Technology Acceptance Model

The technology acceptance model (TAM) explains the acceptance of information systems by individuals. TAM postulates that the acceptance of technology is predicted by the users' behavioural intention, which is, in turn, determined by the perception of technology usefulness in performing the task and perceived ease of its use.

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Theory Factsheet

Proposed By: Davis, 1989

Parent Theory: Theory of Reasoned Action

Related Theories: Information Diffusion, IS Success Model, Theory of Planned Behaviour, Task Technology Fit

Discipline: Information systems management

Unit of Analysis: Individual

Level: Micro-level

Type: Theory for Explaining and Predicting

Operationalised: Quantitatively

Introduction

The acceptance and the use of information technologies can bring immediate and long-term benefits at organisational and individual levels, such as improved performance, financial and time efficiency and convenience (Foley Curley, 1984; Sharda, Barr & McDonnell, 1988). The potential of technology to deliver benefits has long motivated IS management research to examine the willingness of individuals to accept innovative technology (Davis, 1989). The research on the adoption of technology became of primary importance in the 1980s, which coincided with the growth of the use of personal computers. However, a major stumbling stone at the development of the research on the adoption of personal computing was the lack of empirical insight into users' responses to the information system performance. Before the development of TAM, various technological and organisational perspectives had aimed to advance IS-related research (e.g. (Benbasat, Dexter & Todd, 1986; Robey & Farrow, 1982; Franz & Robey, 1986)). Research had emphasised the importance of factors such as users' involvement in the design and implementation of information systems (Robey & Farrow, 1982; Franz & Robey, 1986). A second stream of research had been underpinned by the practitioners' focus on the development of information systems, especially

when it came to evaluating and refining system design and characteristics (Gould & Lewis, 1985; Good et al., 1986). Those studies had widely used subjective performance perception scales but neglected the validation of the quality of those measures. As a result, the correlation of those subjective measures with actual use had not been sufficiently significant to confirm their internal and external validity (De Sanctis, 1983; Ginzberg, 1981; Schewe, 1976; Srinivasan, 1985). Hence, there was a need to develop reliable measures to investigate attitudinal factors mediating the relationship between IS characteristics and system use. The Theory of Reasoned Action (TRA), developed by Ajzen and Fishbein (Ajzen, 2011) was used to predict the attitudinal underpinnings of behaviours across a wide range of areas. However, the generic nature of TRA stimulated a great deal of discussion on the theoretical limitations of the application of the model in the IS field (Davis, Bagozzi & Warshaw, 1989; Bagozzi, 1981). The model did not measure variables specific to technology use. Hence, researchers had to identify the factors salient to the utilisation of technology and information systems. To address the limitations related to the lack of a theoretical model and scales to measure the acceptance of technology, Davis (Davis, 1989) developed the technology acceptance model (TAM) based on TRA. The model's underpinning logic was that in the context of technology utilisation, behavioural intention was not shaped by a generic attitude toward behavioural intention, but specific beliefs related to technology use. The goal of TAM was to become the framework for examining a wide range of behaviours of technology users while maintaining a parsimonious approach (Davis, 1989).

Theory

The primary objective of TAM was to shed light on the processes underpinning the acceptance of technology, in order to predict the behaviour of and provide a theoretical explanation for the successful implementation of technology. The practical objective of TAM was to inform practitioners about measures that they might take prior to the implementation of systems. To fulfil the objectives of the theory, several steps were carried out (Davis, 1989; Davis, 1993). Davis embarked on the development of the model of technology acceptance by framing the processes mediating the relationship between IS characteristics (external factors) and actual system use. The model was based on the Theory of Reasoned Action, which provided a psychological perspective on human behaviour and was missing in the IS literature at that time (Davis, 1989; Davis, 1993).

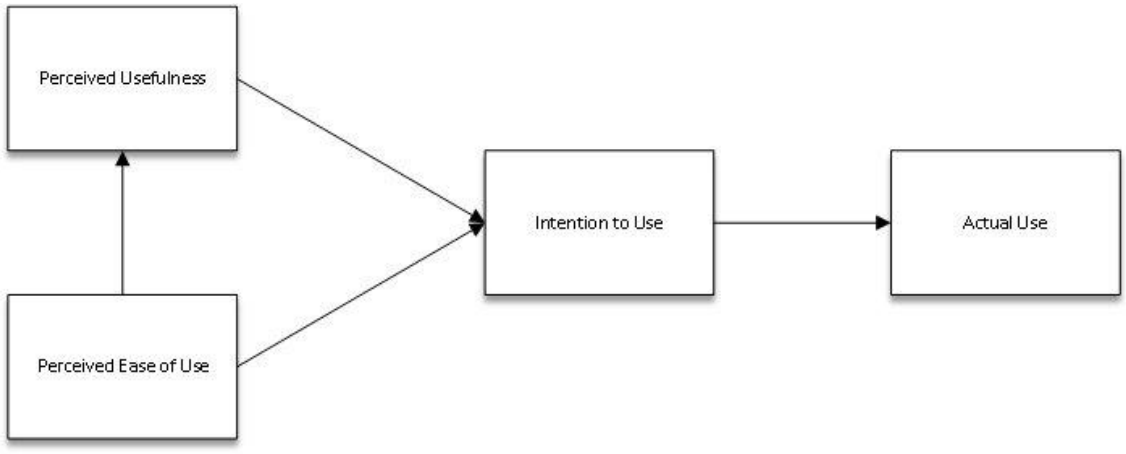
The second step was to identify and define variables and validate measures that would highly correlate with system use. Based on prior empirical literature on human behaviour and the management of information systems, multi-item scales for perceived ease of use and perceived usefulness were developed, pre-tested, and validated in several studies. It was hypothesised that the two constructs were fundamental determinants of user acceptance, due to evidence in previous research (e.g. (Johnson & Payne, 1985; Payne, 1982; Robey, 1979). The research suggested that an individual's decision to perform a behaviour is the result of the analysis of the benefit that they expect to receive from the behaviour compared to the effort/costs they put in to perform the behaviour (Johnson & Payne, 1985; Payne, 1982). This means that the use of the information system is determined by an evaluation of the trade-off between the perceived usefulness of the system and the perceived difficulty of using it (Davis, 1989). Perceived usefulness was defined as the individual's perception of the extent to which the use of a given technology improves performance. The conceptualisation of this construct stemmed from Bandura's concept of outcome judgement, which refers to an individual's expectation of a positive outcome triggering behaviour (Bandura, 1982). Perceived usefulness was operationalised based on evidence confirming the effect of system performance expectancy on system usage (Robey, 1979). Perceived ease of use was defined as the degree to which a person believes that using a particular system is free of effort (Davis, 1989). This construct derived from the self-efficacy concept, which refers to a situation-specific belief about how well someone can execute actions for the prospective task (Davis, 1989; Bandura, 1982). It was

suggested that self-efficacy had a predictive role in decision-making about technology use (Hill, Smith & Mann, 1987). Also, perceived ease of use shared a similarity with the complexity factor theorised in the innovation diffusion literature as a barrier to innovation adoption. It was defined as the degree to which individuals find the innovation difficult to understand and use (Mahajan, 2010). The validity and reliability of the constructs were assessed by testing the contingency of the self-reported usage of IS on the two proposed factors in the organisational context. The developed scales showed excellent psychometric properties. The model was further validated, by confirming significant relationships between perceived usefulness, perceived ease of use, intention and use behaviour (Davis, 1989).

According to TAM, technology acceptance is a three-stage process, whereby external factors (system design features) trigger cognitive responses (perceived ease of use and perceived usefulness), which, in turn, form an affective response (attitude toward using technology/intention), influencing use behaviour (Davis, 1989; Davis, 1993). TAM represents the behaviour, as the outcome predicted by perceived ease of use, perceived usefulness and behavioural intention (Figure 1). Perceived ease of use and perceived usefulness capture the expectations of positive behavioural outcomes and the belief that behaviour will not be labour-consuming (Davis, 1989). According to a follow-up study, behavioural intention can be substituted by the attitude toward behaviour (Davis, 1993), which is an affective evaluation of the potential consequences of the behaviour (Ajzen, 2011). The higher the affective response, the higher is the likelihood that the behaviour will take place. The effect of perceived usefulness on actual use can be direct, which underscores the importance of the variable in predicting behaviour. Although perceived ease of use does not affect use behaviour directly, it underpins the effect of perceived usefulness (Davis, 1993). The model implies that if an application is expected to be easy to use, the more likely it is that it will be considered useful for the user and the more likely it is that this will stimulate the acceptance of the technology (Davis, 1989; Davis, 1993).

The development of the model and measures for technology acceptance have made significant theoretical contributions and have had a great practical value. The application of the model for testing IS usability has made it possible to evaluate the motivation of users to adopt a range of technologies (Hwang, 2005; Gefen, Karahanna & Straub, 2003;Araújo & Casais, 2020), which had not been done before due to a lack of validated subjective measures. The development of constructs which had a strong and significant correlation with use behaviour made it possible to understand the cognitive and affective factors mediating the effect of system characteristics on technology acceptance (Davis, 1989).

Figure 1: Technology Acceptance Model



Theory Extensions

TAM2

Given the established relationship between technology acceptance in organisations and firms' productivity, the exploration of technology acceptance remained at the centre of the research agenda after the development of the original TAM (e.g. (Goodhue & Thompson, 1995; Davis, Bagozzi & Warshaw, 1992)). Although the wide application of TAM confirmed the robustness of the theory (it accounted for around 40% of the variance in technology acceptance on average), the authors of the model aimed to increase its predictive power further. The rationale for extending the model was the limited understanding of the conditions underpinning users' perception of technology utilisation. Perceived usefulness was confirmed to be the strongest predictor of intention to use, with an effect size of .6 on average (Venkatesh & Davis, 2000). However, the literature lacked evidence about the factors that underlie the perception of technology usefulness. Investigation of the antecedents of usefulness perception was required to understand acceptance, as well as to provide guidelines on the development of systems beyond suggesting that users' perception of usefulness and ease of use predict intention (e.g. (Venkatesh & Davis, 1996)). The investigation of key antecedents of perceived usefulness aimed to provide a comprehensive framework for explaining and predicting the acceptance of technology in organisational settings. (Venkatesh & Davis, 2000).

The proposed extension, named TAM2, consisted of five additional exogenous variables and two moderators (Fig 2). The new constructs and moderators incorporated in TAM2 were: subjective norm, image, job relevance, output quality, result demonstrability, experience and voluntariness. Subjective norm is defined as "a person's perception that most people who are important to him think he should or should not perform the behaviour in question" (Venkatesh & Davis, 2000). This construct was thought to affect intention directly and indirectly through image and perceived usefulness (Venkatesh & Davis, 2000). The justification for incorporating subjective norms in the extended TAM derived from prior studies which had found that subjective norms had a significant direct effect on behaviour (Ajzen, 2011). The construct is a direct predictor of behaviour in the Theory of Reasoned Action, which acted as a parental theory for developing TAM, and the Theory of Planned Behaviour (Davis, 1989; Ajzen, 2011). Subjective norm postulates that when an individual does not want to perform a certain behaviour, but valued social group members think that he or she should perform that behaviour, the individual will follow the opinion of the social group (Venkatesh & Davis, 2000). In the IS domain, the examination of subjective norm yielded mixed results. The direct effect of subjective norm on intention to use was not consistent across studies (Davis, 1989; Taylor & Todd, 1995; Mathieson, 1991). This inconsistency raised the need for further exploration of the effect of subjective norm on behavioural intention to use. The indirect effect of subjective norm on intention to use through image and perceived usefulness could be explained by the internalisation mechanisms (Venkatesh & Davis, 2000). Internalisation is described as a process during which an individual perceives and thinks that a referent's suggestions are significant (Kelman, 1958; Warshaw, 1980). Over time, the ideas of a referent person become perceived as his or her own. For example, in the context of technology acceptance, an employee might value a manager's or co-worker's advice about the benefits of the use of certain technology. The direct and indirect effects of subjective norms on intention to use were considered to be moderated by experience, while voluntariness moderated only the direct effect on intention (Venkatesh & Davis, 2000).

The second construct introduced in TAM2 was image. Moore and Benbasat (Moore & Benbasat, 1991) defined image as "the degree to which use of an innovation is perceived to enhance one's status in one's social system". This definition followed that of the Theory of Diffusion of Innovation

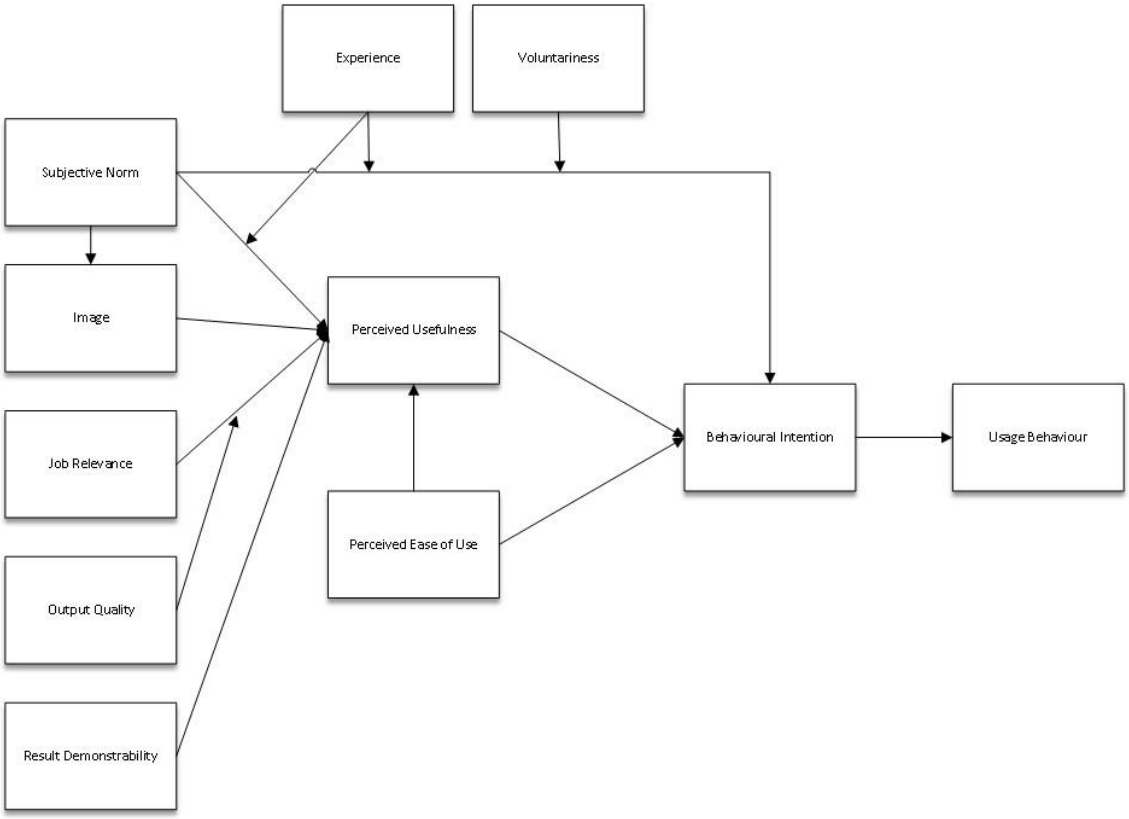
proposed by Rogers (Mahajan, 2010). TAM2 theorises that subjective norm has a positive correlation with image. The link was supported by prior studies confirming that image has a significant effect on behaviour if individuals follow their peers' advice to maintain the individual's status in the group (Pfeffer, 1992; Chassin, Presson & Sherman, 1990). In addition, TAM2 theorises a positive link between image and perceived usefulness. By exhibiting the behaviour endorsed by group norms, an individual "achieves membership and the social support that such membership affords as well as possible goal attainment which can occur only through group action or group membership" (Pfeffer, 1992). Therefore, TAM2 proposes that a favourable image among peers in the social group can increase the likelihood of the positive perception of technology productivity (Venkatesh & Davis, 2000).

The third antecedent of perceived usefulness is job relevance, which has a direct and interactive effect on perceived usefulness (Venkatesh & Davis, 2000). Job relevance is defined as "an individual's perception regarding the degree to which the target system is applicable to his or her job". The direct effect of job relevance is supported by other theoretical frameworks explaining technology acceptance. Task-technology fit and cognitive fit constructs became the basis for proposing the relationship between job relevance and perceived usefulness (Goodhue, 1995; Vessey, 1991). It was postulated that the effect of job relevance on perceived usefulness is moderated by output quality (Venkatesh & Davis, 2000). Output quality refers to the perception of the quality of technology in performing the task. While prior studies validated the direct and individual effect of output quality on perceived usefulness (Davis, Bagozzi & Warshaw, 1992), TAM2 proposes that output quality increases the likelihood of a positive perception of technology, by enhancing the judgement of the technology's relevance for the job (Venkatesh & Davis, 2000).

Result demonstrability is defined as the "tangibility of the results of using the innovation" (Moore & Benbasat, 1991) The inclusion of this construct in the model was based on the argument that advanced technology might not be accepted, if a user fails to embrace the benefits of technology use (Venkatesh & Davis, 2000). The effect of result demonstrability suggests that the increase in individuals' performance resulting from the use of technology should be explicit, tangible and communicable. The link between result demonstrability and perceived usefulness is in line with the principles of the Job Characteristic Model, which postulates that the knowledge of work results increases people's motivation (Hackman & Oldham, 1976; Loher et al., 1985).

Empirical examination of the newly proposed model demonstrated that TAM2 can account for 60% of the variance in perceived usefulness and between 37% and 52% of the variance in usage intention (Venkatesh & Davis, 2000). The theory has contributed to the literature on the factors underpinning the perception of technology. It addressed the gap in the research that had explored the factors contributing to perceived ease of use (Venkatesh & Davis, 1996), but had overlooked the determinants of perceived usefulness. By encompassing both social influence factors (i.e. subjective norm, use voluntariness and image) and cognitive factors (i.e. evaluation of job relevance, result demonstrability, output quality and perceived ease of use), the TAM extension provided a detailed account of the key determinants of judgment about technology usefulness (Venkatesh & Davis, 2000).

Figure 2: Technology Acceptance Model 2



TAM3

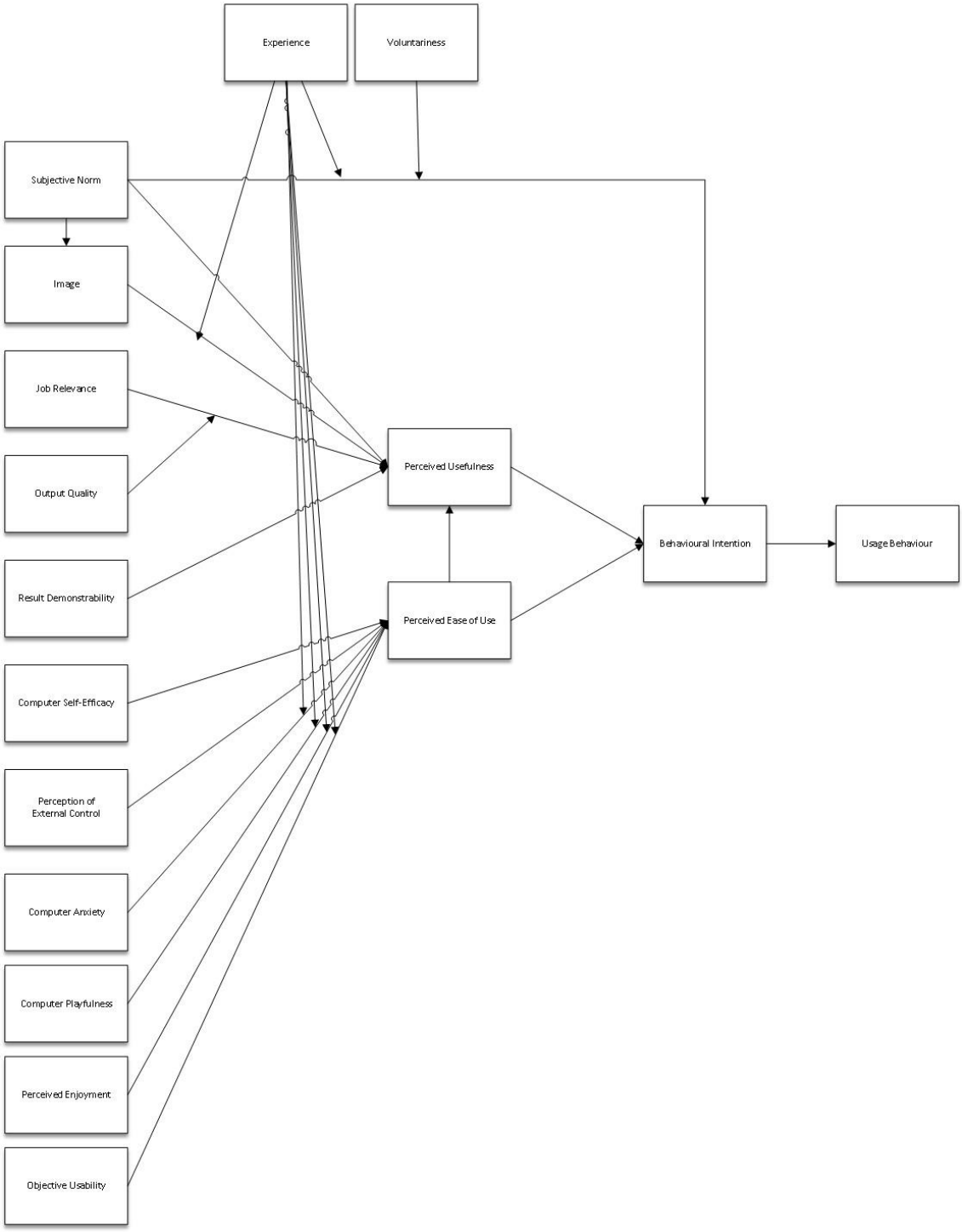
TAM, TAM2 and evidence from other studies had provided rich explanations about key determinants of use intention (Davis, 1989; Venkatesh & Davis, 2000; Venkatesh & Davis, 1996). Still, there had been limited research on interventions which could be used to increase the technology adoption rate (Venkatesh & Speier, 1999). Given that TAM was criticised for providing few actionable guidelines to practitioners (Lee, Kozar & Larsen, 2003), Venkatesh and Bala (Venkatesh & Bala, 2008) combined the antecedents of perceived usefulness and perceived ease of use in a single model and investigated the relationship between antecedents and perception variables to exclude cross-over effects. Such an approach was to provide a nomological network explaining the adoption of technology in a comprehensive way. The aim of theorising distinctive effects of variables on perceived usefulness and perceived ease of use was to add clarity to the literature, which had been inconsistent in terms of the predictors of the two perception factors (Agarwal & Karahanna, 2000; Venkatesh & Davis, 2000).

Figure 3 illustrates the extended theoretical framework, which postulates that actual behaviour is predicted by behavioural intention, and behavioural intention is underpinned by perceived usefulness and perceived ease of use, each of which has a set of antecedents. The determinants of perceived usefulness include subjective norm, image, job relevance, output quality and result demonstrability, which remained unchanged from TAM2 (Venkatesh & Davis, 2000). New to this model were the direct predictors of perceived ease of use, which include computer self-efficacy, perception of external control, computer anxiety, computer playfulness, perceived enjoyment and objective usability (Venkatesh & Bala, 2008). The rationale for incorporating these antecedents derived from evidence on human decision making. The antecedents of perceived ease of use represent two sets of anchoring and adjustment factors. While anchoring factors drive the initial

judgment of perceived ease of use, adjustment factors come into play after individuals gain direct experience with information systems (Venkatesh, 2000). The anchoring factors are computer anxiety, computer self-efficacy, perception of external control and computer playfulness. The first three anchors reflect users' self-belief about technology and technology use (Venkatesh & Bala, 2008). They differentiate users based on the degree of their apprehension/fear related to the use of technology (Venkatesh, 2000), the belief in their personal capability of performing a task using the technology (Compeau & Higgins, 1995) and the belief that they have access to the organizational and technical resources that can support the use of the system (Venkatesh et al., 2003). Computer playfulness is defined as "the degree of cognitive spontaneity in microcomputer interaction" (Webster & Martocchio, 1992). It represents the intrinsic motivation associated with the use of computers. Adjustment factors include perceived enjoyment and objective usability. They measure the degree to which information systems are perceived to be enjoyable and the level of effort the systems require to complete specific tasks (Venkatesh, 2000). TAM3 also introduces three new moderation effects of experience on the relationships between a) computer anxiety and perceived ease of use, b) perceived ease of use and perceived usefulness, and c) perceived ease of use and intention to use. The effect of experience on perceived ease of use was not tested when developing TAM2, although this perception is weakened when people attain hands-on experience and knowledge about the system (Venkatesh & Davis, 2000).

TAM3 proved to be robust in explaining the use of information systems or use intention. The model accounted for between 40% and 53% of the variance in behavioural intention and around 36% of the variance in use (Venkatesh & Bala, 2008). The explanatory strength was similar to TAM2, which accounted for 37% - 52% of the variance in usage intention (Venkatesh & Davis, 2000). However, the main strength of the extension is the development of the behavioural model of antecedents of both the perception factors (perceived ease of use and perceived usefulness). This provides an exhaustive set of conditions and scenarios under which the acceptance of technology is most likely to occur. By delineating the relationships between antecedents, perceived ease of use and perceived usefulness, TAM3 offers a comprehensive list of interventions that have direct implications for decision-making regarding IT implementation and management (Venkatesh & Bala, 2008).

Figure 3: Technology Acceptance Model 3



Applications

TAM and its extensions have been used in a wide range of applications in different disciplines, contexts and geographical locations, offering an important theoretical tool when it comes to predicting user behaviour. Apart from the application in the information systems management domain, technology acceptance models have been utilised in other disciplines e.g. marketing and advertising (Gefen, Karahanna & Straub, 2003; Dabholkar & Bagozzi, 2002; Gentry & Calantone, 2002). Given that information systems are extensively used in the marketing of products and

services, TAM became a handy tool to examine the attitude of consumers towards technologies, such as chatbots, e-commerce platforms and online shopping tools, enabling online trading (Gefen, Karahanna & Straub, 2003; Araújo & Casais, 2020). For example, TAM was used to investigate the assessment of online shopping tools by consumers, underpinning their intention to purchase through e-commerce platforms. It was confirmed that along with trust, TAM constructs contribute to a considerable proportion of variance in the attitude towards IS tools and subsequent consumer behaviour (Gefen, Karahanna & Straub, 2003). In addition, TAM was successful in explaining the acceptance of e-commerce chatbots, which contributed to purchasing intention (Araújo & Casais, 2020). However, when the model was tested on both potential and repeated customers of online stores, the model predicted the behaviour of only those customers who already had prior experience with the stores (Gefen, Karahanna & Straub, 2003; Bruner & Kumar, 2005).

Scholars tested the models of technology acceptance in different contexts and explored the acceptance of different technologies, such as mobile banking, telecommunication technology, virtual reality, e-learning systems, to name a few (Adams, Nelson & Todd, 1992;Venkatesh & Davis, 1996; Wilson, 2004; Al-Gahtani, 2016). While the effect of perceived usefulness was almost invariantly significant in relation to all types of technologies, the findings on the effect of ease of use were not consistent. For example, to adopt text-mining tools, it was important that users feel that software is both useful and easy to use (Demoulin & Coussement, 2020). Also, the contribution of TAM constructs to behavioural intention was significant when studying the acceptance of the world wide web (Mathieson, 1991). When TAM was adapted to test the acceptance of virtual reality, intention was predicted by perceived usefulness, although perceived ease of use was not significant for potential users (Singh, Sinha & Liébana-Cabanillas, 2020). When it came to examining TAM2 and TAM3, the effect of factors on perceived usefulness and perceived ease of use varied depending on the context and technology being studied. For instance, when exploring e-learning acceptance and deployment by users, the role of objective usability was found to be insignificant (Al-Gahtani, 2016), while for the utilisation of medical system technology, the effect of subjective norm did not hold true (Kummer, Schäfer & Todorova, 2013). When TAM2 was applied to exploring e-government adoption, only image and output quality were found to contribute to the perception of system usefulness (Sang, Lee & Lee, 2009). The application of TAM3 in the context of mobile commerce and mobile payment technology adoption demonstrated weak predictive strength, with users' perceptions about the technology being affected only by output quality, image, self-efficacy and perceived external control (Faqih & Jaradat, 2015; Jaradat & Mashaqba, 2014).

The theories were also tested in different settings – e.g. agriculture/farming, healthcare institutions and the use of natural resources (Arkesteijn & Oerlemans, 2005; Flett et al., 2004; Kummer, Schäfer & Todorova, 2013). TAM was able adequately to explain the adoption of dairy farming technologies (Flett et al., 2004). However, when assessing the adoption of telemedicine technology by physicians, only perceived usefulness determined the intention of hospital workers to use the technology (Hu et al., 1999). These inconsistent findings can be interpreted in two ways: the effect of perceived ease of using technology is mitigated when technology 1) has a less functional value, and 2) when the study employs a specific sample of users, who have certain skills required to use the technology.

The strength of TAM variables in predicting behaviour was tested in different cultures and geographical contexts, such as the U.S.A, Japan, India and the Netherlands to name a few (Straub, 1994; Singh, Sinha & Liébana-Cabanillas, 2020). TAM has been found to be sufficiently robust in explaining the acceptance and the usage of websites in the Netherlands (van der Heijden, 2003) and India (Singh, Sinha & Liébana-Cabanillas, 2020). TAM2 and TAM3 held up well in Arabian culture and were helpful in outlining managerial interventions for better organizational e-learning management (Al-Gahtani, 2016; Baker, Al-Gahtani & Hubona, 2010). When the model was compared between countries with different cultural norms and socio-economic development, the antecedents of technology acceptance varied (Straub, 1994). The results reveal that the moderation role of

individualism-collectivism in the adoption of mobile commerce is significant. The individualism-collectivism trait moderates the effect of perceived ease of use on perceived usefulness, perceived usefulness and behavioural intention, and behavioural intention to use (Faqih & Jaradat, 2015). The difference in power distance and masculinity affects the strength of the effects of determinants on behavioural intention (Hung et al., 2010).

From a practical point of view, TAM is useful for vendors to estimate the potential demand or stock supplies of new information technology products (Davis, 1989). Practitioners can use TAM to facilitate the acceptance of technology. By understanding the degree to which technology is useful and easy to operate by consumers, they can design consumer-oriented IT products (Davis, 1989). In addition, the understanding of the antecedents of perceived usefulness and perceived ease of use, proposed by TAM2 and TAM3, can help managers make informed decisions about the strategies on technology implementation in organisations. The models can be applied to guide the development of pre-implementation (actions leading to the actual roll-out of a system) and post-implementation interventions (actions following the actual deployment of the system) to address acceptance rates (Venkatesh & Davis, 2000; Venkatesh & Bala, 2008).

Limitations

A number of limitations have been discussed in TAM and its extensions over the years. The simplicity of TAM and the lack of understanding of the antecedents of technology acceptance (perceived usefulness and perceived ease of use) were the subject of criticism in prior research (Venkatesh, Davis & Morris, 2007; Lee, Kozar & Larsen, 2003). The parsimoniousness of the original TAM drove a number of scholars towards identifying and measuring the predictive power of additional constructs which could be integrated into the model, such as trust, technology fit, external variables (e.g. subjective norms, social influence), technology-specific variables (e.g. compatibility, relevance) to name a few (Venkatesh & Davis, 2000; Venkatesh, 2000; Gefen, Karahanna & Straub, 2003; Karahanna & Straub, 1999; Koufaris, 2002). Benbasat and Barki (Venkatesh, Davis & Morris, 2007) argued that the widespread application and use of TAM created an illusion of progress in IS research, while in reality studies replicated prior findings, thus hindering development in the field. It was stated that extensive utilisation of TAM had left blind spots in the IS literature. The theory brought into focus the factors that make people utilise the technology and blurred the focus on the impact of technology utilisation on performance. TAM research implicitly suggests that the more technology is utilised, the better is the performance, which is not true in practice (Goodhue, 2007). The second blind spot concerns the little attention paid to what makes a system useful – i.e. the system's design and its fit to the user's task, which is equally important both for accepting technology and achieving high performance by utilising it (Goodhue, 2007; Benbasat & Barki, 2007). It is considered that TAM has reached its maturity, thus replication of the model cannot continue (Benbasat & Barki, 2007; Venkatesh, Davis & Morris, 2007).

Extended technology acceptance models had other limitations of their own. For example, TAM2 was criticised for being developed specifically for the organisational context (Venkatesh, Thong & Xu, 2012). Studies recognised the growing segment of consumer technology and developed models (e.g. MATH, UTAUT2) to address the technology acceptance by individuals (Venkatesh, Thong & Xu, 2012; Brown & Venkatesh, 2005). Other limitations of TAM2 were methodological in nature. Some constructs in TAM extensions were measured using only two items (e.g. job relevance, output quality). In addition, nearly all TAM-based models face the limitation regarding the self-reported measurement of use intention and the possibility of common method bias (Venkatesh & Davis, 2000; Venkatesh, Thong & Xu, 2012).

The critiques raised against TAM research point to its methodological issues, some limitations in the theory's applications and the focus on the aspects of systems' utilisation that diverted attention

from other important factors and relationships (Venkatesh & Davis, 2000; Goodhue, 2007; Benbasat & Barki, 2007; Venkatesh, Thong & Xu, 2012). Nonetheless, the limitations cannot overshadow the contributions of the theory. TAM has been shown to be theoretically resilient and to have a strong predictive power to assess individuals' intention to use for almost three decades. TAM became the first theory explaining why individuals use information systems, which was once badly needed for IS research and practice (Goodhue, 2007).

Concepts

Perceived Usefulness (Independent): The degree to which a person believes that using a particular system would enhance his or her job performance. (Davis, 1989)

Perceived Ease of Use (Independent): The degree to which a person believes that using a particular system would be free of effort. (Davis, 1989)

Intention to Use (Dependent): A person's subjective probability that he will perform some behavior. (Fishbein & Ajzen, 1975)

Subjective Norm (Independent): A person's perception that most people who are important to him think he should or should not perform the behaviour in question. (Fishbein & Ajzen, 1975)

Image (Independent): The degree to which use of an innovation is perceived to enhance one's... status in one's social system. (Moore & Benbasat, 1991)

Job Relevance (Independent): An individual's perception regarding the degree to which the target system is applicable to his or her job. (Venkatesh & Davis, 2000)

Output Quality (Moderator): The degree to which an individual believes that the system performs his or her job tasks well. (Venkatesh & Davis, 2000)

Result Demonstrability (Independent): The tangibility of the results of using the innovation. (Moore & Benbasat, 1991)

Voluntariness (Moderator): The extent to which potential adopters perceive the adoption decision to be non-mandatory. (Venkatesh & Davis, 2000)

Experience (Moderator): The passage of time from the initial use of a technology by an individual. (Venkatesh, Thong & Xu, 2012)

Computer Self-Efficacy (Independent): The degree to which an individual believes that he or she has the ability to perform a specific task/job using the computer. (Compeau & Higgins, 1995)

Perception of External Control (Independent): The degree to which an individual believes that organizational and technical resources exist to support the use of the system. (Venkatesh et al., 2003)

Computer Playfulness (Independent): The degree of cognitive spontaneity in microcomputer interactions. (Webster & Martocchio, 1992)

Computer Anxiety (Independent): The degree of an individual's apprehension, or even fear, when she/he is faced with the possibility of using computers (Venkatesh, 2000)

Perceived Enjoyment (Independent): The extent to which the activity of using a specific system is perceived to be enjoyable in its own right, aside from any performance consequences resulting from system use. (Venkatesh, 2000)

Objective Usability (Independent): A comparison of systems based on the actual level (rather than perceptions) of effort required to complete specific tasks. (Venkatesh, 2000)

Attitude (Independent/Dependent): The degree of evaluative affect that an individual associates with using the target system in his or her job. (Davis, 1993)

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