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Determinants Influencing Individuals' Likelihood of Adopting and Actual use of Blueberry

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Abstract: The main purpose of this study is to empirically examine the research model attempting to explain factors influencing individuals' adoption intention and actual use of blueberry. The proposed research model suggests three external characteristics-economic, social and technological characteristics that affect the likelihood of blueberry adoption, which then leads to actual use of the technology. Each characteristic includes variables, such as policies, income, peer influence, safety concerns, various services, ubiquity and cost savings. Two hundred and eighty nine responses were collected in order to test the proposed model. The results of the study revealed that all variables had a significant impact on the likelihood of blueberry adoption, as well as actual use of the technology. The implications of the findings suggest a new theoretical framework for further research on wireless technology adoption and offer suggestions that the marketers and wireless service providers should consider with respect to blueberry.

Key words: Wireless technology, blueberry, technology adoption

INTRODUCTION

Wireless technology has become the hottest issue in many sectors of today's society; more organizations and individuals are interested in using wireless technology for various purposes. Wireless technologies have become a new trend and are expected to be the next big wave in our society. A number of wireless devices, services and applications have been developed and are already in use, covering a wide range of individual, as well as business functions. In addition, there are on-going academic and practical researches in the area of wireless technology adoption, such as wireless internet via mobile technology acceptance (Lu *et al*., 2003), mobile banking services (Mallat *et al*., 2004), mobile brokerage services (Looney *et al*., 2004), smartphone adoption (Kim, 2008) and others. However, what is missing with respect to wireless technology adoption is a clear understand ing of the motivations and circumstances surrounding wireless technology from the vantage point of the users themselves. It is obvious that many of the various wireless services cannot accomplish their potential without the proliferation of wireless devices and related applications.

In fact, the existing body of literature on technology's adoption and use are quite rich and extensive. However, surprisingly few academic studies regarding wireless technology adoption have been found (Pedersen, 2002). Furthermore, most technology adoption studies have been based on one of three well-known theories the Technology Acceptance Model (TAM), (Davis, 1989), the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975) and the Theory of Planned Behavior (TPB) (Ajzen, 1985). The validity of these models has been proved throughout many technology adoption researches. For example, Hu *et al*. (2000) studied the adoption of telemedicine service using the TAM and Kwon and Chidambaram (2000) also extended the TAM to study the adoption of the cellular phone. In addition, Pedersen (2002) used the TPB to study the mobile internet service. However, the extension of either the TAM or the TPB may not be appropriate for the adoption of wireless technology because of the unique characteristics of wireless technology, such as mobility and researchability. Sarker and Wells (2003) claimed that the existing theory, including TAM and the Diffusion of Innovation may explain the adoption of technologies, but in a new context, they may potentially ignore unique issues associated with wireless technologies. Therefore, what is needed at the infancy stage of the wireless era is a clear understand ing of how and why individuals use and adopt this technology. Therefore, the purpose of this study is to develop a theoretical model investigating factors that drive individuals' adoption intention toward

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wireless technology. The target technology in this study is a blueberry wireless technology that becomes must-have technology in many places. In addition, this study does not use the existing technology adoption theories, but approaches to build the research model based on previous researches regarding the use and adoption of wireless technology and actual users' points-of-views with respect to the likelihood of blueberry adoption and the actual use of it.

Existing literatures in technology adoption are very bountiful. Previous studies regarding technology adoption have used different approaches. In general, there are three possible approaches in studying technology adoption: the adoption approach, the diffusion approach and the domestication approach (Pedersen and Ling, 2003). The adoption approach applies one of three well known models: the Technology Acceptance Model (TAM) (Davis, 1989), the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975) and the Theory of Planned Behavior (TPB) (Ajzen, 1985). These models are focused on the individual's level of behavior and are primarily used for explaining the individual adoption and acceptance of technologies (Venkatesh and Morris, 2000). Among them, TAM has been widely used to examine the consequences of perceived usefulness and perceived ease of use with different applications and technologies, such as Window, Lotus, WWW and others (Anand arajan *et al*., 2002). TAM is one of the models whose validity has been highly proven within various contexts of technology adoption.

In addition, Venkatesh and Brown (2001) modified the TPB in order to develop a model that represents the adoption of technology by households. Pedersen (2002) examined the end-user behavior of adopting mobile internet services by using both the TAM and the TPB. Khalifa and Cheng (2002) used the TPB model as their theoretical basis in order to study the impact of exposing m-Commerce to an individual's intention to adopt m-Commerce. These adoption models gave a good understand ing of the characteristics of a particular information system, product, service, end-user behavioral intention and adoption requirement.

Next, diffusion theories include the Diffusion of Innovation (DOI) proposed by Rogers (1995), the Bass new product growth model and the Multi-generation technology diffusion model (Bass, 1969; Norton and Bass, 1992; Bass *et al*., 1994). The DOI model has been widely used to explain an individual's behaviors in various contexts of research, such as consumer behavior in the marketing field, organization adoption and diffusion behavior in a social system and in the information system field (Black *et al*., 2001; Crawford, 1996). Particularly, the bass model was developed to explain how customers adopt consumer durables. Norton and Bass (1992) combined the Bass model with the Technological Substitution Model (Fisher and Pry, 1971) in order to examine the sales behavior of high-technology products. These models encompass both diffusion and substitution. Jain *et al*. (1999) and Danaher *et al*. (2001) studied cellular phone services in the U.S and the European markets by integrating marketing-mix variables with these models.

Despite the plethora of studies in technology adoption and diffusion, there are surprisingly few studies that focus on individuals' adoption of wireless technology, especially blueberry. One main reason for the lack of such a study may be due to the fact that many wireless technologies, including blueberry, are a recent trend. Some researchers used the TAM as a framework to explain the adoption of wireless devices. For example, Kwon and Chidambaram (2000) tested the TAM in the case of cellular phone adoption. Pedersen (2002) suggested a decomposed TPB to study the adoption of mobile Internet services. In addition, Constantiou *et al*. (2004), Sarker *et al*. (2002) and Sarker and Wells (2003) developed a model explaining the use and adoption of wireless devices and services based on a survey and user-experiences. Kshetri and Cheung (2002) developed the model for mobile diffusion in China based on the political and economic changes in the country.

However, the predictive values of these studies were limited in various aspects. For example, the study by Constatiou *et al*. (2004) conducted a non-empirical study that proposed factors influencing mobile services' adoption and diffusion in the Danish market. Thus, this study is required to conduct empirical assessment in order to generalize the model, as well to explain adoption of wireless devices and services. Furthermore, Sarker *et al*. (2002) and Sarker and Wells (2003) conducted the exploratory research projects, which helped understanding about the adoption of wireless technology in general by providing information. However, they failed to prove users' attitudes and behaviors regarding the adoption of wireless technology. Therefore, this study attempts to empirically investigate the proposed research model in order to better explain users' behaviors regarding wireless technology adoption, particularly blueberry.

RESEARCH MODEL AND HYPOTHESES

Figure 1 shows the proposed research model. It introduces three characteristics that explain the social phenomenon that results when individuals have certain attitudes and behaviors toward the technology. First, economic characteristic includes Policies (P) and Income

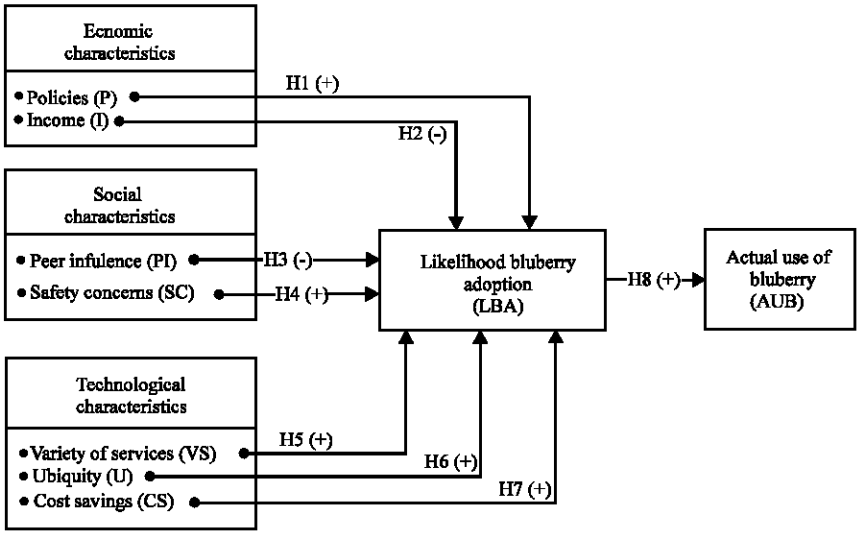

Fig. 1: Research model and hypotheses

(I) as affecting user interests in the adoption of or the rejection of blueberry. Second, social characteristics include Peer Influence (PI) and Safety Concerns (SC). Finally, technological characteristics include Various Services (VS), Cost Savings (CS) and Ubiquity (U). These variables directly affect the likelihood of adopting blueberry, which then leads to the actual adoption of the technology.

Economic characteristics: Economic characteristics, such as policies and income, have been important factors for many different kinds of technology adoption. In this external environment, policies and household income directly link to the likelihood of blueberry adoption. Kauffman and Techatassanasoontorn (2004) suggested that proper regulatory policies regarding wireless communication services play a key role for users in deciding whether to use certain kinds of wireless technology. Furthermore, Dholakia *et al.* (2004) claimed that economic conditions, particularly income level, are a crucial determinant to the adoption of wireless technology due to additional costs involved in adopting wireless technology.

In this study, Policies refer to standards and government regulations for wireless communication. Such policies play an important role, particularly in the diffusion of a new technology, such as the Internet and the wireless telecommunication (Montealegre, 1999). Regulatory policies are complex issues that need to be addressed. Non-stand ardized policy on wireless communication tends to slow the adoption of such technology (Gruber and Verboven, 2001). Therefore, the process of adopting individuals' blueberry may be faster in markets with proper wireless communication policy. Kauffman and Techatassanasoontorn (2004) claimed that countries having stand ardized and government policies in the subscription of wireless technology, for example Korea, Finland and Sweden have a higher diffusion rate. Thus, the first hypothesis is:

- **Hypothesis 1:** Policies (P) has a positive effect on the Likelihood of Blueberry Adoption (LBA)

In addition to regulatory policies, income levels directly influence the likelihood of blueberry adoption. In this study, income refers to the degree of individuals' financial ability to support and use blueberry. High-income people often adopt wireless technologies early, while low-income people may or may not adopt them. Therefore, a certain minimum level of income is required in the adoption of wireless technology (Dholakia *et al.*, 2004). A high income level, in turn, allows prospective adopters to afford higher prices while accepting an innovation (Dekimpe *et al.*, 2000). Some researches even found that there is a correlation between income level and the adoption of new technology. For example, Castro *et al.* (2001) claimed that technology appropriateness is related to socioeconomic characteristics, such as income level. Income is a significant factor in determining whether or not individuals adopt technology (Jeffers and Atkin, 1996). Thus, the following hypothesis is proposed:

- **Hypothesis 2:** Income (I) has a positive effect on the Likelihood of Blueberry Adoption (LBA)

Social characteristics: Social characteristics is the external environment from which the changes in social phenomenon originate. Regardless of the individual's intention and willingness of adopting wireless technology, he/she may have to adopt new technologies due to these social trends and phenomena. Two factors in this characteristic include peer influence and safety concerns. Peer influence is defined as the degree of pressure that an individual feels from other members in the same group about the use and adoption of blueberry. Peer Influence is a well-known factor that affects the adoption of technology. It is the degree of interpersonal influence within a user group. Individuals are often influenced by peers in the same user group they belong to. If some members in a group use a certain technology, there is a high possibility that others adopt the same technology.

Several studies emphasize the importance of peer influence. For example, Pedersen *et al.* (2003) studied the adoption of mobile service-Multimedia Messaging Service (MMS). They claimed that users discover text messaging instrumental in social coordination because all other members of their social network use it, but still feel little social pressure towards using text messaging services as a norm. In addition, the study of cellular adoption (Kwon and Chidambaram, 2000) found that the actual use of the cellular phone had a strong and significant association with the degree of social pressure.

Peer influence has been a key factor impacting the adoption of various technologies. For example, Chiasson and Lovato (2001) studied the decision support system adoption for health planning. They found that subjective norm similar definition as peer influence is a significant antecedent of information system adoption intention. Morris and Venkatesh (2000) used the TPB in order to investigate age differences in adoption intentions and continued use of information technology. They concluded that technology users were strongly influenced by peer influence, although age and length of exposure moderated the effects. Since potential users of blueberry are in a social group, in which almost all members adopt and use blueberry, peer influence regarding the adoption of blueberry might be significant. Therefore, the third hypothesis is:

- **Hypothesis 3:** Peer Influence (PI) has a positive effect on the Likelihood of Blueberry Adoption (LBA)

The second variable in social characteristics is Safety Concerns. Because the current society has become complex and unpredictable, safety is considered to be a huge issue for a daily life. To minimize such safety concerns, individuals attempt to find and adopt a technology providing safety functionality. Safety concerns in this study refers to the extent to which individuals expect to obtain safety functions and capabilities by adopting a technology. Most users had a wireless phone that most likely was attributed to the safety and convenience issues associated with life.

As the crime rate and other emergency situations increase, personal safety is a major concern in many places. In this context, a wireless device, blueberry, is more than a convenient communication tool. It is a safety tool, which affects the likelihood of adopting the technology. Davis (1993) claimed that wireless phones are considered appropriate gifts by family members to ensure their mutual safety. Furthermore, Carroll *et al.* (2002) claimed that the safety function is one of the appropriation criteria of wireless technology, particularly the wireless phone. Thus, to empirically test the relationship between users' attitude and safety concerns with respect to the adoption of blueberry, the following hypothesis is proposed:

- **Hypothesis 4:** Safety Concerns has a positive effect on the Likelihood of Blueberry Adoption (LBA)

Technological characteristics: Three variables related to the technological characteristics are proposed. First, Various Services, offered by wireless technology, are a key factor directly influencing the adoption of the technology. Various Services in this study refers to the degree to which individuals perceive that blueberry provides various types of wireless services. Many wireless devices, including blueberry, have as strong a computing power as personal computers. With such strong computing power and wireless Internet technology, blueberry users may enjoy more services than those of other technologies. Vrehopoulos *et al.* (2002) claimed that the value of the service is highlighted as a key factor of wireless technology adoption. Currently, there are many services offered through wireless technology, such as text messaging, multimedia messaging, personalization, location specificity and others. Constantiou *et al.* (2004) identified that the personalization service of a wireless device was the key factors affecting wireless technology adoption and diffusion. Therefore, in order to empirically test the relationship between Various Services and the Likelihood of adopting blueberry, the following hypothesis is proposed:

- **Hypothesis 5:** Various Services (VS) has a positive effect on the Likelihood of Blueberry Adoption (LBA)

The second variable in the technological characteristics is Cost Savings. Cost Savings implies individuals' perception about the way that blueberry provides cost-effective communication and connectivity (Kim, 2008). In this study, cost savings includes time and emotional efforts. Wireless technology allows users to have anytime and anywhere communication and connectivity, which gives individuals opportunities to save nonmonetary value in their daily lives.

Furthermore, the actual service cost of wireless technology has fallen. Rogers (1995) claimed that the fast falling cost of wireless technology offers users relative advantages regarding the adoption of such technology over other technologies. Vrehopoulos *et al.* (2002) found that the cost of wireless services is a key factor influencing individuals' attitudes and behaviors regarding the adoption of wireless services. Thus, the sixth hypothesis is:

- **Hypothesis 6:** Cost Savings (CS) has a positive effect on the Likelihood of Blueberry Adoption (LBA)

The third variable in the technological characteristics is Ubiquity. Wireless technology provides personalized and discontinued communications and connectivity between the individuals and other individuals and /or networks. Ubiquity is a key advantage of wireless technology. Ubiquity implies anytime and anywhere communication and connection capability. Sarker and Wells (2003) claimed that anytime and anywhere communication and connection may be the most touted advantage of wireless technology. In the same context, individuals can use blueberry without time and location limitation, which makes their behavior toward the technology positive. Therefore, the following hypothesis is proposed:

- **Hypothesis 7:** Ubiquity (U) has a positive effect on the Likelihood of Blueberry Adoption (LBA)

Similar to other technology adoption studies, this study includes the relationship between the likelihood of adopting blueberry and the actual use of the technology. Davis (1989) claimed that information technology use is determined by the likelihood of adopting the technology. This study excludes the attitude variable in order to simplify the research model. The relationship between these two variables has been proven valid from previous studies (Davis, 1989). Thus, the following hypothesis is proposed:

- **Hypothesis 8:** Likelihood of Blueberry Adoption (LBA) has a positive effect on Actual Use of Blueberry (AUB)

MATERIALS AND METHODS

Sample: Data were collected using an online survey in order to empirically test the research model and its hypotheses. A total of 301 responses were collected. A total of 12 were discarded due to being inapplicable to the context of this study. As shown in Table 1, participants were a demographically diverse group with an average age of 24.7, ranging from 18 to 50 years old. Most of the participants (82%) used blueberry for more than one year.

Measurement: Items to measure each variable in the research model were adopted from prior research. However, new variables to measure latent variables in the research model were developed on the basis of information system literature. Each item was modified to measure individuals' psychological feelings with respect to his/her intention to use and actual use of blueberry. Each individual was asked to indicate his/her extent of agreement or disagreement with various statements

Table 1: Demographic characteristics

Demographic characteristics	Frequency	Percentage
Age (years)		
15-24	34	12
25-34	102	35
35-44	79	27
45+	74	26
Gender		
Male	176	61
Female	113	39
Race/ethnicity		
White (Non-Hispanic)	78	27
Black	58	20
Hispanic origin, any race	63	22
Asian or Pacific Island er	90	31
Educational level		
Some high school or less	45	16
Graduate high school	48	17
College/university	79	27
Post-graduate study	66	23
Others	51	18
Occupation		
Student	31	11
Company-employed	78	27
Professional	93	32
Self-employed	64	22
Others	23	8
Length of using blueberry		
<1 year	54	19
=1, <2 years	115	40
=2, <3 years	120	42

concerning blueberry on a seven-point Likert-type scale ranging from (1) strongly disagree to (7) strongly agree for each factor.

RESULTS AND DISCUSSION

Analysis of the measurement model: Confirmatory factor analysis using AMOS 7.0 was used to create and test the measurement model for the variables. First, in order to demonstrate a reasonable fit for the model, several indices, such as the relative χ^2 (χ^2/df), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), normed fit index (NFI) and the root mean square of approximation (RMSEA), were used. A good fit is usually deemed to exist if the value of GFI, NFI and CFI are greater than 0.90 (Bentler, 1990), AGFI is greater than 0.8 and RMSEA is around 0.1 (Browne and Cudeck, 1993). Furthermore, the value for χ^2/df should have a range from less than 3 to as high as 5 (Goodhue, 1995). The results of indices for the measurement model with 29 items represented that the data fits well into the model. The summary of the overall fit indices for the measurement model is shown in Table 2.

Table 2: The summary of the overall fit indices for the measurement model

Model	NFI	GFI	AGFI	CFI	χ^2/df	RMSEA
Measurement model	0.93	0.91	0.87	0.93	1.29	0.039
Recommended value	≥0.9	≥0.9	≥0.8	≥0.9	≥3.0	≥0.10

Table 3: Results of the reliability and construct validity test

Variable	Items	Factor loading	Cronbach's alpha	AVE
Policies	p1	0.756	0.780	0.731
	p2	0.810		
	p3	0.766		
Income	i1	0.827	0.862	0.807
	i2	0.864		
	i3	0.810		
Peer influence	pi1	0.835	0.885	0.847
	pi2	0.894		
	pi3	0.866		
Safety concerns	sc1	0.780	0.847	0.800
	sc2	0.826		
	sc3	0.845		
	sc4	0.862		
Various services	vs1	0.830	0.840	0.729
	vs2	0.743		
	vs3	0.801		
	vs4	0.730		
Cost savings	cs1	0.887	0.743	0.835
	cs2	0.855		
	cs3	0.823		
Ubiquity	u1	0.798	0.812	0.778
	u2	0.881		
	u3	0.756		
Likelihood of adopting blueberry	lab1	0.899	0.923	0.900
	lab2	0.905		
	lab3	0.921		
Actual use of blueberry	au1	0.923	0.942	0.916
	au2	0.940		
	au3	0.902		

Reliability and construct validity: After testing the overall-fit of data, the reliability and construct validity were tested. The most commonly used reliability test tool is Cronbach's alpha in a social science study. Teo *et al.* (1999) claimed that a minimum acceptable level of alpha for confirmatory study is 0.7. As shown in Table 3, Cronbach's alpha ranges from 0.743 to 0.942, this demonstrates the reliability of all variables.

Then, factor loadings and Average Variance Extracted (AVE) were used to test construct validity. To demonstrate construct validity, factor loadings should be greater than 0.5 regarding the expected factors and less than 0.4 on the other constructs (Cheung *et al.*, 2000). In addition, the AVE should be greater than 0.5 in order to justify the use of a construct (Chin, 1998). Table 4 shows the squared inter-correlations among the latent variables. They represent the shared variance among the constructs and did not exceed the AVE. Thus, the construct validity was demonstrated.

Analysis of the Structure Equation Model (SEM): The significance of each hypothesis path in the research model was examined using the structural equation model (SEM). The SEM analysis yields two important pieces of information: path coefficient (β) and the squared multiple correlation (R^2), implying how well the structural model predicted the hypothesized relationships. First, the path coefficients show the strength of the causal relationships between two constructs (Wixom and Watson, 2001).

The findings provided strong support for all hypotheses. The path coefficient between policies and likelihood of blueberry adoption was 0.324, at $p<0.01$. Income was significantly related to likelihood of blueberry adoption ($\beta = 0.421$, $p<0.01$). Also, peer influence was significantly related to likelihood of blueberry adoption ($\beta = 0.398$, $p<0.001$). Safety concerns had a positive effect on the Likelihood of blueberry adoption ($\beta = 0.287$, $p<0.01$). Thus, H1, H2, H3 and H4 were supported. Furthermore, three variables, variety of services, cost savings and ubiquity in the technological characteristics were significantly related to the likelihood of blueberry Adoption ($\beta = 0.254$, $p<0.01$; $\beta = 0.447$, $p<0.001$; $\beta = 0.572$, $p<0.001$, respectively). Therefore, H5, H6 and H7 were supported. Finally, the result showed that likelihood of blueberry adoption had a significant influence on actual use ($\beta = 0.624$, $p<0.001$). Thus, H8 was supported.

The second important piece of information is the squared multiple correlation (R^2) for each endogenous variable regarding the research model. The value of R^2

Table 4: Squared inter-correlations among the latent variables

Latent construct	Policies	Income	Peer influence	Safety concerns	Various services	Cost savings	Ubiquity	Likelihood of adoption	Actual use
Policies	0.85								
Income	0.11	0.90							
Peer influence	0.14	0.12	0.92						
Safety concerns	0.24	0.31	0.25	0.89					
Various services	0.19	0.22	0.24	0.32	0.85				
Cost savings	0.27	0.26	0.17	0.21	0.20	0.91			
Ubiquity	0.34	0.41	0.37	0.36	0.39	0.23	0.88		
Likelihood of adoption	0.29	0.33	0.30	0.42	0.39	0.19	0.43	0.95	
Actual use	0.33	0.31	0.27	0.35	0.34	0.39	0.26	0.21	0.96

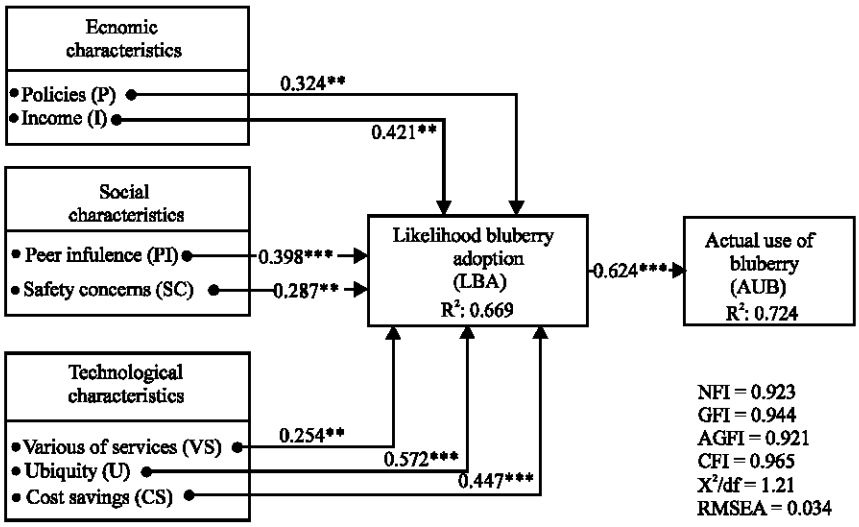

Fig. 2: The results of the structure equation model (SEM). *: p<0.05, **: p<0.01, ***: p<0.001

measures the percent of variance explained by each construct in the model. Seven independent variables in the research model explained the 66.9% variance in likelihood of blueberry adoption, which explained the 72.4% variance in actual use of blueberry. Figure 2 shows the stand ardized path coefficients in conjunction with their respective significance levels and variance explained.

CONCLUSIONS

This study introduced key factors affecting the social effects motivating individuals considering the adoption and uses a piece of wireless technology, blueberry. The data collected supported the overall validity of the research model and all hypotheses were supported. Three external characteristics explained 66.9% of the variance in the likelihood of blueberry Adoption. Finally, it explained 72.4% of the variance in the actual use of blueberry.

All hypothesized relationships in the model were found to be significant: polices ($\beta = 0.324$, $p<0.01$), income ($\beta = 0.421$, $p<0.01$), peer influence ($\beta = 0.398$, $p<0.001$), Safety concerns ($\beta = 0.287$, $p<0.01$), various services ($\beta = 0.254$, $p<0.01$), cost savings ($\beta = 0.447$, $p<0.001$) and ubiquity ($\beta = 0.572$, $p<0.001$) had a significant impact on the likelihood of blueberry adoption. In addition, likelihood of blueberry adoption had a significant impact on the actual use of the technology ($\beta = 0.624$, $p<0.001$).

Blueberry is an interesting and a very recent trend for many individuals. Unlike wired technologies, many wireless technologies, including blueberry, provide not only basic communication tools, but also other capabilities and functionalities that users normally enjoy with personal computers. The findings of this study would vary while it is obvious that any study of wireless technology field contributes to many researchers and practitioners, since it is an emerging technology and being interested by many individuals. First, this study contributes to the knowledge about the adoption of blueberry technology in general, as well as helps reveal the effects of the new technology on human behavior and vice-versa, just as many information technology researches have done in the past. As Straub *et al.* (1995) and Taylor and Todd (1995) claimed, two main focuses in information system research are the users' perceptions

of and intentions to adopt the information system and the rate of diffusion and penetration of technology within and across organizations. This study assists others in understand ing these two main focuses.

Second, even though wireless technology is the hottest interest in many areas of our society, there are few studies regarding individual behaviors in the adoption and use of wireless technology. In other words, the rarity of study in wireless technology adoption in academic and practices setting would add more value to this study. In the near future, there is no doubt that many technologies would be designed to mobile and wireless. This study provides a good framework for the future research of both scholars and practitioners in the wireless technology field. The findings of this study also have significant implications for the research on the other types of wireless devices or services, such as m-Commerce, adoption study.

However, this study had a few limitations that need to be noted. First, the samples had a bias against gender; female samples (39%) were less than male samples (61%). Thus, this study had a limitation in generalizing the findings. Second, this study did not include the individuals or users' characteristics, which may include gender, experiences and so on in the research model. Third, this study did not include the entire array of components of each characteristic in order to explain individuals' likelihood of blueberry adoption. Therefore, future research may develop more variables that affect blueberry adoption. In addition, the future study should address the limitations of this study.

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