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Application of Technology Acceptance Model in Consumer Behaviour Towards Internet Purchases

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Abstract

Technology acceptance model (TAM, Davis 1986) is one of the most widely used models for testing technological acceptance. Technology which is pervasive in nature has penetrated into almost all fields. It is one of the major determinants of innovation and development. E-commerce is one such field of application of technology. With the innovation in marketing technique by application of technology, there is a new platform created for buyer, i.e., "internet". Consumers have several benefits of making purchases here. It is interesting to understand the reasons for acceptance of technology. This area of consumer behaviour research has attracted many researchers in the west and other developing countries. India being a hot spot for investment from FDI's in many industries has also attracted FDI in e-retail. In this regard, it becomes relevant to study the Technology Acceptance Model with reference to the consumer acceptance of technology for purchases. There are five stages of consumer decision making process and today technology has intervened in almost all stages. This research study tries to dig some literature with respect to application of TAM in consumer behaviour towards e commerce and related activities. It is an exploratory research which throws light on understanding TAM model with reference to understanding the determinants of behavioural intention of consumers using internet technology.

1. Introduction

Consumer behaviour studies using internet for purchases is well explored by Information system (IS) researchers by measuring internet adoption (Bhattacharjee, 2001, Koufaris, 2002, Reema Fayad, 2006) and research in the area of technology acceptance and its usage have made noteworthy development (Venkatesh et al., 2003). In today's system and information science literature, consumer acceptance and adoption of technology is one of the most advanced areas of research (Hu et al., 1999). TAM was initially conceptualized and studied in organizations to understand the technology adoption by employees. Since consumer behaviour is different from that of employee behaviour in an organization, TAM cannot be completely used to study online consumer behaviour and hence extension of TAM is required (Reema Fayad, 2006). The next approach of TAM was developed to observe and test the "individual user's" usage and acceptance of technology (Davis 1989, Davis et al., 1989, Venkatesh and Davis, 2000).

It becomes very imperative for the e- marketers to understand the behaviour of e consumer. Only after the acceptance of technology, the consumer would be willing to use it and continue to do so. The individual's intentions towards use of the technology are predicted by many factors. There are many sociological, psychological, information technology, innovation theories developed to understand this technology acceptance and usage behaviour of consumers (Fishbein and Ajzen, 1975; Davis et al, 1989; Ajzen, 1991; Rogers, 1995; Taylor and Todd, 1995; Gefen and Straub, 2000). In all these theories intention acts as a main predictor of technology acceptance and also tries to identify the determinants of intentions. The Theory of Reasoned action (TRA, Fishbein and Ajzen, 1975), Theory of Planned Behaviour (TPB, Ajzen, 1991), Innovation Diffusion Theory (IDT, Rogers, 1995) have received very good empirical support in many fields of application of the theory in determining the behaviour of individuals with respect to acceptance of the technology.

In the current research study the Technology Acceptance Model (TAM, Davis, 1989) which was developed by adopting TRA (Fishbein and Ajzen, 1975) is used as a main model for predicting the technology acceptance by consumers. The determinants of intention based models are explored in the first section. Some of the literatures with respect to the application of technology in e commerce is discussed in the next section. The proposed model for further analysis is derived based on the literature.

1.1. Consumer Behaviour

Consumer is the king who drives the business. He plays the role of buyer, payer and user. The study of Consumer behaviour has become one of the key factors contributing for

strategic marketing decisions (A. Abdul Brosekhan et al., 2013). Consumer behaviour is one of the most favourite researches in marketing as marketers are always keen to know what the consumer feels, thinks and how they make selection of products. Marketers are interested to understand where the consumer buys? What they buy? What makes them select the products? What are their opinions? According to Engel et al., (1968), consumer behaviour is defined as "acts of individuals involved in obtaining, using and disposing of goods and services, which also includes decision making process which determines these acts". Consumer is very careful in selecting the product while making purchase decisions. Consumer undergoes 5 stages of consumer decision making process which includes:



Figure 1. Consumer buying decision process.

1.2. Consumer Behaviour in Participatory Digital World

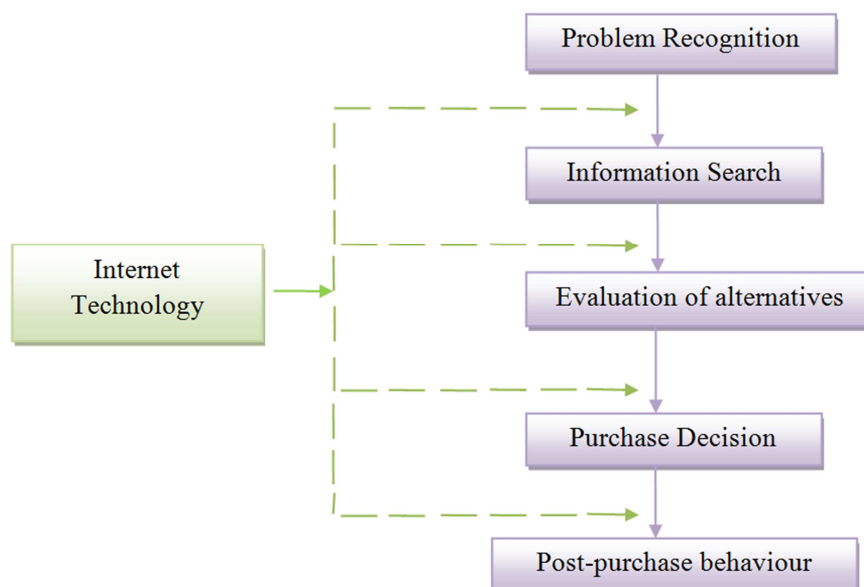


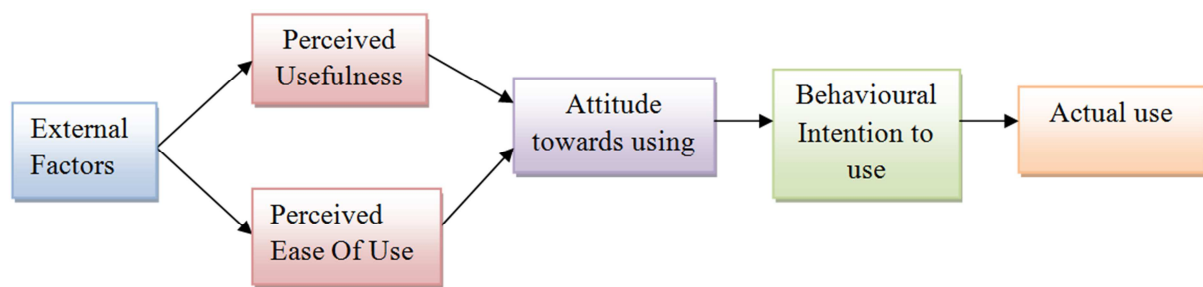
Figure 2. Consumer behaviour in participatory digital world.

Today, consumer is making buying decisions in a participatory digital culture. The old consumer behaviour no more fits into this digital era. There is intervention of technology in almost all stages of consumer decision making process, (Rachel Ashman, Michael R. Solomon, Julia Wolny, 2015). There are several factors which are influencing this consumer behaviour and it becomes very important for a marketer to understand the consumer characteristics, their online buying intentions and their behaviours. The behavioural intentions of individuals differ. It becomes imperative for marketers to understand the determinants of consumer acceptance of technology (Internet) so that they can derive appropriate marketing strategies like segmentation, targeting and positioning (Strauss, 2009). It is also observed that the younger millennial generation intends to use internet technology more when compared to the elderly generation.

(Rachel Ashman, Michael R. Solomon, Julia Wolny, 2015).

2. TAM- Technology Acceptance Model, Davis 1989

TAM is based on the causal relationships between the factors like beliefs- attitudes-intentions and behaviour which is based on Theory of Reasoned Action (TRA). The basic idea on which Davis developed the theory was that, the intention to use the system was based on the motivation of the user, which is further determined by the system capabilities and features. Based on this idea, Davis, 1989, came out with a model called TAM i.e., Technology Acceptance Model.



Source: TAM: Technology Acceptance Model, Davis, 1989

Figure 3. TAM.

Davis said that the Perceived Usefulness, Perceived Ease of Use and Attitude towards using were the motivators behind the intention to use the technology which predicted the actual usage of the system. The model of Technology acceptance is based on socio-psychological theory with good number of studies in literature and hence the psychometric

measurement scale has been validated. TAM is simple and hence can be easily applied and tested in different domains of technological (Irfan Bashir, 2014). The constructs of TAM with reference to consumer acceptance of technology for purchasing are as follows:

Table 1. Constructs in Technology Acceptance Model in context of internet purchases.

Sl No	TAM Constructs	Definition
1	Perceived Usefulness	The extent to which consumers' believe that, using internet for purchases increases his/her performance as a consumer.
2	Perceived Ease Of Use	The extent to which consumers' believe that using internet for making purchases is free of effort
3	Attitude	Consumers' negative or positive feeling towards using internet for making purchases.
4	Behavioural Intention	The probability that consumers' may or may not use internet for making purchases.
5	External Variables	These are the supporting factors which influences the adoption of internet for making purchases

2.1. Perceived Usefulness

Perceived usefulness is one of the main determinants of attitude as proposed by Davis, 1989. It is one of the components of perception towards technology. With reference to making purchases using internet technology, perceived usefulness is defined as the extent to which consumers' believe that, using internet for purchases increases his/her performance as a consumer. With respect to performance as a consumer, the ability of consumer to improve performance in shopping, improve productivity while shopping and to what extent the consumer achieves the goals of shopping were considered as the main determinants

to make shopping successful act (McCloskey, 2004). Internet purchasing platform which provides support to consumer in facilitating him to make better decisions is considered to be perceived as useful (Kim et al., 2003, Weng Marc Lim et al., 2012). Perceived usefulness influences on the formation of positive or negative attitude towards using internet technology for purchases (Kleijnen et al., (2004); Van der Heijden et al (2003); Chen, et al.,(2002); Farrah Binti Fadil, 2009); Childers et al. (2001). The comparison between online and offline purchasing behaviour helped to understand the benefit and usefulness of internet for making purchases (Bisdee, (2007); Christopher J. Ruth (2000); Gianina Lala (2014); Rima Fayad (2006); Donald L. Amoroso et al., (2009); Juniwati (2014); Irfan Bashir (2014). Hence there

were sufficient evidence from the literature that the perceived usefulness towards internet for making purchases played a major role in determining the formation of positive or negative attitude towards it.

2.2. Perceived Ease of Use

This is yet another perception factor which influences the attitude of an individual to accept or reject technology. Perceived ease of use with respect to using technology for making purchases is defined as the extent to which consumers' believes that using internet is easy and free from any effort (Davis, 1989). The attitude towards using a technology also depends on the extent to which the consumer feels that it is easy to use. When a technology is perceived to be easy, it is more likely that technology is accepted (Selamat et al. (2009); Teo (2001); Buton-Jones and Hubona (2005); Farrah Binti Fadil, (2009); Van der Heijden et al (2003); Chen, et al.,(2002); Bisdee, (2007); Yulihassri & Daud, (2011), Childers et al. (2001), Shumaila Y. Yousafzai, (2007); Christopher J. Ruth (2000); Donald L. Amoroso et al., (2009); Gianina Lala (2014); Rima Fayad (2006); Juniwati (2014); Irfan Bashir (2014). Perceived ease of use is hence yet another factor which plays major role in influencing attitude formation which further helps in determining the acceptance of technology for purchasing.

2.3. Attitude

Attitude is one of the major determinants of the intention to use the technology. Attitude with respect to acceptance of technology for making purchases is defined as the positive or negative attitude of consumers towards usage of internet for making purchases. Attitude in TAM is conceptualized as mediating factor between the perceived usefulness, perceived ease of use and the behaviour intention which determines consumers' internet adoption. This construct is empirically proved by many researchers. The earliest studies with respect to attitude is in socio-psychology (Allport, 1935). The attitude was used by (Fishbein and Ajzen, 1975; Zanna and Rempel, 1988; Ajzen, 2010) in their Theory of Reasoned Action (TRA). Accordingly, attitude has three components i.e, cognitive, affective and behavioural. Attitude in TAM was taken as mediating variable and was responsible for developing intentions (Suki & Ramayah, 2010; Olson and Zanna, 1993). There was a positive correlation between Perceived usefulness towards using internet for making purchases and attitude formation. The positive correlation between attitude and intentions were also noted, which shows that positive attitude towards using internet for purchases influenced the purchase intentions using internet (Amoroso and Hunsinger's (2015); Van der Heijden et al (2003); George; Gribbins, et al., (2003); Venkatesh, et al., (2003); Bhattacharjee and Premkumar (2001); Martins and Kellermanns (2001), Chen, et al., 2002; Suh & Han, 2002; Ahn, et al., 2004; Al-Rafee and Cronan (2006); Schiffman and Kanuk (2007; 200), Donald L. Amoroso et al., (2009); Weng Marc Lim et al., (2012); Juniwati (2014); Irfan Bashir

(2014)).

2.4. Behavioural Intentions

The intention refers to the consumers' mindset towards usage of technology. It is determined by preceding factors like Perceived usefulness, Perceived ease of use and the attitude. The Behavioural Intentions with respect to acceptance of internet for making purchases is defined as the probability that consumers may or may not use the technology for making purchases. Chau, P. and Hu, P. (2001); Venkatesh, et al., (2003); Ramayah et al., (2003); Pavlou (2003) McCloskey (2004); Barkhi et al. (2008); Donald L. Amoroso et al., (2009); Weng Marc Lim et al., (2012); Amoroso and Hunsinger's (2015); Juniwati (2014); Irfan Bashir (2014)). There is a strong relationship between attitude and behavioural intention. Behavioural intention is a good predictor for actual behaviour (Grandon and Mykytyn, 2004). The individual's Technology acceptance and adoption behaviour is well studied in socio-psychological theories like TRA (Theory of Reasoned Action, (Fishbein and Ajzen, 1975), TAM (Technology Acceptance Model (Davis, 1989), TPB (Theory Of Planned Behaviour (Ajzen, 1991), IDT (Innovation Diffusion Theory (Rogers, 1995). Hence, Intention is a main factor which determines the actual behaviour.

2.5. Actual Usage

The intention to use the internet for making purchases directly influences the actual behaviour of the individuals'. i.e., if there is intention towards using internet for purchases, the actual behaviour is expected. Dasgupta et al. (2002); Mao (2002); UTAUT, Venkatesh *et al.*, (2003); Amoroso and Hunsinger's (2015); (Grandon and Mykytyn, 2004); Wilson, et al. (2005); Juniwati (2014); Irfan Bashir (2014); Donald L. Amoroso et al., (2009). Many researchers have adopted behavioural intention as the final dependent variable. i.e., if intention is there, then behaviour is expected automatically (Christopher J. Ruth, 2000; Rima Fayad (2006); Farrah Binti Fadil (2009); Juniwati (2014); Irfan Bashir (2014)).

2.6. External Variables

These are the some of the supporting variables that influences on the technology adoption by consumers'. They include factors like social factors, individual factors, facilitating conditions. These factors influence the individuals perceptions and attitudes. They also play an important role in determining the intention to adopt technology. Some of the researchers have used these variables and extended the TAM model. There are other dimensions added to TAM like Perceived risk, Perceived enjoyment, computer playfulness, social relations, beliefs, computer self efficacy, Trust, etc. Their role in determining the internet adoption for purchases is empirically tested.

The TAM model, which determines the factors indicating technology adoption can be hence applied to test the factors responsible for adoption of internet for purchases during the

buying decision making process. The below mentioned model tries to build the relationship between the constructs of TAM and stages of buying decision process and tries to

evaluate whether TAM can be applicable while determining the intention to make purchase using internet.

Key psychological process of internet adoption for purchase decision using Technology Acceptance Model

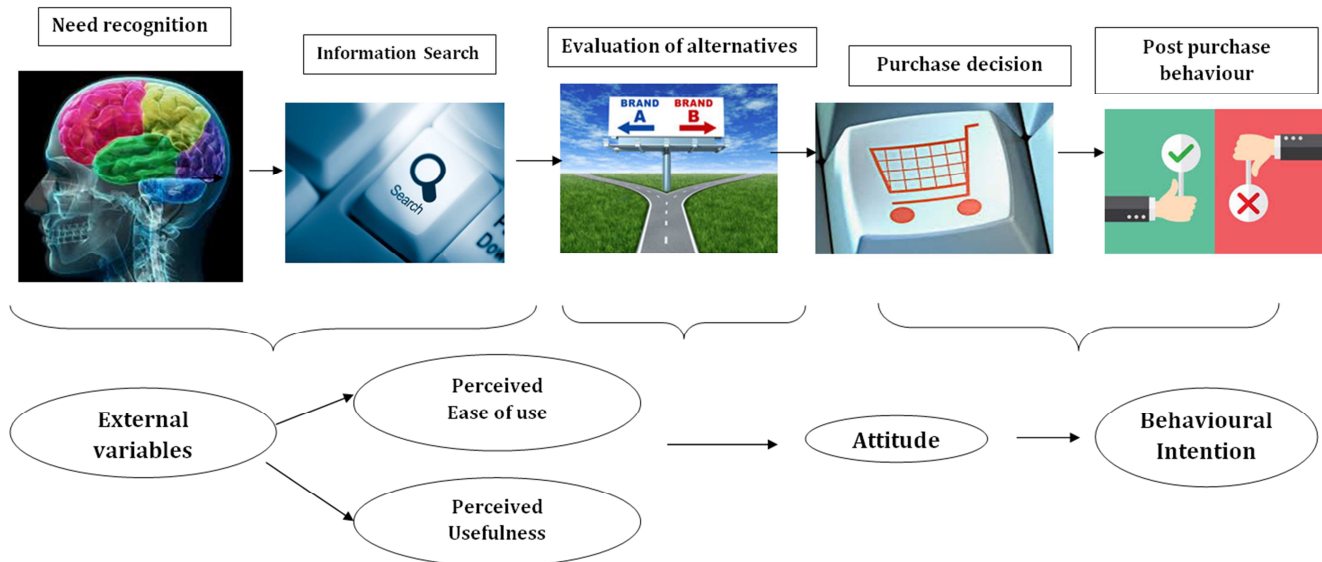


Figure 4. Constructs of TAM in consumer decision process.

3. Linking TAM Model in Consumer Decision Making Process

The consumer decision making process is called as the key psychological process (Philip Kotler, 2009), because of the reason that there is psychological series of steps a consumer undergoes during his purchases. Because of the advancement of technology and social environment, today's consumer is well informed. Every consumer has become a researcher because of the information and communication technology (Internet), while making purchases. To check the technology adoption among consumers during their decision making process, TAM model is used to fit in to the decision process model. The key psychological process includes belief-perception-attitude-intention, as proposed by socio-psychological theories like TRA and TAM. There is tendency of consumer to adopt the technology at every stage of buying decision if he is able to achieve his goal of shopping successfully. Hence, every stage of consumer decision making process is taken to consideration and analyzed, to integrate the TAM model with EKB model.

3.1. Need Recognition/Problem Recognition

In this stage of consumer behaviour, consumer gets aroused because of marketing efforts by companies (Bruner and Pamazal, 1988). The "must-haves", a need or a want is influenced by many factors (Rachel Ashman et al., 2015). In Tam model this is referred to as external variables which are like age, gender, individual capabilities, social influence, and situational factors. Technology today has made a lot of

influence over the conventional media in terms of identifying the need. Because of Social networking, Search Engine Optimization (SEO), Search Engine Marketing (SEM), big data analysis, digital marketing etc., consumer is stimulated to identify the need/want.

3.2. Information Search

According to (Rachel Ashman et al., 2015), consumer decision process is a conscious effort by consumer to select the best among alternatives to maximize the utility (Foxall, 1989, Solomon, Bamossy, Askegaard and Hogg, 2014). Consumer in the next stage seeks for information about the product/ service. There is ample information today, from multiple sources. The tendency of consumer looking for information using internet primarily depends on the perception towards the internet. Adoption of technology depends on Perceived Usefulness and Perceived ease of use of internet for searching information, as proposed in TAM. If perceived usefulness and Perceived ease of using internet for searching information is positive, there is positive attitude and positive tendency to adopt internet for information search.

3.3. Evaluation of Alternatives

Out of the many options available, consumer selects the best, by evaluating the alternatives. Perceived usefulness and Perceived ease of use towards internet makes the consumers adopt technology (internet) for evaluation of alternatives. If the perception is positive, there is positive attitude followed by intention.

3.4. Purchase Decision and Post Purchase Behaviour

The behaviour intention to use internet for making purchases is determined by the attitude towards it. If the consumer has positive attitude, there is all probability that he uses the e purchasing platform for making purchases. The tendency to continue to purchase using e platform and advocate the same to others depends on successful purchase of a product using internet. Hence, the technology acceptance for purchases i.e., the intention to use e purchases can be determined using the TAM model and its constructs.

4. Research Observations

The advancement of technology has drawn the interest of researchers to determine the factors influencing the technology adoption so that appropriate strategies can be developed. Consumer behaviour towards new purchasing platform i.e., e-retail has become one of the important area in consumer behaviour research. The marketers should understand the influencers responsible for making consumer decide upon the adoption of internet while making purchases. Internet has become virtual place for buying and selling of goods and services. The e commerce companies are facilitating the business by providing place for buyers and sellers by managing the distribution and supply chain. This industry has attracted good investments including FDI in India. For the e commerce companies to sustain it becomes important to understand the buying intentions so that there is growth in business. Any product is available on the internet today and convenience is the top most reason for consumers to use internet as a buying platform. Most of the research studies in literature with respect to technology is in the west and other developing countries. India being one of the developing economies, where the e retail industry is in nascent stage, understanding consumer behaviour towards this impact of technology in decision making process is the call of hour.

5. Conclusion

TAM is a model which determines the factors responsible for acceptance of technology. The current paper examines the application of TAM in e commerce with respect to understanding the consumer's intentions to use technology (internet) for making buying decisions. India, one of the rapidly growing economies witnessed internet in 1995. The internet penetration in India is 28.77%, which is comparatively lower than other developed countries. However it is expected to grow to 60% by 2020. Asian population contributes 55% of the total world population. China stands in the top list in terms of internet penetration among Asian countries which is about 48% and second is India. With the intervention of technology in marketing, there is a buying platform for consumers i.e., Internet. Though it is

more than two decades since internet is introduced in India, the penetration is low. E commerce, especially B2C commerce is growing rapidly and the industry is very attractive in terms of investments. The socio-psychological theories with its origin in west are successful in determining the factors influencing the technology acceptance. TAM is one such application. There is sufficient literature which proves that, the consumer behaviour towards intervention of technology during the buying process is can be studied using TAM. The research based on application of TAM in e commerce need to be empirically proved with respect to Indian context. As many of the researches in literature are studied in different cultural context, study of TAM with Indian context is needed. The TAM applicable for different age groups, Gender, and other demographic factors can be studied (Weng Marc Lim, 2012).

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