

Chapter 2

Literature Review

This chapter is divided into 5 sections. The first section describes the status of Internet Based Platforms in Higher education. The second section elaborates the usage of IBPs and allied technologies for Communication skills enhancement. The third section deals with the process of *Acceptance* and the important theories in the acceptance domain. In the fourth section, there is a description of the important studies with their findings using these theories to study the acceptance behavior of users in various contexts. The last section elucidates the research gap derived from the exhaustive literature review.

Internet Based Platforms have become an integral part of our lives including the field of education. It would not be an exaggeration to claim that certain level of dependency exists between users and the IBP technologies. These dependencies are mostly about achieving greater access to communication and information sharing platform. In education domain also IBPs have proved their utility similar to predecessor technologies. Today students can address their study related queries ubiquitously with the help of IBPs. IBPs abundant use due to its catalyzing nature made it important to find out what are the factors which motivate the users to use them. Various theories have been developed to study the technology acceptance behavior of users. Review of existing studies about technology acceptance in education domain has been done extensively to find out the acceptance behavior of the stakeholders. In the aforesaid context the Unified Theory of Acceptance and Use of Technology (UTAUT) is a well-established model in the domain of technology acceptance.

2.1) Internet Based Platforms in Higher Education

The use of technology in education is not a new concept. Technology interventions in education can be seen in various forms, since the beginning of the last century. From the very beginning the process of teaching and learning necessarily involved teaching aids, in the form of a blackboard. In the initial stage students used to write on wooden planks with the help of wooden pen and ink made from juices of various types of vegetations. Teachers used to teach using blackboard and chalk. With the evolution of time and modernization these teaching aids started to change. Green boards are now used in the place of blackboards. New media has replaced old media. New media is different from traditional media due to its dynamic nature while traditional media refers to the text based materials like books, newspapers, magazines, charts, graphs and so on. The new media refers to the dynamic nature of the text and media, like audio and video channels, online journals, material stored in compact disks and so on. In the context of this study new media refers to the technologies and tools which work with Internet Based Platforms. In Indian classrooms, initially, the use of traditional media was popular. Traditional media such as charts, models or the actual objects (in some cases) were used to make the learners' observation clear. Technology interventions begin with charts and models, passing through radio and disks, and exploded with the usage of computers in all aspects of education. Afterwards, with the invention of the internet and web and its various versions, the barriers of time and space were broken.

Not only the use of these teaching aids was changing, but also the methods and process of teaching and learning were changing. Gradually, at the inflection point, the education paradigm shifted completely and from teacher centered it became student centered. The invention of internet made the task of teaching and learning collaborative in nature by allowing real time interaction. Now the task of learning has expanded and shifted itself from the one way of sending knowledge from the teachers end towards the learners/receivers end

to a two way process of sharing of knowledge between the teacher and the student. This phenomenon provides avenues to make the task of teaching easy, interesting and student centric.

Numerous initiatives by government and private enterprises have been undertaken to enhance the usage of technology in education at national as well as international level. Apart from developing the basic infrastructure, government is also spending on essential hardware distribution such as Aakash tablets. The government is serious about taking the technology to as many people as possible. The awareness about the use of technology in the field of education is growing rapidly. National Programme on Technology Enhanced Learning (NPTEL) provides e-learning through online web and video courses in engineering, science, and humanities streams. The mission of this programme is to enhance the quality of engineering education in the country by providing free online courses. It provides free access to various courses and keeps on introducing new courses (<https://www.nptel.org/>).

Edx is a non-profit programme created by founding partners Harvard and MIT. Edx offers MOOCs and interactive online classes in subjects including law, history, science, engineering, business, social sciences, computer sciences, public health, and artificial intelligence. Coursera is a free online programme with 1,561 courses and 16,964,344 learners at present and the number is increasing at a fast rate. It has 140 partners across 28 countries, and it provides universal access to education. Students can watch online video lectures, take interactive quizzes, complete peer graded assessments, and can interact live with new classmates and teachers (<https://www.edx.org/>). Khan Academy is a non-profit educational website created in 2006 by educator Salman Khan, a graduate of MIT and Harvard Business School. The stated mission is to provide "a free world-class education for anyone anywhere" (<https://www.khanacademy.org/>). Such steps taken by people prove their

awareness about the importance of technology in the field of education. Today there are numerous educational apps available which can be used by the learners at all levels.

In contemporary context, the process of learning has undergone substantial change. The process is more of gaining knowledge and information from various resources instead of receiving the same from the teacher only. In earlier times where the teacher was a resource of knowledge, has now been converted into one of the sources of information and knowledge. The teacher is now more seen as a facilitator of knowledge acquisition. The process of learning inside the classrooms as well as outside the classroom is more flexible today because of the internet.

2.2) Communication Skills Enhancement with Technology Intervention

The use of technology in language learning and teaching has been exhaustively documented in research. It can be seen in various forms since a long time back. Radio and tape recorders were used for listening drills, pronunciation recording etc. Later on, with the inclusion of television, multisensory absorption of information in the form of audio and video made the task of teaching and learning more effective and interesting. In 1980s and 90s, computers played a vital role in bringing the technology in the hands of the techno-savvy new generation of learners. There were pre-recorded audio and video files which could be played on a computer. The advent of internet gave rise to a revolution in terms of increase in number of end users for sharing and collaborating. But to a large extent users were still content consumers. This limitation was breached by web 2.0. It enabled collaboration and interaction beyond time and space barriers. It provided new avenues to make the task of teaching easy, interesting and student centric. Internet technology is helping people of academia not only inside the classroom but also outside the classroom boundaries. Initially, usage within the classroom was measured, but after doing field survey, the results revealed that technology plays a vital role in the process of accomplishing those academic tasks

which are completed outside the classroom. The reason for taking into consideration the outside classroom learning is that its access is open for everybody.

Studies have proved the importance of technology while learning inside the classroom as well as outside the classrooms. Various types of technological tools have been used by the learners at their personal level also for the fulfillment of their academic tasks. Lu, Yaobin, Zhou, and Wang (2009) observed and reported the usage and popularity of instant messaging by student community to enhance their communication performance. The students were reported using the technology at ease because they were not bounded by any type of restriction of time limit, and they were able to access it from their own convenient places. Park and Youl (2009) reported on the usage and its increasing popularity of e-learning on a group of 628 students of schools and universities of Korea. Shroff, Ronnie, Deneen, and Eugenia (2011) reported that the usage of e-portfolio is increasing day by day in education, not only by the students but also by the faculty.

In a report, Koin (2000) stated that computers can be used very effectively to enhance all the four skills of learners, i.e. listening, speaking, reading, and writing. He cited that computer technology opens up numerous opportunities for the learners. The author highlighted that computers can be used as effective tools for novice teachers also. Through e-mailing and chatting, the monotonous work of writing can be converted into an interesting task. Students can record their own voices and improve their pronunciation by comparing it with the native speakers. It would help in confidence building of the learner. The learners can not only improve their performance but also evaluate themselves.

Tanyeli (2008) conducted an experimental study on Law students to see the effect of web assisted reading instruction. Using questionnaires, semi-structured interviews, and observations he proved that the experimental group was performing better than the control group. The results revealed that instruction given through web based media for enhancing

reading efficiency was better than that of traditional media. Although it can never be claimed that new media is a substitute for traditional media, studies indicate that the blend of traditional methods and new media is the best way to teach learners.

Sarica and Cavus (2009) reported that the use of web and new similar technologies in learning has made the process of English learning an easy and enjoyable process. Students were learning faster than before with the help of English learning activities and internet communication tools. The authors explicated about various tools like emails, blogs, online tests and quizzes, instant messenger, Skype, mobile devices, iPods, PDAs, cell phones and similar technologies and their usage in learning English. They have explained how these devices can be used effectively for listening and speaking drills, for vocabulary building and grammar practise. These devices allow real time interaction where students and teachers can stay connected all the time and make improvements.

Chang, Pearman, and Farha (2012) discuss about the frequent usage of iPhones, iPads, smart phones, net books and other devices by today's generation learners. The authors argue that these devices should be used for learning English language. Spoken language development, reading and writing skills can be enhanced through the use of technology. The authors discussed about web 2.0, its evolution and methods of using it effectively for the enhancement of English language skills. Jung, Lim, and Leon (2002) explains in their work that web based instruction overcomes the limitation of interpersonal interaction in traditional distance education by providing real time interaction. The purpose of the study was to investigate the effects on the learners' achievement level, satisfaction level, participation and their attitude towards online learning in a Web Based Instruction (WBI) environment. Results imply that students can be made more creative and efficient if opportunities are provided to use technology. Tyagi (2012) in a survey conducted in 6 universities in the National capital region of India, with the objective of analyzing the usage of web 2.0

technologies in learning, and also to identify the tool used most and to explore the benefits and contribution of these tools in education found that web 2.0 tools are beneficial in many ways. Its usage enhances peer-to-peer learning and also helps to create personal learning environment. Not only it enhances students' motivation but also fosters a new approach to learning.

Relles and Tierney (2013) made an attempt to find out the role of social networking platforms to enhance the writing skills of the students. 91 low-income graduate students who were enrolled in remedial classes were chosen for the task. 80 hours of classroom instruction was given to them on the social networking platform, Facebook. Results have shown a significant improvement in their writing skills. It signifies that such platforms can be used very effectively for the enhancement of skills in students. Lai and Gu (2011) tried to investigate the use of technology outside the classroom by the students to self-regulate their Language learning. 279 language learners at Hong Kong University were the subject population of the study. 5-point Likert scale was used on two different questionnaires, and semi-structured interviews were also conducted to collect the responses. Results suggested that training is needed to use the web 2.0 technologies. It signifies that mere availability of a technology is not sufficient, proper training to handle the technology is also required. Yin, Wang and Comac (2008) attempted to find out whether audio blogs can be helpful in improving oral efficiency of language learners. 22 students were selected, and through open-ended questions and interviews their responses were collected. The results indicated a significant positive response of the respondents. It was observed that they have enjoyed the use of these audio blogs. Also, individual feedback was given to them which conveyed a feeling of individual attention.

Golonka, Bowels, Frank, Richardson, and Freynik (2012) wrote a review on the difference between the use of traditional media and new media. The focus of their study was to

investigate the effect of new media. Their primary argument was that new media can be used very effectively for motivating the learners to enhance their linguistic efficiency. They substantiated their idea by referring to 350 previous studies. These studies have suggested that new media technologies are very helpful to increase the motivation level. It opens many options for the learners in self-selecting study materials, and it will lead to deeper engagement with language, more time to complete their tasks and finally increase their efficiency level. A learner can select the learning material according to his own requirements. It eventually makes the task of learning much easier for the learner.

Arquero and Frias (2013) conducted a survey to investigate the usefulness of Social Networking Sites (SNSs). The SNSs are very popular among today's generation. An attempt was made to evaluate its popularity in educational context. An SNS platform was created using the link "Ning". The major issues taken were the active role of the learners' collaborative learning, promoting critical thinking, and content learning. In all of the issues taken, the responses were highly affirmative. Most of the students reported that with the inclusion of these SNSs in education, students' active role can be increased. Students felt that these sites are highly helpful in content learning and doing team work. It motivates them for work and makes the task more interesting. With the help of these SNSs, students with introvert personalities can also express their point of view. These sites are also very helpful in promoting their creative thinking. These SNSs not only break the barrier of time and place but also the barrier between a faculty and a student.

Sarica and Cavus (2008) stressed that both English efficiency and internet efficiency are the two important aspects of today's era. The study discusses the various methods of using World Wide Web, effectively to enhance learners' English language. Internet can be used as a rich source for updated knowledge. There are a number of courses online which teach foreign languages. The authors feel that the online courses offer a learning environment

online, such as chat rooms, net meetings where a real time interaction occurs among the students and with teachers. The authors point out that in online platforms, a teacher has to play four roles namely, pedagogical, social, managerial, and technical. All the four skills i.e., listening, speaking, reading, and writing can be enhanced using internet.

Amundsen and Elahe (2008) also explored that Internet can be used not only for sharing ideas but also for active and healthy discussions which is possible only by reflecting on the given ideas and by providing innovative ideas in response. According to Olaniran (2008) new media should be incorporated in the course because it has various characteristics which can be helpful in various purposes. It makes the learners interactive and creative. It facilitates creative and transformational thinking in the learners. A learner can create a very smooth relationship by taking initiative of making contact with the peers and the instructor. The author further adds that personalized learning and teaching can be done with the help of new media. It allows the instructor to pay individual attention. An instructor can provide feedback by looking at the records and can compare and contrast the assignments of the students. Tomar (2008) has investigated and observed that underprivileged children are not getting proper education and new media can be a very good medium for their teaching. The author has pointed out that students have different needs and requirements and new media can be a very good medium to provide freedom of choice of the learning content and improve their creativity level and skills. Panwar (2008) mentions that new media can be used as a very good platform for teaching and learning which also strengthens the arguments build by earlier scholars in their studies. It can be used as an independent platform and its access is very convenient and it also saves cost. Content can be easily updated on such platforms which can be accessed by the students later. Vries (2001) argues that new media technology excites the students and makes study more interesting for them but it can become monotonous if not used in a proper and sophisticated manner. It can act as a novel source of

information and instruction. Through the support of various media types, such as multimedia, text, audio etc. can be used in various ways. It can also act as an effective means of communication. It motivates the learners to work in several innovative ways.

Milrad, Marcelo, Jackson, and Bergman (2005) tried to explore the usage of mobile phone technologies for enhancing the communication skills of students. The authors have claimed that they use smart phones and mobile services in their class-rooms to enhance the communication skills of the learners. For their study the authors provided Nokia 6600 smart phones to 41 students. The authors have argued that a teacher plays a significant role in the acceptance of any technology by the students. If technology is used by the teacher in his/her pedagogy, the students feel motivated to use it. The students strongly argued that the technology integration should be done into their pedagogy. The students selected for the study were students from school of Humanities. All the students were Literature students and they emphatically said that smart technologies should be made an integral part of their pedagogy. It was evident from the students' feedback that there is an urgent need for providing institutional support of educational mobile technology services especially for content which is related to their course work.

2.3) Technology Acceptance: The Process

While the literature review highlights high degree of technology usage, including new media technology and Internet Based Platforms, the research for understanding the reasons behind certain technologies getting accepted more as compared to others, remains in its initial stages at this point. The literature reveals the effective use of new media in education. In a developing country like India, making technology available and accessible to students is the need of the hour. The government has recently initiated the campaign "digital India" with a vision to make digital literacy diffuse into the common masses. To make broader technology penetration across the cross-section of the society, one simple way is to study the factors

which motivate an individual to use it. If crucial factors which affect the decision of a user to start using technology can be identified then the educational technology can be designed keeping those factors in mind.

Scott and Rockwell (1997) conducted a study to explore that how technology anxiety, communication anxiety, and writing anxiety affect technology usage in learning. 178 students from general public speaking courses were selected to fill the survey questionnaire. The results have suggested that computer/technology anxiety puts a negative effect on using a new technology. Communication anxiety is negatively related to those technologies which are used for communication purposes, whereas writing anxiety is not negatively related with those technologies which play a significant role in writing.

In today's technological era where an individual has plenty of choices, in terms of content and its form, users get confused in selecting relevant material. Other major aspect which is associated with the usage of technology is that people get anxious even after selecting a tool. If after certain efforts a choice is made then the self-confidence in using that tool remains an issue. There are several factors which motivate a learner to use technology. Chang, Cheng, Yan, and Tseng (2012) measured the use of mobile phone technology for learning English. The authors have argued that convenience is an important factor which motivates a learner to use a technology.

Rogers (2003) has explained in his book 'Diffusion of innovations' that whenever an innovation comes into market, it gets diffused into the masses. Once it gets diffused, it gets accepted or rejected. This acceptance occurs due to several reasons. The author identifies 5 characteristics to describe the adoption of an innovation namely-Relative Advantage, Compatibility, Complexity, Trialability, and Observability. According to Rogers (2003) number of users included in the process is inversely proportional to the rate of adoption. Further, he says that communication channels also play a vital role in the process of adoption. The first attribute, Relative advantage can be defined as the degree to which an

innovation is perceived as being better than the idea it supersedes, also the adopters play a vital role to accelerate the rate of adoption through the attribute of selective advantage. Economic factor is also a crucial factor which is responsible for the rate of adoption. It can be connected to the availability of the innovation because if any innovation is not expensive then the chances of its availability to the common masses are very high and the rate of adoption would be high likewise. Some people tend to imitate others' adoption behavior. This behavior i.e. status symbol behavior is important only for the innovators, early adopters and early majority whereas late majority and laggards give less importance to it. Rogers (2003) says that further studies can be conducted to observe the behavior for such traits because respondents tend to hide the real intention and they do not admit it directly that they have adopted a certain innovation for the sake of status symbol.

The second important attribute is Compatibility. It can be defined as the degree to which an innovation is perceived as consistent with the existing values, past experiences and the needs of the potential adopters. If an innovation is not compatible with the ensuing values and beliefs of a particular population or individual then the rate of adoption of this innovation would be slow. Moreover, compatibility is necessary with the previously introduced ideas. Presumed compatibility can create negative results like over adoption or mis-adoption. Another aspect of the rate of adoption is compatibility with needs. If the needs felt are fulfilled by the innovation then the rate of adoption would increase.

The third attribute is, Complexity. According to Rogers, this is the degree to which an innovation is perceived as difficult or easy to understand first and then for its usage. Complexity is negatively related to the rate of adoption. The chances of rate of adoption are higher as much as the innovation is simple. There are various ways to deal with the complexity of any innovation like external help, external assistance etc. The fourth attribute is Trialability. This is the degree to which an innovation may be experimented with on a limited basis. If the innovation is open for trial by the individuals themselves or by others,

the rate of adoption increases. The fifth attribute is, Observability. It is the degree to which the results of an innovation are visible to others. Observability is also positively related to the rate of adoption. If an innovation is easy enough to be observed then its benefits and consequences can be recorded. Consequently, it will lead to the increased rate of acceptance.

2.4) Evolution of Technology Acceptance Theories

Scholars have been trying to study the factors/variables amenable for technology acceptance. Various theories have been propagated by scholars for many years to find out the factors which motivate a user to accept a technology. The following sections describe the theories, the factors of the theories, various studies which have used these theories, and the limitations of the theories.

2.4.1) Theory of Reasoned Action

The first major theory used to study the technology acceptance behavior was ‘Theory of Reasoned Action’ by Fishbein and Ajzen (1975). According to this theory the actual behavior of an individual is dependent on the behavioral intention of the user. Intention depends on two determinants- attitude towards behavior and subjective norm. Attitude is formed by beliefs and evaluations, whereas subjective norm is determined by normative beliefs and the motivation to comply. Figure 2.1 presents the thematic representation of the theory variables.

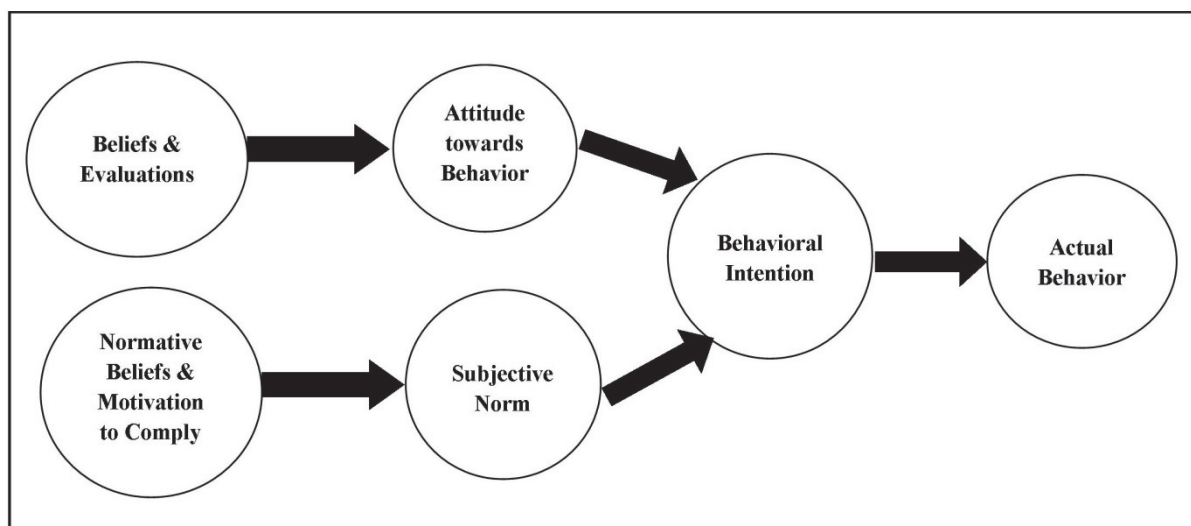


Figure 2.1 Theory of Reasoned Action

Numerous researchers and academicians have used this theory in various studies. Davis, Bagozzi and Warshaw (1989) used the Theory of Reasoned action and the Technology Acceptance Model to observe the acceptance behavior of a group of people towards the usage of computers. It was found that subjective norm does not have a significant relation with the intentions of a person to accept a technology. Whereas, the variable perceived ease of usefulness is a very strong determiner to accept a technology. However, the study suggested that the Theory of Reasoned Action and its constructs are not sufficient enough to evaluate a person's acceptance behavior. Therefore, changes have been made and new theories came into existence implying that changes are required to get better results. Considering the drawbacks of the theory, in 1985 a new theory was developed, named Theory of Planned Behavior.

2.4.2) Theory of Planned Behavior

Theory of Planned Behavior was proposed by Icek Ajzen (1985). It was a modified version of Theory of Reasoned Action. The difference lies in one more variable that was added to the theory i.e. Perceived Behavioral Control. The authors define this variable as, "Perceived behavioral control refers to the peoples' perceptions of the ease or difficulty of performing the behavior of interest" (Ajzen, 1985, P. 183). Perceived Behavioral Control can be understood as the perception of a person in using a particular technology. It is explained in the theory that if a person is confident enough in using a technology his/her chances of using a technology becomes higher. This determinant does not affect the intention of usage but it is directly associated with the actual usage of a technology. Perceived Behavioral Control can be understood as in terms of the internal instincts of a person directly influencing the behavior. According to the Theory of Planned Behavior, the two variables, Perceived Behavioral Control and the Intention to Use can lead to the actual Use.

Figure 2.2 presents the thematic representation of the theory variables.

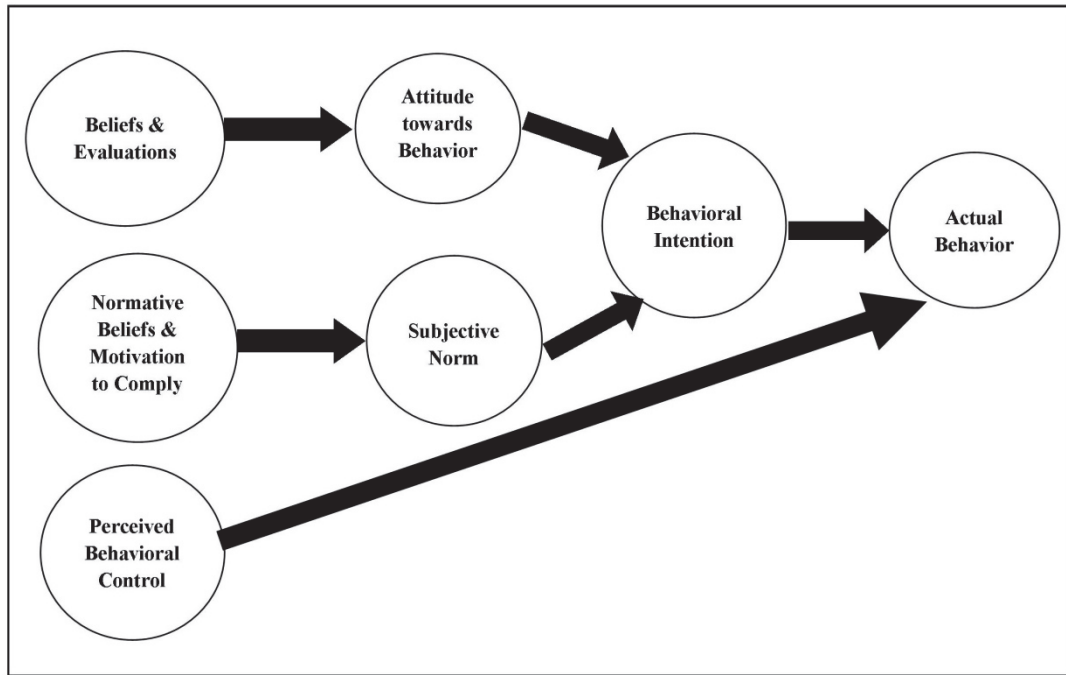


Figure 2.2: Theory of Planned Behavior

Scholars and researchers have used the Theory of Planned Behavior to analyze the behavior patterns of people in different situations and environments. Teo (2010) took 157 teachers of Singapore as the subject population for his study and used a combined model of Theory of Planned Behavior and Technology Acceptance Model to observe the usage behavior of teachers. It was observed in the study that Attitude and Subjective Norm are the two most significant factors which play an important role in taking decisions for accepting a technology. Venkatesh, Morris, and Ackerman (2000) used the Theory of Planned Behavior to observe the effect of gender in taking decision to accept a new technology. A longitudinal study was conducted and 4 organizations were selected for the purpose and 355 people were observed for 5 months. The results revealed that the variables of the framework come into effect in different ways for both genders. The theory was proved a good fit to explain the intentions to use technology. Yannis (1994) extended the theory by adding two components namely multi-component attitude strength and role-identity. The author tried to find out the relationship between attitude and behaviour of a sample population of 395 females of a fitness programme. The authors argue that the likelihood of adoption increases when we

develop a positive attitude towards that habit. The results revealed that perceived behavioural control and attitude are very strong determiners to formulate a positive intention which leads to the actual behaviour. Lee and Sang (2006) compared the variables of theory of planned Behavior and the Technology Acceptance model. The authors added some exogenous factors to see the effect of these factors on the constructs of the two theories taken. The authors attempted to explore how the intermixing of the variables can affect the process of adoption. Fusilier, Marcelline, and Durlabhji (2005) tried to explore the role of variables of the theory of planned behavior and the technology acceptance model. The authors measured the effect of the variables of both the theories in accepting the internet platforms by the students. All the variables were proved to be significant while adopting the platforms; whereas, subjective norm and perceived behavioural control, are significantly and positively related to behavioural intention to use the internet. The other two variables namely, attitude and experience were not proved to be significant. The study was conducted in Indian setting and the Theory of Planned Behaviour fizzled to prove the significance of all its variables. It implies that there was a need to redefine the model. All the mentioned studies have used the theoretical model with some other model. It shows that the theory alone cannot describe all the factors associated with the acceptance of any technology.

2.4.3) Decomposed Theory of Planned Behavior

The factors of the Theory of Planned Behavior were further decomposed after discerning the outcomes of those studies where it was used. The Decomposed Theory of Planned Behavior (DTPB) originated from the Theory of Planned Behavior (TPB) that posits that actions are determined by a combination of people's behavioral intentions and Perceived Behavioral Control (Ajzen, 1991). In DTPB, 9 new constructs were added. This theory consists of 14 constructs namely, Perceived Usefulness, Perceived Ease of Use, Compatibility, Social Influence, Peer Influence, Superior Influence, Self-Efficacy, Facilitating Conditions

Resources, Facilitating Conditions Technology, Attitude, Subjective Norm, Perceived Behavioral Control, Behavior Intention, and Usage Behavior. According to this theory, Perceived Usefulness, Perceived Ease of Use and Compatibility affect the attitude of a user that leads to the intention and intention finally leads to the actual usage. Social Influence, Peer Influence, and Superior Influence determine the Subjective norm of a user which in turn affects the Behavior Intention that leads to the actual Usage. Self-Efficacy, Facilitating Condition Resources, and Facilitating Condition Technology determines the Perceived Behavioral Control that leads to the Intention to Use which in turn leads to the actual Usage.

Figure 2.3 presents the thematic representation of the theory variables.

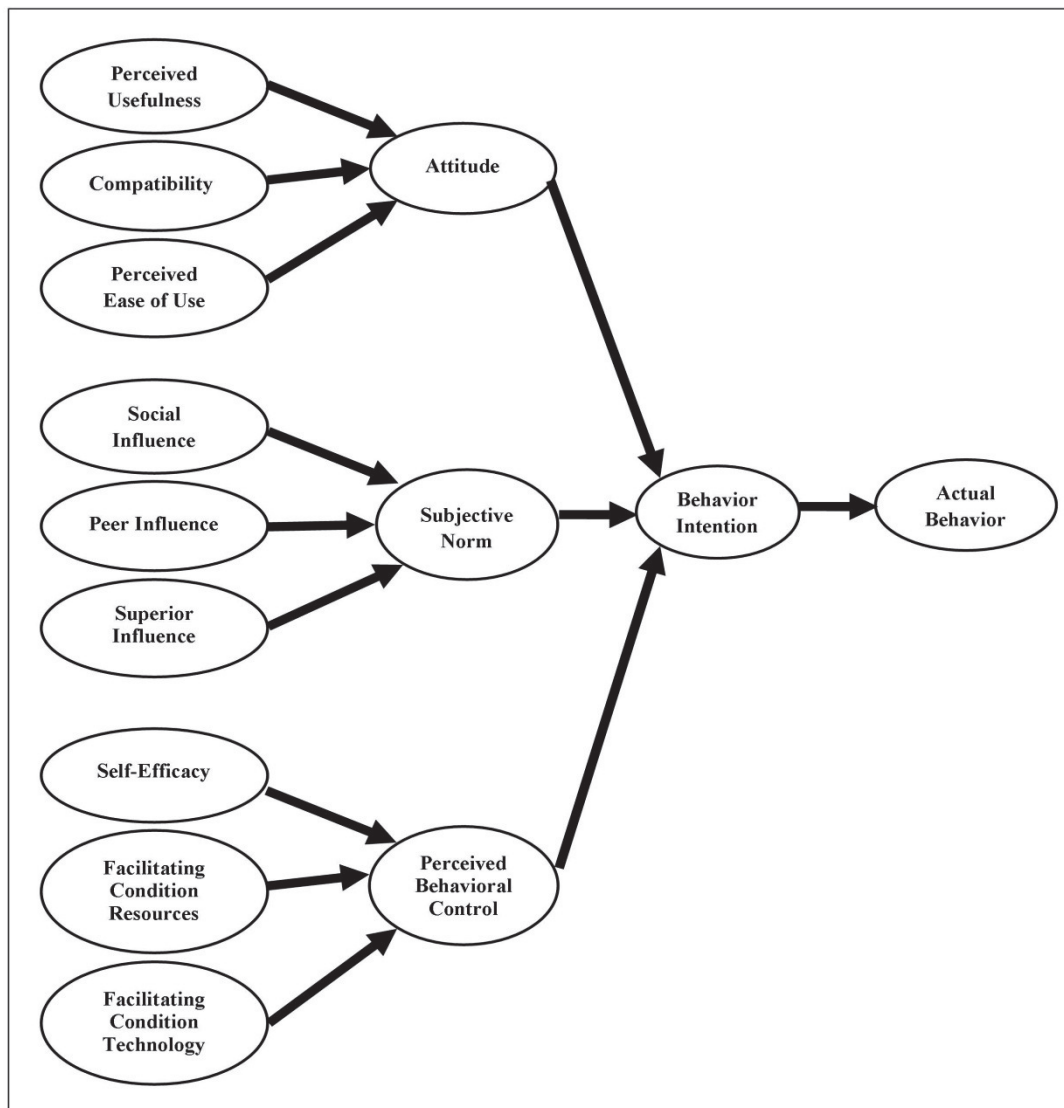


Figure 2.3: Decomposed Theory of Planned Behavior

Hsu, Hsiang, and Chiu (2004) using the Decomposed Theory of Planned Behavior examined the post-adoption cognitive beliefs and factors which influence the intention to continue the usage of e-services. The authors argue that the framework is well designed to predict the initial adoption behaviour of people but when it comes about the continuation of the usage the theory is not much successful to predict the adoption behaviour. Majali (2010) used the Decomposed Theory of Planned Behaviour to observe the acceptance behaviour of internet banking users. He suggested that banks should offer those technologies which are simple and easy to use, leading the costumers to feel more confident and satisfied. The author also observed that family influence is a huge factor for people to adopt internet banking. He concluded that the Theory of Decomposed Behaviour is helpful to some extent to observe the adoption behaviour of consumers.

Ajjan and Hartshorne (2009) used the Decomposed Theory of Planned Behavior on 136 participants to observe the adoption behavior of students in adopting web 2.0 tools for learning. They concluded that attitude and perceived behavioral control are the two most significant determiners that affect the person's usage behavior. Taylor and Todd (1995) compared the three well known adoption theories, namely Technology Acceptance Model, Theory of Planned Behavior, and Decomposed Theory of Planned Behavior. The authors observed the usage difference of information technology by taking business students as user population using these three mentioned theories. The authors found that all the three models help to understand the acceptance behavior aspects of users. All the three theories show a positive and significant relationship between intention to use and the actual usage.

2.4.4) Diffusion of Innovations Theory

One of the most important theories to study acceptance is Diffusion of Innovations theory by Rogers (2003). The process of diffusion has been defined as “the process in which an innovation is communicated through certain channels over time among the members of a

social system” (Rogers, 2003, p.5). According to the author there are four main elements in the theory namely- uncertainty, communication channels, time, and social system. Thereafter he explains the process of adoption of any innovation as a five step process. These steps include the knowledge of the innovation i.e. awareness about the existence of any innovation. The knowledge stage further consists of three items and these are- awareness knowledge, how to knowledge and the principle knowledge. This stage follows the *persuasion* stage. The third stage is the decision stage, which is very crucial in terms of whether an individual actually accepts or rejects an innovation. The fourth stage is implementation stage where an individual puts the innovation into practice. The final stage is the conformation stage.

Goktalay and Ocak (2006) explored the adoption behaviour of faculty members towards online teaching using the Diffusion of Innovation Theory. The focus of their work was on the available online technology which is useful for the teachers of higher education. By explaining the various steps of Diffusion of Innovation theory, the authors have suggested that the people involved in education should visualize, plan and implement innovation into teaching and learning.

2.4.5) Technology Acceptance Model

Fred Davis (1985) proposed the Technology Acceptance Model (TAM). Initially, the author proposed that an individual is directly influenced by the features and capabilities of any system and then it leads to internal motivation and the user shows the actual usage behavior of the system. Figure 2.4 provides the framework.

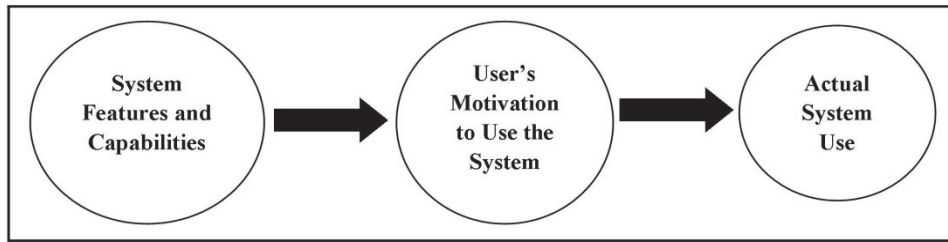


Figure 2.4: Technology Acceptance Model

TAM was redefined by the author using some already existing theories. The variables Perceived ease of use and Perceived usefulness decide the attitude of the person which further affects the behavioral intention and eventually it leads to the actual usage of the system. It can be understood as presented in figure 2.5.

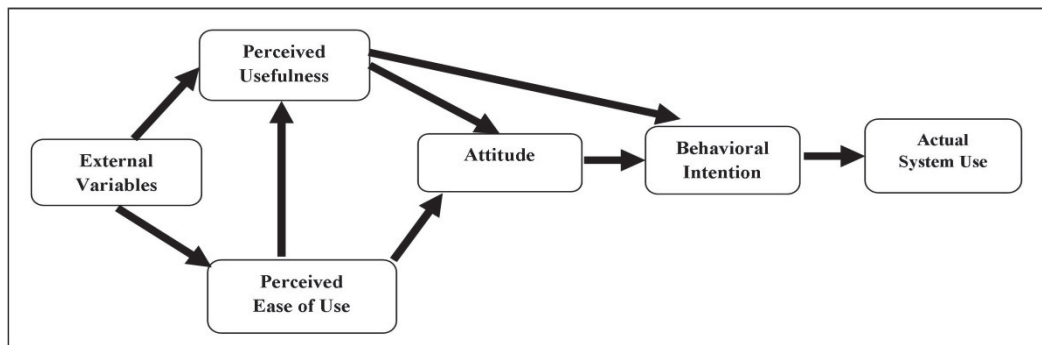


Figure 2.5: Technology Acceptance Model (Refined)

However, after analyzing and conducting tests. The author eliminated the variable *Attitude* from the model, and finally the model evolved as a framework with 5 constructs. External variables like system characteristics, user training, nature of implementation process etc. affect the two variables- Perceived Usefulness and Perceived Ease of Use. Perceived Ease of Use also affects Perceived Usefulness. These variables lead to the intention to use a system which leads to the actual usage of the system. Numerous research studies in academia and beyond used TAM as their theoretical foundation to study the adoption behavior of individuals. Meta-analysis of the Technology Acceptance Model has also been done by a plenty of scholars, academicians, and people from other fields, to see the credibility of the model. The result of these studies suggests a mixed response. Legris, Paul, Ingham, and Collette (2003) explored the studies which used TAM as their theoretical foundation and

then explains the original model and its extended versions. After doing a thorough study and analyzing the model and its versions, the authors concluded that although TAM is a significant model to understand the acceptance behavior of people but still some modifications are required to make it more reliable and valid. King, William, and Jun He (2006) analyzed 88 previous studies which have used TAM as their theoretical foundation. The results proved it as a robust model but it can be made more effective by making changes in moderating factors for different sets of population. Davis and Venkatesh (1996) conducted 3 experiments to observe the change which can occur if the items of the constructs are intermixed. The authors say that various researchers argue that the items for each construct should be intermixed. The intermixing of items of the constructs showed poor results resulted into poor results. The authors concluded that the grouping of the items is the best method to use the model.

Fenech and Tino (1998) applied the Technology Acceptance theory on 150 undergraduate business students. The authors have used the model to find out whether all of its constructs are capable enough to predict their usage intentions and usage behavior interesting. They found that the two constructs namely Perceived Usefulness and Perceived Ease of Use were not adequate to measure the behavior of the sample population. The constructs namely- Computer, Self-Efficacy proved its significance, which was not a construct of TAM.

Venkatesh and Davis (2000) conducted longitudinal studies on four different systems in four organizations. An extension of the Technology Acceptance Model was used to observe the influence of various variables of the model. Among the four settings, two were mandatory usage and two were of voluntary usage. The study confirmed the applicability of the extended version of the model. The results proved that the extended version i.e. TAM2 is found strongly significant to measure the behavior of people for adopting technologies.

Similarly, Roca, Carlos, Chiu and Martínez (2006) used the Technology Acceptance Model and some other human psychology theories to explore the acceptance behavior of people. The authors used the variables of the Technology Acceptance Model and the Expectancy Disconfirmation Theory towards the adoption of e-learning services. The Technology Acceptance Model was used in a decomposed form. The findings of the study were very much similar to the previous studies using the model. All the variables of the extended version of TAM and the Expectancy Disconfirmation Theory proved to be in a positive significant relationship. Roca, Carlos, and Gagne (2008) theory as the theoretical foundation, used TAM to observe the acceptance behavior of the population selected from four organizations of the United Nations. The authors found the role of the motivators explained in the self-determining theory, while adopting e-learning services. The results revealed that the motivators explained in the Self Determination (SD) theory, effects the variables of the Technology Acceptance Model. The intrinsic motivators are supposed to be enhanced in order to increase the rate of adoption towards a new technology.

Users tend to adopt and continue with the technology which satisfies their intrinsic motivations like satisfaction. People tend to espouse and continue with the technology which gives satisfactory results not for attaining success only but internal satisfaction also. Kumar and Bhattacharjee (2008) tried to explore what leads to adoption of a technology and to find out the reasons of continuance of the technology. In their study they used the Technology Acceptance Model and the expectation–disconfirmation theory (EDT). It proves that an integrated model is always useful to explain the adoption and continuance behavior. The results confirmed that TAM is a robust model to measure the adoption behavior of people.

Many studies have tried to find out the significance of the constructs in isolation. Instead of using the model as a whole a subset of variables used to test their significance to determine the technology acceptance behaviour. Davis (1989) took only two variables of TAM namely,

Perceived Ease of Use, and Perceived Usefulness and tested the reliability, convergent, discriminant, and factorial validity of these two fundamental constructs of the model. The author has taken 152 users and 4 programs for the study. The results revealed that usefulness is more strongly related with the usage behavior than ease of use. Dennis, Nelson, and Todd (1992) conducted and compared two consecutive studies to check the discriminant and convergent validity of the two constructs namely, Perceived Ease of Use and Usefulness. The authors found that the construct Perceived Ease of Usefulness is of considerable importance in the chosen 118 employees of 10 organizations. Kim, Jin, Chun, and Song (2009) investigated the role of the strength of attitude in acceptance. The authors had a strong assumption that the strength of attitude towards an innovation decides the adoption process, and it is a very strong determinant to affect a person's intention to use an innovation. The authors have argued that in the original TAM, Perceived Ease of Use and Perceived Usefulness are the two strongest determiners to predict a person's intention to use a technology. They strongly believe that it is the strength of the Attitude which determines the Usage or rejection of an innovation.

Yang, dong, and Yoo (2004) stressed upon the more detailed study of the Attitude construct of the Technology Acceptance Model. The authors mention that attitude has an important role to play in determining the relation between the attitude and the actual usage of information system. They suggested that the construct should be decomposed further and divided into sub-sections to get a more in-depth overview of the model and the relationship between its constructs.

During the evolution of technology acceptance research, frameworks and theories have been modified by adding or deleting some constructs to check whether it gives similar or different results in different situations. Gefen and Straub (1997) extended the model TAM and added gender as a moderating variable. The authors have argued in their study that the gender and

different demographic aspects like culture and environment affect the decision of a person to adopt a technology. Absence of gender as a moderator is a limitation of the original TAM. So, the authors have added this moderator to see the influence and used e-mails for their study. The authors argued that lack of such research is not only in TAM but also in other technology adoption theories. The authors have also used Information Technology Diffusion process model. The authors have supported their argument that men and women have a different perception in using the information technology by taking previous studies into consideration which have discussed gender differences in same environment, which simply proves that people living in one environment, one culture may differ in their attitude due to their genders. The study was carried out in North America, Asia, and Europe. The entire hypothesis formulated by the authors proved their significance and there was a difference between the usage of e-mails by women and men. Consequently, the study became very significant because it has suggested adding new dimensions to the existing model.

Cheng, Yan, and Tseng (2012) extended TAM by adding one more variable i.e. Perceived Convenience. The new variable proved its significance in the population taken i.e. 158 students from a college in Taiwan. The study revealed that perceived convenience affects a person's attitude to use a technology, thus it is an important factor. Mun, Yi, and Hwang (2003) extended TAM by adding 3 new variables namely, Self-Efficacy, Enjoyment, and Learning Goal Orientation. The authors attempted to measure the usage of Blackboard system, a Web-based class management system over a period of 8 weeks. The study proved its extended model as significant. All the new variables added were proved as strong determiners in forming attitude which leads to the actual usage of an innovation. These studies where extended version are proving themselves significant, poses a question on the existing models in terms of their sufficiency to measure what it is intended to measure.

Venkatesh and Bala (2008) investigated the role and influence of interventions while making decisions to adopt a new information technology. The authors have added a number of variables and extended to TAM3. The results revealed that the moderators of the model used have very strong and significant influence on the constructs which eventually affect the decisions of the employees to espouse information technology. Daniel and Hamilton (2006) have used an extended version of the model saying that the model is a result of the variables of the previous theories modified. The model has come into shape by taking Social Cognitive Theory, Theory of Reasoned Action, and Theory of Planned Behavior as the theoretical foundation. The authors have added contextualized variables namely; Prior Experience, others' use, Anxiety, System Quality, Task Structure, and organization support, and tried to find out their influence on the four variables: System Usage, Perceived Ease of Use, Perceived Usefulness and Computer-Efficacy. The results revealed that all the contextualized variables affect the main variables. It signifies that the models need to be redefined, and if some external variables are added it gives significant results. Rauniar and Rupak (2014) used the Technology Acceptance Model to observe the usage behavior of users towards the most popular social networking site Facebook. The authors have argued that today the social networking sites are becoming more and more popular. The reasons of their popularity can be traced only by observing their usage behavior. The authors have modified the model and designed it according to the usage of social networking sites. Apart from Perceived Ease and Perceived Usefulness of the social networking site the authors have added the user's Critical Mass, Social Networking Site Capability, Perceived Playfulness, and Trustworthiness of the site. The study was proved to be a very significant one and the variables added were proved to be strong determiners in forming Attitude towards using Facebook. Lederer (2000) using an e-mail survey tried to find out the factors responsible for users to use the World Wide Web for their job. The findings of the research suggested that Perceived Ease of Use and Perceived Usefulness motivate a user to use web services. The

sample population of professionals used web for accomplishing their job related tasks because they find the web easy to use and helpful in their work. Legris, Paul, Ingham, and Colletette (2003) have critically analyzed the model and the various studies which have used it. The authors found that although TAM is a useful model to observe the adoption behavior of people and its other versions are also valuable. However, there is still some scope to include more variables to make it more effective. Li, Yuanquan, Qi, and Shu (2008) critically reviewed 34 articles to analyze the stabilities and significance of the variables of the Technology Acceptance Model. The authors concluded that attitude and subjective norm need to be decomposed and should be studied in detail to get a more comprehensive view. A more refined state of the model is needed.

The theories explained above in the chapter have been used in different domains including the education domain. The variables were used to study and explore their significances. One observation which is common in all the above mentioned studies is- none of the theory was used in isolation. In all the contexts, variables from different theories are used for the study. The research literature also advised that exploration is needed for further research. All these findings imply that none of the theory is suffice to use in isolation. The amalgamation of all these theories was done by Venkatesh et al. in 2003. The theory is explained in the next section, which has been used as the theoretical foundation of the study.

2.4.6) Unified Theory of Acceptance and Use of Technology

The Unified Theory of Acceptance and Use of Technology (UTAUT) is an amalgamation of eight previous theoretical models. Venkatesh and Davis (2003) took 32 constructs from the previous theories to identify the most important factors influencing the intention to use an innovation which finally leads to the actual usage. Apart from these 32 constructs, four moderating variables namely – experience, voluntariness, gender, and age were also included in the theory.

8 already existing acceptance models were considered for review. These are Theory of Reasoned Action, Technology Acceptance Model, Motivational Model, Theory of Planned Behavior, combined TAM and TPB, Model of PC utilization, Innovation Diffusion Theory, and Social Cognitive Theory. Constructs and moderators taken from these models were tested in different settings with different participants. By observing the results, seven constructs were selected as direct and significant determinants which affect the intention of a user to use a particular technology. Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions were considered as the direct determinants which lead to the intention to use a technology. Self-Efficacy and Anxiety were considered as indirect determinants. Apart from these determinants four moderators are there namely, gender, age, experience, and Voluntariness of Use. All these constructs were finalized by taking different constructs from all 8 frameworks. After finalizing this new model, empirical validation was carried out. Cross validation was also done to test the validity of the model. All the tests provided a positive and strong empirical support to the new theory. Various studies have been conducted using (UTAUT) in various domains to observe the acceptance behavior of individuals towards adopting a technology. The direct determiners, indirect determiners, moderators and their relationship with each other, has been presented in figure 2.6.

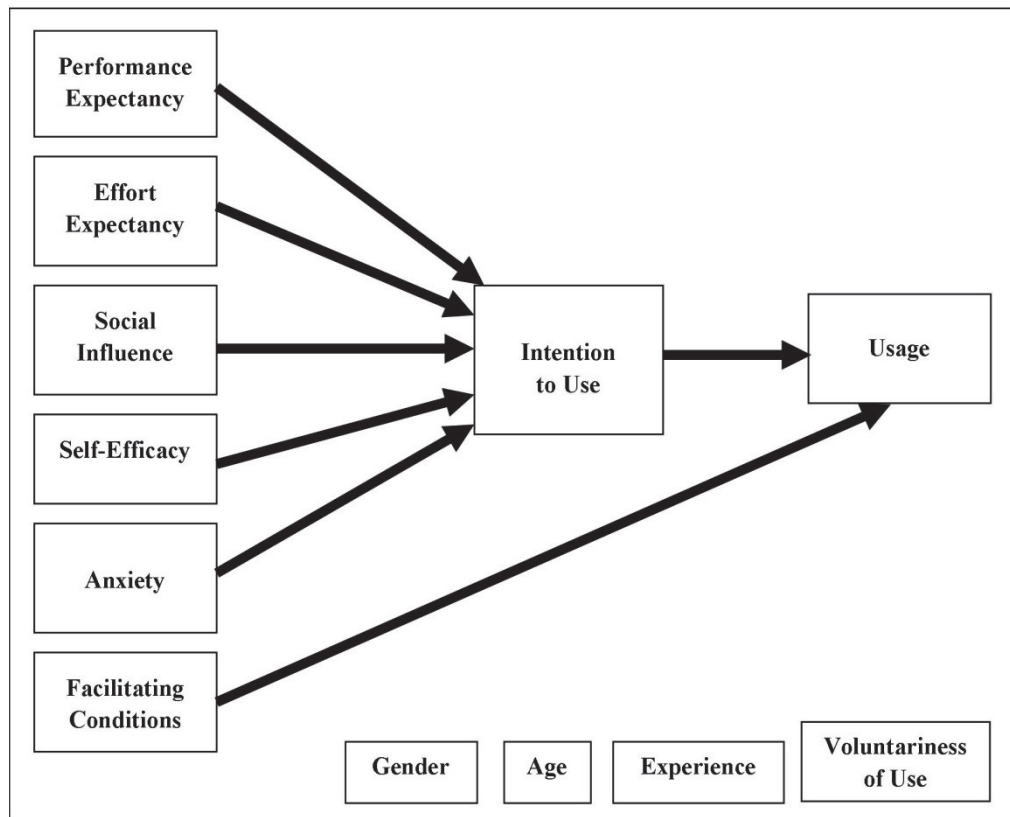


Figure 2.6: Relationship between variables and moderators

Loh, Ling (2011) compared the two most widely recognized models namely, Technology Acceptance Model and UTAUT to find out which one is better to gauge the acceptance behavior of educators in Malaysia. They compared the models by doing extensive literature review and concluded UTAUT as a more effective framework in educational settings and added one variable named- Perceived Needs which refers to the professional needs of the educators in Malaysia. Various people have used the complete UTAUT as their theoretical foundation and it has proved its significance to predict user behavior. The model is not only used with all of its existing constructs but also used with various modifications and by adding new constructs to it. Chen, Ying, and Chang (2013) tried to explore the factors which affect consumer acceptance of Near Field Communication (NFC) mobile phones by using a modified version of UTAUT. The results revealed the positive association between Performance Expectancy and Effort Expectancy. The study established a positive relationship between Performance Expectancy and intention towards using a technology.

There is also a positive relationship between Social Influence and Intention towards Use. Anxiety turned out to be in a negative relationship construct with the intention to use. Bertil, Villate, and Carvalho (2011) made an attempt to prove the significance of the UTAUT model in higher education. The objective was to find out the reasons behind the low level acceptance of technologies which are useful for teachers. They wanted to know about those factors which are responsible for the adoption of an innovation, so that they can make use of those factors and increase the adoption level of their faculty. Facilitating Conditions emerged as the prominent factor responsible for technology adoption in this study. The results revealed that infrastructure facilitating the technology intervention influences the acceptance behavior. Similarly, Gayar and Moran (2006) used the modified version of UTAUT. The survey instrument was based on the constructs of UTAUT and some additional constructs. Results revealed that *Attitude* is the strongest determiner to adopt an innovation. Moran, Hawkes and Gayar (2011) used UTAUT and results suggested that providing an opportunity and adequate training to use technologies are the most important factor to accept a technology. The result of these studies reflects that technology infrastructure plays an important role in technology acceptance.

Tan (2013) has observed that all the constructs of UTAUT has a strong positive relationship with the adoption of an innovation. Pardamean and Susanto (2012) investigated the user acceptance behavior of students adopting Blog using the UTAUT framework. Results have indicated that performance expectancy and social influence have a positive relation with intention to accept a technology. Balavivekanandhan and Arulchelvan (2015) used the UTAUT framework to observe the acceptance behavior of students in adopting mobile learning. Results suggested that all the constructs of UTAUT have a strong positive relationship with intention and intention has a positive relation with actual usage. However, Facilitating Conditions proved to have an insignificant relationship with Intention and actual

Usage. Sundaravej (2010) made an attempt to observe the acceptance behavior of 262 students adopting a web-based software system of a business administration undergraduate level course using UTAUT as the theoretical framework. The results suggested that Social Influence affects in mandatory settings only. Apart from Social Influence all other constructs proved to be in a positive relationship with intention to use a technology which leads to the actual usage. It implies that students get influenced to use a technology when it is obligatory to use.

Not only the determiners of UTAUT are important, but the moderators used in the framework have also proved their significance in various contexts. David, Hood, Yoo (2013) carried out a study to observe the role of gender in technology acceptance. Results reflected that perception differs when there is a gender difference for the learning tasks. The female users felt higher level of Anxiety as compared to male users. Adding to this, results also suggested that Intrinsic Motivation plays more important role than Extrinsic factors. Various studies using UTAUT as their theoretical foundation have proved the significance of one or the other determinant to be significant according to the content and technology. Williams and Michael (2011) argue that UTAUT is cited by many people in their studies but it is actually used by a very small number of people in quantitative as well as qualitative studies. The authors carried out a systematic review of 450 citations to validate their argument and proved it correct. Their analyses reflected that UTAUT is sometimes partially used for the sake of citation. Sometimes people use the constructs but leave the moderators. In many cases only a subset of constructs is used. The authors suggested that instead of using partial model, the complete framework should be used to get complete, valid, and reliable results. Therefore all the 6 determiners are used in the present study to find out the most influential factors which motivate the students accept Internet Based Platforms. All the direct and indirect variables as well as the moderators have been taken into consideration.

2.5) Research Gap

Based on the research review in the previous sections of this chapter following research gap has been identified for the study:

- The literature review reflected that while there are numerous studies on technology usage in academia in general and communication skills discipline in particular, there is a dearth of research studies on technology acceptance behavior, particularly in Indian context.
- Various scholars have attempted to use theoretical frameworks and to find out the factors responsible for the technology acceptance in other contexts such as manufacturing, services, and hospitality. Culture, socio-economic factors, gender, age, experience of using a certain technology, and several other demographic variables play a vital role and different results have been obtained in various settings. There is a dearth of such studies which observe the acceptance behavior and the effect of the moderating variables in educational contexts.
- Public and Private university systems offer two different academic environments in India. These differences manifest themselves in academic flexibility, infrastructure, support services etc. An attempt has been made in the present study to find out whether this difference influences the acceptance behavior of students or not. No comprehensive study could be located which elaborates on the difference between usage and acceptance of the academia communities.