Testing an Extended Model of IT Acceptance in the Chinese Cultural Context

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Abstract:
Research on technology acceptance and diffusion is critical, providing insights into how organizations can manage the adoption and use of information technology. With globalization, it is important to understand IT adoption in other cultures. The primary purpose of this study is to enrich the understanding of IT acceptance by extending a U.S.-based research model to a different culture, namely China. We conducted a cross-sectional survey of e-mail users in 30 Chinese organizations. Structural equation modeling was used to validate the model and test the hypotheses. We draw comparisons between our findings and existing studies, and discuss theoretical and practical implications.
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Article:

Introduction

In the past three decades, IT acceptance has been studied extensively. Significant theories and models include the technology acceptance model (TAM) (Davis, 1986; 1989), theory of reasoned action (TRA) (Fishbein & Ajzen, 1975), and innovation diffusion theory (IDT) (Rogers, 1995). In IS research, several researchers underscore the importance of replication and extension (Berthon et al., 2002; Rai et al., 2002; Venkatesh et al., 2003). Most of the research in technology acceptance has been conducted in North America alone.

It has long been recognized that culture has a significant impact on organizational theories (Hofstede, 1994; 2001) including IT acceptance (Straub, 1994; Straub et al., 1997). It would be erroneous to assume that IT acceptance theories predict equally well in other cultural settings. The robustness of the models may vary across different cultures and thus needs to be empirically tested. In a practical sense, as multinational companies continue to penetrate foreign markets, the question of how IT should be managed in other parts of the world must be answered. In this paper, we test a research model, based on existing innovation theories, in China. The selection of China, a very different culture from the U.S., offers advantages from both theoretical and practical perspectives.

From a theoretical angle, testing a model based on theories and empirical work from the U.S. in the Chinese cultural setting could offer a substantially different view.

Country	Cultural Cluster	Power Distance	Individualism	Uncertainty Avoidance	Masculinity	Long-Term Orientation
United States	Anglo	30	100	21	74	29
China	Far Eastern	89	39	44	54	118

Adapted from (Cullen 1999, p. 62). (100 = highest; 50 = middle)

Table 1. Culture Dimensions and Their Values of the United States and China

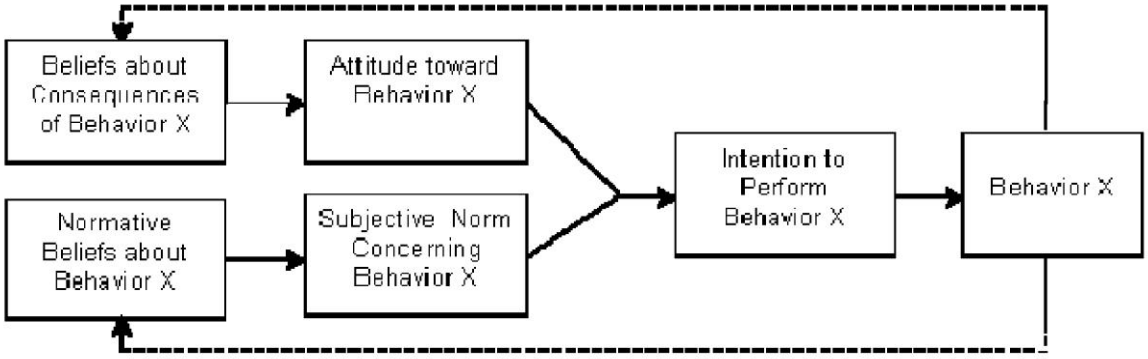


Figure 1. Theory of Reasoned Action (TRA)

We expect to find differences based on the considerable disparity between cultural values and clusters (See Table 1; for a complete discussion of cultural dimensions and clusters, see Hofstede, 1994 and Hofstede, 2001). As shown in Table 1, the U.S. and Chinese cultures contrast each other along some dimensions. The U.S., an Anglo culture, has a low degree of power distance and uncertainty avoidance and extremely high degree of individualism. The degree of masculinity is relatively high for the Anglo culture. It is also short-term oriented. China on the other hand is classified under the Far Eastern cluster. Comparing with the U.S., it has a higher degree of power distance and uncertainty avoidance, much lower degree of individualism, and slightly lower degree of masculinity. China has the highest score in long-term orientation among all countries investigated by Hofstede. Clearly, the Chinese culture is quite different compared to the U.S. and we expect our findings to be different from the U.S.-based studies. More specifically, we expect differences in the effects of the determinants of attitude and behavioral intention.

From a practical viewpoint, as the world's fastest growing economy and the most populous nation, China has significant business dealings with the U.S. Thus the study would offer a richer understanding of this relationship. The results of our research would provide insights to managers faced with the challenges of managing technology acceptance in China.

Theoretical Foundations

In MIS research, both innovation diffusion theory (IDT) and theory of reasoned action (TRA) serve as theoretical foundations for technology acceptance models, such as the technology acceptance model (TAM). Innovation diffusion theory (IDT) has been a major area of research focusing on innovation attributes (Rogers, 1995). Relative advantage, complexity, compatibility, observability, trialability, and image are perceived attributes of innovation. The innovation attributes are treated as behavioral beliefs, a key concept in the theory of reasoned action (TRA) (Fishbein & Ajzen 1975). TRA focuses on predicting behavioral intention and actual behavior based on behavioral beliefs and subjective norms (Figure 1). Its strong predictive power has drawn attention from multiple disciplines, such as psychology, sociology, marketing, and MIS (Sheppard et al., 1988). However, TRA's normative beliefs and subjective norms constructs have received inadequate attention from TAM researchers. It is reasonable to assume that norms play an important role in shaping organizational behaviors in a collective culture, such as China; therefore, it is included in our study.

While IDT provides the theoretical and empirical framework to the behavioral beliefs in technology acceptance models, TRA supports the underlying causal relationships among behavioral beliefs, subjective norms, attitude, and behavior. In the well-known technology acceptance model (TAM), Davis (1986; 1989) validated two key determinants of technology use: perceived usefulness (PU) and perceived ease of use (EOU). The perceived usefulness construct parallels relative advantage and perceived ease of use parallels complexity (Davis et al., 1989; Karahanna et al., 1999). These two constructs constitute the major determinants of user attitude, which mediates the relationship between the two beliefs and user intention (Figure 2). There is also a direct link between perceived usefulness and behavioral intention. The rationale is that employees may have a negative attitude, yet the positive belief of usefulness can lead to positive usage intention (Taylor & Todd, 1995b). While relative advantage and complexity are studied consistently in TAM research, other types of behavioral beliefs

including compatibility are rarely included. Although the effect of these constructs is less known and infrequently acknowledged in IT acceptance, they constitute some important concepts and thus worth additional research efforts.

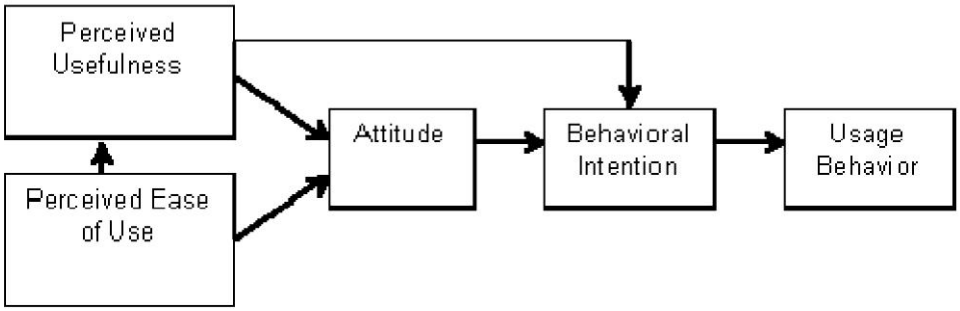


Figure 2. Technology Acceptance Model

TAM has been extended and modified extensively. However, extant literature is limited to testing TAM and other technology acceptance models in North America. TAM in particular is found less applicable or predictive in other countries, such as Japan, Switzerland, and Arab countries (Rose & Straub 1998; Straub, 1994; Straub et al., 1997). Furthermore, the non-U.S. studies test only a sub-set of the constructs of TAM. We develop a more comprehensive model and test it in the cultural context of China.

Research Model and Hypotheses

IDT, TRA, TAM, and other key studies contributed to the development of a research model for this study (Figure 3). The model is consistent with that of Karahanna et al. (1999) with the exception of a link between perceived usefulness and behavioral intention, as per TAM.

The model combines TAM's perceived usefulness, ease of use, attitude and behavioral intention constructs, IDT's innovation attributes (treated as behavioral beliefs), and TRA's normative beliefs and subjective norms constructs. The variables and their linkages are discussed below.

Behavioral Beliefs

Dimensions of behavioral beliefs include usefulness, ease of use, image, compatibility, trialability, visibility, and result demonstrability (e.g., Davis, 1989; Davis et al., 1989; Agarwal & Prasad, 1997; Rogers, 1995; Karahanna et al., 1999). These constructs have seldom been tested simultaneously. Table 2 contains the definitions and references for these dimensions. Based on TRA and previous studies, behavioral beliefs lead to attitude, defined as "a learned, implicit anticipatory response" (Doob 1947, in Fishbein & Ajzen, 1975, p. 24). We generate Hypothesis 1 to 7 that investigate behavioral beliefs as the determinants of attitude.

H1: Chinese IT users' perceived usefulness has a positive effect on attitude.

H2: Chinese IT users' perceived ease of use has a positive effect on attitude.

H3: Chinese IT users' perceived compatibility has a positive effect on attitude.

H4: Chinese IT users' perceived visibility has a positive effect on attitude.

H5: Chinese IT users' perceived trialability has a positive effect on attitude.

H6: Chinese IT users' perceived result demonstrability has a positive effect on attitude.

H7: Chinese IT users' perceived image has a positive effect on attitude.

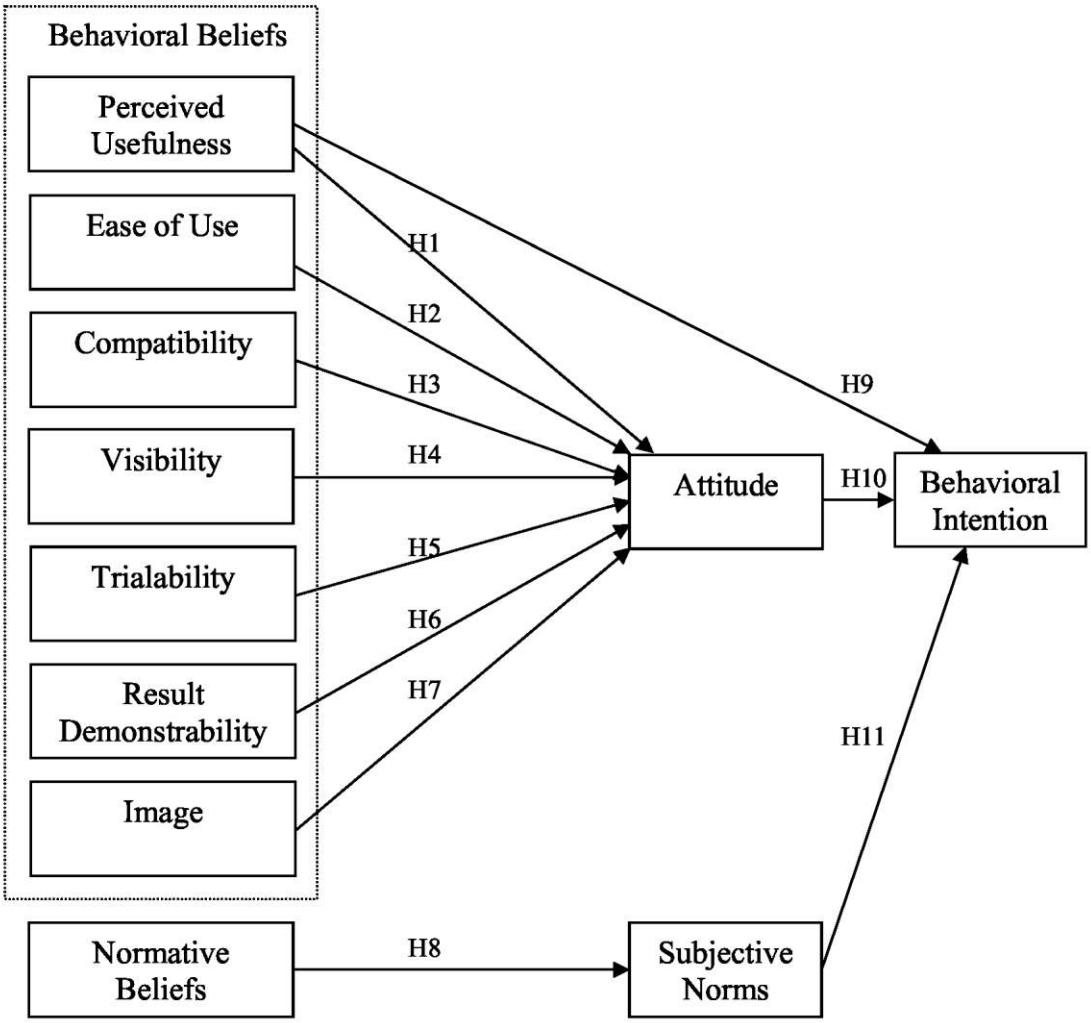


Figure 3. Research Model

Normative Beliefs and Subjective Norm

Normative beliefs of an individual refer to what he feels about what his salient referents expect him to do. MIS literature indicates that normative beliefs are formed from the following sources: top management, friends and peers, IS department, and IS specialists (Karahanna et al., 1999). Normative beliefs shape a person's subjective norm, which is the perception of social pressure to perform the behavior (Mathieson, 1991). Thus,

H8: Chinese IT users' normative beliefs have a positive effect on subjective norms.

Behavioral Intention

It has been established that behavioral intention is a good predictor of both self-reported and actual usage (Szajna, 1996; Jackson et al., 1997; Agarwal & Prasad, 1999). Therefore, intention is a meaningful surrogate for behavior. According to TRA, both attitude

and subjective norms affect behavioral intention. Particularly in the context of IT use, perceived usefulness has a direct effect on behavioral intention (Davis et al., 1989). Thus,

H9: Chinese IT users' perceived usefulness has a positive effect on behavioral intention.

H10: Chinese IT users' Attitude has a positive effect on behavioral intention.

H11: Chinese IT users' subjective norms has a positive effect on behavioral intention.

Research Methodology

We selected e-mail as the target technology. It has been studied in the existing literature (e.g., Agarwal & Prasad, 1998; Straub et al., 1997). Besides, the advantage of selecting e-mail is that it is widely available in Chinese organizations thus making sampling easier.

Behavioral Beliefs	Definition	References
Perceived Usefulness	The subjective probability that using a specific application system will increase his or her job performance within an organizational context.	Davis et al. 1989; Karahanna et. al. 1999; Rogers 1995; Hoffer and Alexander 1992; Moore and Benbasat 1991
Ease of Use	The degree to which using a particular system is free of effort.	Karahanna et al. 1999; Rogers 1995; Hoffer and Alexander 1992; Moore and Benbasat 1991
Compatibility	The degree to which using the IT innovation is compatible with what people do.	Karahanna et al. 1999; Rogers 1995; Hoffer 1992; Moore and Benbasat 1991
Trialability	The degree to which one can experiment with an innovation on a limited basis before making an adoption or rejection decision.	Karahanna et al. 1999; Rogers 1995; Moore and Benbasat 1991
Visibility	The degree to which the innovation is visible in the organization.	Karahanna et al. 1999; Moore and Benbasat 1991
Result Demonstrability	The degree to which the results of using the IT innovation are observable and communicable to others.	Karahanna et al. 1999; Moore and Benbasat 1991
Image	The degree to which usage of the innovation is perceived to enhance one's image or status in one's social system.	Karahanna et al. 1999; Moore and Benbasat 1991

Table 2. Perceived Innovation Attributes (Behavioral Beliefs)
(Adopted from Karahanna et al. 1999)

Operationalization of the Constructs

The constructs were operationalized using existing scales from previous studies. Fully anchored 7-point Likert scales were used with end points being "strongly disagree" and "strongly agree". The items for perceived usefulness and ease of use were adapted from Davis (1989), Karahanna et al. (1999), and Moore and Benbasat (1991). The compatibility, trialability, visibility, and result demonstrability items were from Karahanna et al. (1999) and Moore and Benbasat (1991). The image items were from Moore and Benbasat (1991). The normative beliefs and subject norms items were from Karahanna et al. (1999), Moore and Benbasat (1991), and Taylor and Todd (1995b). Attitude items were from Barki and Hartwick (1994) and Karahanna et al. (1999). The behavioral intention items were from Karahanna et al. (1999) and Venkatesh and Davis (1996).

Instrument Translation

Because the majority of Chinese employees are not proficient in English, the instrument was developed in English and was translated into Chinese and back translated to English to ensure that the instrument was equivalent. The instrument was then validated and refined through a pilot test using actual Chinese employees. The final instrument demonstrating adequate reliability contains 44 items for the 11 constructs. **Appendix**A shows the instrument along with the means and standard deviations of the items.

Data Collection

A cross-sectional survey was carried out in 30 Chinese companies. We were able to work with a liaison in each company to distribute the questionnaires to employees. The employees were given questionnaires to answer questions about e-mail. A total of 533 usable surveys were returned.

Sample Demographics

Approximately 40% of the respondents were between the ages 23 and 28, representative of the young work force in China. Approximately 72% were males. Most were college graduates. The survey covered every level of the organization.

Analysis

Scale Reliability

Scale reliability was assessed using Cronbach's alpha (α). Table 3 shows the reliability coefficients, ranging from .76 to .93, above the accepted cutoff of .70 (Nunnally, 1967).

Construct (# of Items)	Cronbach's α
Perceived Usefulness (6)	.88
Perceived Ease of Use (4)	.82
Compatibility (3)	.83
Trialability (4)	.84
Visibility (5)	.86
Result Demonstrability (3)	.76
Image (4)	.91
Normative Believes (6)	.93
Attitude (4)	.89
Subjective Norm (2)	.93
Behavioral Intention (3)	.84

Table 3. Reliability Coefficients

Fit statistics	Measure-ment Model	Structural Model	Recom-mended Value
χ^2 (df)	2887.78 (847)	3031.76 (863)	
Root Mean Square Error of Approximation (RMSEA)	.067	.069	about .06
Comparative Fit Index (CFI)	.95	.94	≥ .90
Normed Fit Index (NFI)	.93	.92	≥ .90
Incremental Fit Index (IFI)	.95	.94	≥ .90

Table 4. Fit Indices for the Measurement Model and Structural Model

Construct validity of the measurement was assessed through convergent and discriminant validity. Examination of the correlation matrix (Appendix B) demonstrated adequate convergent and discriminant validity. Correlation coefficients within the same construct (mean absolute value = .60) were generally higher than the correlations across constructs (mean absolute value = .17). In addition, a factor analysis[1] with varimax rotation was preformed. All items loaded on the prospective constructs. No unacceptable cross-loadings were detected indicating construct validity. The risk of multicollinearity was assessed. Each indicator was regressed against all other indicators within the same construct. As recommended, all variance inflation factors (VI F) were less than 10.

Model and Hypothesis Testing

The associations between the constructs were evaluated with structural equation modeling (SEM), a technique for discovering potential latent structures (Jöreskog, 1993). The estimation procedure used was maximum likelihood (ML). ML assumes normality of data. The examination of histograms, skewness, and kurtosis indicated that the variables approximate a normal distribution, acceptable for LISREL analysis (Byrne, 1998; West et al., 1995; Bollen, 1989).

The model was evaluated following the two-step approach (Anderson & Gerbing, 1988), the measurement model first followed by the structural assessment. The measurement model fit statistics were satisfactory as per the recommended values (Table 4). Given a satisfactory measurement model fit, the structural model was assessed. Eleven structural paths were entered into the model. The fit indices again indicated good fit of the data (Table 4).

The structural model results including the estimated parameters, their t-values, significance level, and R2 values are shown in Figure 4. Eight of the eleven structural paths are significant in the hypothesized direction lending support to H1, H3, H5, H6, H8, H9, H10, and H11. Table 5 provides a summary of the standardized path coefficients estimated in the structural model and the hypothesis testing results.

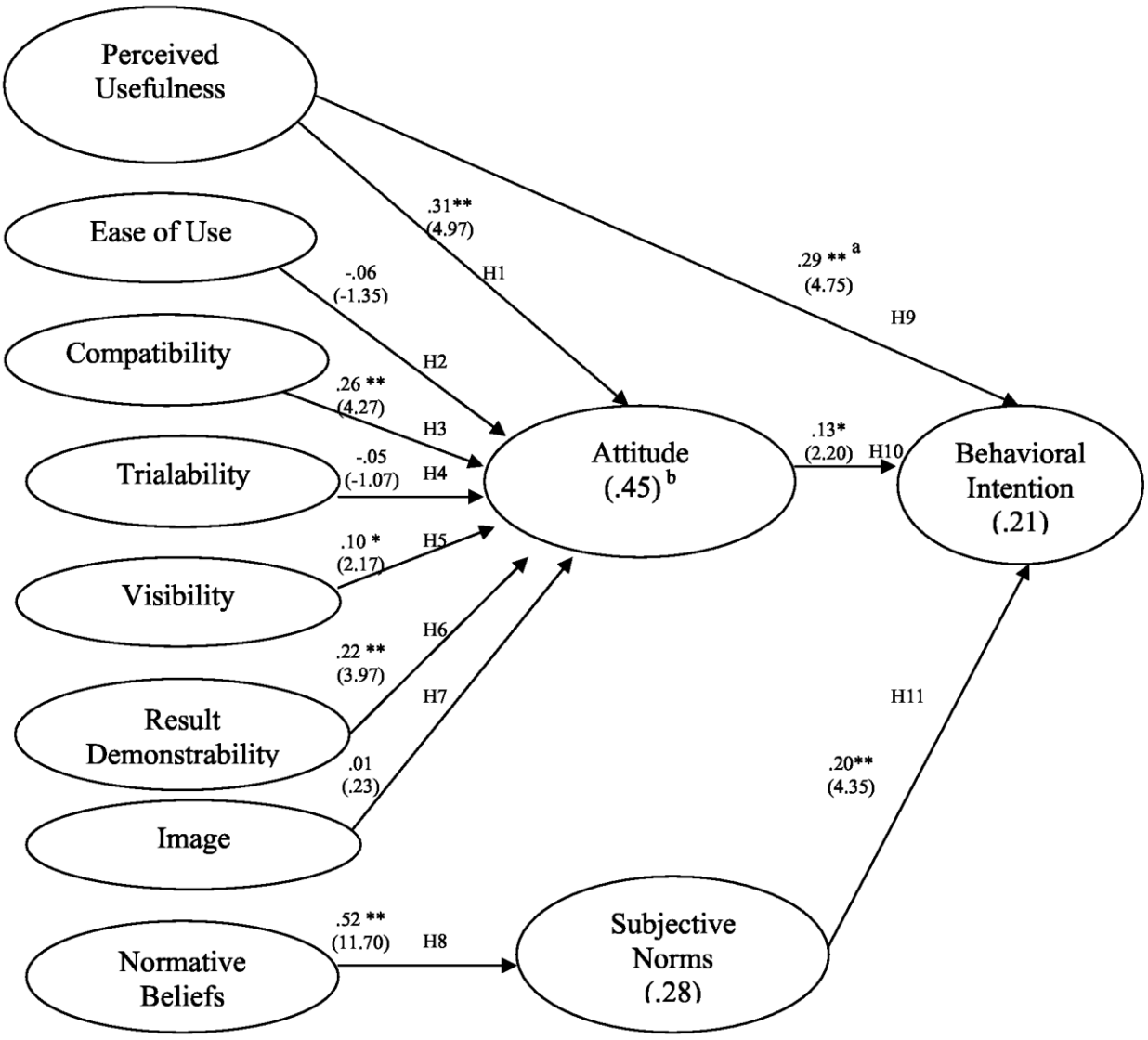
Discussion

Our study extends current IT acceptance research across cultures. It supports prior studies conducted in North America as well as provides evidence of differences. It confirms the applicability of TAM, TRA, and IDT as

theoretical foundations to study IT acceptance among Chinese employees, particularly in the context of e-mail use. Thus our model seems to be robust and generally supportive of existing theories.

Overall, the results show that the model demonstrates good predictive power and explains behavioral intention of Chinese e-mail users well. The model fit indices were comparable to North American studies of technology acceptance models (e.g., Agarwal & Prasad, 1998; Bagozzi et al., 1992; Doll et al., 1998; Igbaria et al., 1997; Taylor & Todd, 1995a; 1995b). Note that in prior studies, the applicability of TAM alone has been relatively low in other cultural contexts.

More specifically, the underlying theoretical themes that behavioral beliefs→attitude and perceived usefulness+attitude+subjective norms→behavioral intention were supported. We discuss these in greater detail. We believe that cultural dimensions such as individualism, uncertainty avoidance and long-term orientation, and other cultural aspects help to explain our findings.



(a) Coefficient of estimation and (t-value)
(b) R^2 value of dependent construct
(*) $p < .05$; (**) $p < .001$

Figure 4. Estimated Structural Model

Structural Path	Path Coefficient	Hypothesis	Hypothesis Support
Perceived Usefulness→Attitude	.31**	H1	Yes
Ease of Use→Attitude	-.06	H2	No
Compatibility→Attitude	.26**	H3	Yes
Trialability→Attitude	-.05	H4	No
Visibility→Attitude	.10*	H5	Yes
Result Demonstrability→Attitude	.22**	H6	Yes
Image→Attitude	.01	H7	No
Normative Belief→Subjective Norm	.52**	H8	Yes
Perceived Usefulness→Behavioral Intention	.29**	H9	Yes
Attitude→Behavioral Intention	.13*	H10	Yes
Subjective Norm→Behavioral Intention	.20**	H11	Yes

Note: * $p < .05$; ** $p < .001$

Table 5. Summary of Estimated Path Coefficients and Hypothesis Testing

Formation of Attitude

The salient behavioral beliefs that influence attitude are: perceived usefulness, compatibility, visibility, and result demonstrability. Ease of use, trialability, and image were not significant determinants of attitude.
The effect of perceived usefulness is significant on attitude among Chinese IT users. More importantly, its relationship is the strongest among all behavioral beliefs. Some studies have demonstrated that the effect of perceived usefulness become stronger over time (e.g., Szajna, 1996; Davis, 1989). In existing studies conducted in other cultures, Switzerland (Straub et al., 1997), Arab countries (Rose & Straub, 1998), and Hong Kong (Hu et al., 1999), the effect of usefulness has also been significant. By nature, the Chinese culture does not favor uncertainties and changes. Therefore, it seems that they would commit to a change or to a new technology only if the perception of usefulness is strong.

The effect of perceived ease of use in our study was quite similar to many studies where its impact quickly diminishes after short period of usage (e.g., Adams et al., 1992; Igbaria et al., 1995; Hu et al., 1999; Davis, 1989). The lack of a direct relationship between ease of use and attitude has also been observed in other cultural contexts (e.g., Hu, et al., 1999; Straub, et al., 1997). We suspect that because ease of use is a short-term oriented belief, it may not be salient for the Chinese who tend to focus more on long-term beliefs resulting in delayed gratitude. In addition, “ease of use” may have a negative connotation in that it undermines the importance of learning. Respect for learning is one of the most treasured long-term oriented values for the Chinese culture (Hofstede, 2001). We suspect that ease of use may be an implicit but not an explicit requirement for technology acceptance in China.

Compatibility was significant in our study, in accordance with both the Agarwal and Prasad (1997) and Moore and Benbasat (1991) studies. The Chinese IT users are conscious about the fit between technologies and their work style and environment. When the technology is harmonized with work, they tend to have a more favorable impression. Harmony is a norm expected in almost every aspect of human behavior in the Chinese society (Hofstede, 2001).

For Chinese IT users, it seems trialability was not important - consistent with the results of Karahanna et al.'s (1999). The ability to try out a technology is only salient for end users before they adopt because the experimentation helps them overcome uncertainties and makes the change process less demanding (Karahanna et al., 1999). For users, trialability may be obsolete or irrelevant after adoption.

Visibility was a significant determinant of attitude. Among Chinese users, seeing others using the technology reinforces a favorable attitude. This is consistent with the Chinese culture, classified as collective (Hofstede 1980), where a person’s attitude and behavioral are greatly affected by others.

Result demonstrability was a significant factor among Chinese IT users. When the results of using a technology could be clearly communicated to others, they had a more favorable attitude. However, result demonstrability

has no impact on users' attitude in U.S. studies (e.g., Agarwal & Prasad, 1997; Karahanna et al., 1999). This can be explained by the uncertainty avoidance dimension of culture (Hofstede, 1980). The Chinese culture is characterized high on uncertainty avoidance where in the U.S., people are more risk tolerant. When the outcome of certain behavior is clear and certain, it reduces uncertainty leading to greater acceptance. In addition, the Chinese do not hold abstract principles and concepts in high regard (Hofstede, 2001). They need demonstrable results in lieu of concepts or promises.

Few studies in IS have examined the effect of image. Our results contrast those of Karahanna et al.'s (1999). In our study, the IT users' perceived image of using e-mail had no impact on attitude. One potential explanation emerged in informal interviews with some employees. It was suggested that e-mail lacks authority and is not perceived as a status symbol. If something is really important, it would be reinforced with handwritten notes.

Formation of Behavioral Intention

Our results support the notion that perceived usefulness has a direct impact on behavioral intention as professed by TAM. It also confirms TRA where behavioral intention is influenced by attitude and subjective norms. While usefulness, attitude, and subjective norms all impact behavioral intention, the comparative strengths of the three constructs are different. When prior studies compare the strengths of attitude and subjective norms, it is found that users form attitude based on direct experience, thus a closer relationship between attitude and behavioral intention is expected (Fazio & Zanna, 1981; Karahanna et al., 1999). We found the effect of usefulness on intention to be the strongest which is a direct result of experience. However, between attitude and subjective norms, norms play a more important role than attitude in influencing intention. This may be an indication that in a collective culture, people tend to base their behavior more on what others think rather than their own attitude.

Implications and Conclusion

This study makes an important contribution to cross-cultural research in the IT literature. Cultural factors have a significant impact on IT users and should be considered when theories are applied cross cultures. While the comprehensive research model developed for this study based on U.S. based theories explained the IT acceptance behavior well in the Chinese culture, differences were also observed. Previous attempts using simpler models found little support in other cultures, such as in Japan (Straub, 1994). Our study has strong implications on the applicability of IT acceptance theories and models. The theoretical validity cannot be assumed away in other cultures and need to be confirmed empirically. Future studies should be aimed at dissecting the culture and explaining why IT acceptance theories fare better or worse in different cultures. Besides the dimensions of country culture itself, there may be political/regulatory, economic, and demographic factors also at play (Palvia, 1998).

We contributed to the IT acceptance literature in another significant way. We explored several behavioral beliefs constructs, e.g., compatibility, trialability, visibility, result demonstrability, and image that have been rarely evaluated in the U.S. or other cultures. Our findings enhance our understanding of the effects of these beliefs on the formation of attitude.

Practical implications of our study are twofold. First, for multinational organizations managing IT in China, the study points out that perceived usefulness is the most important element of technology perception. Therefore, IT intervention programs need to focus on promoting perceived usefulness. Other important aspects of the technology, such as compatibility, visibility, and result demonstrability should also be addressed in efforts to encourage IT usage. Second, it is important to recognize that social influences bear a strong impact on why people adopt technologies in certain cultures. Managers need to provide channels to encourage social exchange of IT experiences.

Notes:

1 Factor analysis table not included due to space constraints.

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Appendix A: List of Items, Abbreviations, Item Means and Deviations, and Descriptions

	Construct (Abbreviation) /Item	Mean	Standard Deviation	Item Description
	Perceived Usefulness (PU)			
1	PU1	5.83	1.01	Using E-Mail helps me to accomplish tasks more quickly.
2	PU2	5.62	1.09	Using E-Mail improves the quality of my work.
3	PU3	5.61	1.04	Using E-Mail enhances my effectiveness on the job.
4	PU4	5.60	1.12	Using E-Mail makes my job easier.
5	PU5	5.71	1.04	Using E-Mail in my job increases my productivity.
6	PU6	5.96	0.94	I find E-Mail useful in my job.
	Ease of Use (EOU)			
7	EOU1	6.01	0.87	Learning to use E-Mail was easy for me.
8	EOU2	5.98	0.93	E-Mail is easy to use.
9	EOU3	5.75	0.95	My interaction with E-Mail is clear and understandable.
10	EOU4	6.02	0.87	It is easy for me to become skillful at using E-Mail.
	Compatibility (COM)			
11	COM1	5.07	1.37	Using E-Mail is compatible with most aspects of my work.
12	COM2	5.02	1.27	Using E-Mail fits my work style.
13	COM3	5.22	1.25	Using E-Mail is very compatible with the way I like to work.
	Trialability (TR)			
14	TR1	4.97	1.62	Before I started using E-Mail, I was able to use it on a trial basis.
15	TR2	4.57	1.72	Before I started using E-Mail, I was able to properly try it out.
16	TR3	4.60	1.67	I was permitted to use E-Mail long enough to see what it can do.
17	TR4	4.08	1.78	I had E-Mail for a long enough period to try it out.
	Visibility (VI)			
18	VI1	5.66	1.42	In my organization, one sees E-Mail on many computers.
19	VI2	5.80	1.26	In my organization, I have seen many people with E-Mail on their computers.
20	VI3	6.08	1.04	I have seen what other people do using E-Mail.
21	VI4	5.83	1.30	It is easy for me to observe others using E-Mail in my company.
22	VI5	5.87	1.14	I have had plenty of opportunity to see E-Mail being used.
	Result Demonstrability (RD)			
23	RD1	5.52	1.12	The results of using E-Mail are apparent to me.

	Construct (Abbreviation) /Item	Mean	Standard Deviation	Item Description
24	RD2	5.33	1.16	I could communicate to others the pros and cons of using E-Mail.
25	RD3	5.36	1.14	I have no difficulty telling others about the results of using E-Mail.
	Image (IM)			
26	IM1	2.68	1.52	People who use E-Mail have high status in the organization.
27	IM2	2.55	1.46	People who use E-Mail have more prestige than those who do not.
28	IM3	2.49	1.49	Using E-Mail is a status symbol.
29	IM4	2.98	1.72	Using E-Mail improves my image within the organization.
	Normative Beliefs (NB)			
30	NB1	4.46	1.65	Top management thinks I should use E-Mail.
31	NB2	4.65	1.61	My supervisor thinks I should use E-Mail.
32	NB3	4.96	1.46	Peers think I should use E-Mail.
33	NB4	5.26	1.35	Friends think I should use E-Mail.
34	NB5	5.10	1.47	MIS department thinks I should use E-Mail.
35	NB6	5.08	1.44	Computer Specialists in the company think I should use E-Mail.
	Attitude (A)			
36	A1	5.64	0.94	Using E-Mail on my job is extremely good … extremely bad.
37	A2	5.57	0.90	Using E-Mail on my job is extremely harmful…extremely beneficial.
38	A3	5.56	0.88	Using E-Mail on my job is useless ….. Useful.
39	A4	5.53	1.06	Using E-Mail on my job is worthless ….valuable.
	Subjective Norms (SN)			
40	SN1	4.82	1.47	Most people who are important to me think I should use E-Mail.
41	SN2	4.91	1.47	Most people who influence my behavior think I should use E-Mail.
	Behavioral Intention (BI)			
42	BI1	6.07	0.75	I intend to continue using E-Mail.
43	BI2	6.02	0.87	Assuming I had access to E-Mail, I intend to use it.
44	BI3	5.98	0.93	Given that I had access to E-Mail, I predict that I would use it.

Appendix B: Covariance Matrix

	Construct	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
	Perceived Usefulness																																												
1	PU1	1.02																																											
2	PU2	.65	1.19																																										
3	PU3	.66	.75	1.09																																									
4	PU4	.59	.68	.72	1.26																																								
5	PU5	.57	.60	.62	.65	1.07																																							
6	PU6	.45	.45	.51	.50	.53	.88																																						
	Ease of Use (EOU)																																											
7	EOU1	.27	.24	.19	.15	.17	.19	.76																																					
8	EOU2	.29	.23	.20	.19	.23	.24	.58	.87																																				
9	EOU3	.27	.28	.29	.35	.25	.25	.44	.43	.90																																			
10	EOU4	.21	.15	.16	.22	.19	.23	.39	.37	.40	.76																																		
	Compatibility(COM)																																											
11	COM1	.44	.50	.57	.62	.63	.59	.06	.19	.20	.23	1.86																																	
12	COM2	.44	.59	.63	.68	.64	.52	.13	.25	.32	.26	1.08	1.60																																
13	COM3	.44	.59	.55	.52	.54	.52	.14	.26	.28	.26	.86	1.15	1.56																															
	Trialability (TR)																																											
14	TR1	.22	.18	.17	.32	.19	.27	.20	.22	.13	.22	.25	.22	.17	2.61																														
15	TR2	.14	.22	.17	.25	.22	.15	.18	.19	.24	.29	.42	.43	.41	1.70	2.96																													
16	TR3	.14	.28	.24	.23	.27	.20	.15	.13	.26	.26	.33	.44	.34	1.31	1.92	2.81																												
17	TR4	.13	.22	.22	.34	.17	.15	.05	.03	.20	.19	.55	.51	.27	1.33	1.73	1.72	3.16																											
	Visibility (VI)																																											
18	VI1	.24	.20	.28	.29	.19	.37	.19	.25	.25	.19	.44	.28	.27	.20	.24	.17	.22	2.12																										
19	VI2	.25	.22	.25	.29	.21	.32	.17	.25	.28	.18	.48	.30	.30	.23	.23	.21	.33	1.50	1.59																									
20	VI3	.21	.22	.19	.13	.21	.28	.21	.25	.17	.19	.11	.14	.13	.28	.17	.23	.00	.56	.57	1.09																								
21	VI4	.28	.24	.21	.35	.33	.29	.33	.40	.31	.25	.42	.30	.27	.31	.31	.25	.21	.98	.96	.65	1.69																						
22	VI5	.30	.29	.29	.34	.34	.29	.32	.37	.31	.31	.38	.35	.33	.25	.31	.35	.24	.79	.79	.56	1.10	1.31																					
	Result Demonstrability (RD)																																											
23	RD1	.45	.44	.47	.51	.63	.40	.20	.27	.24	.26	.53	.60	.52	.15	.23	.22	.23	.36	.35	.21	.49	.55	1.31																				
24	RD2	.35	.35	.33	.32	.39	.29	.18	.22	.25	.29	.44	.49	.44	.36	.64	.58	.46	.21	.30	.22	.42	.47	.65	1.39																			
25	RD3	.37	.30	.32	.32	.34	.30	.30	.33	.34	.38	.39	.42	.44	.28	.49	.41	.28	.35	.35	.17	.38	.43	.57	.94	1.35																		
	Image (IM)																																											
26	IM1	-.11	-.11	-.08	-.06	-.03	-.15	-.26	-.18	-.19	-.23	.08	.15	.06	.13	.24	.33	.46	-.40	-.29	-.32	-.25	-.37	-.09	.01	-.09	2.31																	
27	IM2	-.13	-.08	-.02	.05	-.05	-.13	-.31	-.16	-.19	-.24	.15	.22	.10	.16	.24	.35	.46	-.40	-.25	-.32	-.21	-.35	-.07	.02	-.10	1.92	2.13																
28	IM3	-.13	-.11	.01	.04	-.04	-.12	-.29	-.17	-.14	-.19	.14	.17	.07	.09	.26	.35	.45	-.36	-.22	-.34	-.17	-.29	-.06	.04	-.08	1.63	1.83	2.21															
29	IM4	.00	-.02	.07	.10	.01	-.04	-.30	-.22	-.18	-.20	.37	.31	.22	.44	.41	.56	.72	-.31	-.16	-.26	-.24	-.27	-.03	.12	.05	1.54	1.70	1.80	2.95														
	Normative Beliefs (NB)																																											
30	NB1	.32	.37	.36	.35	.20	.29	-.04	.04	.06	.04	.62	.53	.57	.26	.27	.40	.46	.38	.41	.14	.30	.29	.25	.31	.31	.63	.66	.67	1.15	2.74												
31	NB2	.32	.37	.37	.33	.23	.31	-.14	-.04	.01	.01	.65	.55	.57	.10	.10	.29	.39	.48	.46	.18	.25	.29	.25	.32	.28	.46	.48	.41	.83	2.18	2.62											
32	NB3	.30	.26	.29	.30	.20	.20	-.02	.03	.08	.06	.49	.44	.45	.03	.20	.16	.33	.35	.40	.17	.35	.34	.26	.29	.24	.25	.22	.24	.47	1.50	1.75	2.12										
33	NB4	.27	.26	.25	.24	.19	.15	.06	.04	.10	.07	.32	.38	.46	.15	.31	.20	.31	.17	.26	.12	.28	.30	.24	.24	.21	.21	.15	.16	.34	1.14	1.27	1.54	1.83									
34	NB5	.20	.29	.32	.27	.26	.23	-.03	.00	-.03	.02	.44	.42	.48	.26	.41	.34	.42	.24	.29	.20	.22	.28	.28	.35	.20	.39	.33	.32	.59	1.43	1.57	1.53	1.40	2.16								
35	NB6	.23	.30	.32	.32	.30	.27	.01	.04	.05	.05	.50	.50	.52	.21	.29	.28	.41	.26	.32	.22	.30	.27	.32	.29	.18	.36	.33	.32	.57	1.36	1.49	1.44	1.30	1.87	2.07							
	Attitude (A)																																											
36	A1	.36	.35	.37	.37	.35	.35	.11	.18	.17	.22	.54	.50	.43	.14	.19	.15	.12	.26	.31	.19	.29	.30	.45	.38	.33	-.06	-.05	-.02	.02	.29	.30	.29	.17	.20	.28	.89						
37	A2	.33	.37	.34	.36	.39	.37	.09	.16	.16	.18	.53	.49	.44	.14	.23	.23	.17	.26	.26	.19	.27	.27	.48	.40	.32	.06	.07	.07	.17	.38	.38	.31	.23	.30	.33	.61	.80						
38	A3	.37	.39	.38	.42	.42	.39	.11	.15	.17	.18	.56	.52	.47	.13	.21	.20	.15	.31	.27	.16	.23	.26	.48	.33	.26	-.04	-.06	-.02	.07	.34	.35	.33	.26	.30	.33	.59	.68	.84				
39	A4	.44	.41	.48	.43	.44	.41	.14	.21	.21	.16	.54	.48	.48	.08	.12	.14	.03	.31	.26	.19	.30	.35	.51	.34	.31	-.09	-.10	-.10	.01	.36	.38	.30	.26	.21	.24	.57	.60	.59	1.19			
	Subjective norm (SN)																																											
40	SN1	.32	.38	.39	.38	.34	.30	.07	.08	.14	.13	.60	.55	.50	.25	.43	.41	.39	.25	.44	.16	.32	.42	.48	.41	.41	.28	.26	.31	.52	.83	.87	.96	.92	.87	.84	.37	.44	.41	.38	2.16			
41	SN2	.26	.34	.33	.33	.34	.26	.07	.06	.09	.14	.50	.51	.45	.30	.58	.39	.42	.14	.27	.15	.24	.34	.45	.38	.32	.32	.26	.31	.47	.84	.82	.90	.93	.87	.81	.31	.45	.42	.33	1.86	2.15		
	Behavioral Intention (BI)																																											
42	BI1	.31	.27	.25	.24	.27	.22	.24	.23	.18	.20	.20	.29	.28	.17	.18	.15	.05	.27	.27	.22	.31	.37	.33	.26	.25	-.14	-.19	-.17	-.13	.16	.15	.19	.28	.18	.22	.24	.21	.26	.28	.31	.31	.57	
43	BI2	.27	.25	.21	.25	.23	.19	.21	.18	.22	.18	.18	.26	.20	.06	.15	.14	.13	.20	.19	.24	.26	.31	.26	.22	.20	-.11	-.18	-.11	-.11	.17	.16	.27	.30	.19	.23	.22	.22	.23	.27	.32	.35	.36	.75
44	BI3	.25	.27	.25	.23	.22	.21	.24	.21	.26	.20	.16	.26	.26	.09	.15	.14	.00	.21	.22	.26	.27	.34	.26	.24	.22	-.21	-.26	-.18	-.20	.23	.21	.32	.36	.24	.25	.23	.19	.22	.30	.36	.35	.40	.65	.87