Analyze Modified Extended Information Technology Continuance toward Continuance Intention of Administration Information System

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ABSTRACT

This study emphasizes the importance of the role of technology in the form of information systems in an educational service institution by using an information system application that is used by the academic community on a daily basis. The purpose of this study is to analyze post-usage usefulness and facilitating conditions through or not through satisfaction to achieve continuance intention related to Administrative Information Systems (SIA) at the Faculty of Economics, Universitas Sarjanawiyata Tamaniswia, Yogyakarta. This study uses a modification of the Extended Information Technology Continuance (ITC). This study uses AMOS 22 path analysis and a total sample of 343 students in accounting and management programs. The results showed that all hypotheses were accepted except for the direct effect of facilitating conditions toward continuance intention. These results strengthen the impact of satisfaction on continuance intention regarding the practice of using technology. The implication of the results indicates that the use of available information system applications, although satisfactory, must still be monitored and developed in order to ensure continued user satisfaction.

Keywords: post-usage usefulness; facilitating condition; satisfaction; continuance intention; Extended ITC

1. Introduction

In the current era, services must prioritize satisfaction for their user entities. The satisfaction felt by users is expected to increase a sense of trust and loyalty. Hamidi et al., (2011) stated that in developing quality resources, it is important for the role of information systems and technology in schools and education, especially in the face of rapid changes and development in the world. The importance of the role of information systems is proven when the world is faced with the New Normal era after the outbreak of COVID-19. In order for service institutions to continue to carry out their activities properly, the improvement and development of technology in the form of information systems is emphasized rapidly and massively to its user entities.

Before the study of technology usage behavior was carried out, a behavioral study of information system users was conducted by Peter GW Keen, (1980) in the Proceedings of the First International Conference on Information Systems (ICIS) article entitled “MIS Research: Reference Disciplines And A Cumulative Tradition”. Then developed into the study of behavior in technological acceptance. Early studies on behavior in the use of technology began with theories regarding technology acceptance such as the Technology Acceptance Model (TAM) by Fred D. Davis in the article “Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology” in 1989. The theory was later developed into a theory called the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al., (2003). However, literature reviews that have been carried out on acceptance of technology are no longer relevant enough in today’s era. This is because there are many uses of technology in society, which proves that technology is well accepted. The problem that arises now is what the right strategy to increase the use intention so that a technology in the form of an information system can be used sustainably.

Research conducted by Anol Bhattacharjee in 2001 is a preliminary study in the field of information systems-based sustainability behavior research. Bhattacharjee (2001) states that the sustainability of information systems at the individual level is central to the success of a business-to-consumer based
Electronics Company. This study modifies the follow-up research conducted by Anol Bhattacharjee, Johan Perols and Clive Sanford in 2008 on the Extended Model of IT Continuance. Post-usage usefulness reflects long-term use, transaction-invariant beliefs gathered from previous perceptions of usefulness, facilitating conditions mean a person’s level of trust in available organizational and technical resources, while satisfaction means the evaluation results of users’ transactional experiences with products that can be used influence the subsequent use of a product (Bhattacharjee et al., 2008). This modification is carried out against the background that the information system that has become the object of research has been used for a long time so that the post-usage usefulness and facilitating condition variables are also tested for their effect on satisfaction.

**Post-Usage Usefulness**

This variable originally from the Technology Acceptance Model (TAM) by Davis (1989) which stated perceived ease of use and perceived usefulness indicated an effect on user acceptance of the technology. Perceived ease of use of technology refers to “the degree to which a person believes that using a particular system will improve his performance, following the definition of” ease, freedom from difficulty or great effort. The perception of ease of use will reduce a person’s effort (both time and effort) in studying information technology (Amin et al., 2014). This comparison of convenience gives an indication that people who use the new system work easier than people who work with the old system (Davis, 2013). While perceived usefulness means the extent to which a person believes that using IT will enhance his or her job performance (Venkatesh & Bala, 2008). In the context of post-usage usefulness explained the post-consumption expectations distinguish from pre-usage (perceived usefulness).

**Facilitating Condition**

Facilitating conditions described as the degree to which one believes that organizational and technical resources are available (Bhattacharjee et al., 2008). Facilitating conditions are one of the reasons for the use of information systems and technology that will help students in the learning process using e-learning (Wang et al., 2010). Facilitating conditions also described as the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system (Escobar-Rodriguez & Carvajal-Trujillo, 2013). With the implementation of information technology systems among students and lecturers, it is hoped that it can facilitate teaching and learning activities that use information technology.

**Satisfaction**

Satisfaction defines as a user’s post-usage evaluation of initial or ongoing experiences with a specific IT (Bhattacharjee, 2001). Satisfaction is the level of consumer feelings after comparing what they receive and their expectations, or the extent to which the services provided by the campus are felt as expected (Vranesevic et al., 2002). In marketing research, satisfaction is an interesting thing for organizations because it relates to commitment, the tendency to leave the organization, performance, roles and conflicts (Brown & Person, 2013). Rahman et al. (2017) stated that satisfaction is known as a primary measure of continuance intention to use any information systems (IS). Therefore, if the members of the institution are satisfied with the system, they will continue to use the system without hesitation and voluntarily.

**Continuance intention**

Continuance intention is defined as an individual’s interest or desire to use existing information systems on an ongoing basis (Susanto et al., 2016). Continuance intention also defined as users’ decisions to continue using an IT over the long run (Bhattacharjee et al., 2008). It had a different perspective from the earlier acceptance point of view. Long-term use of a particular system is the key of success of a system (Venkatesh & Bala, 2008). Based on prior studies have established empirically that user satisfaction consistently results in high continuance intention (Lee et al., 2007; Lin & Wang, 2006).

**Hypotheses Development**

The post-usage usefulness of benefits is a level where employees believe that the use of a certain system will be able to improve work performance, increase productivity and work effectiveness (Juvelin, Wulani, & Amrullah, 2018). Perceptions of business are different for each employee, the system developed by the University must be easy to apply by users without spending any effort that is considered burdensome (Davis, 2013). Based on the description above, it can be concluded that the post-usage usefulness will reduce a person’s effort (both time and effort) in studying information technology. The form of convenience provided by the system used will provide satisfaction for users to continue using the system that has been developed (Bhattacharjee et al., 2008; Juvelin et al., 2018; Lee, 2010).

**H1: Post-usage usefulness positively affect satisfaction**

The post-usage usefulness of the benefits is the extent to which individuals believe using these technologies will improve their performance in doing their work (Davis, 2013). Examples of commonly used measurement of benefit perceptions are the use of the internet which makes shopping easier, the internet makes better purchasing decisions, the internet is a more useful shopping, internet shopping saves money, and the internet is easier to make purchases.

Research conducted Juvelin et al., (2018) shows the usefulness of information technology has a significant effect on the interest in using online buying and selling sites again. This shows that with the increasing use of information technology in the company, the interest in using online buying and selling sites will also increase.

The significant influence indicates that the benefits of information technology, in this case regarding the accuracy of the information, the timeliness of the use of the information and the completeness of the information provided, can increase interest in using online buying and selling sites again. The results of this study support research conducted by Bhattacharjee et al., (2008); Juvelin et al., (2018); Rezaei et al., (2016). Bhattacharjee
H2: Satisfaction mediates post-usage usefulness toward continuance intention

The facilitating condition is the belief in the existence of an information system that helps students in learning activities using the system and intends to continue it because they are satisfied with the system used (Wang et al., 2010). Conditions that facilitate, will be weak if the intention is there are obstacles from supporting conditions such as limited resources or problems in the system (Venkatesh et al., 2011). Examples of system quality that provide satisfaction according to the user's perception are the ease of accessing the system, the existence of a manual for those who need information in using it. The results of Lee et al. (2021) showed that facilitating conditions positively impact user satisfaction using of m-Health service in Taiwan. The higher the facility conditions that facilitate the higher the level of satisfaction of the end user of the information system (Bhattacherjee et al., 2008).

H3: Facilitation condition positively affect satisfaction

Conditions that facilitate the use of information systems are factors that make it easier to take action, conditions that facilitate, among others, are provisions that support users in utilizing existing information systems such as provision of training when there are difficulties in use. Thompson & Higgins (1991) found that there is no relationship between conditions that facilitate users and the use of information systems. Meanwhile, Bhattacherjee et al. (2008) stated that conditions that facilitate user have an effect on employee satisfaction and have an effect on increasing the intention to reuse.

H4: Satisfaction mediates facilitating condition toward continuance intention

Satisfaction means that the product performance perceived by customers is in the same or above level of expectation (Kotler & Armstrong, 2012). In technological research, satisfaction relies heavily on both user expectation and experience. The user that has a satisfying experience (meaning the expectation met the actual experienced) with the application has more propensity to keep continuing it without any coercion. The research conducted by Tan et al. (2015) showed that satisfaction is brought a heavy impact on continuance intention in using smartphone. This result is also similar to research conducted by Han, Wu, Wang, & Hong (2018) that satisfaction has proved to bring a positive impact on continuance intention in online China brand communities. Other research by Amoroso & Lim (2017) also showed consumer satisfaction positively correlated with continuance intention for mobile technologies in the Philippines.

H5: Satisfaction positively affect continuance intention

(2001) shows that benefit has a significant effect on the interest to reuse which is mediated by satisfaction.

FIGURE 1. RESEARCH MODEL

(Source: Anol Bhattacherjee, Johan Perols & Clive Sanford (2008), Anol Bhattacherjee (2001))

2. Method

This research includes quantitative research. The sampling technique used was accidental sampling. The sample in this study was 343 students in the accounting and management program. The indicators in this study are adopted from post usage research Bhattacherjee et al. (2008); facilitating conditions Bhattacherjee et al. (2008); satisfaction Bhattacherjee et al. (2008), and continuance intention Bhattacherjee et al. (2008).

Determination of sample size using the Slovin formula:

\[ n = \frac{(Z\alpha/2)^2 \cdot p \cdot q}{(e)^2} \]  

\[ n = \frac{(1.96)^2 \cdot 0.5 \cdot 0.5}{(0.1)^2} \]

n = 132 (Simplified into 343 respondents).

Notes: n = sample measurement; Z = error standard related to level of confidence 95%; p = proportion in population; q = (1-p); e = Margin of error.

3. Results

The reliability is defined as the ratio of the true variance to the total variance of the measurement (Vehkalahti et al., 2006). Hinton et al. (2014) stated that four cut-off points of reliability are excellent reliability range between 0.9 above; high reliability range between 0.7-0.9; moderate reliability range between 0.5-0.7; and low reliability range between 0.5 below. Based on Table 1. Reliability Test all of the Cronbach’s Alpha showed significant value above 0.7 (α > 0.7) which means all of the variable are high and moderate reliable. The test used AMOS application.

Table 1. Reliability Test

<table>
<thead>
<tr>
<th></th>
<th>Cronbach’s Alpha</th>
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</thead>
<tbody>
<tr>
<td>Post-Usage Usefulness (PO)</td>
<td>0.877</td>
</tr>
<tr>
<td>Facilitating Condition (FC)</td>
<td>0.783</td>
</tr>
<tr>
<td>Satisfaction (S)</td>
<td>0.887</td>
</tr>
<tr>
<td>Continuance Intention (CI)</td>
<td>0.841</td>
</tr>
</tbody>
</table>

Source: Data Analysis (SPSS)

Validity is defined as the extent to which a concept is accurately measured in a quantitative study (Heale & Twycross, 2015). Based on Table 2. Validity Test all of the items of the questionnaire were significant (0,000) with Pearson Correlation value above 0,800.

Table 2. Validity Test
Based on Table 3. Model-Fit Test showed some of the model-fit test criteria were acceptable and only one adequate.

Table 3. Model-Fit Test

| Source: Data Analysis (AMOS 22) |
| CMIN/DF | 4,123 (< 5) | Acceptable |
| GFI | 0,910 (> 0.9) | Acceptable |
| TLI | 0,909 (> 0.9) | Acceptable |
| NFI | 0,910 (> 0.9) | Acceptable |
| PNFI | 0,700 (0.60 - 0.90) | Acceptable |
| PGFI | 0,6 | Adequate |

Based on Table 3. Model-Fit Test showed some of the model-fit test criteria were acceptable and only one adequate.

Table 4. Estimates

| Source: Data Analysis (AMOS 22) |
| Estimate | S.E. | C.R. | P |
| PO -> S | 0,738 | 0,062 | 11,820 | 0,000 |
| PO -> CI | 0,434 | 0,074 | 5,840 | 0,000 |
| FC -> S | 0,272 | 0,053 | 5,100 | 0,000 |
| FC -> CI | 0,090 | 0,050 | 1,811 | 0,070 |
| S -> CI | 0,261 | 0,071 | 3,984 | 0,000 |

Based on Table 4. Estimates showed that the direct relationship has been accepted between post-usefulness toward continuance intention (P<0,05). The indirect relationship has been accepted also between post-usefulness toward continuance intention mediated by satisfaction (P<0,05). Based on Table 5. Standardized Directs Effects PO toward CI amounted 0,483 and S toward CI amounted 0,330, meanwhile PO toward S amounted 0,707. Therefore indirect relationship between PO toward CI mediated by S = 0,707 x 0,330 = 0,233 which shown on Table 6. Standardized Indirect Effects PO toward CI. The total effect (direct effect sum indirect effect) become 0,483+0,233 = 0,716 shown on Table 7. Standardized Total Effects.

Facilitating Condition positively affect Satisfaction

Based on Table 4. Estimates show that there is a direct relationship between conditions that facilitate and influence satisfaction (P <0,05), which means that facilitating conditions actually affect satisfaction, using information systems is a factor that makes it easier to take actions, conditions that make it easier facilitating, among others, provisions that support users in utilizing existing information systems such as provision of training when there are difficulties in use (Bhattacherjee et al., 2008).

Satisfaction mediates Facilitating Condition toward Continuance Intention

Based on Table 4. Estimates showed that the direct relationship has been rejected between facilitating condition toward continuance intention (P>0,05). However, the indirect relationship has been accepted between facilitating condition toward continuance intention mediated by satisfaction (P<0,05). Based on Table 5. Standardized Directs Effects FC toward CI amounted 0,100 and S toward CI amounted 0,330, meanwhile PO toward S amounted 0,261. Therefore indirect relationship between PO toward CI mediated by S = 0,261 x 0,330 = 0,086 which shown on Table 6. Standardized Indirect Effects FC toward CI.

Satisfaction positively affect Continuance Intention

Based on Table 4. Estimates showed that the direct relationship has been accepted between satisfaction toward continuance intentions (P<0,05), which means maintaining the system so that users can possibly be satisfied is really matters. Limayem, Hirt, & Cheung (2007) stated that once an individual has accomplished successfully her or his intended objective by performing a particular behavior, a repetition of the same behavior under similar conditions is likely. Management should aware and response as fast as possible to keep the satisfaction level of the users.

Post-Usage Usefulness positively affect Satisfaction

Based on Table 4. Estimates show that there is a direct relationship between post-usage usefulness of benefits and satisfaction (P <0,05), which means that the system developed by the University bring many usefulness to help user finish their task online. The intensity of use and interaction between the user (user) and the system can also show ease of use that students as users of this system are satisfied with the ease provided. Research conducted in accordance with research Bhattacherjee et al., (2008); Lee (2010); Susanto et al.,(2016).

Satisfaction mediates Post-Usage Usefulness toward Continuance Intention

Based on Table 4. Estimates showed that the direct relationship has been accepted between post-usage usefulness toward continuance intention (P<0,05). The indirect relationship has been accepted also between post-usage usefulness toward continuance intention mediated by satisfaction (P<0,05). Based on Table 5. Standardized Directs Effects PO toward CI amounted 0,483 and S toward CI amounted 0,330, meanwhile PO toward S amounted 0,707. Therefore indirect relationship between PO toward CI mediated by S = 0,707 x 0,330 = 0,233 which shown on Table 6. Standardized Indirect Effects PO toward CI. The total effect (direct effect sum indirect effect) become 0,483+0,233 = 0,716 shown on Table 7. Standardized Total Effects.
showed that H1, H2, H3, and H5 is accepted while H4 is rejected. From the result, the implication can be concluded that the use Information Administration System is important, therefore maintaining satisfaction for all users so that the users keep their belief of the use of the system is beneficial and important for them. Further research suggestion for authors analyzed the role of perceived ease of use, attitude and subjective norms in developing MIS for users.

REFERENCES


