The Effect of Social Characteristic in the Acceptance and Continue Usage for Information Technology in the Public Sector

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Abstract

Purpose: *This study aims to test the factors influencing the acceptance and continue usage of technology in public sector. In addition, the study added one important factors of social characteristic to the key factors in the theory of technology acceptance in order to provide better understanding for the factors influencing the acceptance of information technology among the individual perceptions.* ***Methodology:*** *survey questionnaire was distributed to 53 government utilities and 357 cases were used in the analysis. SPSS and Structural Equition Modeling AMOS 18 was used for the analysis of the proposed model.* ***Findings*** *the study confirmed the theory of TAM and showed its potential capability in the public sector. the study has provided empirical evidence for the positive effect of subjective norm on the intention behaviour to use towards the actual usage for the technology the study has provided empirical evidence for the positive effect of social characteristic on the intention behaviour to use. Empirical evidence has shown that the employees and managers have the capability to use the technology.* ***Significance****: This study has provided empirical evidence for the effects of new technology determinants in the government sector. In particular, it has successfully revealed that subjective norm and organization culture, are important determinants in influencing the adoption and continue usage of technologies.*

Keywords: Technology Acceptance Model, Subjective Normssocial characteristic, Structural Equition Modeling,.

Social Characteristics

Social factors were defined as whether the subject perceived that their work group (faculty, staff, study group, professor) thought they should use the intranet and whether or not they would follow what others thought they should do Chang, (2004).

Social influence is the degree to which an employee perceives that others coworkers believe he or she should use a technology (Dadayan, Ferro, 2005).

Social characteristics (social influence) are defined as the perceived social pressure to perform or not to perform the behavior (Fishbein &Ajzen, 1975). It also, defined as the degree to which an individual perceives that important others believe he or she should use the new system (Davis, at al, 1989).

Another conceptualization is that information conveyed via individuals' social networks influences their cognition about a target technology (Lewis, Agarwal, Sambamurthy, 2003). Social factors have been defined as whether the subject perceives that their work group (faculty, staff, study group, professor) thought they should use the intranet and whether or not they would follow what others thought they should do (Chang, 2004). It has also been defined as the degree to which an employee perceives that other coworkers believe he or she should use a technology (Dadayan , Ferro, 2005).

Subjective Norms

Subjective norm (SN) is defined as the result of an individual's response to the perceived expectations of his or her peer group and his belief that he must comply with those expectations (Aversano, 2005).

It has also been defined as the person's perceptions about most of the people who are important to him think that he should or should not perform the behavior (Park et al., 2006). Subjective norm comprises of interpersonal influence like family members, friends, colleagues or work-related activities and external influences like expert ideas, different kinds of media reports. Subjective norm of an individual influences his acceptance through a positive effect on perceived usefulness.

When Davis developed the technology acceptance model (TAM) in 1989, he ignored subjective norm as a factor affecting technology acceptance. But later, he incorporated this variable in his TAM2 and TAM3 after he realized the importance and the effects of social influences on individuals on the acceptance of technology. In fact, many researchers have found the influence of subjective norm or social influence on user's acceptance (Kwan & Wang, 2009; Park et al., 2006; Raaij & Schepers, 2008).

Chung, Skibniewski, and Kwak (2008) examined critical factors that need to be considered to ensure successful ERP system implementation in the construction industry. The study found that subjective norm has a significant relation with perceived usefulness, which has a significant relation with perceived ease of use. Perceived usefulness and perceived ease of use were found to have a significant relation with intention to use and perceived ease of use has indirect relation with the intention to use through perceived usefulness. Additionally, there is a strong effect for subjective norm on intention to use and perceived usefulness, which was confirmed by Schepers and Wetzels (2007).

Wu, Shen, Lin, Greenes, and Bates (2008) integrated variables trust and management support to investigate what determines acceptance of adverse event reporting systems by healthcare professional users. The study found that perceived ease of use, perceived usefulness, subjective norm, and trust have a significant effect on a professional's intention to use the adverse event reporting system. Perceived ease of use and subjective norms had a direct effect on perceived usefulness and trust. In a different study to explore adoption of ICT to enhance government-to-employee interactions in a government organization in a developing country, Gupta, Dasgupta, and Gupta (2008) found that subjective norm has the most contribution (total effect) to the intention to use the system.

Several other studies have also found social influences having a positive influence on technology acceptance. For example, a study was conducted by Singletary, Akbulut, and Houston (2002) to identify factors that affect the acceptance of high school students for software application when the initial use of the application is mandatory. The study found a positive relationship between social norms and image, perceived usefulness and innovative usage behavior. Chang (2004) explored the validity of the extension of Technology Acceptance Model (TAM) based on social factors and facilitating conditions as the main factors to predict intranet/portal usage. He found that social factors can be effective when related with the user attitudes to predict intention to use, and facilitating conditions can be effective when related with intention to use to predict actual usage. In other words, social factors were related to intention to use the intranet and facilitating conditions were related to the actual use.
Additionally, social influences like subjective norms have significant effects on student's acceptance of the new technology. For example, a study was conducted by Yang (2007) to examine the relationship between students' attitude toward the use of WebCT and the determinants of the actual usage in light of social presence and sociability using technology acceptance model. The study found that subjective norms have a significant effect on students' acceptance of the technology.

In a different study, Yalcinkaya, (2007) found that subjective norm has a negative direct effect on the acceptance of police officers to use the POLNET system in Turkey. This is because the system implemented in the police force facilitates their job better in dealing with the public.

However, in a study by Venkatesh and Morris (2000) to investigate gender differences in the context of individual adoption and technology usage in the workplace by using technology acceptance model, they did not find any effect of social influence on technology acceptance. They revealed that subjective norm did not influence men in using the system but influence women in the beginning of system introduction. But after a short time there was no effect in the women's intention to use the system despite the increase in their experience. Also, perceived usefulness, perceived ease and subjective norm can explain the effect on women's intention to use the system. However, usefulness can only explain men's intentions to use the system.

Seymour, Makanya, and Berrange (2007) also did not find any effect of social influences on acceptance of ERP systems using UTAUT.

They further found that social influence reduces until it becomes insignificant on the implementation of the system. Venkatesh and Davis (2000) further found that social constructs (subjective norm, social factors and image) are not significant when the systems usage is optional. But if the usage for the system is obligatory, social influences were found to have a direct effect on intention.

Chismar and Patton (2002) revealed that physicians are not influenced by peer pressures on how they will be perceived if they adopt the technology because they are independent and do not place any attention to subjective norm or image, in their study to examine the extended Technology Acceptance Model (TAM2)'s applicability on the physicians' intention to adopt Internet-based health applications. The study found that perceived usefulness is a strong determinant of intention to use. Perceived usefulness, job relevance and output quality have significant effects on intention to use. But perceived ease of use, the social factors subjective norm and image do not have significant effect on the intention to use. These results were supported by Seymour, Makanya, and Berrange (2007), and Venkatesh and Davis (2000).

Ajjan and Hartshorne (2008) conducted a study to examine the faculty's awareness of the benefits of Web 2.0 to supplement in-class learning. They found that subjective norm did not influence behavioral intention. This insignificant effect might be explained due to the high degree of independence the faculty has when developing their classroom environment.

User's experience interacts with subjective norms to influence usage of new software. In other words, subjective norms have a strong influence on user's perceptions. Subjective norms also play a strong and complex part in the usage of the software system, as revealed by Chiasson and Lovato (2001). In a different study, Aversano (2005) explored why some people refuse to use mobile telephone in USA. The study used the theory of Ajzen to explore human behavior in order to understand a person's actions like social attitude and personality traits. The study used theory of planned behavior (TPB) to confirm that behavioral intention to use determines actual behavior and there are three factors predicting intention to use the technology like attitude, subjective norms and perceived behavioral control as stated in theory of reasoned action (TRA).

Based on the previous arguments, the current study supports the notion that social influences like subjective norm provides an important basis for expected manners of behavior. The beliefs and attitudes of any group can shape the usage behavior of the technology of members in this group. There are various sources of social influence that could determine one's intention and hence behavior such as peers, friends, supervisors, and co-workers. Social pressure might induce new users to exhibit initial adoption behavior and normative influences were found to be more important in intentions to adopt. However, attitudes dominated as a predictor of continued intentions to use (Agarwal, 2000).

Therefore, this study is going to test the effects of social influences like subjective norms on technology acceptance in order to provide a more comprehensive explanation for its effects on technology acceptance in a different culture.

Methodology

Response Rate

The response rate and descriptive statistics were run as the first stage of analysis. As mentioned earlier, all in all 760 questionnaires were distributed. Of these, 585 were returned, yielding a response rate of 77%, which is considered very good (Cable & Derue, 2002) in comparison to other studies found in the relevant literature. Also, 160 cases with missing value and 68 cases outlires were deleted from 585 questionnaires were returned. Therefore, the data were ready for the analysis are 357 cases.

Operational Definition of Variables and Hypotheses

Social Factors of Subjective Norms and Organization Culture

Subjective norm refers to the person's perception about what people who are important to him think that he should or shouldn't do (Park et al., 2006).

Subjective norms have a strong influence on user's perceptions. Subjective norms play a strong and complex part in the usage of a software system (Chiasson & Lovato, 2001). People who are close and important to the individuals are like family members, friends, and colleagues. Perceptions are also formed due to influences from experts and media reports (Agarwal, 2000: Merchant, 2007).

Subjective norms have been found to be an important factor of intention to use information technology. Subjective norm did not influence men in using the system but influence women in the beginning of the introduction of the system but after a short time there is no effect on the women's intention to use the system despite the increase in experience (Venkatesh & Morris, 2000). So when supervisors or peers say that using the particular technology will be more useful at work, this may affect the perception of the user. Therefore, subjective norm is considered a determinant for intention to use and perceived usefulness.

Chung, Skibniewski, and Kwak (2008) examined critical factors that need to be considered to ensure successful ERP system implementation in the construction industry. The study found that subjective norms have a significant relation with perceived usefulness, and perceived usefulness has a significant relation with perceived ease of use. Perceived usefulness and perceived ease of use were found to have a significant relation with intention to use and perceived ease of use has indirect relation with the intention to use through perceived usefulness. Additionally, there is a strong effect for subjective norm on intention to use and perceived usefulness, which was confirmed by Schepers and Wetzels (2007). Hence, the following hypotheses are offered:

H8: Subjective norm has a positive effect on intention to use a particular system.

Data Collection Instrument – Questionnaire

Social Characteristic - Subjective Norms Instrument

Subjective norms instrument was adopted from Yalcinkaya et al, (2007) and Venkatesh and Morris (2000). These items were adopted from the original TAM the theory of the acceptance technology and the theory of reasons action TRA (Ajzen 1991; Davis et al, (1989); Fishbein and Azjen, (1975). These items are measured on a five-point scale with '1' "Strongly Disagree," '2' "Disagree," '3' "Neither Agree or Disagree," '4' "Agree," and '5' "Strongly Agree." The items are as follows:

1. People who influence my behavior think that I should use the system.
2. People who are important to me think that I should use the system

Findings

H8: Subjective norm has a positive effect on intention to use a particular system.

The result supports the hypothesis and subjective norm has a significant positive effect on intention to use (Y = .180, T-value = 2.785, $p < .002$). For every increase in subjective norm by one, the intention of use increases by .180 standard point. This result is consistent with that in previous studies (e.g. Chung, Skibniewski Jr., & Kwak, 2008; Schepers & Wetzels, 2007; Wu et al., 2008) which found a strong effect of subjective norm on intention to use. It seems that important people in the government sector have positive influence on the employees and managers' intention to use the technology because these people are usually better educated and have high positions in the government.

H9: Culture has a negative effect on perceived ease of use toward the usage of a particular system.
H10: Culture has a negative effect on perceived usefulness toward the usage of a particular system.

As expected, the result supports the hypothesis that culture has a non- significant negative effect on perceived ease of use (Y = -.08, T-value = -1.038, $p < .002$). For every increase in culture by one, perceived ease of use decreases by .08 standard points. The result also supports the hypothesis that culture has a non-significant negative effect on perceived usefulness (Y = -.086, T-value = -1.192, $p < .002$). For every increase in culture by one, perceived usefulness decreases by .086 standard points. Both results are consistent with those in previous studies (e.g. Li, Hess, Mcnab, & Yu, 2009; Yeniyurt & Townsend, 2003; Yoon, 2009; Zakour, 2004) in that there is cultural resistance to technologies (Brown et al., 1998).

People with low level of uncertainty avoidance, use information technology more than people with high level of uncertainty avoidance Yoon, (2009) . Furthermore, high uncertainty avoidance contributes in the affect of the culture on the intention to use by Y = 0.718, T-value = 0.918, $p < .002$. For every increase in the Power distance by 0.718, the culture increases by 0.918, which caused negative effects on the intention to use, that was supported by Yeniyurt and Townsend (2003).

In a high uncertainty avoidance culture, people may not be inclined to use the new information technology, as the society with high power distance is not open to new ideas and products. Therefore, lower acceptance of using the new technology in these societies is expected.

However, power distance and individualism have positive effect on the culture which cause negative effects on intention to use throughout ease of use and usefulness (Yeniyurt and Townsend, 2003).

Besides that, Power distance contributes in the affect of the culture on the intention to use by Y = .862, T-value = 1.427, p < .002. For every increase in the Power distance by .862 culture increases by 1.427, which caused negative effects on intention to use, and that was supported by (Yeniyurt and Townsend, 2003). This expected result was due to the fact that employees and managers in the government sector in a high power distance society that may attribute to the lack of usage of the new information technology to the lack for training and knowledge about the new technology. They may also not complain about the current way of performing their daily work.
Moreover, individualism is contributing in the affect of the culture on the intention to use by (Y = .763, T-value = 1.000, p < .002). For every increase in the individualism by .763 points, culture increases by 1, which it caused negative effects on intention to use, and that was supported by Li, Hess, McNab, Yu, (2009).

In addition, masculinity/femininity contributes in the affect of the culture on the intention to use by (Y = .783, T-value = 0,991, p < .002). For every increase in the masculinity/femininity by .783, the culture increases by 0,991, which caused negative effects on intention to use, that was supported the study conducted by Li, Hess, McNab, Yu, (2009).

Discussion and Conclusion

Organizations are investing in the information technology and providing all the necessary requirements such as hardware, software, system and the infrastructure support in order to improve the efficiency and productivity of the organization. However, if individuals under or over estimate available resources, they might take poor usage decision of the information technology. Therefore, in order for organizations to address these issues, it is important to measure the usage level of the acceptance of the information technology. The level of usage, however, could be explained by the level of perceptions and believes such as ease of use, usefulness and the intention to use towards the actual usage.

The study also found that social characteristics (subjective norms) have a significant positive effect on behaviour intention to use the technology. This finding is consistent with previous studies that demonstrate similar result (e.g. Chung, Skibniewski Jr., & Kwak, 2008; Schepers & Wetzels, 2007; Wu et al., 2008). This shows that the use of the information technology by employees and managers in the Yemeni government sector is influenced much by people who are perceived to be important to them.

Consistent with previous studies (e.g. Li, Hess, Mcnab, & Yu, 2009; Yeniyurt & Townsend, 2003; Yoon, 2009; Zakour, 2004), culture was found to have negative influence on perceived usefulness and ease of use towards using the information technology. However, cultural dimensions of power distance, individualism, and masculinity were shown to have positive effects on intention to use. The result suggests that culture plays an important role in formulating the perception of the individual in the society (Merchant, 2007), and in this case in shaping individuals' behaviour towards using or adopting the information technology.

The result further showed that employees and managers in the government sector are high uncertainty avoidance. However, people with low level of uncertainty avoidance were found to use information technology more than those with the high level of uncertainty avoidance. The finding seems to indicate that high power distance societies are not more open to new ideas and products (Yeniyurt and Townsend, 2003). Therefore, lower acceptance of using the new technology in these societies is expected. Furthermore, employees and managers in the government sector in high power distance societies may regard the low usage of the new information technology to the lack for training and knowledge about the new technology. In this context, culture therefore explains why employees and manager do not perceive information technology as being easy to use or useful.

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