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Evolution of Technology Acceptance Model (Tam)

By

Seema Benakatti
OB and HR area, Jain University, Bengaluru, India
Email: seema.benakatti@gmail.com

Dr. Ujjal Mukherjee
OB and HR area, Jain University, Bengaluru, India
Email: ujjal.m@cms.ac.in

Abstract

Aim: The Current Paper Aims To Describe The Development Of Tam From The Time It Was Conceptualised By [11]. Methodology: The Paper Reviews The Existing Literature Between 1989 And 2020 To Identify The Development Of Tam. Analysis: Several Antecedents Have Been Added As Tam Progressed From Tam 1 To Tam 3. The Last Model (Tam 3) Was Developed In The Year 2008 And Technology Has Progressed A Lot From That Time. There Is A Need To Revisit This Model, And Study More Antecedents And Factors That May Influence The Adoption Of Technology In The Current Scenario. Implications: This Paper Will Help Researchers To Understand The Development Of Tam. It Also Discusses The Scope Of Future Research. Keywords: Technology Adoption Model, Perceived Usefulness, Perceived Ease Of Use, Tam 1, Tam 2, Tam 3, Technology.

1. Introduction

Technology has extended through almost all areas in society. In information systems research and practice, the adoption and use of information technology in the workplace is still a hot topic [12]. Despite tremendous advancements in hardware and software capabilities, the problem of underutilised technologies persists [9]. The "productivity paradox" surrounding low returns on organisational investments in information technology has been identified as a major factor underlying low usage of installed systems [27]. Creating conditions for human organisations to adopt information systems remains a high priority [23]. Over the last decade, significant progress has been made in explaining and predicting user acceptance of information technology at work. The Technology Acceptance Model (TAM) has received widespread theoretical and empirical support [22], [8], [11]. Numerous empirical studies have discovered that TAM consistently explains a giant percentage of the variance (usually approximately 40%) in utilization intentions and behaviour [31]. Other models, such as the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB), outperform TAM [30]. Many studies have been conducted over the last thirty years using the technology acceptance model. The studies have been conducted in virtually all sectors and industries like education, healthcare, business communication, transportation, manufacturing, hospitality & tourism, and banking etc. The purpose of this paper is to comprehend the historical development of TAM and its applications in various business avenues.

2. Tam: Meaning and Background

In 1989, Fred Davis proposed the Technology Acceptance Model (TAM) for his doctoral dissertation. The TAM was developed on the basis of the Theory of Reasoned Action and Theory of Planned Behavior [11], and it deals specifically with the prediction of an

information system's acceptability. The objective of this model is to predict a device's acceptability and to identify the changes that should be made to the system to make it ideal for users.

2.1 TAM 1

[11] The goal of TAM was to explain the general determinants of computer technology acceptance, which leads to an understanding of user behaviour across a wide range of end-user computing technologies and user populations [19]. It is a model that simulates how a customer accepts and uses an innovation [33]. TAM is also used to indicate end-user recognition of information systems.

Fig1. *TAM 1 (Source: Davis, 1989)*

According to the model, an information system's acceptability is determined by two major factors: perceived usefulness (PU) and perceived ease of use (PEU) (PEOU). Perceived usefulness is the degree to which a person believes that using a particular system will improve his or her job performance (PU). PU entails shortening the time required to complete a task, resulting in greater efficiency and accuracy. The majority of the research has used perceived usefulness as the primary construct to assess new technology acceptance [29],[1],[18],[14],[13],[10],[28],[20]. Perceived usefulness of IT is commonly expressed in terms of increased productivity, improved job performance, increased job effectiveness, and job usefulness.

The PU construct was created with the following benefits in mind [11]:

- Enable users to complete tasks more easily.
- Allow the user to improve performance.
- Increase your productivity.
- Improve their efficiency.
- Make it easier for the user to do what they want.
- It would be beneficial to users.

Perceived Ease of Use (PEOU) is defined as the degree to which a person believes that using a specific system will be effortless. The majority of studies [1], [15], [16], [25], [26], [2], [14], [24] have identified PEOU as a major determinant of technology acceptance behaviour. It is measured by how clear and understandable the interaction with the system is, how easy it is to get the system to do what is required, and how much mental effort is required to interact with the system.

[11] explained PEOU construct to deliver the following benefits:

- It makes learning to operate it simple for the user.
- Users would find it simple to get it to do what they want.
- The interaction of users with it would be clear and understandable.
- Users would find it simple to interact with.
- It would be simple for users to learn how to use it.
- It would be simple for them to use.

Other factors, known as external variables in TAM, can have an impact on a person's belief in a system. Belief has been shown to influence PU and PEOU. An external variable is a quality that exists outside of an individual. For instance, training, computer experience, system quality, and so on. PEOU is also influenced by PU. Following PU and PEOU, the model's subsequent factors include attitude, behavioural intentions, and actual system use. A person's attitude toward technology can be defined as their perception of it. Behavioral intentions to use a technology or embrace a skill result in actual skill and expertise usage [3]. It is the extent to which an individual is consciously prepared to execute or refrain from executing a specific action. Actual System Use is defined as an external psycho-motor response measured by individual users' actual course of action [11]. The number of times a system is used constitutes actual usage as a behaviour. The frequency of use of the system is operationalized [11], [8], [21].

2.2 TAM 2

[32] proposed the TAM 2 extended model. The factors influencing perceived usefulness were the focus of this revised model. Among these variables are: subjective norm: the influence of others on the user's decision to use or not use technology; Image: the user's desire to maintain a favourable reputation among others; Job relevance: the extent to which the technology was applicable; output quality: the extent to which the technology performed the required tasks adequately; and The production of tangible results is referred to as result demonstrability.

Fig 2: *Technology Acceptance Model (TAM 2) (Source: Venkatesh and Davis, 2000).*

In addition, experience and voluntariness are introduced as moderating factors of subjective norms.

TAM 3

After experiencing trends and extension by introducing predictors for the basic TAM constructs, new TAM modifications emerged as a result of "enhancement" and incorporation of supplementary elements as a result of relevant research. It also included the PEOU determinants. There were primarily four major types of modifications:

- External predictors include technology anxiety, prior usage, experience, self-efficacy, and technological confidence.
- Other theories' factors include subjective norms, expectations, user participation, risk, and trust.
- Gender, cultural diversity, and technological characteristics are examples of contextual factors.
- Usage measures include attitudes toward technology, perceptions of usage, and actual usage of technology.

Fig 3: *TAM 3 (Venkatesh & Bala, 2008)*

[7] Confirmed Tam Adequacy In Predicting Individuals' Intent To Visit Specific Internet Web Sites, Whereas [17] Used The Same Model Even When Exploring Net Attractiveness Taking Gender Of Users Into Account. Learning And Coaching, Or Teaching, Are Two Areas Of Great Interest In Incorporating New Technology, Particularly Computer And Internet Generation. The Educational System Includes A Wide Range Of Potential Users Of Technology That Can Help Them Understand Knowledge Transfer And Acquisition.

Conclusion and Scope for Future Research

Human race initially resisted the usage of technology. In course of time as more and more companies accepted technology in their day to day operations and the tech companies made it more user friendly, individuals started adopting it. Such changes have continuously

pushed the researchers to explain human behaviour when they interact with technology. TAM 1 to TAM2 to TAM 3 is an example of how the studies have explained this interaction. In the current situation when pandemic has affected the world and most employees are working from home, it is important to study if any virus (a determinant or a factor) has infected TAM 3. With employees forced to accept technology as a mode to get their job done and also interact with people, it will not be a surprise that new antecedents may influence PU or PEOU. There is anyway a need to revisit TAM in the scenario where technology is changing with the speed of light.

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