

The Integration of Technology Acceptance Model with the Uses and Gratification Theory Toward the Intention to Use Accounting Information Technology: An Analysis

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Key words: Accounting, accounting information, information technology, TAM, integration technology

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Page No.: 219-226

Volume: 16, Issue 6, 2019

ISSN: 1683-8831

Pakistan Journal of Social Sciences

Copy Right: Medwell Publications

Abstract: To test a TAM Model integrated with the uses and gratification theory, to further test and predict the acceptance of using particular technology when using it such as perceived usefulness, perceived enjoyment and perceived ease of use. Using primary data by delivering questionnaires to the respondents. The respondents are several employees who used the financial information system in the government offices in North Sumatra province. The analytic tool employed is Structural Equation Model (SEM), especially, Partial Least Square (PLS). This research resulted in the following empirical findings: the intention to use technology is influenced by the perceived enjoyment and the attitude toward using it. Furthermore, the behavior intention to use influences the usage behavior and the usage behavior influences gratification.

INTRODUCTION

The growth of internet technology usage may be a good opportunity to increase company's profit. The internet users may also benefit from it in terms of the ease of transaction. However, despite of the fact that the internet has provided numerous advantages, the behavior intention to use it does not automatically occur with in users to use the technology directly. This phenomenon encouraged several researchers to test individual's intention to use technology. Davis (1989) proposes perceived usefulness and perceived ease of use that may influence individual's attitude toward using technology. His theory is called Technology Acceptance Model (TAM).

Heijden (2004) states that TAM, besides involving extrinsic motivations also involves intrinsic motivation such as enjoyment. Luo *et al.* (2006) employed the uses and gratification theory to observe that a sense of deep

enjoyment influences individuals to use technology. Davis *et al.* (1989) prove that the acceptance of information system is also influenced by one of intrinsic motivations, perceived enjoyment. McElroy *et al.* (2007); Fatimah *et al.* revealed that personality factor influences individual's acceptance on technology.

This research integrated TAM with the uses and gratification theory developed by Luo *et al.* (2006). They stated that TAM may be integrated with the uses and gratification theory in terms of the use of internet information service. This research is critical because, first, TAM is a model which is capable of predicting acceptance on particular technology, outlining that to use a technology, perceived usefulness and perceived ease of use must be met.

Second, TAM assumes that individual's use of technology is influenced by enjoyment and joyful feeling. By adding the perceived enjoyment and integrating the uses and gratification theory to TAM, the new version

of TAM is expected to be able to predict acceptance on both technology and user's motivation and gratification when using it.

Theories and hypotheses development

Theories: TAM assumes that there are two primary behavior beliefs variables in adopting information system, namely perceived usefulness and perceived ease of use (Davis, 1989). According to Davis (1989), perceived usefulness is the degree to which a person believes that using a particular system would enhance his or her job performance. A person will use IT if he/she knows the positive benefits he/she would get when using it (Thompson *et al.*, 1991). Klopping and McKinney (2004) find that user's intention to use particular system is influenced by their perceived usefulness. Perceived ease of use is the degree to which a person believes that using a particular system would be free from effort (Davis, 1989). The perceived ease of use also influences the perceived usefulness, assuming that if a person perceives particular system to be easy to use then the system would be useful. Furthermore, Venkatesh *et al.* (2003) state that TAM shows how user's behavior in using particular system (technology) is influenced by the perceived usefulness and the perceived ease of use.

Attitude toward behavior are negative and positive feelings a person has when he or she has to act on particular pre-determined behaviors. The attitude toward use is the attitude toward system usage in forms of acceptance or rejection. It is show a person performs when using a technology to finish his or her work.

Behavior intention is a person's intention to perform particular behavior (Jogiyanto, 2007). In TAM it is a behavior to keep using particular technology. The behavior intention is influenced by the perceived usefulness and the attitude toward using technology. Behavior is a person's doing (Jogiyanto, 2007). In TAM, behavior is able to be measured as the amount of time spent to interact with particular technology and as the frequency of its measurement.

The uses and gratification theory emphasizes that individuals actively choose a more specific, loaded media to achieve their goals which also provides gratification because they have options to evaluate the various types of medias being used. The uses and gratification theory is developed from motivations, behavioral usage and gratification constructs (Luo *et al.*, 2006). Motivations push individuals to fulfill their needs or desires; behavioral usage refers to the amount of use, duration of use and type of use (Papacharissi and Rubin, 2000); and gratification refers to the fulfilment of needs and hopes (Spitzberg and Hecht, 1984). This research focused on the development of TAM which was integrated with the uses and

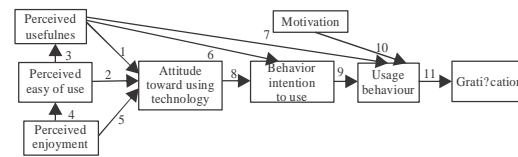


Fig. 1: Research developed model

gratification theory. It is in line with Spitzberg and Hecht (1984) who added the gratification theory in TAM, since, gratification refers to the fulfillment of needs and hopes of system users. Luo *et al.* (2006) also stated that it is important to include the uses and gratification theory in TAM, since, when people use technology, several intrinsic motivations influence their intention and gratification.

The gratification theory consists of motivations, behavioral usage and gratification. The aspects of TAM which were employed in this research were perceived usefulness and perceived ease of use, attitude toward using and behavior intention to use. The integration of TAM and the uses and gratification theory may give us a broader picture on whether users receive gratification from the technology they use.

Other variable employed in this research was perceived enjoyment (Zahra *et al.*, 2017). The perceived enjoyment is an intrinsic motivation of user when accepting and using technology. For example, users may decide whether they are entertained when using particular system or gain enjoyment from it compared to using the conventional means.

Research model: The model developed in this research is depicted in the Fig. 1.

Hypotheses development: The hypotheses development are explained as follows: perceived usefulness is the degree to which a person believes that using a particular technology or system would enhance his or her job performance. It is a factor strong enough to influence the attitude toward using technology in user's acceptance, adoption and use of system (Dalcher and Shine, 2003). The perceived usefulness positively and significantly influences the attitude toward using information technology (Davis, 1989; Chau, 1996; Igbarida *et al.*, 1996). Thompson *et al.* (1991) concludes that an individual would use information technology if he/she knows he/she would acquire positive benefits when using it. Therefore, the first hypothesis to be tested will be:

- H_1 : the perceived usefulness positively influences the attitude toward using information technology

Perceived ease of use is the degree to which a person believes that using particular technology or system would be free from mental and physical efforts. Chau (1990) concludes that the perceived ease of use positively influences the attitude toward using technology. If users feel ease then they will form the attitude toward using technology (Davis, 1989; Venkatesh *et al.*, 2003; Lohse *et al.*, 2000). Therefore, the second hypothesis to be tested will be:

- H₂: the perceived ease of use positively influences the attitude toward using information technology

In TAM, the perceived ease of use may also influence the perceived usefulness. Salanova *et al.* (2000) finds that the perceived ease of use is positively related to the perceived usefulness. Davis (1989) also finds that perceived ease of use both directly and indirectly have impacts on the perceived usefulness. If users feel ease in using particular technology or system they would also feel the usefulness of the technology or system. The higher user's perceived ease of use on system is the higher the perceived usefulness of the system will be. Therefore, the third hypothesis to be tested will be:

- H₃: the perceived ease of use positively influences the perceived usefulness

Perceived enjoyment is an intrinsic motivation to accept and use technology or make one feel happy when using technology (Davis *et al.*, 1989). Venkatesh (2000), and Sun and Zhang (2006) reveal that the perceived enjoyment significantly influences the perceived ease of use. Therefore, the fourth hypothesis to be tested will be:

- H₄: the perceived enjoyment positively influences the perceived ease of use

Venkatesh (2000), dan Igarria and Chakrabarti (1990) reveal that the perceived enjoyment positively influences the attitude toward using technology. Bobek and Hatfield (2003) specified the perceived enjoyment in the use of information technology while Igarria (1993) specified the perceived enjoyment in using the micro-computer. Therefore, the fifth hypothesis to be tested will be:

- H₅: the perceived enjoyment positively influences the attitude toward using information technology

Perceived usefulness has impacts on the behavior intention to use (Davis *et al.*, 1989). Moon dan Kim (2001) and Keil *et al.* (1995) conclude that the perceived usefulness influences the behavior intention to use technology. Therefore, the sixth hypothesis to be tested will be:

- H₆: the perceived usefulness influences the behavior intention to use information technology

If a person believes a particular information system to be useful then he or she would use it. Therefore, the perceived usefulness will be related to his or her behavioral usage. Davis (1989), Igarria *et al.* (1997), Venkatesh *et al.* (2003) Sun and Zhang (2006) conclude that the perceived usefulness influences the attitude toward using technology. Therefore, the seventh hypothesis to be tested will be:

- H₇: the perceived usefulness influences the behavioral usage information technology

Attitude toward using technology is an evaluation from users on their interest in using technology (Mathieson, 1991). The attitude toward using technology may be in form of accepting or rejecting technology when the users use it. Bobek and Hatfield (2003) and Lin and Lu (2000) reveal that the attitude toward using technology positively influences the behavior intention. Therefore, the eighth hypothesis to be tested will be:

- H₈: the attitude toward using technology influences the behavior intention to use information technology
Usage behavior involves user's intensity and frequency in using technology (Papacharissi and Rubin, 2000). The frequency of use is the amount or duration of using technology. Triandis (1980) states that the usage behavior is influenced by the behavior intention to use technology. Vankatesh *et al.* (2003) found a direct, significant relationship between the behavior intention to use technology and the usage behavior. Thompson *et al.* (1991) found a positive relationship between the behavior intention to use and the usage behavior. Therefore, the ninth hypothesis to be tested will be:

- H₉: the behavior intention to use technology influences the usage behavior

Individual's behavior is encouraged by the motivation to fulfil their needs (Maslow, 1954). Behavior occurs because of motivations which direct individuals to exert particular actions according to their interests or goals. As'ad (1995) argues that a person's behavior is strongly influenced by his or her motivation which encourages them to fulfill his or her needs. Therefore, the tenth hypothesis to be tested will be:

- H₁₀: the motivation influences the usage behavior

Usage behavior on particular media or technology tends to form a relationship with the existence of gratification on using the related media. Lin and Chen

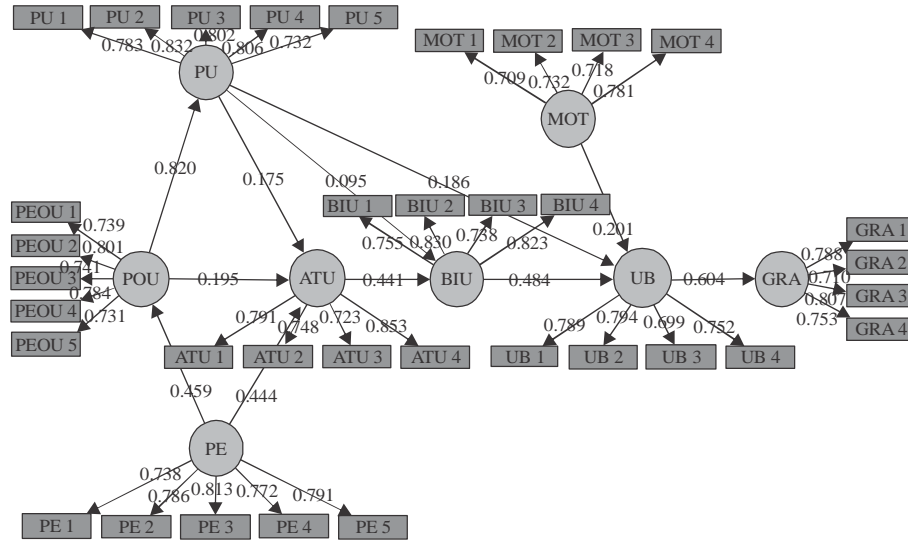


Fig. 2: The output of the PLS's measurement model

(2017) proved that gratification is marked with the change of behavior usage on the media being used to fulfill personal needs through the gained gratification. Luo *et al.* (2006) proved that the usage behavior influences the media usage with gratification. Therefore, the eleventh hypothesis to be tested will be:

H₁₁: the usage behavior influences gratification

MATERIALS AND METHODS

Research design: This research employed a survey method, delivering questionnaires to the potential respondents to acquire the valid data. The questionnaires were given to several employees who used the financial information system in the government offices in North Sumatra province. The questionnaires were spread during May-June, 2017.

Data testing: The analytic tool (method) used to test the data was Structural Equation Model (SEM). The type of SEM employed in this research was Partial Least Squares (PLS). PLS is a variant based analysis method on SEM equation which is able to perform model and structural testings simultaneously. The result of the measurement model will be used to test validity and reliability while the result of the structural model will be used to test causality such as hypotheses testing with the prediction model.

The measurement model of validity and reliability testings as well as path coefficients in the research's model are presented as follows (Fig. 2):

Validity: Table 1 provides the output values of average variance extracted to measure validity of variable that used in this research.

Table 1: Average Variance Extracted (AVE)

Variables	AVE	Roots of AVE
PU (Percieved Usefulness)	0.627	0.792
POU (Percieved Easy of Use)	0.577	0.760
PE (Percieved Enjoyment)	0.609	0.780
ATU (Attitud Toward Using)	0.609	0.780
BIU (Behavior intention to Use)	0.620	0.787
UB (Usage Behavior)	0.577	0.760
GRA (Gratification)	0.586	0.766
MOT (Motivation)	0.541	0.736

Table 2: Test results reliabilatas

Variables	Composite reliability	Role of thumb	Interpretation
PU (Percieved Usefulness)	0.894	0.70	Reliable
POU (Percieved Easy of Use)	0.872	0.70	Reliable
PE (Percieved Enjoyment)	0.886	0.70	Reliable
ATU (Attitud Toward Using)	0.861	0.70	Reliable
BIU (Behavior intention to Use)	0.867	0.70	Reliable
UB (Usage Behavior)	0.845	0.70	Reliable
GRA (Gratification)	0.849	0.70	Reliable
MOT (Motivation)	0.825	0.70	Reliable

The results of research indicate that all constructs have AVE values >0.50, confirming that all construct indicators have met the requirements for convergent validity. Based on the comparison between the roots of AVE and the correlation among the latent variables it can be concluded that the roots of AVE have greater values compared to the correlation among the latent variables. Therefore, all indicators have met the requirements for discriminant validity.

Reliability test: Table 2 provides the output values of the composite reliability. All indicators which were employed have values >0.7, confirming that they are reliable.

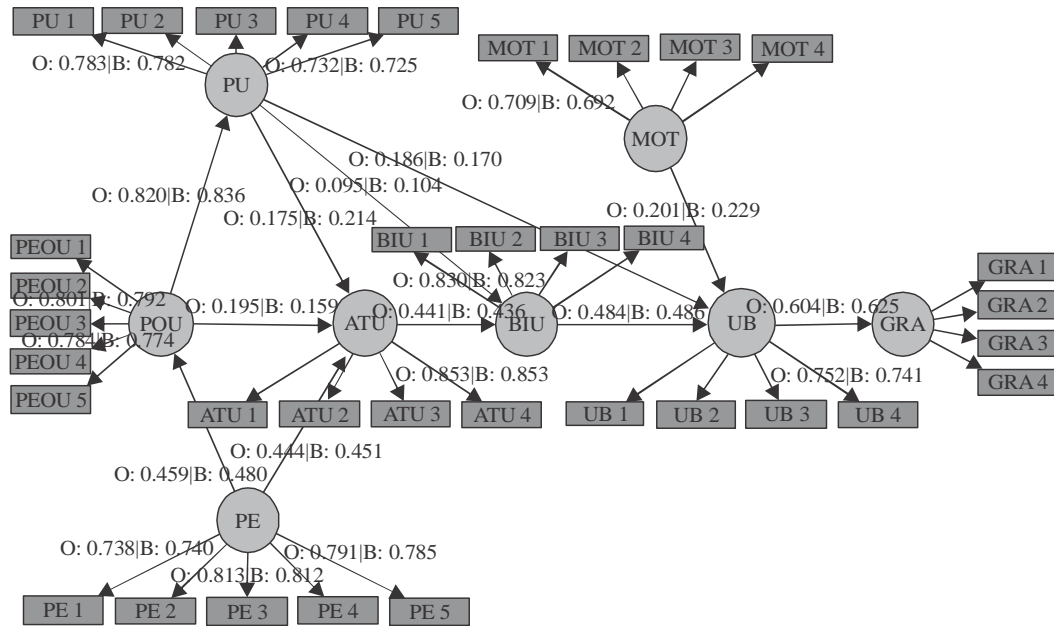


Fig. 3: Bootstrapping measurement model output

Table 3: R²

Variables	R ²
PU (Perceived Usefulness)	0.673
POU (Perceived Easy of Use)	0.211
PE (Perceived Enjoyment)	0.000
ATU (Attitud Toward Using)	0.482
BIU (Behavior intention to Use)	0.251
UB (Usage Behavior)	0.452
GRA (Gratification)	0.365
MOT (Motivation)	0.000

RESULTS AND DISCUSSION

The evaluation of the structural model: Based on the R² values it can be concluded that: The variation change of the perceived usefulness variable which can be explained by the perceived ease of use construct is 67.3% while the rest can be explained by variables outside the research model. The variation change of the perceived ease of use variable which can be explained by the perceived enjoyment construct is 21.1% while the rest can be explained by variables outside the research model. The variation change of the attitude toward using variable which can be explained by the perceived usefulness construct and the perceived enjoyment variable is 48.2% while the rest can be explained by variables outside the research model. The variation change of the behavior intention to use variable which can be explained by the perceived usefulness, perceived ease of use, attitude toward using and perceived enjoyment constructs is 25.1% while the rest can be explained by variables outside the research model. The variation change of gratification variable which can be explained by the

perceived usefulness, perceived ease of use, attitude toward using, behavior intention to use, usage behavior and motivation constructs is 36.5% while the rest can be explained by variables outside the research model (Fig. 3 and Table 3).

Hypotheses testing: By comparing the t_{value} and t_{table} , the following conclusions are drawn: first, the t_{value} of the influence of the perceived usefulness on the attitude toward using technology is 0.815 while the t_{table} is 1,96. It can be concluded that the perceived usefulness does not significantly influence the attitude toward using technology: the first hypothesis is not supported. This finding indicates that users could not directly see the features offered by a technology they use, resulting their low attitude in using the technology (Table 4).

Second, the t_{value} of the positive influence of the perceived ease of use on the attitude toward using technology is 0,901 while the t_{table} is 1,96. Therefore, it can be concluded that the perceived ease of use does not significantly influence the attitude toward using technology: the second hypothesis is not supported. This finding indicates that the perceived ease of use of technology does not influence the attitude toward using the technology. It is different from the findings of Chau (1996). It may be caused by the fact that the respondents did not have experience in using or operating the technology system.

Third, the t_{value} of the influence of the perceived ease of use on the perceived usefulness is 11.200 while the t_{table} is 1,96. Therefore, it can be concluded that the perceived ease of use has significant influence toward the perceived

Table 4: t-test result

Variables	t-statistic	One-tailed	Two-tailed	Results
POU->PU	11.200	1.64	1.96	Hipotesis supported
PE->POU	4.013	1.64	1.96	Hipotesis supported
PU->ATU	0.815	1.64	1.96	Hipotesis rejected
POU->ATU	0.901	1.64	1.96	Hipotesis rejected
PE->ATU	3.754	1.64	1.96	Hipotesis supported
PU->BIU	0.582	1.64	1.96	Hipotesis rejected
ATU->BIU	2.637	1.64	1.96	Hipotesis supported
PU->UB	1.594	1.64	1.96	Hipotesis rejected
BIU->UB	3.769	1.64	1.96	Hipotesis supported
MOT->UB	1.522	1.64	1.96	Hipotesis rejected
UB->GRA	6.484	1.64	1.96	Hipotesis supported

usefulness: the third hypothesis is supported. The existence of the ease use of a particular system allows users to gain the benefits from such system. The perceived ease in using technology allows users to finish their work on time, confirming their gaining benefits from the technology. Fourth, the t_{value} of the influence of the perceived enjoyment toward the perceived ease of use is 4.013 while the t_{table} is 1,96. Therefore, it can be concluded that the perceived enjoyment has significant influence toward the perceived ease of use: the fourth hypothesis is supported. This finding supports the research by Davis, 1989; Vakentesh and Davis, 2000; and Mathieson (1991) that revealed that the perceived enjoyment significantly influences the perceived ease of use. It also supports the notion that the higher perceived enjoyment in using technology is the higher perceived ease of using the technology will be. In other words if a particular technology system is easy to use then it will bring enjoyment to its users.

Fifth, the t_{value} of the influence of the perceived enjoyment on the attitude toward using technology is 3.754 while the t_{table} is 1,96. Therefore, it can be concluded that the perceived enjoyment significantly influences the attitude toward using technology: the fifth hypothesis is supported. This finding supports the findings of Venkatesh (2000), and Igbaria (1993). It also indicates that the higher the perceived enjoyment in using and operating a technology system is the higher the attitude toward using the technology will be. In other words, the technology usage is a joyful, entertaining activity because it is easy and produces maximum results, therefore, influencing the attitude toward using the technology. Sixth, the t_{value} of the influence of the perceived usefulness toward the behavior intention to use technology is 0.582 while the t_{table} is 1,96. Therefore, it can be concluded that the perceived usefulness does not significantly influence the behavior intention to use technology: the sixth hypothesis is not supported. This finding unsupports the findings of Lohse *et al.* (2000), Moon and Kim (2001) and Ajzen dan Madden (1986). The inability of the perceived usefulness in improving the behavior intention to use may be caused by the fact that their works had little use of technology.

Seventh, the t_{value} of the influence of the perceived usefulness on the usage behavior is 1.594 while the t_{table} is 1,96. Therefore, it can be concluded that the perceived usefulness does not significantly influence the usage behavior: the seventh hypothesis is not supported. This finding does not support the findings of Davis (1989), Igbaria *et al.* (1996), Venkatesh *et al.* (2003) Sun and Zhang (2006), since, the usefulness provided by the technology system could not change the attitude toward using the technology. Eighth the t_{value} of the influence of the attitude toward using on the behavior intention to use technology is 2.637 while the t_{table} is 1,96. Therefore, it can be concluded that the attitude toward using technology significantly influences the behavior intention to use technology: the eighth hypothesis is supported. This finding supports the findings of Ajzen (1991) where the higher the attitude toward using technology is the higher the behavior intention to use the technology will be.

Ninth, the t_{value} of the influence of the behavior intention to use technology on the usage behavior is 3.769 while the t_{table} is 1,96. Therefore, it can be concluded that the behavior intention to use technology significantly influences the usage behavior: the ninth hypothesis is supported. This finding supports the findings of Vankatesh *et al.* (2003) and Thompson *et al.* (1991). Tenth, the t_{value} of the influence of motivation on the usage behavior is 1.522 while the t_{table} is 1,96. Therefore, it can be concluded that motivation does not significantly influence the usage behavior: the tenth hypothesis is not supported. This finding does not support the findings of As'ad (1995). It may be caused by the fact that, although, there is user's motivation in using technology to do his or her jobs, the information search will not cause the behavior to use technology to occur. Eleventh, the t_{value} of the influence of the usage behavior on gratification is 6.484 while the t_{table} is 1,96. Therefore, it can be concluded that the usage behavior significantly influences gratification: the eleventh hypothesis is supported. This finding does not support the findings of Xueming (2002). The technology usage behavior increases users' gratification when they have motivations to use technology which in turn influence their behavior in

using the technology. The benefits perceived by users in using technology bring gratification to them, so, their behavior to use technology would automatically occur.

CONCLUSION

Based on the findings of research it can be concluded that the employee in government organizations intention to use information technology is significantly influenced by the perceived enjoyment but the attitude toward using technology is not influenced by the perceived usefulness and the perceived ease of use. Meanwhile, the attitude toward using information technology influences the behavior intention to use technology. The higher one's attitude in accepting or rejecting particular technology is, the higher his or her behavior intention to use it will be. The behavior intention to use influences the usage behavior and the usage behavior influences gratification. Based on the hypotheses testing, it can be concluded that the perceived usefulness and the perceived ease of use do not influence the attitude toward using information technology but the perceived enjoyment influences the attitude toward using information technology. The perceived enjoyment, the attitude toward using and the behavior intention to use influence gratification in using information technology. The attitude is influenced by the perceived enjoyment. The findings of research provide implications or contributions that the perceived enjoyment, the attitude toward using, the behavior intention to use and gratification are tools (variables) in forming the intention to use information technology in local government North Sumatera province.

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