purchase another smartphone, I intend to use this telecommunications service provider.
2. As much as possible, I will use this mobile telecommunications service provider to do different things (e.g., phone and free messaging).
3. I intend to increase my use of services from this mobile telecommunications service provider in the future.
4. Whenever possible, I intend to use this mobile telecommunications service provider.