TAM as Acceptance Model of Health Information System

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1.0 INTRODUCTION

User acceptance in the implementation of technology can be defined as the willingness of users to be shown through the use of an active technology to support the completion of certain tasks (Dillon & Morris, 1996). Until now there have been many known models of acceptance of information system implementation by users, one of which is a model developed by Davis, et al., (1989) with the name Technology Acceptance Model (TAM).

2.0 DEVELOPMENT OF TAM

TAM is a behavioral model that explains the acceptance of technology implementation. Of the various types of technology acceptance models, TAM is the most widely used and developed model (Kulviwat, et al., 2007). This model is the development of the Theory of Reasoned Action (TRA) of Fishbein & Ajzen (1975), so there is a fundamental similarity between the two, namely assuming that if someone has built up the intention to act, then they will be free to act without obstacles.
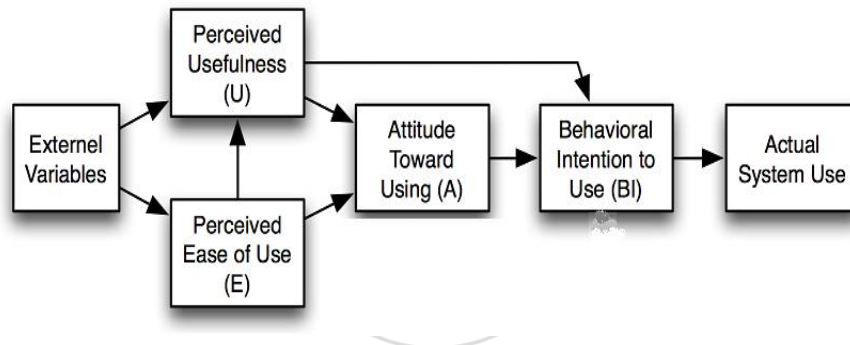
Source: Davis et al., 1989
Figure 1. Technology Acceptance Model (TAM)

TAM explained that when a user is faced with new technology, there are 2 factors that influence his decision about how and when he will accept and use the technology. First is perceived usefulness (PU), and second is perceived ease of use (PEOU). Perceived usefulness and perceived ease of use are specific beliefs, which replace normative beliefs in TRA (Davis, et al., 1989) and are technical contexts (Gagnon, et al., 2012). Both are determinants of attitude toward use (AT) technology. Furthermore, attitude toward use becomes a determinant of the behavioral intention to use (BI) technology. Finally, with intentions formed, actual system use (AU) is realized (Davis, et al., 1989). The visual display of TAM is presented in Figure 1, which can then be referred to as Original-TAM.

The following is an explanation of each construct in TAM:
   Perceived ease of use: According to Davis, et al. (1989), perceived ease of use illustrates the extent to which information systems can be applied by users without using too much effort. Furthermore Davis (1993) perfects the notion of perceived ease of use as "the degree to which information systems can be applied by users without strenuous effort physically and mentally". Constructs are measured by several indicators, namely: 1) ease of learning the operation of the system, 2) the ease of using the system to work according to wishes, 3) the ease of skilled use of the system, 4) ease of use of the system in general (Davis, et al., 1989).
   Perceived usefulness: Perceived usefulness is defined as "the usefulness of information systems to improve user performance in an organizational context" (Davis, et al., 1989). This definition is further refined to "the degree to which the use of information systems will improve user performance" (Davis, 1993). This construct can be measured by several indicators, namely the ability of the system to: 1) improve user performance, 2) increase user

productivity, 3) increase the effectiveness of the user's work, and 4) the benefits of the system in general (Davis, et al., 1989).

Attitude toward use: Attitude toward use is defined as "a person's evaluative level of information systems applied in their work" (Davis, 1993). This construct is measured by several indicators including: 1) the goodness of the system, 2) the policies of the system, 3) acceptance of the system, 4) the benefits of using the system, 5) the positive value of the system implemented (Davis, 1993).
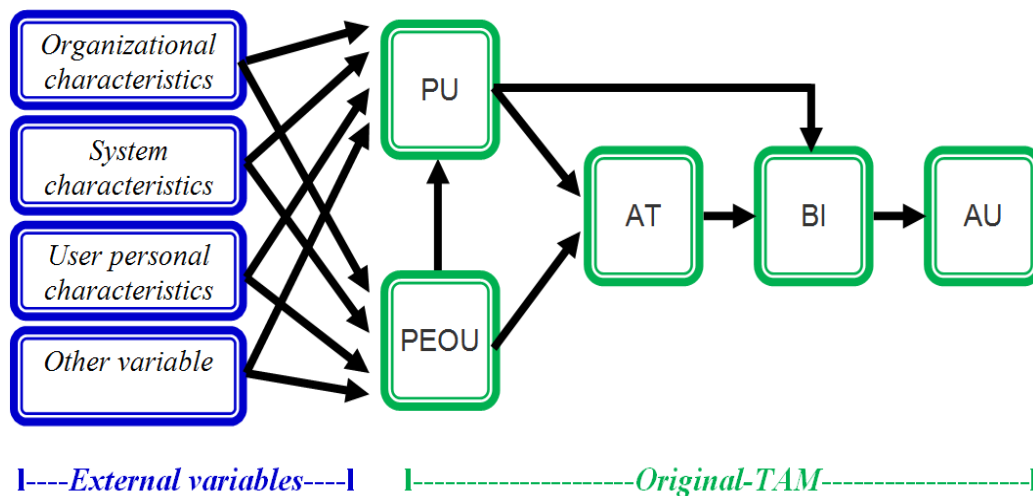
Behavioral intention to use: Behavioral intention to use is defined as "the power of one's intention to run certain information systems" (Davis, et al., 1989). This construct can be measured by several indicators, namely: 1) plans to use the system, 2) predictions that someone will use the system (Davis, et al., 1989).

Actual system use: Actual system use is a person's actual actions in implementing certain information systems, which can be measured by several indicators, namely: 1) frequency of system usage, 2) duration of system usage (Davis, 1993).

3.0 TAM DEVELOPMENT PATHS

TAM can be developed through 2 lines, namely the Extended-TAM line and the Integrated-TAM line. If both are used together then it is called Extended-Integrated-TAM.

3.1 Extended-TAM

Note= PEOU: Perceived Ease of Use, PU: Perceived Usefulness, AT: Attitude toward Use, BI: Behavioral Intention, AU: Actual System Use
Figure 2. Extended-TAM Developed through External Variable Additions which are Antecedents of Perceived Ease of Use and Perceived Usefulness

Basically, TAM wants to test how perceived ease of use and perceived usefulness along with the antecedent factors involved influence the behavioral intention to use, which in turn affects the actual system use (Syu & Huang, 2011). Related to this, the factors underlying the willingness of users to be different from one another, depending on the target technology used, the user, and the context of the case being studied (Moon & Kim, 2001). Therefore, there is a possibility that the construct in TAM cannot fully explain the reason for willingness to use a technology. For this reason, TAM can be expanded to Extended-TAM (Figure 2) through the development of external variables from perceived ase use and perceived usefulness (Syu & Huang, 2011). There are four groups of external variables as expansion efforts of TAM, namely: 1) organizational characteristics, 2) system characteristics, 3) personal characteristics of users, and 4) other variables (Yousafzai, et al., 2007). The four groups of external variables are explained as follows:

Organizational characteristics: This variable is related to organizational characteristics, such as: competitive environment, user support, group innovation norms, implementation gap, internal computing support, internal computing training, work insecurity, management support, organizational policy, organizational structure, organizational support, organizational use, influence peer, peer use, training, transitional support, and so on.

System characteristics: This variable relates to the characteristics of the technology or system itself, such as: accessibility, cost of access, compatibility, confirmation mechanism, convenience, image / interface, information quality, media style, navigation, objective usability, quality of output, activity, complexity, importance , accuracy of software, risk, relevance to work, reliability and accuracy, response time, results of demonstrability, screen design, social presence, system quality, terminology, experimentability, visibility, network security, and so on.

Personal characteristics of users: This variable relates to the individual characteristics of technology users, for example: age, awareness, cognitive absorption, computer anxiety, attitudes toward computers, computer skills, education level, experience, gender, intrinsic motivation, involvement (situational / intrinsic), personality, developer responsiveness, enjoyment, playfulness, resources, personal innovation, role in technology, self-efficacy, shopping orientation, knowledge and skills, beliefs, years of work, volunteering, and so on.

Other variables: This last category includes variables which are not classified in the previous three classifications, for example: arguments for change, cultural affinity, external computing support, external computing training, facilitation conditions, subjective norms, situational normality, social influence, social pressure, technological compatibility with tasks, task characteristics, vendor cooperation, and so on.

3.2 Integrated-TAM
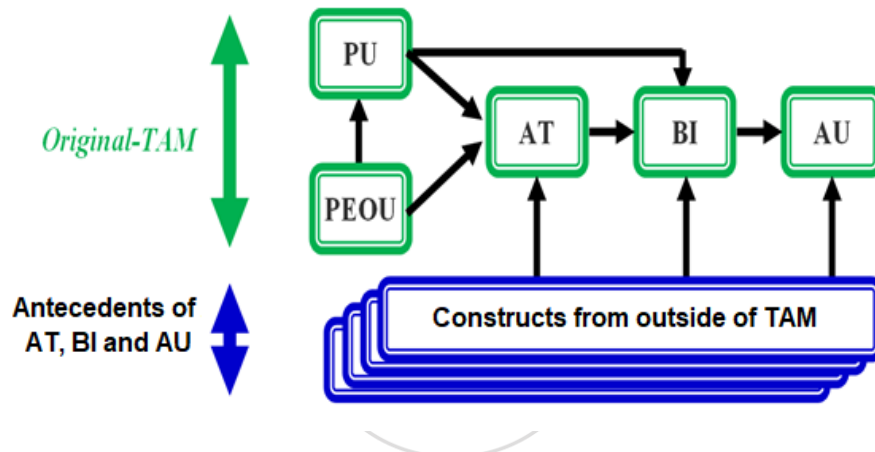
Note = PEOU: Perceived Ease of Use, PU: Perceived Usefulness, AT: Attitude Toward Use, BI: Behavioral Intention, AU: Actual System Use

Figure 3. Integrated-TAM that was developed through the addition of constructs which are antecedents of Attitude Toward Use, Behavioral Intention to Use, or Actual System Use

TAM can also be developed by integrating Original-TAM with constructs from outside TAM but it is not an external variable for perceived ease of use and perceived usefulness, but directly towards the attitude toward use, behavioral intention to use, or actual system use. This is what is called Integrated-TAM.

4.0 CONCLUSION

The explanation above is indeed the pathways for the development of TAM in general, but basically the use of information technology in health service management is not different, so that in full these pathways can be used to explain user behavior, which is generally still mostly played by health workers as additional assignments.

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