

# *A Review of Evolution of Theories and Models of Technology Adoption*

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## **Abstract**

Technology adoption is one of the mature areas of IS research. Research in this domain has evolved over time by conceptualizing new factors which can better explain the phenomena of technology adoption resulting in development of several theories and models. This process of evolution has been primarily driven by rapidly changing technology scenario and has led to new factors which are grounded in theory from other disciplines. In this paper, we strive to trace the evolution of various theories and models of technology adoption over the years with the objective of presenting an overview of this important domain to the researchers who intend to apply these models in their research. We also look at need for identification of new factors in the technology adoption models in wake of rapid technology changes in future.

## **1. Introduction**

Technology adoption is one of the mature area of research in information systems. Carr (1999) has defined technology adoption as the 'stage of selecting a technology for use by an individual or an organization'. With rapid strides being made in technology innovations in every conceivable domain, the issues related to technology adoption have gained increasing prominence in recent times. Huge investments are made by organizations and governments for introducing new technologies that have the potential of bringing a paradigm shift in the life-style of the users. However, these investments may not yield results if the innovations are not adopted by the intended users. Initial failure of diffusion of Electronic Health Record (EHR) systems in US (Simon et al. 2007) and Enterprise Resource Planning (ERP) systems (Addo & Helo 2011) are some of the examples of the technologies that failed to take off in spite of promising start. More recent examples are that of cloud computing (Low et al. 2011) and e-

Government (Venkatesh et al. 2012) that were promising in respect of the advantages they offered to the users but still have not been adopted by the users to the extent expected.

Several studies have revealed that technology adoption is not related to the aspects of technology alone but has evolved as a much more complex process involving dimensions of user attitude and personality (Venkatesh et al. 2012), social influence (Ajzen and Fishbein 1975), trust (Gefen et al. 2003) and numerous facilitating conditions (Thompson et al. 1991). It is necessary to understand the evolution of this research area in Information Systems and look at future research opportunities.

In this study, we trace the evolution of research in the area of technology adoption over the years by means of a review of the existing literature on the subject. The study is undertaken with two objectives. The first objective of this paper is to present an overview of this important domain to the researchers who intend to apply these models in their research. Second objective of the study is to look at the need to identify new constructs that may possibly be used in explaining adoption of emerging technologies such as e-government, cloud computing, mobile government etc. and further build the theoretical foundations of the existing body of knowledge.

## **2. Research Methodology**

Methodology of literature survey was followed for this paper. Research papers with relevant keywords (such as technology adoption, technology adoption theory, technology adoption model etc) were downloaded from online databases like EBSCO, Google Scholar, Proquest, INFORMS etc. The papers were scrutinized to identify and classify them on the basis of themes on which they were focussed. Details of methodology, data set and major findings of the papers were tabulated for extracting

their common and differentiating features. References of latest papers were once again searched online to include any missing papers left out due to new keywords. Since the objective was to look at evolution of theories and models over the years rather than their application, we picked up a survey paper by Sarkar (2009), review papers by Chuttar et.al. (2009) and Long (2010) that provided an overview of some of the important theories that have evolved over the years. Seminal papers related to these theories were then downloaded and studied in depth to understand the constructs and the context of the study.

### 3. Technology Adoption Theories and Models

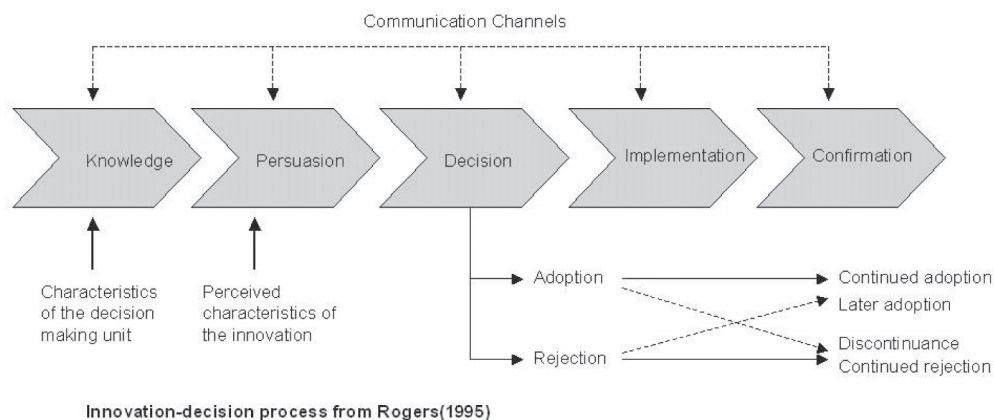
Literature review revealed interchangeable use of the terms adoption and diffusion although these terms are quite distinct from each other. Therefore, noting the difference between these two terms is in order. Adoption refers to "the stage in which a technology is selected for use by an individual or an organization" (Carr, 1999) while the term diffusion refers to "the stage in which the technology spreads to general use and application" (Rogers, 2003). Therefore, while the term adoption is used at individual level, diffusion can be thought of as adoption by the masses. From the point of view of our study, both the terms are important because adoption will generally lead to diffusion. Hence, while looking into the evolution of research of technology adoption we take into account the diffusion studies as well as adoption studies.

Two major streams of research have evolved on adoption of technologies. One stream pertains to adoption at individual and the other at organizational level. If the intention or usage by an individual is the subject of study, it is considered as adoption at individual level (e.g., Compeau and Higgins 1995; Davis et al. 1989). On the other hand, if success of implementation by the organization is under study, it is considered as adoption at organization level (Leonard-Bartonan and d Deschamps 1988). Adoption at individual and organizational levels leads to mass adoption which is termed as the diffusion of technology.

The theories and models that have evolved for explaining adoption of technology are summarized in chronological order as follows:

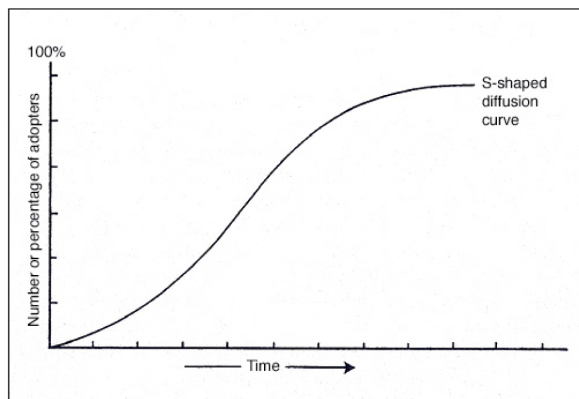
**A. Diffusion of Innovation Theory (Roger, 1960):** Research in diffusion can be traced back to the epic work by Everett Roger's in 1960 named as the Diffusion of Innovation Theory which has been widely applied by the researchers over the years.

The main idea of the theory is that there are four elements that influence the spread of a new idea: the innovation, communication channels, time and social system. The process of diffusion consists of five stages, namely, knowledge, persuasion, decision, implementation, and confirmation. It results in six categories of users: innovators, early adopters, early majority, late majority, laggards and the leap-froggers. The theory can be depicted as shown in Figure 1.



**Figure 1: The Diffusion of Innovation Theory (Rogers, 1960)**

The diffusion innovation theory provided the concept of S-shaped curve of adoption which was also called as the epidemic model of adoption. According to this curve, spread of infections among the population can be held as an analogy to the pattern of spread of a new technique or idea. According to this analogy, initially the rate of spread is slow. In the mid range of the graph, the rate of spread accelerates and finally the rate of spread tapers off resulting in an S-shaped curve depicted in Figure 2.



**Figure 2: S-shaped Adoption Curve (Rogers, 1960)**

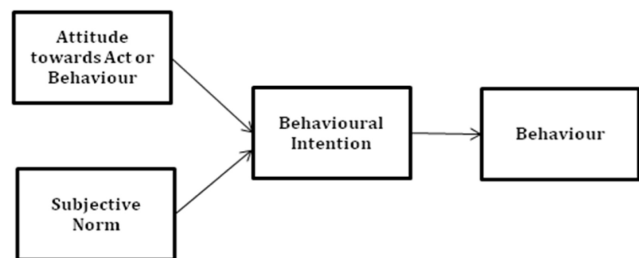
The reasoning for such S-shape curve is that initially the innovation has to come from outside the boundaries of the social system prevalent at that time. This implies that number of people that are exposed to the innovation are few in the beginning. As these people in the social system start accepting the innovation, they bring it in contact with more and more people. Therefore the rate of spread keeps on increasing. Eventually, the innovation is accepted by most of the members of social system and the rate of spread declines. As there are no more members left for accepting the innovation, the spread stops completely.

The S-shaped curve depicted in Figure 2 illustrates that there is a critical "take off point" at which the

slope of the growth curve becomes positive and number of members who have adopted the innovation becomes so large that there are hardly any new members left for adopting it. According to Rogers (1960), this point occurs when nearly 10% to 20% of the members of the social system have adopted the innovation.

The S-shaped adoption curve described above applies to most of the innovations that come up from time to time. However its application is of special significance for adoption of communication technology where it is referred to as Metcalfe's law (Gilders 1993). In this case, value of the innovation is enhanced for existing users of the communication system as more and more people adopt the innovation. Each addition of user has a positive effect on existing users of the system which results in acceleration of the adoption curve. Phenomenal growth of the Internet over last one and half decade is often interpreted by this law.

**B. Theory of Reasoned Action (Fishbein and Ajzen, 1975):** Theory of Reasoned Action (TRA) has its roots in social psychology setting. The theory proposes three general constructs, namely "behavioural intention (BI), attitude (A), and subjective norm (SN)". According to TRA behavioural intention of a person depends on his attitude and subjective norms. Mathematically, it can be interpreted that behavioural intention is the summation of attitude and subjective norms. Moreover, intention of a person likely to convert to action if there is the intention to behave in a specific manner is strong enough.



**Figure 3: Theory of Reasoned Action, (Fishbein and Ajzen, 1975)**

The definition of various constructs used in the theory are as given in Table 3.

**Table 1: Constructs used in Theory of Reasoned Action**

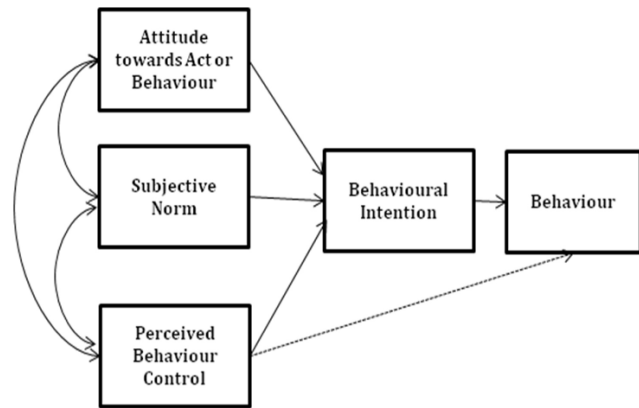
Construct	Definition
Attitudes	"Sum of beliefs about a particular behaviour weighted by evaluations of these beliefs".
Subjective norms	"Influence of people in one's social environment on his behavioural intentions; the beliefs of people, weighted by the importance one attributes to each of their opinions that will influence one's behavioural intention"
Behavioural intention	"Function of both attitudes toward a behaviour and subjective norms toward that behaviour which has been found to predict actual behaviour"

Source: Fishbein and Ajzen (1975)

**C. Theory of Planned Behaviour (Ajzen, 1991):** The

Theory of Planned Behaviour (TPB) was proposed by Icek Ajzen in 1991 and was developed from the Theory of Reasoned Action (TRA) which was proposed by Martin Fishbein and Ajzen in 1975. TPB adds the concept of Perceived Behavioural Control (PBC) to the constructs attitudes and subjective norms which make the TRA. Perceived behavioural control refers to "people's perception of the ease or difficulty of performing the behaviour of interest". It differs from Rotter's (1966) concept of perceived locus of control because it is not constant and varies with different situations faced by the individual. Locus of control is considered to be a more generalized expectancy of the individual that remains fairly stable across situations. In this way, the criticism faced by TRA that it is based on relatively static construct of attitude and thus cannot be used for prediction of behavioural outcome has been addressed by TPB. The roots of concept of PBC are grounded in the Self-Efficacy Theory (SET) proposed by Bandura (1977) which in turn came from the Social Cognitive Theory. Bandura (1986) defined self-efficacy as "the judgments

of how well one can execute courses of action required to deal with prospective situations". According to the theory, self-efficacy is the most important determinant for behavioural change since it leads to building up of coping behaviour.



**Figure 4: Theory of Planned Behaviour (Ajzen, 1991)**

The definition of additional construct (PBC) is given in Table 2.

**Table 2: Additional Construct used in Theory of Planned Behaviour**

Construct	Definition
Perceived Behaviour Control	"People's perception of the ease or difficulty of performing the behaviour of interest which in turn depends on the self efficacy which is the judgments of how well one can execute courses of action required to deal with prospective situations."

Source: Ajzen (1991)

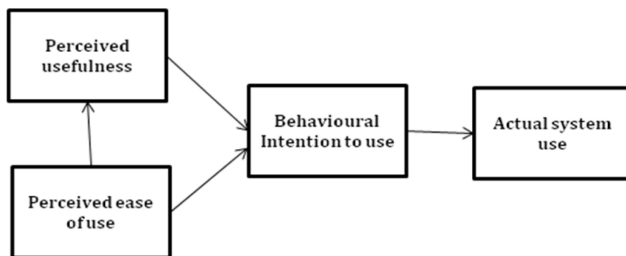
**D. The Social Cognitive Theory (Bandura, 1986):** Focus

of the Social Cognitive Theory (SCT) is on the concept of self-efficacy which is defined as "the judgment of one's ability to use a technology to accomplish a particular job or task" (Compeau and Higgins, 1995). According to SCT, behaviour of the user is influenced by expectations of outcome related to personal as well as performance-related gains. Self-efficacy, in turn, influences the expectation of outcome of both types. While esteem of the person and his sense of achievement relate to personal outcome expectations, outcome expectations related to performance on the job

lead to performance related expectations. According to SCT, there are two opposing factors that influence behaviour of the users. Positive contribution is made by the factor "affect" which is the extent to which an individual likes his job. On the other hand, negative contribution to desired behaviour is made by the factor "anxiety" which is the anxious reaction of the person while performing a job such as trying to use a computer with which the person is not very familiar. This theory has been widely used in adoption studies.

**E. Technical Adoption Model (Fred D Davis, 1989):**

Technology Adoption Model (TAM) has been widely used in technology adoption studies. The strength of the model lies in its simplicity as it has only two constructs, namely, "perceived usefulness" and "perceived ease of use" for predicting extent of adoption of new technologies at individual level as shown below



**Figure 5: Technology Adoption Model (Davis, 1989)**

These constructs are derived from Bandura's Self Efficacy Theory (1982) which defines perceived ease of use as "the judgments of how well one can execute courses of action required to deal with prospective situation" and from Rogers and Shoemaker (1971) paper which defines complexity (interpreted as ease

of use) as "the degree to which an innovation is perceived as relatively difficult to understand and use". The definitions of these constructs are depicted in Table 1.

TAM was originally tested in the context of adoption of email service and file editor at IBM Canada with 14 items on each of 2 constructs. The results of the survey on sample of 112 users validated the model with the finding that perceived usefulness is a stronger factor than perceived ease of use that drives technology adoption. In next ten years, TAM became well-established as a robust, powerful, and parsimonious model for predicting user acceptance. King and He (2006) presented a meta analysis of TAM and found that it is a valid and robust model with applications in a wide range of areas. Dwivedi et al (2010) carried out a comparison of TAM and UTAUT (Venkatesh et al. 2003) and found that focus is now shifting away from TAM to UTAUT while citing in the research articles. In another study, Benbasat & Barki (2007) have criticized TAM especially on the grounds of its limitations in the fast-changing IT environment.

**F. The Model of PC Utilization (Thompson et. al. 1991):**

The model is based on the Theory of Human Behaviour by Triandis (1977) which differs in some ways from the Theory of Reasoned Action because it makes a distinction between cognitive and affective components of attitudes. Beliefs belong to the cognitive component of attitudes. According to this theory "Behaviour is determined by what people would like to do (attitudes), what they think they should do (social norms), what they have usually done (habits), and by the expected consequences of

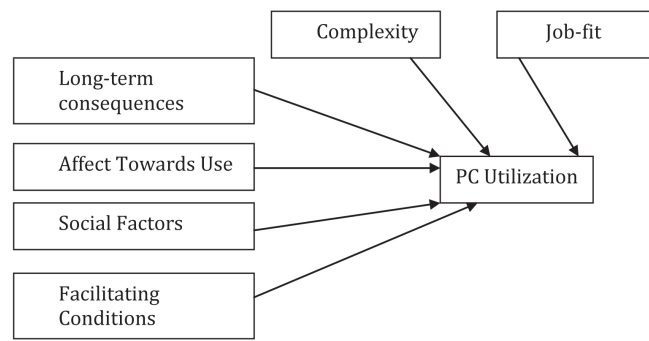
**Table 3: TAM Model by Davis (1989)**

Construct	Definition	Theoretical Background
Perceived usefulness	The degree to which a person believes that using a particular system would enhance his or her job performance	Bandura's Self efficacy theory (1982)
Perceived ease of use	The degree to which a person believes that using a particular system would be free of effort	Rogers and Shoemaker (1971)

Source: Davis (1989)



their behaviour". This theory primarily deals with extent of utilization of a PC by a worker where the use is not mandated by the organization but is contingent on the option of the user. In such a setting, the theory posits that the use of computer by the worker is likely to be influenced by several factors such as his feelings (affect) toward using PCs, prevalent social norms regarding use of PC at the workplace, general habits related to use of the computer, consequences expected by the user by using the PC and extent of conditions that are present at the work place for facilitating use of PC. These constructs are depicted in the figure 6.



**Figure 6: The Model of PC Utilization (Thompson et al. 1991)**

The definition of the constructs used in the model are given in Table 4.

**G. The Motivation Model (Davis et al., 1992):** Davis applied the motivational theory to study information technology adoption and use. The main premise of the Motivation Model is that there are extrinsic and intrinsic motivations that shape the behaviour of the user. Extrinsic motivation is defined as the perception that users want to perform an activity "because it is perceived to be instrumental in achieving valued

outcomes that are distinct from the activity itself, such as improved job performance, pay, or promotions" (Davis et al., 1992, p. 1112). Examples of extrinsic motivation are perceived usefulness, perceived ease of use, and subjective norm. On the other hand, if performing an activity leads to a feeling of pleasure and results in satisfaction for the individual, such behaviour can be classified as intrinsic motivation. (Vallerand, 1997). Users want to perform an activity "for no apparent reinforcement other than the process of performing the activity per se" (Davis et al., 1992,

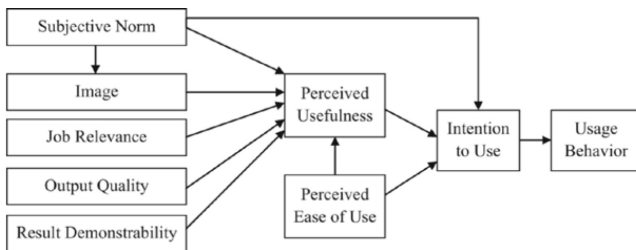
**Table 4: Constructs used in the Model of PC Utilization (Thompson et al. 1991)**

Construct	Definition
Job-fit	"The extent to which an individual believes that using a technology can enhance the performance of his or her job."
Complexity	"The degree to which an innovation is perceived as relatively difficult to understand and use."
Long-term consequences	"Outcomes that have a pay-off in the future."
Affect Towards Use	"Feelings of joy, elation, or pleasure, or depression, disgust, displeasure, or hate associated by an individual with a particular act."
Social Factors	"Individual's internalization of the reference group's subjective culture, and specific interpersonal agreements that the individual has made with others, in specific social situations."
Facilitating Conditions	"Provision of support for users of PCs may be one type of facilitating condition that can influence system utilization."

Source: Thompson et al. (1991)

p. 1112). An examples of intrinsic motivation is the extent of enjoyment that a person derives from playing with a computer (Davis et al., 1992; Venkatesh, 2000).

**H. Extended TAM2 model (Venkatesh and Davis, 2000):** Venkatesh & Davis modified TAM to include additional key determinants of TAM's perceived usefulness and usage intention constructs in their extended TAM model. The additional constructs included social influence processes (subjective norm, voluntariness and image) and cognitive instrumental processes (job relevance, output quality, result demonstrability and perceived ease of use) which are depicted in Figure 7.



**Figure 7: Extended Technical Adoption Model (Venkatesh & Davis, 2000)**

The definitions and theoretical basis of the constructs are summarized in Table 5.

**I. Unified Theory of Acceptance and Use of Technology (Venkatesh, 2003):** This theory, popularly referred as UTAUT was postulated in 2003 by Venkatesh et.al. by a systematic review and consolidation of the constructs of earlier eight models (TRA, TAM, MM, TPB, TAM2, DOI, SCT and model of personal computer use). It is meant to serve as a comprehensive model that can be applied across a range of applications. It has four key constructs namely "performance expectancy, effort expectancy, social influence and facilitating conditions" which are depicted in Figure 8.

For developing the unified model, the authors have compiled and tested all the constructs that were used in previous models and theorized that out of the seven constructs used earlier, four constructs shown above are most significant as determinants of intention to use information technology. They have hypothesized

that remaining three constructs, namely, attitude toward using technology, self efficacy, and anxiety are theorized not to be the direct determinants of intention as they are fully mediated by ease of use which has been considered in the unified model as performance expectancy. Therefore, these three constructs have been removed from the UTAUT model. The constructs in the unified model are defined as in table 6.

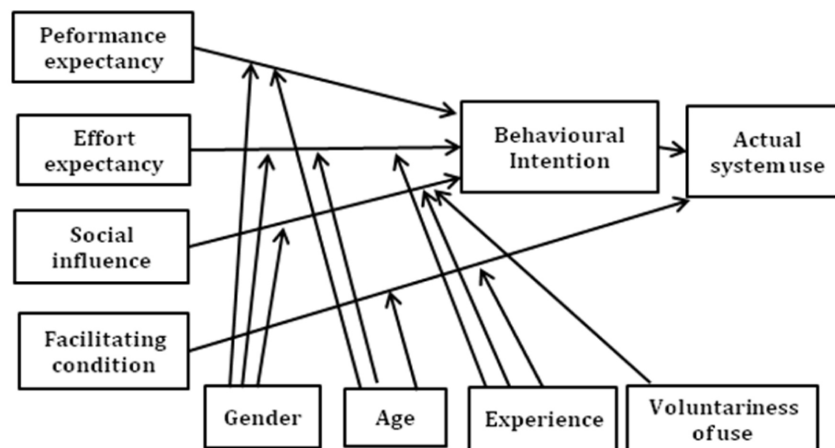
The unified theory is proposed to be superior as it is able to explain 70% of the variance while the earlier theories were explaining only 30-40% variance in the adoption behaviour (Venkatesh et al. 2003). However, it is criticized on the grounds of being overly complex, not being parsimonious in its approach and its inability to explain individual behaviour (Casey & Wilson-Evered 2012; Van Raaij & Schapers 2008). A comprehensive review of 450 articles that have cited UTAUT was carried out by Williams et al (2011) and they found that only a small number of articles have actually used the constructs of UTAUT in their study- rather, it has been used more for theory-building.

**J. Model of Acceptance with Peer Support, (MAPS, Sykes et al., 2009):** Model of Acceptance with Peer Support (MAPS) provides an integration of earlier research that was focussed on individuals with relevant constructs of social network in a way that helps to extend the scope of earlier theories. The authors propose that there are two types of social ties. First tie between employees relates to obtaining help from employees that can result in extension of knowledge for using the system. Another kind of tie between employees is related to providing assistance and help to co-workers for enabling better understanding of configuration and deployment of the system. These ties are labelled as "get-help" and "give help" ties. The authors propose two new constructs, namely, "network density" and "network centrality" that relate to the concept of "get-help" and "give-help" respectively. The theoretical backing for these constructs is drawn from earlier research carried out in social network and are posited as key predictors of system use. These constructs are further extended as "valued network density" and "valued network cen-

**Table 5: Extended TAM Model by Venkatesh and Davis (2000)**

Construct	Definition	Theoretical Background
Subjective Norm	Person's perception that most people who are important to him think he should or should not perform the behaviour in question".	Theory of Reasoned Action (Fishbein and Ajzen 1975) and the subsequent Theory of Planned Behaviour (Ajzen 1991).
Voluntariness and Compliance with Social Influence.	Voluntariness is the extent to which potential adopters perceive the adoption decision to be non-mandatory.	Hartwick and Barki (1994) found that even when users perceive system use to be organizationally mandated, usage intentions vary because some users are unwilling to comply with such mandates.
Image	Moore and Benbasat (1991) define image as "the degree to which use of an innovation is perceived to enhance one's . . . status in one's social system".	Moore and Benbasat (1991)
Job relevance	Defined as an individual's perception regarding the degree to which the target system is applicable to his or her job. Regarded as cognitive judgment that exerts a direct effect on perceived usefulness, distinct from social influence processes.	Cognitive instrumental theoretical underpinnings come from three main areas: work motivation theory (e.g., Vroom 1964), action theory from social psychology (e.g., Fishbein and Ajzen 1975), and task-contingent decision making from behavioral decision theory (e.g., Beach and Mitchell 1978).
Output quality	Output quality measures perception of how well the system performs the job related tasks.	
Result Demonstrability	Defined by Moore and Benbasat (1991) as the "tangibility of the results of using the innovation". This implies that individuals can be expected to form more positive perceptions of the usefulness of a system if the co-variation between usage and positive results is readily discernible.	

Source: Venkatesh & Davis (2000).



**Figure 8: The UTAUT Model (Venkatesh et. al. 2003)**



**Table 6: Constructs used in UTAUT (Venkatesh et.al. 2003)**

Construct	Definition	Root source of the construct from earlier models	Moderators
Performance expectancy	Performance expectancy is defined as the degree to which an individual believes that using the system will help him or her to attain gains in job performance.	The five constructs from the different models that pertain to performance expectancy are perceived usefulness (TAM/TAM2), extrinsic motivation (MM), job-fit (MPCU), relative advantage (IDT), and outcome expectations (SCT).	Gender, Age
Effort expectancy	Effort expectancy is defined as the degree of ease associated with the use of the system.	Three constructs from the existing models capture the concept of effort expectancy: perceived ease of use (TAM/TAM2), complexity (MPCU) and ease of use (IDT).	Gender, Age, Experience
Social influence	Social influence is defined as the degree to which an individual perceives that important others believe he or she should use the new system.	The three constructs related to social influence: subjective norm (TRA, TAM2/IDTPB, TPB), social factors (MPCU), and image (IDT).	Gender, age, voluntariness and experience
Facilitating conditions (no effect on use intention but direct effect on use behaviour)	Facilitating conditions are defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system.	Three different constructs used in earlier models are: perceived behavioural control (TPB, DTPB, C-TAM-TPB), facilitating conditions (MPCU) and compatibility (IDT).	Age and experience

Source: Venkatesh et al. (2003)

trality" by taking into account the extent of the resources, information and knowledge available in the system. It is inferred that these constructs can act as additional predictors.

The definitions of these constructs are given in Table 7. The authors conducted a social network study on 87 employees of a supplier-focused business unit of a large multinational company in Finland. With this empirical study they were able to obtain support to their proposed model. They found that the new social network constructs which augmented the previously

established determinants of system use, namely behavioural intention and facilitating conditions, were able to explain about 20 percent additional variance.

To summarize, Table 8 presents the summary of the various theories and models of technology adoption that have evolved over the years.

**4. Discussions & Findings from the Study**

The study was carried out with two objectives. The first objective was to present an overview of technology

**Table 7: Model of Acceptance with Peer Support (Sykes et al., 2009)**

Construct	Definition
Behavioral intention	Behavioral intention is defined as "a person's subjective probability that he will perform some behavior" (Fishbein and Azjen 1975, p. 288).
System use	System use is defined as the frequency, duration, and intensity of an employee's interactions with a particular system (Venkatesh et al. 2003).
Facilitating conditions	Facilitating conditions is defined as the "degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system" (Venkatesh et al. 2003, p. 453).
Network density	Network density describes the connectedness of a network and is defined as the actual number of ties in a network as a proportion of the maximum possible number of ties.
Network centrality	Network centrality is defined as the extent of an individual's involvement in assistance exchanges with co-workers (Mossholder et al. 2005; Sparrowe et al. 2001). An individual's centrality has been linked to influence (Burkhardt and Brass 1990), involvement in innovation (Ibarra 1993a, 1993b), and attitudes toward new technology (Rice and Aydin 1991).
Valued network centrality	Valued network centrality refers to peers' perceptions of the level of system-related resources controlled by a focal employee.
Valued network density	Valued network density refers to the connectedness of a focal employee to others, weighted by the perceived strength of the tie and control of system-related information (such as system features, upcoming releases, demo dates), knowledge (such as tips and tricks, short cuts, process sequences), and other tangible resources (such as training resources, manuals, tutorials) that are needed for effective use of a system.

Source: Sykes et al 2009.

adoption theories and models to the researchers who intend to apply these models in their research. This objective has been achieved as evolution of various models has been presented in Table 8. In section 3, we have presented definitions of the constructs and provided literature references to the criticism and applications of various models. It is felt that the paper provides sufficient knowledge of this evolving field in a concise form to the researchers who intend to probe deeper into the field of technology adoption.

Second objective of the study was to look at the necessity to identify new constructs that may possibly be used in explaining adoption of emerging technologies such as e-government, cloud computing, mobile government etc. Need for a sound theoretical model in the fast changing information technology environment has been articulated by Benbasat & Barki (2011). They suggest

that researchers should "redirect their focus toward examining different antecedents (e.g., IT artifact and design) and different consequences (e.g., adaptation and learning behaviors) in order to reach a more comprehensive understanding of what influences adoption and acceptance in different IT use contexts and to provide more useful recommendations for practice" (pp 216). This view of the authors clearly hints towards probable inadequacy of present models in explaining adoption of upcoming technologies such as Internet of Things (IOT), cloud computing and m-Government among others. This also points towards a future research opportunity that needs to be probed by the researchers and fulfils the second objective of the research.

It is therefore posited that the systematic overview of technology adoption contributes to the area of IS/IT

**Table 8: Evolution of Theories and Models of Technology Adoption**

Year	Theory/Model	Developed By	Constructs/ Determinants of adoption
1960	Diffusion of Innovation Theory	Everett Roger	The innovation, communication channels, time and social system.
1975	Theory of Reasoned Action	Ajzen and Fishbein	Behavioural intention, Attitude (A), and Subjective Norm.
1985	Theory of Planned Behaviour	Ajzen	Behavioural intention, Attitude (A), and Subjective Norm, Perceived Behavioural Control.
1986	Social Cognitive Theory	Bandura	Affect, anxiety.
1989	Technical Adoption	Fred D Davis	Perceived usefulness and perceived ease of use.
1991	The Model of PC Utilization	Thompson et al.	Job-fit, Complexity, Long-term consequences, Affect Towards Use, Social Factors, Facilitating Conditions.
1992	The Motivation Model	Davis et al.	Extrinsic motivation ( such as perceived usefulness, perceived ease of use, and subjective norm) and intrinsic motivation (such as perceptions of pleasure and satisfaction).
2000	Extended TAM2 model	Venkatesh and Davis	Social influence processes (subjective norm, voluntariness and image) and cognitive instrumental processes (job relevance, output quality, result demonstrability and perceived ease of use).
2003	Unified Theory of Acceptance and Use of Technology (UTAUT)	Venkatesh et al.	Performance expectancy, effort expectancy, social influence and facilitating conditions.
2009	Model of Acceptance with Peer Support (MAPS)	Sykes et al.	Behavioural intention, System use, Facilitating conditions, Network density, Network centrality, Valued network centrality, Valued network density.

adoption and diffusion research by highlighting various theories and models, including their criticism. The paper identifies the possibility and the need for further evolution in this domain so that more holistic models are developed that can take care of fast-changing technology environment. Therefore it is evident that research has to continue in this domain because the environmental factors driving the adoption process are dynamic and can reveal new constructs of adoption.

## 5. Conclusions

This review paper provides an overview of theories and models which have evolved over the years for better understanding of adoption process of technologies by individuals and organizations. It is intended to present a bird's eye view of various constructs related to this relatively mature area of information system research and will be of immense value to the contemporary researchers who are planning future work in adoption

of new technologies in the present dynamic environment. The review provides identifies several new areas of research where the existing models of technology adoption may prove to be inadequate. The paper concludes with the view that further evolution in this area of study may be necessary. Future research in this domain may require that existing theories are augmented with constructs from other disciplines of management in order to explain the adoption process of new technologies.

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