USER ACCEPTANCE AND USAGE OF SOCIAL NETWORKING SITES: VALIDATION OF AN EXTENSION TO UTAUT2 MODEL

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By

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Under the Guidance of

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Ph. D Thesis under the Faculty of Social Sciences

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Certificate

This is to certify that the thesis entitled "**User Acceptance and Usage of Social Networking Sites: Validation of an Extension to UTAUT2 Model**" is a record of bona-fide research work done by Ms. Praveena K., part–time research scholar under my supervision and guidance.

The thesis is the outcome of her original work and has not formed the basis for the award of any degree, diploma, associateship, fellowship or any other similar title and is worth submitting for the award of degree of Doctor of Philosophy under the Faculty of Social Sciences of Cochin University of Science and Technology. All the relevant corrections and modifications suggested by the audience during the pre-synopsis seminar and recommended by the Doctoral committee have been incorporated in the thesis

Dr. Sam Thomas
Research Guide

Declaration

I hereby declare that this thesis entitled " **User Acceptance and Usage of Social Networking Sites: Validation of an extension to UTAUT2 Model** " is a record of the bona-fide research work done by me and that it has not previously formed the basis for the award of any degree, diploma, associateship, fellowship or any other title of recognition.

Kochi
07/09/2016

Praveena K.

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Praveena K,

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List of Abbreviations

AGFI	Adjusted Goodness of Fit
AIC	Akaike's Information Criterion
AVE	Average Variance Extracted
BCC	Brown-Cudeck Criterion
BI	Behavioural Intention
BIC	Bayes Information Criterion
CAIC	Consistent Akaike's Information Criterion
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
C.R	Critical Ratio
DF	Degrees of Freedom
EE	Effort Expectancy
FC	Facilitating Conditions
GFI	Goodness of Fit
HA	Habit
HM	Hedonic Motivation
IFI	Incremental Fit Index
IT	Information Technology
IS	Information Systems
NFI	Normed Fit Index
PE	Performance Expectancy
R^2	Squared Multiple Correlation
RFI	Relative Fit Index
RMR	Root Mean Square Residual
RMSEA	Root Mean Square Error of Approximation
SEM	Structural Equation Modelling
SC	Social Connectedness
SI	Social Influence
SNS	Social Networking Sites

SRMR	Standardized Root Mean Square Residual
TAM	Technology Acceptance Model
TLI	Tucker-Lewis Index
TR	Trust
UTAUT	Unified Theory of Acceptance and Use of Technology
VI	Visibility

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Chapter 1

INTRODUCTION

Contents

The world has witnessed rapid technological advancements over the past few decades. Information Technology (IT) is ubiquitous and has changed the lives of people drastically. It can be seen that an IT revolution has occurred in the past few years and the world has become digital, thus making it a very small place. The information is processed and communicated digitally and the series of developments in these areas have reshaped the economies and societies of most of the countries. The using and sharing of information by people have been affected by the advancements in the internet based technologies. IT has been serving as a catalyst for global integration by creating efficient and effective channels for the exchange of information. The term Information and Communication Technology (ICT) has been coined accordingly and is used synonymously as IT, though it covers a broader scope.

The growth of World Wide Web (www) has been phenomenal since its inception and this has paved way to the use of online technologies. The internet has changed the world and lives of people, both their professional and personal life too. Statistics reveal that around 40% of the world population has an internet access (http://www.internetlivestats.com/internet-users).

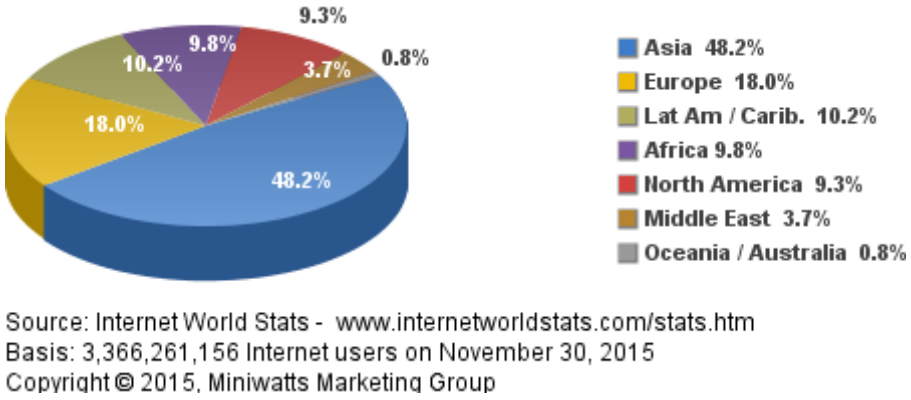


Figure 1.1: Internet users in the world by regions November 2015

It can be seen from Figure 1.1 that Asia has the highest number of internet users. India accounts for 23.1% of internet users in the whole of Asia. The advent of handheld devices has been a boost to the use of different technologies and applications. The desktops and laptops are replaced by mobile devices and thus the flow of information has become smooth. This in turn has boosted the use of online technologies. Many online technologies have become an integral part of the daily life and majority of these online technologies are available on these handheld mobile devices.

1.1 User acceptance in Information Systems Research

Information Technology (IT)/Systems (IS) adoption/acceptance remains a central concern of IS research and practice. The benefits of IT investments are often obstructed by the user's unwillingness to use these available systems. There are systems which have been very successfully accepted by the users while some failed miserably. "User acceptance can be defined as the demonstrable willingness within a user group to employ information technology for the tasks it is designed to support" (Dillon, 2001). He further states that researchers were always interested in studying the factors that influence the adoption and acceptance of technologies and many psychological variables were identified to distinguish users who accept or reject technologies.

One of the major research areas in Information Systems (IS) literature is the study of user acceptance of technologies and systems. Several theories and models are formulated accordingly to explain the user acceptance and use of different technologies and information systems. The models like Technology Acceptance Model (TAM), the different extensions of TAM, Innovation Diffusion Theory (IDT), and the Unified Theory of Acceptance and Use of Technology (UTAUT) are the most commonly used and researched with different technologies. These models have identified different factors that determine the attitude towards using and the intention to use a technology/system. The new technologies always challenge the existing models in explaining their acceptance and accordingly, these models are extended to suit the context. Researchers have pointed out the necessity of adding contextual

factors to these extant models to increase the explanatory power of use behaviour and acceptance when new technologies are introduced. The revolution in the area of IT has made this stream of research still significant and the acceptance models are modified and revamped.

The model UTAUT was developed by Venkatesh et al.(2003) based on eight previous models to explain the acceptance and use of technology. This model is found to be one of the best models with good explanatory power on the intention to use and the use behaviour of a technology. Researchers have used this model to study various technologies and across different countries. Venkatesh et al. (2012) extended UTAUT to suit the consumer use context and named it UTAUT2. UTAUT and UTAUT2 have been used by researchers in studying the acceptance of different technologies. With new online technologies and the consumer driven online environment, Venkatesh et al. (2012) emphasizes the need to include contextual predictor variables to the model to better explain the usage of technologies.

1.2 Emergence of Social Networking Sites

Computer networks have facilitated computer mediated social interaction, thus paving the way for online social networks. The online social networks initially focused on online communities, bringing people together to interact, share personal information and chat rooms. The recent times have seen a rapid growth in online Social Networking Sites (SNS) and virtual communities. "A social network site is a networked communication platform in which participants 1) have uniquely

identifiable profiles that consist of user-supplied content, content provided by other users, and/or system-provided data; 2) can publicly articulate connections that can be viewed and traversed by others; and 3) can consume, produce, and/or interact with streams of user generated content provided by their connections on the site." (Ellison and Boyd, 2013).

The use of these sites has grown from personal to organisational, and even at the governance level. People discuss and share information through these sites and use them as a medium for voicing their opinion on all matters. The initial use of these Social Networking Sites was just for communication and maintaining relationships online. The first networking site was launched in 1997: "SixDegrees.com" and was used to create profiles by users and list their friends. Several sites were then introduced with varied features and applications to target different strata of people. The use of these sites are now not limited just for communication but expanded to marketing activities, decision making, campaigning, and even e-governance activities. Among the various SNS, Facebook is the largest in terms of number of users and has around 1.59 billion monthly active users by the end of 2015. Around 52% of online adults use SNS and Facebook remains the popular among other sites irrespective of the age of the users. (http://www.pewinternet.org/2015/01/09/social-media-update-2014)

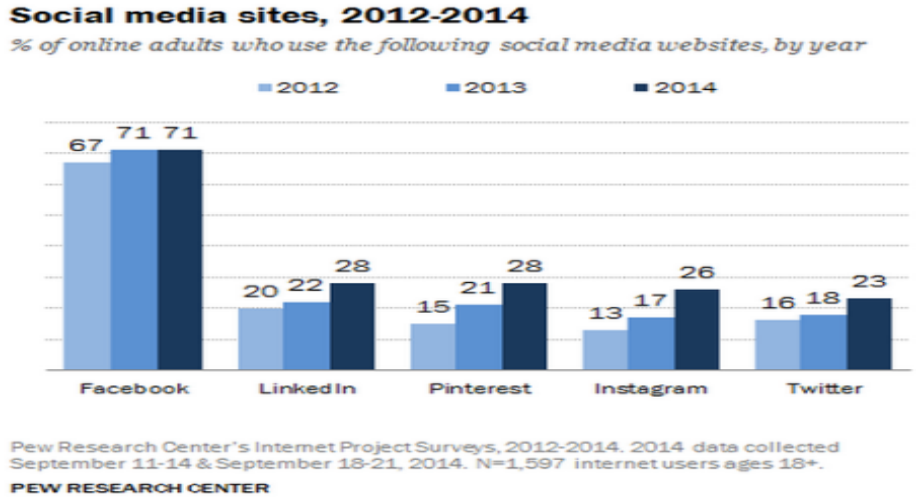


Figure 1.2: Percentage of online adults using different SNS 2012-2014

According to IAMAI-IMRB(IAMAI- Internet and Mobile Association of India, IMRB- Indian Market Research Bureau) report, one of the major reasons people use internet is to access social media and the largest segment of users are the college going students. (http://www.thehindu.com/sci-tech/technology/internet/social-media-use-doubles-in-rural-india/article7334735.ece) In India, nearly 10% of the population has an account with any social network and the most popular SNS is Facebook with a penetration rate of 13% in the year 2015. (http://www.statista.com/statistics/284436/india-social-network-penetration/). Facebook is normally termed as an entertainment SNS while there are certain sites which are used solely for professional networking. Among these type of SNS, LinkedIn has the largest user base and are used by professionals for their networking and for other organisational activities like recruitment, online discussions etc.

Though the number of user accounts of the SNS keeps on increasing, many reports suggest that the number of active users in these sites is decreasing. There are a large number of SNS, but people stick on to only certain sites. Further, some SNS like Orkut have been closed by the service providers. There are many indigenous sites popular in their own countries and not offered to others. With many options of SNS available with varied features, users choose only certain sites and continue using them. Therefore the information on the factors that influence users' continuous intention to use and how to retain users are important for SNS service providers, as well as for those people who use it as a platform for their activities.

1.3 Current Study

This study aims to investigate the factors that influence the usage of Social Networking Sites. The study has taken the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) as the base model and tried to extend the model with contextual factors to explain the usage of SNS. Though different models are framed to explain the acceptance of technologies, UTAUT2 aims at the consumer use context and on the volitional behaviour. SNS are matter of choice for users and hence, UTAUT2 with its variables which are suitable for this context is chosen as the base for the study.

Keeping in mind the diversity in the uses and features of SNS, the study has focussed on two SNS- Facebook and LinkedIn, which are the most used and largest in terms of number of users in their domains, in Indian context. From the literature it can be seen that there are many

factors that influence the usage of SNS of which three factors were found most suitable. The three factors identified are Trust, Social Connectedness and Visibility. These variables were chosen by extensive literature review and keeping in mind the context of SNS. Addition of psychological and contextual variables to the existing models of technology acceptance makes the models more robust and explanatory. These factors were used to extend UTAUT2 and a theoretical model is developed to explain the acceptance and usage of Social Networking Sites. The research contributes to the existing literature on the different models of technology acceptance and provides a comprehensive model to explain the usage of Social Networking Sites. The study helps the SNS developers and users to identify the factors that influence the different types of SNS and thus formulate effective strategies. The developers may concentrate on the privacy policies , the content on SNS as trust is a major factor and create more interaction between groups since the major use of these sites is to remain connected and more visible.

1.4 Organisation of the report

The thesis is organised in six chapters. Chapter Two provides the review of literature. Chapter Three illustrates the research methodology used in this study. Chapter Four presents the first part of the data analysis and results obtained. Chapter Five presents the second part of data analysis checking for the variation of the proposed model across the Social Networking Sites, Gender and Age. Chapter Six provides the findings and the discussions on the findings.

Chapter 2

LITERATURE REVIEW

Contents

This chapter gives a brief review of literature to outline the theoretical framework of the study. Study on user acceptance of technologies is a major area in Information Systems research. Several theories and models have been formulated by researchers in the past decades to explain and predict the behaviour of use of these systems and technologies. These models have tried to investigate the factors that contribute as well as hinder the use of different technologies and systems. Many of the models are either extended or built upon the earlier models and thus improve the explanatory power of the existing models. Social Networking Sites have become an inevitable part of the daily life of people. The use of these sites has travelled far from just being used for connections to marketing, advertising, campaigning and so on. Though there are a number of sites, users continue to use only some of these sites and certain sites die off eventually. The current study aims at providing a model to explain the acceptance and usage of Social Networking Sites.

The first section reviews the existing theoretical models. The second section briefs on the social networking sites and the third section explains the variables used in this study; thus, leading to the conceptual framework of the study.

2.1 Review of the theoretical models

The following section gives an overall review of the different theoretical models framed to predict the acceptance and usage of information technology/systems.

2.1.1 Theory of Reasoned Action (TRA)

A widely studied model of social psychology, Theory of Reasoned Action (TRA) was developed by Fishbein and Ajzen (1975). TRA suggests that a person's behaviour is determined by his/her intention to perform the behaviour. Further, intention is a function of his/her attitude toward the behaviour and his/her subjective norm (Fishbein and Ajzen, 1975). The theory is of the opinion that behavioural intention is the main predictor of behaviour. Intention is the cognitive representation of a person's readiness to perform a given behaviour. The two main determinants of intention as per TRA are Subjective norm and attitude towards behaviour. Subjective norm is defined as "the person's perception that most people who are important to him think he should/should not perform the behaviour in question". Attitude is defined as "an individual's positive or negative feelings about performing the target behaviour" (Fishbein and Ajzen, 1975). TRA is depicted in figure 2.1.

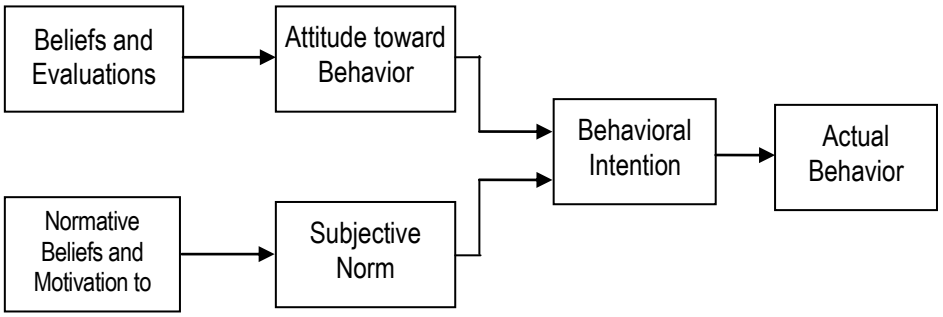


Figure 2.1: Theory of Reasoned Action (Fishbein and Ajzen, 1975)

TRA is a well researched model and has been applied extensively across various domains. TRA serves as a backbone for most of the studies on attitude-behaviour relationships (Davis, Bagozzi, & Warshaw, 1989). TRA is used to study behaviours across different areas including advertising, marketing and technology. TRA focuses on volitional behaviour and this has been pointed out as a limitation of the theory. TRA applies to behaviour that is consciously thought out beforehand.

2.1.2 Theory of Planned Behaviour (TPB)

TRA showed high predictability of behaviour intention, but due to intervening environmental conditions, people may not actually perform behaviour under voluntary conditions. Ajzen (1985) extended TRA by adding a new construct called, "Perceived Behavioural Control (PBC)" to overcome the limitation of TRA of focusing on volitional behaviour. The expansion was named as Theory of Planned Behaviour (TPB). TPB was developed to predict behaviours in which individuals have incomplete volitional control.

TPB states that attitude towards behaviour, subjective norms and PBC determines an individual's behavioural intentions and behaviours. PBC is defined as an individual's perceived ease or difficulty of performing the particular behaviour (Ajzen, 1991). PBC is the result of two factors combined – control beliefs and perceived power. Control beliefs are "beliefs about the likelihood of having the opportunities and resources necessary to perform the behaviour and the frequency that a control factor will occur." Perceived power is the "perceived ability of the control belief to facilitate or inhibit the performance of the behaviour. (Ajzen, 1991). Figure 2.2 shows TPB.

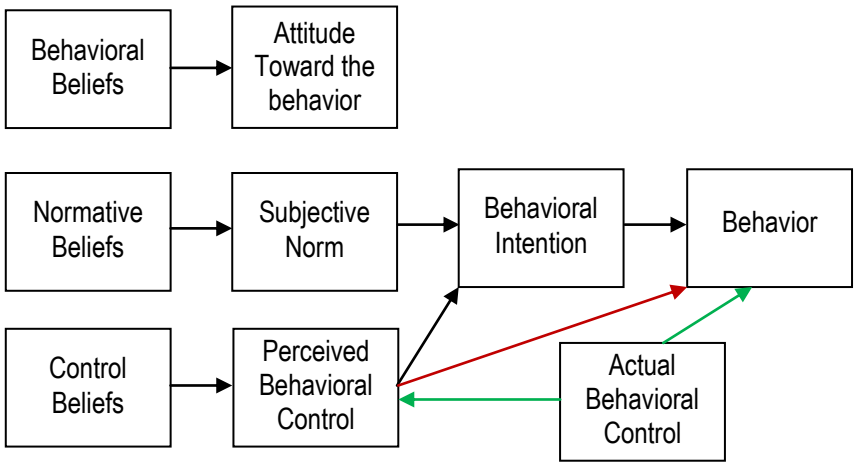


Figure 2.2: Theory of Planned Behaviour (Ajzen, 1991)

In the context of information systems, PBC is defined as "perceptions of internal and external constraints on behaviour" (Taylor and Todd, 1995). PBC can have an effect on behaviour either directly or through behavioural intention. Actual behavioural control refers to the

extent to which a person has the skills, resources, and other prerequisites needed to perform a given behaviour.PBC is usually used as a proxy for actual behavioural control since it is much more difficult to measure the latter.

TPB has been successfully applied to various situations to predict performance of behaviour and intentions like health care, marketing, public relations and use of various technologies (Truong, 2009; Godin and Kok,1996; Mathieson, 1991). TPB has also been used to study technology acceptance in different situations like internet banking, e-commerce etc.

TPB is also not free from criticisms on its limitations. The theory is said to assume that people are rational and make systematic decisions based on available information. Taylor and Todd (1995) criticized TPB on the basis that the model requires individuals to be motivated to perform certain behaviour. According to Frymier and Nadler (2013), TPB doesn't explain habitual behaviours with significant real obstacles (eg. cooperation from others). Both TRA and TPB has over emphasis on a specific behaviour and also do not include previous behaviour in the model.

2.1.3 Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) proposed by Davis (1989) is based on the theoretical framework of Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975). TAM explains the causal relationship between user's beliefs, attitude, intentions and computer usage behaviour (Davis, 1989).

The main focus of TAM is on two theoretical constructs – Perceived Usefulness and Perceived Ease of Use to predict the intention to use information systems (Davis, 1989). Perceived usefulness (PU) refers to the degree to which a person believes that using a particular system would enhance his/her job performance; and Perceived ease of use (PEOU) refers to the degree to which a person believes that using a particular system would be free from effort (Davis, 1989). According to TAM, these two behavioural beliefs lead to behavioural intention and actual behaviour, of which perceived usefulness is the strongest predictor of an individual's intention to use an information technology. TAM doesn't include subjective norms of TRA in the model to explain behavioural intention. Attitudes are formed from the beliefs a person holds about the use of the technology/system. The intention is determined by the person's attitude towards the use of technology and the perception of its usefulness. Attitude mediates the effect of perceived usefulness and perceived ease of use on the intention to use a particular technology. TAM posits that PU is influenced by PEOU. TAM also suggests the inclusion of external variables having an effect on intentions, but mediated by PU and PEOU. TAM has been widely used in researches on information technology and information systems and is known as a robust, parsimonious and powerful model to predict user acceptance of technology TAM is one of the most widely tested models of technology acceptance. TAM is depicted in Figure 2.3.

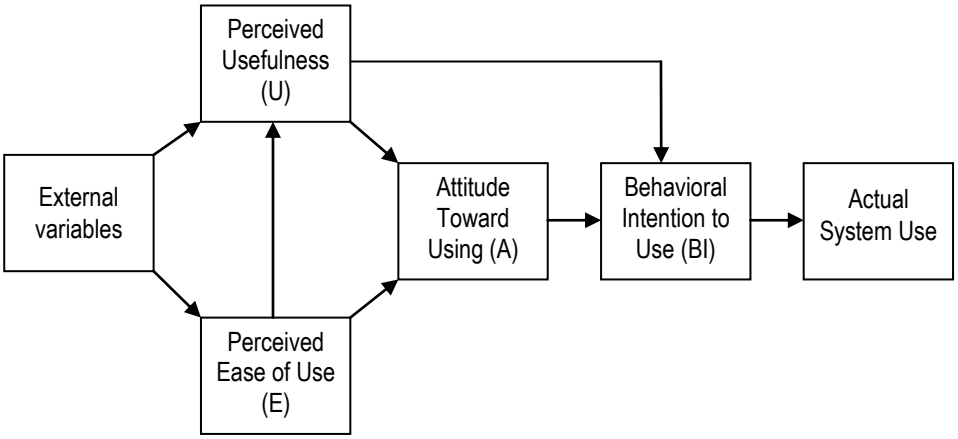


Figure 2.3: Technology Acceptance Model (Davis et al., 1989)

TAM was originally developed to test the acceptance of word processor technology (Davis, 1989). TAM has been extended to study the acceptance of email, World Wide Web (Lederer, et al., 2000), voicemail, graphics (Adams, Nelson and Todd, 1992), and other IT applications. Yousafzai, Foxall and Pallister (2007) in their meta analysis of TAM states that the widespread popularity of TAM is due to the following three factors.

1) "it is parsimonious, IT-specific, and is designed to provide an adequate explanation and prediction of a diverse user population's acceptance of a wide range of systems and technologies within varying organizational and cultural contexts and expertise levels;

2) it has a strong theoretical base and a well researched and validated inventory of psychometric measurement scales, making its use operationally appealing; and

3) it has accumulated strong empirical support for its overall explanatory power and has emerged as a pre-eminent model of users acceptance of technology ."

According to Han (2003), over the past years, TAM has progressed through three phases: adoption, validation and extension. TAM has been tested across different applications for its adoption like office applications, communication technologies, and many other information systems. TAM has been tested across different countries and validated. Akour & Dwairi (2011) have tested the use of TAM in Jordan and states that "computer technology acceptance is not culture bound". Studies were done to validate the causal links among TAM components. Researchers have extended TAM using different external variables like training, self efficacy, system design characteristics, system quality and compatibility, trust, enjoyment, experience etc. (Suki and Suki, 2011;Reid and Levy, 2008; Gefen, Karahanna &Straub, 2003; Lee et al.,2003).

Though a widely used model, TAM is not free from criticisms. Benbasat and Barki (2007) states that TAM has paid scant attention to antecedents of belief constructs and the whole attention is only on the two constructs- usefulness and ease of use. According to Bagozzi (2007), only few attempts are made to introduce moderators to TAM.

2.1.4 Technology Acceptance Model 2 (TAM 2)

The extended model (TAM 2) was proposed by Venkatesh and Davis (2000) to enhance the adaptability of the original model. The model incorporated the external variables of both social influence processes and cognitive instrumental processes. In TAM 2, the four cognitive instrumental determinants of perceived usefulness are job relevance, output quality, result demonstrability and perceived ease of use. TAM 2 theorizes that "people use a mental representation for assessing the match between important work goals and the consequences of performing the act of using a system as a basis for forming judgements about the use performance contingency (perceived usefulness)."(Venkatesh and Davis, 2000). Job relevance is defined as "an individual's perception regarding the degree to which the target system is applicable to his/her job." Output quality refers to "an individual's perception about how well the system performs the tasks." Result demonstrability is defined as "the tangibility of the results of using the innovation" (Moore and Benbasat, 1991). This model was tested to study the acceptance of both mandatory and voluntary systems. Subjective norm was found to influence Perceived Usefulness and had a direct effect on intentions for mandatory systems and not for voluntary systems. In the context of voluntary systems, social influence indirectly influences intention.

TAM2 is depicted in Figure 2.4 below.

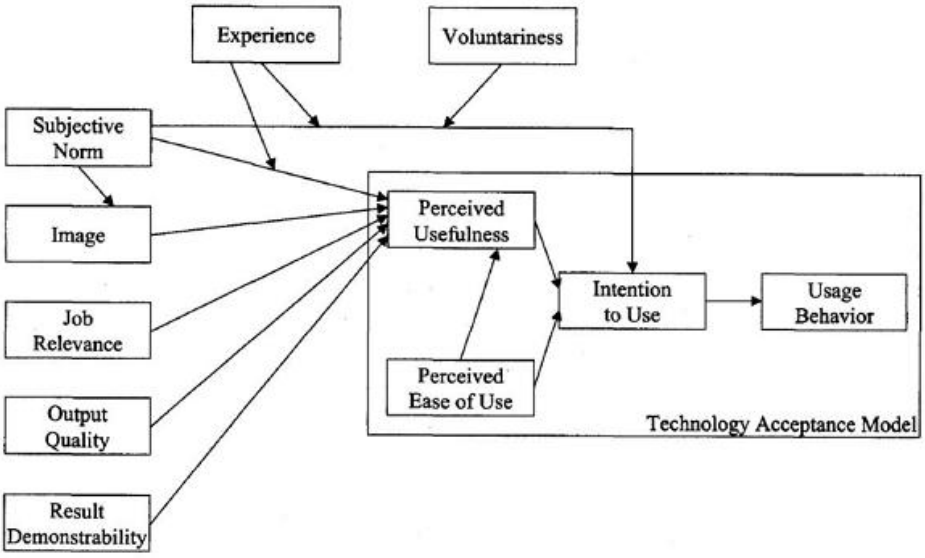


Figure 2.4: Technology Acceptance Model2 (Venkatesh and Davis, 2000)

2.1.5 Combined TAM and TPB

Combining the predictors of Theory of Planned Behaviour (TPB) with the constructs of Technology Acceptance Model (TAM) (Perceived Usefulness and Perceived Ease of Use), Taylor and Todd (1995) developed a hybrid model to predict the acceptance of information technology/systems. The model is also known as the Decomposed Theory of Planned Behaviour. Attitude is decomposed to include perceived usefulness, perceived ease of use and compatibility. Peer influence and superior influence is included in the normative belief structure, while self-efficacy, resource facilitating conditions and technology facilitating conditions were included in the control belief structure. The control belief structure here is the perceived behavioural

control. The figure 2.5 depicts Combined TAM and TPB. The model has been used by researchers to predict the acceptance of different technologies like internet banking adoption (Safeena et al., 2013), online tax filing (Lu, Huang and Lo, 2010).

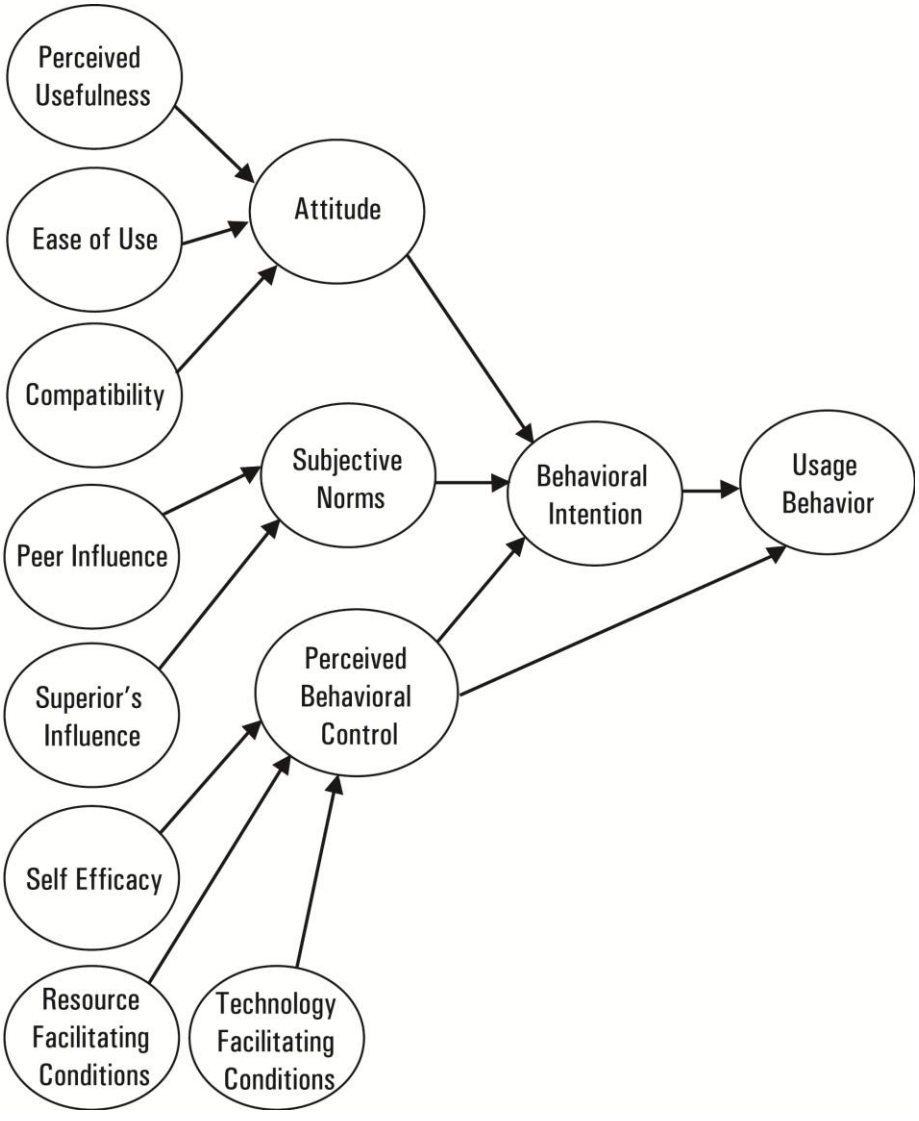


Figure 2.5: Combined TAM and TPB (Taylor and Todd, 1995)

2.1.6 Technology Acceptance Model 3 (TAM3)

TAM 3 was proposed by Venkatesh and Bala (2008) by combining TAM 2 and the various determinants for Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). The determinants of PU include PEOU, subjective norm, image, job relevance, output quality and result demonstrability. The effect of PEOU on PU is moderated by experience. The determinants of PEOU are developed on the factors of individual differences, facilitating conditions and system characteristics. Computer self-efficacy, computer anxiety and computer playfulness represent the individual differences, perception of external control represent the facilitating conditions; and perceived enjoyment and objective usability represent the system characteristics related adjustments. TAM 3 is depicted in figure 2.6. PU is the strongest predictor of behavioural intention in TAM 3 too, which is in consistent with the original TAM model. The effect of subjective norm on behavioural intention was found to be stronger in the mandatory context. Daniel (2011) has investigated the adoption of diversity using TAM 3

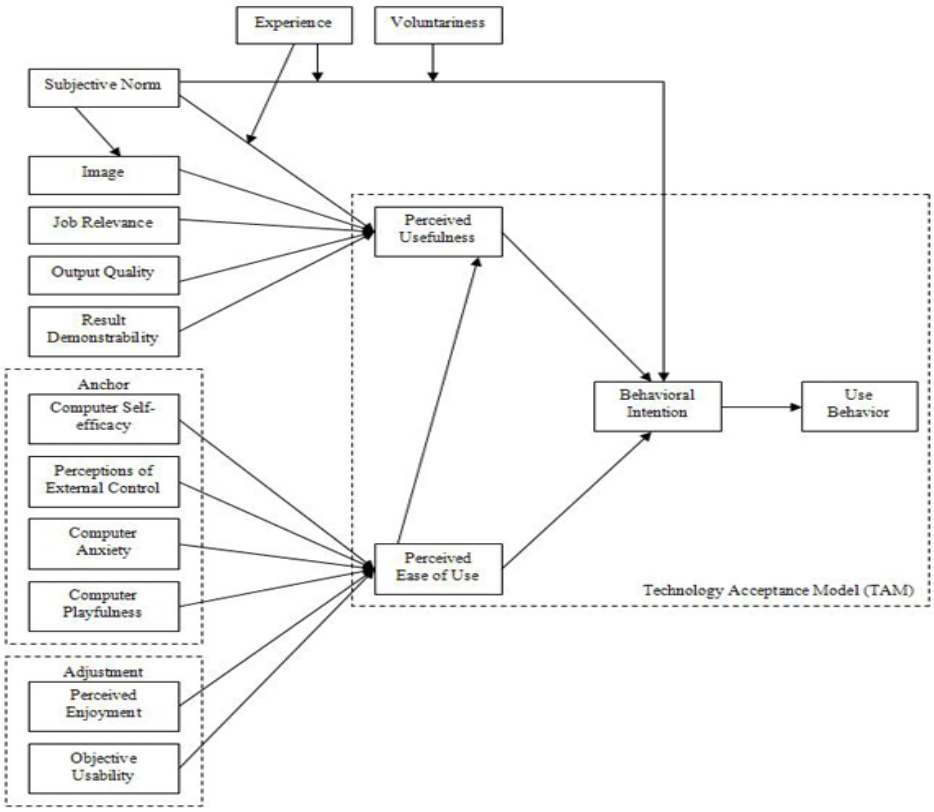


Figure 2.6: Technology Acceptance Model3 (Venkatesh and Bala (2008))

2.1.7 Innovation Diffusion Theory (IDT)

Rogers (1995) proposed the Innovation Diffusion Theory to study a variety of innovations. Rogers defines diffusion as "the process in which an innovation is communicated thorough certain channels over time among the members of a social system". The four main elements in the diffusion of innovations are innovation, communication channels, time and social system. "An innovation is an idea, practice, or project that is perceived as new by an individual or other unit of adoption".

Communication is "a process in which participants create and share information with one another in order to reach a mutual understanding". Social system is defined as "a set of interrelated units engaged in joint problem solving to accomplish a common goal" (Rogers, 2003). According to him, time factor is one of the important but ignored dimensions in many of the studies. He identified five attributes of an innovation that influences the acceptance behaviour which are relative advantage, complexity, compatibility, trialability and observability. IDT theory argues that potential users make decisions to adopt or reject an innovation based on beliefs that they form about innovation (Agarwal, 2000).Relative advantage is defined as the degree to which an innovation is considered as being better than the idea it replaced. Compatibility is the degree to which innovation is regarded as being consistent with the potential end-user's existing values, prior experiences and needs. Complexity is the end user's perceived level of difficulty in understanding innovations and their ease of use. Trialability is the degree to which innovations can be tested on a limited basis and observability refers to the degree to which the results of innovations are visible to other people. Rogers (2003) have classified the adopter categories as innovators, early adopters, early majority, late majority and laggards. Studies have tried to integrate IDT into TAM to understand the user's behaviour in accepting technologies (Lee, Hsieh and Hsu,2011; Chang and Tung, 2008; Wu and Wang,2005). A large number of studies using IDT are done in the educational sector where the adoption of technology for educational purposes are studied (Less, 2003; Surendra, 2001; Jacobsen, 1998).

2.1.8 Motivational Model (MM)

The motivational theory was applied to study information technology adoption by Davis, Bagozzi and Warshaw(1992) and suggests that the behaviour of an individual is based on extrinsic and intrinsic motivation. They further describes extrinsic motivation 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 (job performance, pay, promotions). Examples of extrinsic motivation include Perceived Usefulness, Perceived Ease of Use, subjective norm. Intrinsic motivation is the perception of pleasure and satisfaction achieved from performing the behaviour. Enjoyment, playfulness are examples of intrinsic motivation (Venkatesh, 2000). Venakatesh et al. (2002) in their study have incorporated intrinsic motivation as a main determinant in TAM.

2.1.9 The Model of PC Utilization (MPCU)

Triandis (1980) made a distinction between the cognitive and affective components of attitudes, thus modifying his theory of attitudes and behaviour (1977). Thompson, Higgins and Howell (1991) refined Triandis's model to propose the Model of PC Utilization (MPCU). The constructs in the model are Job-fit, Complexity, Long term consequences, Affect towards use, Social factors and Facilitating conditions. "Job fit is the extent to which an individual believes that using a technology can enhance the performance of his/her job. Complexity is the degree to which an innovation is perceived as relatively difficult to understand and use. Long term consequence is

defined as outcomes that have a pay-off in the future. Affect towards use relates to the feelings of joy, elation or pleasure, or depression, disgust, displeasure, or hate associated by an individual with a particular act. Social factors include 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 is defined as the provision of support for users of PC s may be one type of facilitating condition that can influence system utilization."(Thompson et al.,1991) Figure 2.7 depicts MPCU.

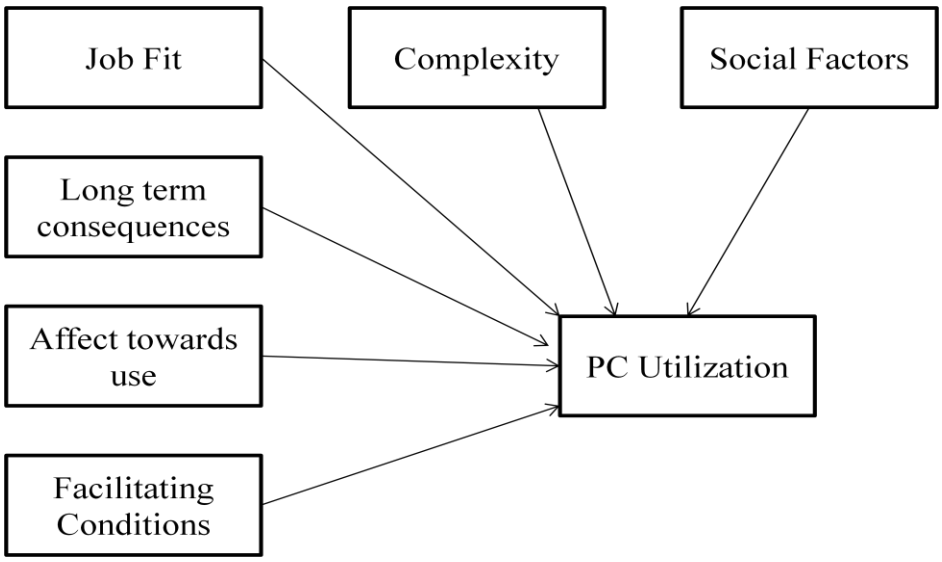


Figure 2.7: The Model of PC Utilization (Thompson et al., 1991)

2.1.10 Social Cognitive Theory (SCT)

Social Cognitive Theory, a well used theory in psychology, education and communication is a learning theory and explains how people acquire and maintain certain behavioural patterns. Bandura (1986) suggests that environmental factors (social and physical), personal factors (cognitive and affective) and behaviours share a reciprocal relationship. According to Compeau, Higgins and Huff (1999), the cognitive competences of an individual influence the behaviour in using a technology and successful interactions with the technology influence the cognitive perceptions. The social cognitive theory emphasizes on self -efficacy, which is defined as the judgement of one's ability to use a technology to accomplish a particular job/task (Compeau and Higgins, 1995). Self-efficacy influences both personal and performance related outcome expectations. The two affective factors here are – Affect and Anxiety, where affect ia an individual's liking for a particular behaviour and Anxiety is an individual's emotion reaction in performing a behaviour.

2.1.11 Information Systems Continuance Model

Expectation Confirmation theory (ECT), proposed by Oliver (1980) is widely used to study consumer satisfaction, post purchase behaviour and repurchase intentions. ECT states that consumer's intention to continue the use of a service is determined primarily by their satisfaction with prior use of that service. The ECT was further modified to suit the context of Information Systems continuance use by Bhattacherjee (2001). Bhattacherjee (2001) states that user's continuance decision in

using an information system is similar to consumer's repurchase intentions. Bhattacherjee (2001) defines IS continuance intention in the ECT as an individual's intention to continue using an information system (in contrast to initial use or acceptance). This model is termed as a post acceptance model and follows the concept that continuance usage intention of system will be influenced by system usage satisfaction and perceived usefulness. The model is depicted in figure 2.8. Thong, Hong and Tam (2006) has explained the continuance usage behaviour by adding perceived usefulness and perceived entertainment to the post acceptance model. Hong et al. (2008) have given an integrative model of information systems continuance for the web portal sites by integrating habit, perceived switching cost and quality.

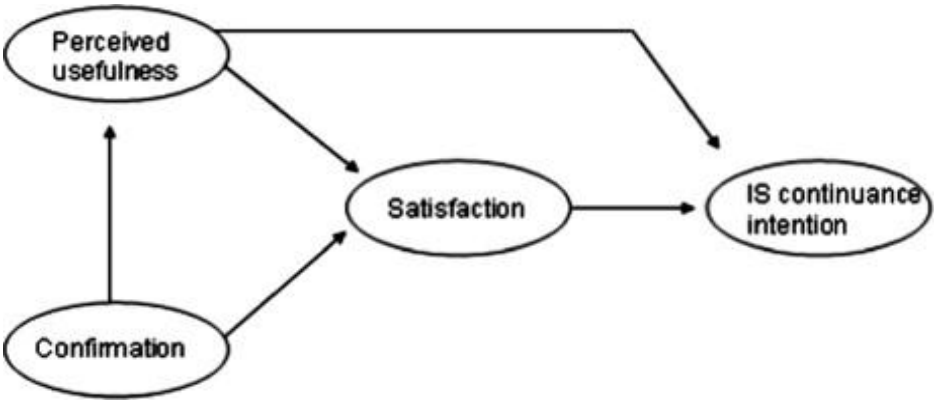


Figure 2.8: Information Systems Continuance Model (Bhattacherjee, 2001)

2.1.12 Unified Theory of Acceptance and Use of Technology (UTAUT)

Venkatesh et al. (2003) tried to integrate the above different models and proposed a unified theory to explain the acceptance of technologies. The Unified Theory of Acceptance and Use of Technology (UTAUT) was proposed by integrating eight extant models to predict the user adoption of information technology/systems. The eight models are the theory of reasoned action (TRA), the theory of planned behaviour (TPB), Technology Acceptance Model (TAM), Innovation Diffusion Theory (IDT), the motivational model (MM), a model combining the TAM and TPB (c-TAM/TPB), the model of PC utilization and social cognitive theory (SCT). The authors pointed out five limitations of these prior models

- The technologies studied are relatively simple and individual oriented
- Except for a few studies, the participants for the study were students
- In general, the models were tested well after the participant's acceptance or rejection decision rather than during the decision making process
- The nature of measurement in most of the models were cross sectional
- Most of the models were tested in the voluntary context

The UTAUT was formulated to address these limitations. The authors empirically compared the eight models in longitudinal field studies conducted in four different organisations. The measurement was done at three different points of time: post training, one month after implementation and three months after implementation. The study was conducted in both voluntary and mandatory settings. The findings state that all the eight models explained individual acceptance, with variance in intention explained ranging from 17 to 42 percent. The test also found out key difference in voluntary and mandatory settings. The authors also investigated the moderating effect of age, gender, experience and voluntariness on the usage.

From the previous models many constructs were identified and seven constructs were found to be direct determinants of intention or usage. The UTAUT holds that four key constructs (Performance expectancy, Effort expectancy, Social influence and Facilitating conditions) are direct determinants of usage intention. Three constructs (Attitude, Self-Efficacy and Anxiety) are found to be indirect determinants of usage intention (Venkatesh et al 2003). Self-efficacy and anxiety were not included as direct determinants of intention in UTAUT. Venkatesh (2000) have modelled self-efficacy and anxiety as indirect determinants of intention fully mediated by perceived ease of use. Attitude, defined as an individual's overall affective reaction to using a system was termed to have no direct effect on intention.

UTAUT explained about 70 percent of the variance in behavioural intention to use a technology and about 50 percent of the variance in technology use.

Figure 2.9 depicts UTAUT.

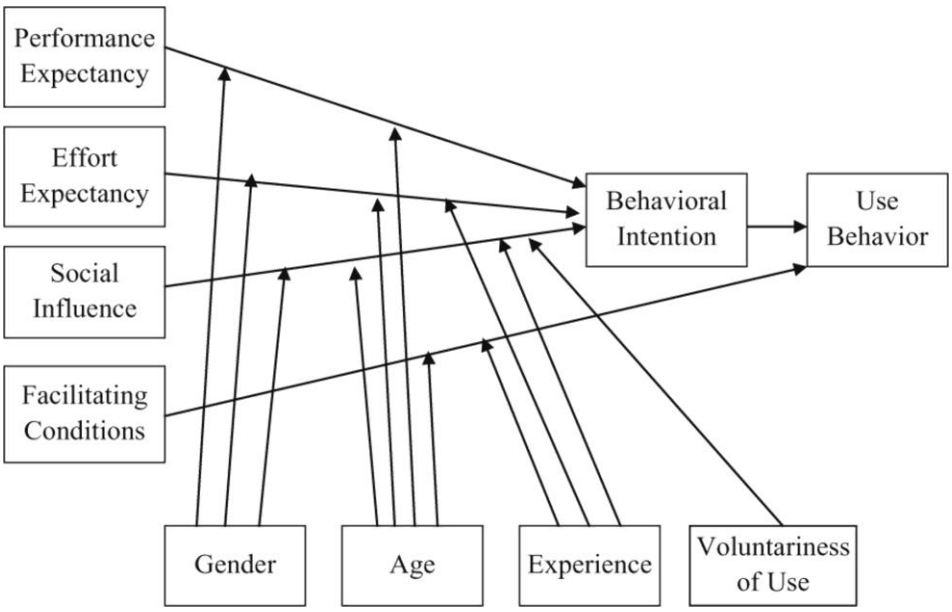


Figure 2.9: Unified Theory of Acceptance and Use of Technology
(Venkatesh et al.,2003)

UTAUT was modelled by Venkatesh et al.(2003) dropping the non significant determinants namely self-efficacy, anxiety and attitude to predict the behavioural intention and thus the usage of the technology/ system. UTAUT was cross validated by data gathered from two organisations, one from the voluntary context and other from mandatory context (Venkatesh et al., 2003).

Many empirical studies have been conducted using UTAUT since its inception. UTAUT has been applauded for its generalizability. Researchers have applied it in different fields and conducted qualitative and quantitative studies across different countries. The different studies on cross cultural validation of UTAUT includes adoption of e-government services in Kuwait(AlAwadhi and Morris,2008), e-government services in Saudi Arabia(Alshehri,Drew and AlGhamdi, 2012), mobile internet usage from China(Zhou, 2011), internet banking in Portugal(Martins, Oliveira and Popovic, 2014), internet banking adoption in Malaysia (Foon & Fah, 2011), ICT adoption (Attuquayefio & Addo, 2014), ERP systems (Fillion et al.,2011),among others.

Besides being tested in different cultures, UTAUT has also been tested in different oragnisational contexts like health care (Kijsanayotin, Pannarunothai and Speedie, 2009), educational sector (Oye, Iahad and Rahim, 2011), among others.

Venkatesh et al. (2003) has also recognized certain limitations to UTAUT. The measures for UTAUT are to be viewed as preliminary since the core constructs were operationalized using highest loading items from the previous respective scales. The moderating effects are to be further explored.

2.1.13 Unified Theory of Acceptance and Use of Technology 2 (UTAUT 2)

Venkatesh, Thong and Xu (2012) proposed UTAUT 2 by integrating additional constructs and relationships to UTAUT. UTAUT 2 was tailored to suit the consumer use context. The key constructs were

identified from prior research on adoption and use of technologies and UTAUT 2 was modelled altering certain relationships in UTAUT and adding new relationships. The three variables added to UTAUT are Hedonic Motivation (HM), Price value (PR) and Habit (HA). The key constructs of UTAUT (Venkatesh et al.(2003)): performance expectancy (PE), effort expectancy (EE), Social Influence (SI) and Facilitating Conditions (FC) were adapted in UTAUT 2. In UTAUT2, PE is defined as the degree to which using a technology will provide benefits to consumers in performing certain activities. EE is the degree of ease associated with consumers' use of technology.SI is the extent to which consumers perceive that important others (e.g., family and friends) believe they should use a particular technology; and FC refers to consumers' perceptions of the resources and support available to perform behaviour. AS per UTAUT, PE, EE, and SI influence the behavioural intention to use a technology and FC and Behavioural Intention (BI) determine the technology use. In UTAUT 2, FC is hypothesized to have a direct effect on behavioural intention, which makes the concept differ from UTAUT. Age, gender, experience and voluntariness of use were found as the moderator variables in the relations in the UTAUT, while in UTAUT2, voluntariness to use is not included as the moderator variable. Since UTAUT 2 is explained in the consumer use context, voluntariness is assumed.

UTAUT emphasized on utilitarian value and hence, PE was found to be the strongest predictor of behavioural intention. In consumer behaviour research, hedonic motivation is found to be a key predictor.

UTAUT2 is modelled on a consumer use context and hence hedonic motivation is significant. Hedonic motivation is defined as the fun or pleasure derived from using a technology. Hedonic motivation plays a vital role in determining usage of information systems (Thong, Hong and Tam (2006), van der Heijden (2004)). Price value is defined as consumer's cognitive trade-off between the perceived benefits of the applications and the monetary cost for using them (Dodds, Monroe and Grewal,1991). Habit is defined as the extent to which people tend to perform behaviours automatically because of learning (Limayem, Hirt and Cheung, 2007). Figure 2.10 depicts UTAUT2

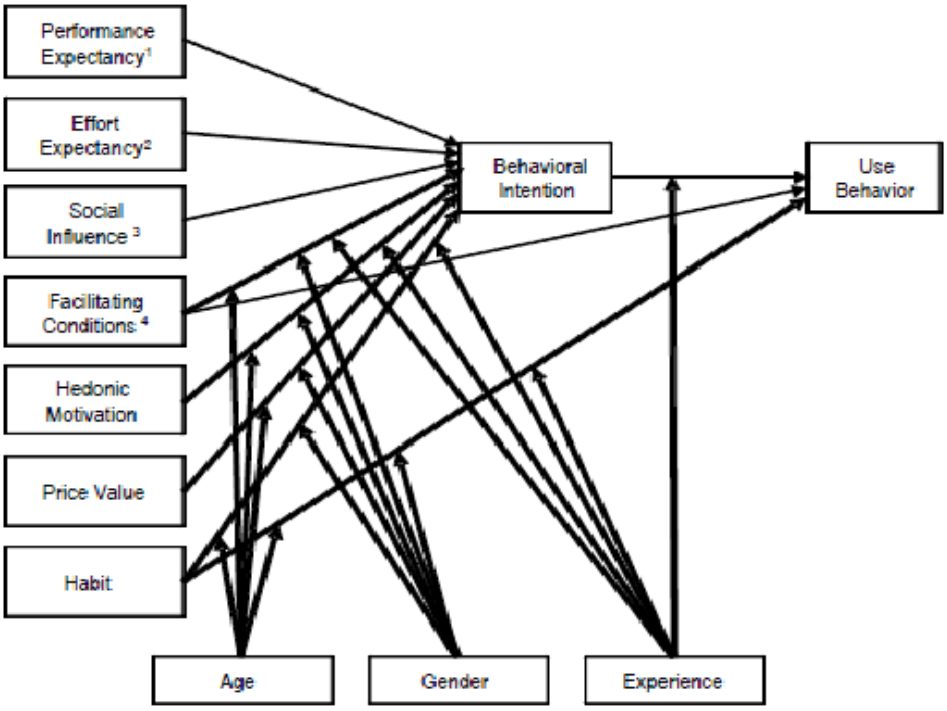


Figure 2.10: Unified Theory of Acceptance and Use of Technology 2
(Venkatesh et al., 2012)

UTAUT2 has been researched quite well in the few years. UTAUT2 is used to explain the acceptance and use of different technologies and systems. Since the main context of use of UTAUT2 is mainly on the consumer use, researchers have focussed on the study of voluntary systems. Internet banking is one application studied in different countries with the help of UTAUT2. Arenas-Gaitan et al. (2015) studied the internet banking use in Spain by elderly people and states that the variance explained in BI is 62.3% and Use is 38.6%. Alalwan, Dwivedi and Williams (2014) have studied the adoption of internet banking in Jordan with Trust and Perceived Risk added to UTAUT2.Their study explains 68% variance in BI and 32% variance in Use and states that UTAUT2 is suitable and adequate to predict internet banking applications. Pascual-Miguel et al. (2015) have used UTAUT2 to examine the gender difference in studying the online purchasing behaviour of consumers. They have extended UTATU2 by two variables- perceived risk and trust. Rondan-Cataluña et al.(2015) have studied the comparison of the popular technology acceptance models and states that UTAUT2 model has a better explanation power over the other models. Their study was done on the case of mobile internet users of Chile.

UTAUT2 has been widely used to study the mobile applications. Bapista and Oliveira (2015) have studied mobile banking with cultural factors added to UTAUT2 and found that Performance Expectancy, hedonic motivation and habit was found to be significant predictors of intention. Slade, Williams and Dwivedi (2013), in their study on adoption

of mobile payments have added trust and perceived risk to extend UTAUT2. Yang (2013) adds to the literature that hedonic aspect is more significant in the case of consumer setting by his study on adoption of mobile learning in China.

Williams et al. (2011) have reported that though many studies have used UTAUT in explaining acceptance, very few have tried to probe the full model incorporating all its constructs. Further, Venkatesh, Thong and Xu (2012) have stated that most of the studies using UTAUT employed only a subset of constructs. Hence the need for further testing the model is suggested. Researchers have pointed out the need to add context specific constructs to UTAUT to increase the predicting power of UTAUT. Bagozzi (2007) has pointed out that "even in UTAUT, important independent variables are left out since the included predictors are fundamental, generic or universal, and future research is likely to uncover new predictors not subsumable under the existing predictors".

All the above models point out the necessity to extend them by the use of contextual variables. UTAUT2 is termed as one of the best models in explaining the acceptance and usage of technologies in consumer use context. Hence this study focuses on building the theoretical framework based on UTAUT2. The factor "price value" is not considered for the current study. According to Venkatesh et al. (2012), there can be a significant impact of price on consumer's technology use. When prices are low, there are chances that technology use increases. But with the latest developments in technology and the competitive market, the price factor is getting negligible. In the case of

mobile applications and other online applications, the cost of internet use stands insignificant as many of the companies provide minimal and low rates to attract users. The current study focuses on the usage of Social Networking Sites and this is provided free and no extra price is charged for these sites. Hence price value is dropped since it doesn't fit to the current research setting. The table 2.1 shows the limitations of the existing models upto UTAUT2

Table 2.1: Limitations of the models

Models	Limitations
Theory of Reasoned Action	Focus on volitional behaviour alone
Theory of Planned Behaviour	Required individuals to be motivated to perform certain behaviour and doesn't explain habitual behaviour
Technology Acceptance Model	Scant attention to antecedents of belief constructs and the use of moderators is limited
Technology Acceptance Model 2	Major application in the organisational setting
Unified Theory of Acceptance and Use of Technology	The increased variance is explained only because of the moderators and is less parsimonious

2.2 Social Networking Sites

The term "social network" traditionally was used to describe an individual's personal social connections and the social interactions that mostly occur face-to face (Brisette, Cohen and Seeman, 2000). Boyd and Ellison (2005) define social network websites (SNS) as "web based services that allow individuals to (1) construct a public or semi-public

profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system." Later, Ellison and Boyd (2013) states that a more accurate term is "social network sites" and redefined as "A social network site is a networked communication platform in which participants 1) have uniquely identifiable profiles that consist of user-supplied content, content provided by other users, and/or system-provided data; 2) can publicly articulate connections that can be viewed and traversed by others; and 3) can consume, produce, and/or interact with streams of user generated content provided by their connections on the site."

SNS comes under the umbrella of the greater term "social media". The other nodes that come under social media are microblogging, video sharing sites like Youtube and blogs. There are many wide explanations given for the term social media. Social media is a broader concept and is a way to transmit, or share information with a broad audience, while SNS is an act of engagement where groups of people of common interest associate together on a common platform.

The first networking site "SixDegrees.com" was launched in 1997 by Andrew Weinreich and initially allowed users to create profiles and list their friends. One year later, instant messaging and ability to search friend lists were added. Though millions of users were attracted to the site, the site couldn't sustain and was closed in 2000.A number of community tools started popping up then on with the above features on the sites, like LiveJournal(1999), Cyworld(1999), LunarStorm(2000) to

name a few. Ryze.com, launched in 2001 helped people to leverage their business networks, thus making a shift in the paradigm of SNS. Though there were many dating sites, which introduced people to strangers, Friendster, launched in 2001, helped friends to meet and friends of friends to meet, thus making the connectedness stronger. According to Boyd(2006), due to technical difficulties, social collisions, and rupture of trust, the popularity of Friendster started to fade. From 2003, onwards the number of SNS started to rise and different sites focussed on different purposes. LinkedIn, Xing etc. focussed on business people while Dogster helped strangers to connect on shared interests. Orkut, launched by Google in 2004 was one of the SNS which attracted a large number of users and had a wide variety of features. By 2008, Orkut was one of the most visited sites in India and Brazil. MySpace, launched in 2003 started attracting teenagers by 2004 and was used for promotion purposes for bands etc. By then, SNS started proliferating and was becoming popular worldwide. Countries stared indigenous sites of their own like QQ instant messaging service by China, Cyworld by Korea. Researchers have studied the use of homely SNS and the factors that drive their usage. Apaolaza et al. (2013) have studied the roles of self esteem and loneliness on the Spanish online networking site.

Facebook launched in 2004 by Mark Zuckerberg was initially designed to support Harvard students and later expanded to other Universities. Facebook was limited to distinct college networks and later open to all users. Slowly, Facebook started to attract millions of users and started emerging as the largest SNS in terms of number of users.

The main feature of Facebook is the ability to connect with others and get to know the happenings in their lives. People create a virtual community and feel a part of it by sharing and contributing online using Facebook. By the end of 2015, Facebook claims to have 1.59 billion monthly active users worldwide. Facebook has many features that make the users continue to use it. Apart the main aim of connecting people, it provides many online games and other applications which attracts users. Later, people started using it for business purposes. From being started on a motive of individual use, Facebook has grown to organisational use. Organisations use it for online promotion and other business activities. Facebook attracts people by updating and adding new features and programs almost every month. This helps the company increase its user base.

The United States tops the world in terms of number of users of Facebook. India stands second in the list, followed by Brazil by the year 2015. In India, there are around 55 million daily active users of Facebook and accounts for around 8.4% of the global monthly active users. A large percentage of the Indian users use mobile devices to access Facebook. Majotiry of the SNS usage studies revolves around the use of Facebook since it is the most commonly used SNS and has the maximum number of users(Hollenbaugh & Ferris, 2014; Ljepava et al.,2013; Tosun, 2012; Smock et al., 2011; Ryan & Xenos, 2011)

Apart from the entertaining purposes, there are certain SNS which focuses on specific purposes. LinkedIn is one such site which is termed as a professional networking site. LinkedIn claims to be the largest in terms of

number of users in this segment. LinkedIn has 414 million users worldwide by the fourth quarter of 2015. In India, there are around 30 million users (http://indianexpress.com/article/technology/social/linkedin-sees-50-per-cent-growth-in-india-crosses-30-mn-user-mark/). India holds second position in terms of member base of LinkedIn, the first being the United States.

Though there are a large number of sites with varied and distinct features, the statistics reveal that the number of active users remains only for some sites. This shows that there are certain factors that influence the usage of Social Networking Sites and those that explain the usage of different types of these sites. Ravasan et al. (2014) have categorised the different works done on social networks in their review of literature on the social networks. The reasons why people choose to use social networking sites have been explored by different researchers. Some of the factors that contribute to the use of social networking sites are loneliness (Clayton et al., 2013; Skues, Williams and Wise, 2012), self esteem (Wang et al., 2012; Skues, Williams and Wise, 2012), extraversion (Kuss and Griffiths,2011;Lee, Dean and Jung,2008). Pai and Arnott (2013) in their study on user adoption of SNS states that the four values belonging, hedonism, self esteem and reciprocity are the main things users attain by SNS adoption. Heinrichs et al. (2011) have investigated the differences in the perceptions based on the different access methods and the different social networking tools. The three access methods for their study were mobile devices, desktops and notebooks and the three social networking groups were Facebook, Twitter and YouTube.

Valenzuela et al. (2009) has studied the use of Facebook in building social capital.

2.2.1 Need for the study

Rarely studies have been done to study the acceptance and usage of SNS. Though there are many models explaining the acceptance and use of technologies, the use of SNS on this perspective is yet to be explored. The current study identifies this gap and aims at building a model and empirically validates it to explain the usage of SNS. The different models and theories explaining the acceptance and use of technologies are reviewed above and the Unified Theory of acceptance and Use of Technology 2 (UTAUT2), developed by Venkatesh et al. (2012) is one of the best models in explaining the acceptance on the context of consumer use The addition of psychological and contextual variables to the model makes the model more explanatory and robust. In the case of SNS, many factors play a major role in explaining the usage.

The researcher has identified three factors which are prominent in the use of SNS- Trust, Social Connectedness and Visibility. These factors were identified by extensive literature review and found to be good predicting variables of usage in the case of SNS. One of the major use of SNS is to build connections and retain them. Studies in the area of media have shown Social Connectedness as a prominent factor and hence the same was chosen for this study. Trust is a major factor in any online environment. People post pictures and personal information on these virtual sites and hence trust is chosen for study. One important use

of SNS is to remain visible in the online platform and networking. Hence from literature, Visibility was chosen for the study .These three factors are used to extend UTAUT2 and a theoretical model is proposed to explain the acceptance and usage of Social Networking Sites.

2.3 Variables used in the study

2.3.1 Usage

The definition of behaviour is "the action by which an organism adjusts to its environment" (APA). In majority of the models the actual system use is neglected and the study concentrates on the intentions to use alone as measuring actual behaviour is difficult and impossible in many of the circumstances. There are many factors put forward by the researchers that determine the use behaviour/actual use of a technology/ system. Venkatesh et al. (2012) have measured the use by the different types of uses of mobile internet. Usage can be determined by the type of use as well as the actual time taken to use the system.i.e, the variety and frequency of use contributes to usage. Researchers have tried to probe the different factors that predict the use of Social Networking Sites. Lin & Lu (2011) states that enjoyment is the most influential factor in people's use of SNS, followed by the usefulness. This is supported by Chen (2014), Lin, Fan and Chau (2014) in their studies and states that the major motive of using SNS is for enjoyment purposes. Usefulness and ease of use also drives the use of SNS by people (Sledgianowski and Kulviwat, 2009). There are other factors that significantly influence the use of SNS like Trust (Wu, Huang and Hsu, 2014; Sledgianowski and

Kulviwat, 2009), personality traits (Jenkins - Guarnieri, Wright and Hudiburg, 2012; Moore and McElroy, 2012), Social Connectedness (Kwon, Park and Kim, 2014; Ahn and Shin, 2013).

2.3.2 Behavioural Intention (BI)

Behavioural intention is defined as an indication of an individual's readiness to perform a given behaviour. It is assumed to be an immediate antecedent of behaviour (Ajzen, 1985). According to the acceptance models discussed above, the Behavioural Intention (BI) determines actual use and BI has been found to be the strongest predictor of actual use (Davis, 1989, Taylor and Todd, 1995). According to Fishbein and Ajzen (1975), BI measures a person's relative strength of intention to perform a behaviour. Sheppard, Hartwick and Warshaw (1988), in their meta analysis states that intention is a good predictor of behaviour. Taylor and Todd (1995) also supports the fact that behavioural intention is an important predictor of behaviour. Researchers have widely made efforts to study BI since the study of actual behaviour is difficult in many circumstances. For eg, predictions of actual purchase behaviours are always difficult to measure and hence most of the studies are done with the intention to purchase. Venkatesh et al. (2003) also states that behavioural intention has a positive influence on technology usage. Hence the following hypothesis.

Behavioural intention has a significant effect on usage of Social Networking Sites.

2.3.3 Performance Expectancy (PE)

Performance Expectancy, a significant construct in the Unified Theory of Acceptance and Use of Technology (UTAUT) is defined as "the degree to which an individual believes that using the system will help him/her to attain gains in job performance" (Venkatesh et al.,2003). PE was derived from the earlier models: perceived usefulness (TAM), extrinsic motivation (MM), job-fit (MPCU), relative advantage (IDT) and outcome expectations (SCT). PE is found to be the strongest predictor of intention to use the technology and remains significant in both mandatory and voluntary situations. PE was found to be more significant for men and younger workers. Venkatesh et al. (2012) has reasserted the influence of PE on the usage of systems in a consumer context. Here, PE is defined as "the degree to which using a technology will provide benefits to customers in performing certain activities".

Zhou (2011) in the study of mobile internet continuance usage have found that PE has a significant effect on continuance usage. PE was found to be a significant predictor of behavioural intention across different cultures in the study by Bandyopadhyay and Bandyopadhyay (2010). PE is explored for its role in social media acceptance in different cultures. Salim (2012) studied the application of UTAUT for acceptance of social media in Egypt and established the significance of PE on the behavioural intention of acceptance of Facebook. The following hypothesis is stated in this study.

Performance Expectancy has a significant effect on behavioural intention to use Social Networking Sites

2.3.4 Effort Expectancy (EE)

Effort Expectancy is defined as "the degree of ease associated with the use of the system" (Venkatesh et al, 2003). The concept of EE was captured from the constructs- Perceived Ease of Use (TAM), Complexity (MPCU) and Ease of Use (IDT). EE also was found to be significant in both voluntary and mandatory context, similar to PE. The effect of EE on intention to use is moderated by gender and age (Venkatesh et al., 2003). Venkatesh et al. (2012) has redefined EE as "the degree of ease associated with consumers' use of technology", in the context of consumer use when they proposed UTAUT2. Most of the researches using UTAUT and UTAUT2 support the significant influence of EE on the intention to use different technologies and systems (Lian (2015); Martins et al. (2014); Oye et al. (2011))

Bandyopadhyay & Bandyopadhyay (2010) in their study on the acceptance of prepayment metering systems states that EE was found to influence behavioural intention significantly in India, while EE was insignificant in the case of United States. Researchers have pointed out the significant influence of EE on the intention to use Social Networking Sites. Wu, Huang and Hsu (2014) states EE to be a direct determinant of the intention to use online social networks. Accordingly, the following hypothesis is stated.

Effort Expectancy has a significant effect on behavioural intention to use Social Networking Sites

2.3.5 Social Influence (SI)

Social Influence is defined as "the degree to which an individual perceives that important others believe he or she should use the new system" (Venkatesh et al., 2003). SI is represented as subjective norm in TRA and TAM, as social factors in Model of PC Utilization (MPCU) and as image in Innovation Diffusion Theory (IDT). According to Venkatesh et al. (2003) SI is a direct determinant of behavioural intention. Studies argue that Social Influence constructs were not significant in voluntary context but becomes significant in mandatory context. The effect of SI on intention to use is found to be contingent on all the four moderator variables of UTAUT (age, gender, experience and voluntariness to use). In technology adoption context, peer pressure is shown to be a determinant of subjective norm/social influence. The effect of social influence is significant in the study of acceptance of social networking sites. During the formation of UTAUT2, Venkatesh et al.(2012) have defined SI to fit the consumer context as " the extent to which consumers perceive that important others (eg. family and friends)believe they should use a particular technology".

The effect of SI on the technology usage intentions has been validated by many researchers across different technologies. Martins et al.(2014), in their study on acceptance of internet banking states SI as

one of the most important factors in explaining user intentions. Hsu & Wu (2011) states that the one of the factors that determine the user's continuance intention of Facebook is SI. Gender also is found to influence the effect of SI. Mazman et al. (2009) has shown that the effect of SI on females were significantly higher than males in technology innovation usage. The following hypothesis is formulated.

Social Influence has a significant effect on behavioural intention to use Social Networking Sites

2.3.6 Facilitating Conditions (FC)

Facilitating conditions are defined as the degree to which an individual believes that an organisational and technical infrastructure exists to support use of the system (Venkatesh et al, 2003). The three different constructs – perceived behavioural control (TPB), facilitating conditions (MPCU) and compatibility (IDT) were captured to build this construct in UTAUT. In TPB/DTPB, facilitating condition is significant in predicting intention while in MPCU and IDT it is insignificant in predicting intention. Venkatesh et al.(2003), in their study states that in the presence of Performance Expectancy and Effort Expectancy, Facilitating Conditions become non significant in predicting intention. Hence, Facilitating Condition is modelled as a direct antecedent of usage in UTAUT. But on extending UTAUT to the consumer context, Venkatesh et al. (2012) added a direct relationship from Facilitating Conditions to Behavioural Intention. The reason behind this was, in organisational context, many aspects of Facilitating Conditions will be freely available within the organisations but it will differ in the consumer context.

Facilitating Conditions behaves similar to Perceived Behavioural Control (PBC) in TPB, hence influencing both intention and behaviour. Venkatesh et al. (2012) has redefined FC as "consumers' perceptions of the resources and support available to perform a behaviour".

In UTAUT 2, age, gender and experience moderates the effect of FC on behavioural intention. Teo (2010) in his study on behavioural intentions to use technology by pre service teachers shows the significant effect of facilitating conditions mediated by attitude, perceived usefulness and perceived ease of use. The availability of necessary resources facilitates the use of technology. The effect of facilitating conditions on system use is proved in literature by extant research (Venkatesh et al., 2012, Zhou,2012). Keong et al. (2012)used three constructs: training, communication and shared belief to measure facilitating conditions. Mazman et al. (2009) have proposed a model for usage of social networks in educational context with facilitating conditions as a determinant. The following hypothesis is stated.

Facilitating Conditions has a significant effect on behavioural intention to use Social Networking Sites

Facilitating Conditions has a significant effect on Usage of Social Networking Sites

2.3.7 Hedonic Motivation (HM)

The word "hedonic" means relating to, or characterised by pleasure. Hedonic motivation is defined as the fun or pleasure derived from using a technology. In consumer context, hedonic motivation has

been found to be a strong determinant of technology acceptance and use (Venkatesh et al, 2012; Brown and Venkatesh, 2005; Childers et al., 2001). Hedonic motivation or perceived enjoyment as stated by Davis, Bagozzi and Warshaw (1992) has been asserted as a key predictor of technology acceptance particularly those related with customer context (Venkatesh et al., 2012). According to Venkatesh et al.(2012), "*hedonic motivation play a less important role in determining technology use with increasing experience*." van der Heijden (2004) states that "the value of a hedonic system is a function of the degree to which the user experiences fun when using the system."

Sledgianowski and Kulviwat (2009) has found that the hedonic component-perceived playfulness to be a strong predictor in the use of online social networks. According to them SNS are considered to have more hedonic perception than the utilitarian purpose. Chen (2014), in his study on exploring influences on Facebook continuous usage states that when the perceived enjoyment is high, users are willing to continuously use Facebook. Thus the following hypothesis.

Hedonic Motivation has a significant effect on behavioural intention to use Social Networking Sites.

2.3.8 Habit (HA)

Limayem et al. (2007) has defined habit as the extent to which people tend to perform behaviours automatically because of learning. According to Kim and Malhotra (2005), habit is viewed as a prior behaviour. They say that prior use is a strong predictor of use of

technology. Further, they state that system usage will be driven by conscious intention when the linkage between stimuli and action is not fully developed. According to them, once the information system use becomes routine, past use is a proxy for habit. Ajzen and Fishbein (2000) reports that repeated performance of a behaviour can result in formation of attitude and attitudes can trigger intentions. Time is also a factor for the formation of a habit. Several empirical studies are done to explain the significant influence of habit on technology use. LaRose,Kim and Peng (2011) states that social networking has become a media habit. They have identified the different dimensions of media habits in their study. Many of the studies have asked the respondents to indicate the frequency of past behaviour and thus throw light on the habit of use of SNS. The following hypotheses is formed in tune with that of Venkatesh et al. (2012)

Habit has a significant effect on behavioural intention to use Social Networking Sites

Habit has a significant effect on Usage of Social Networking Sites

2.3.9 Trust (TR)

Studies on the concept of trust are varied across diverse fields and various disciplines and hence, the definition of trust also varies according to different contexts. Mayer, Davis and Schoorman (1995) has defined trust as "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to

monitor or control that other party". Further, they have stated that trust can be viewed as a crucial predictor of customer behaviour. Trust was conceptualised as "individual willingness to depend based on the beliefs in ability, benevolence, and integrity" (Gefen, Karahanna and Straub, 2003). Trust is conceptualised as a belief that the other party will behave in a dependable, ethical and socially appropriate manner (Kumar, Scheer and Steenkamp, 1995; Hosmer 1995; Zucker 1986)

Trust is a strong determinant in the concept of user acceptance of technology. With new online technologies dominating the market, the role of trust stands significant. In the context of internet and online experiences, trust plays a significant role in predicting the user acceptance (Coppola, Hiltz and Rotter, 2004). Trust in a website has been found to encourage website use (Gefen, Karahanna and Straub, 2003). In an online environment, trust is a determinant of perceived usefulness and attitude. (Chiu et al., 2009, Wu et al., 2005). Hallegatte and Nantel (2006) have studied the intertwined effect of perceived usefulness, perceived ease of use and trust on the return intention of individuals to a website. Pavlou (2003) stated that trust positively influences both the usefulness and the ease of use of a system. Different factors are found to affect the effect of initial trust like website quality, information quality, perceived security and usability (Koufaris and Hampton-Sosa, 2004; McKnight and Chervany, 2002). The active role of trust in the case of e-commerce and online intentions has been studied by various researchers over the years (Becerra & Korgaonkar, 2011; Hsiao et al., 2010; Corbitt et al., 2003; McCole, 2002)

Social Networking Sites (SNS) have provided a virtual platform for people to communicate and build relationships online. People use SNS to share their photos and personal details and hence trust on these sites has been studied by researchers. Many of the SNS provide different features to ensure security and have varied privacy policies. Riesner, Netter and Pernul (2013) say that social identity management (SIdM) as a key requirement to address the privacy threats that occur by interacting with other users of SNS. According to them, "SIdM refers to the deliberate, targeted disclosure of personal attribute values to a subset of one's contacts on SNS". They further adds that SIdM is a necessity and popular SNS provide advanced SIdM settings. According to Kim and Ahmad (2013), trust has a key role in social media - sharing communities, since content sharing and dissemination occurs in these social interactions. Lorenzo-Romero et al.(2011) in the study of consumer adoption of SNS states that trust has a positive and direct effect on the attitude towards using these sites. They also add that for providing user friendly SNS, establishing trust is a necessity. Shafie et al. (2011) have studied the effect of privacy and trust on social network sites in the context of Malaysia. Mital et al. (2010) have examined the mediating role of trust in SNS on the relationship between the type of information exchange and information disclosure. They further add that if trust is there the disclosure of information will be high. Sledgianowski et al. (2009) in their study have shown that trust is a significant predictor of intention to use SNS. Dwyer et al (2007) have compared the case of Facebook and MySpace to study the trust and privacy concern within social network

sites. From the literature, it is found that trust is a significant factor in the case of use of SNS and hence the hypotheses are stated as follows:

Trust has a significant effect on behavioural intention to use Social Networking Sites

Trust has a significant effect on Usage of Social Networking Sites

2.3.10 Social Connectedness (SC)

Social connectedness refers to a person's subjective awareness of being in close relationship with the social world *in toto* (Lee & Robbins, 1995). According to them, social connectedness permits individuals to 'feel human among humans' and involves a way that people relate with others. People always want to stay in touch with their fellow beings and develop a sense of belongingness with each other. The concept of social connectedness involves the way people relate to others and their outlook towards the bonds and associations. The social connectedness construct has evolved out of the study of belongingness (Baumeister and Leary, 1995; Lee and Robbins, 1995). Baumeister and Leary (1995) states that people develop relationships and connections so that they can experience a sense of belongingness and thus enhance their well being. They further state that two essential components of belongingness are regular social contact and the feeling of connectedness. Rettie (2003) states that human beings have fundamental need to belong and feel connected. Romero et al. (2007) characterizes connectedness as a feeling of staying in touch with ongoing social relationships. "Social connectedness is reflected as a self evaluation of the degree of closeness between the self and other

people, the community and society at large"(Lee, Dean and Jung, 2008). Many researchers have pointed out the significant effect of social connectedness on well being (Ahn and Shin, 2013; Yoon and Lee, 2010; Lee et al.,2008)

Social connectedness has been explored in prior research in different contexts. Social networking sites (SNS) have emerged to be an integral part of daily life. The main use of these sites is for maintain relationships and connectedness online. Prior researches have shown that socializing as one of the main reasons why people use SNS such as Facebook (Liu, 2008; Boyd, et al.,2007). SNS are used more to maintain social relationships than to extend social contacts and Facebook is one of the main SNS used for this purpose (Kujath, 2011; Sheldon, 2008). From offline social connectedness, SNS have paved way to online connectedness. The use of social networking to enhance connectedness for the elderly has been explained by Goswami et al. (2010). Riedl et al. (2013) have explored the effect of social presence, usage frequency and social awareness with social connectedness taking the case of Twitter. According to Grieve et al. (2013), Facebook may provide an opportunity to develop and maintain social connectedness in online environment and adds that SNS such as facebook might provide an alternate platform for social connectedness to that of an offline environment. In a comparative analysis of user acceptance of Facebook and Twitter, Kwon et al. (2014), states that perceived connectedness has a major role in determining user attitudes towards Facebook. They further add that the different features offered by Facebook enhance users to have the feeling of connectedness.

Lemieux et al. (2013) states that people who are lonely and keep aloof from social interactions use Facebook as a medium for their expressions and spends more time on Facebook. They further adds that women consider Facebook for communication than males. Fox, Osborn and Warber (2014) points out the role of Facebook in romantic relationship and states the use of same in ensuring connectedness online even after relations die offline. By status updates, posting photographs and videos, exchanging life events, involving in discussions etc, SNS allows users to maintain, continue and strengthen their relationships (Cornejo, Tentori and Favela, 2013).

Since Social Connectedness is a significant factor in predicting the use of SNS, the following hypotheses is formulated.

Social Connectedness has a significant effect on behavioural intention to use Social Networking Sites

Social Connectedness has a significant effect on Usage of Social Networking Sites

2.3.11 Visibility (VI)

Visibility, a personality based dimension is represented by the derived significance among others on account of an actor's ability to cope with uncertainty and perform non-routine and critical activities. Usually, visibility has been termed as a personality trait in explaining the behaviour of individuals in an organisation and is often associated with the power styles (Mampilly, 1998). According to Bregman and Haythornthwaite (2003), visibility refers to "mean, methods and

opportunities for presentation". Visibility is viewed as the extent of presence of a brand, or product or person in an online environment. Visibility can be defined analogous to the concept of self presentation. According to Ma and Agarwal(2007), self presentation is a process to communicate one's identity, helping others form a more sophisticated understanding of the person. Self presentation is one of the major motivation of using social networking sites (Seidman, 2013). Siedman(2013) has examined the relationship between the personality traits to fulfil the self presentational needs and use of Facebook. The role of self presentation in online communities have been studied by many researchers (Buffardi et al.,2008; Boyd et al., 2007; Stutzman,2006). Schwammlein (2012) states that users gain acceptance through self presentation and this in turn helps them to establish relationships with other members of the group in online communities and further adds that visibility matters in the use of these online communities. He states that users modify their self presentation depending on the type of community and adapt to different interaction settings. Users also use visibility as a method to attain their personal goals online. In the above study, he points out that users show high self disclosure when they strive to get in contact. This comes into play more in the context of professional networking.

The origins of visibility often relate to the person's overall influence and position in the social network (Anderson et al., 2001; Fiske, 1993).Boyd and Ellison (2007) states that the primary functions of SNS are impression and relationship management. Ellison, Steinfield and Lampe (2007) adds that one of the significant element of Facebook

is self presentation. Users use SNS as a media to create impressions and image of the self. People never restrict self disclosure but they adjust the visibility of their profiles by changing the privacy settings (Tufekci, 2008). Gender has no effect on self promotion and both males and females use self promotional status updates and ensure visibility (Mehdizadeh, 2010). Herring & Kapidzic (2015) have studied the self presentation in self media by teenagers and the differences in gender on ensuring visibility on SNS. They state that girls choose to limit visibility and boys often have a tendency to post false information. Most of the SNS provide different features to attract users and ensure visibility online. For eg, the "Like" button of Facebook is one such feature and users get to know how many people have seen their posts, pictures etc. Similarly the number of followers and profile visitors etc give an idea to the users that their profile is visible to others. In professional networking sites, users always update their information to remain visible in their professional group and strive to attain more contacts. Chiang &Suen (2015) have investigated the concept of self presentation and states that the quality of self presentation of a candidate online influences the recruiters perceptions for hiring. The study has been done on the case of LinkedIn.

Thus, visibility is one of the significant factors in the usage of SNS and hence the hypotheses are stated as follows:

Visibility has a significant effect on behavioural intention to use Social Networking Sites

Visibility has a significant effect on Usage of Social Networking Sites

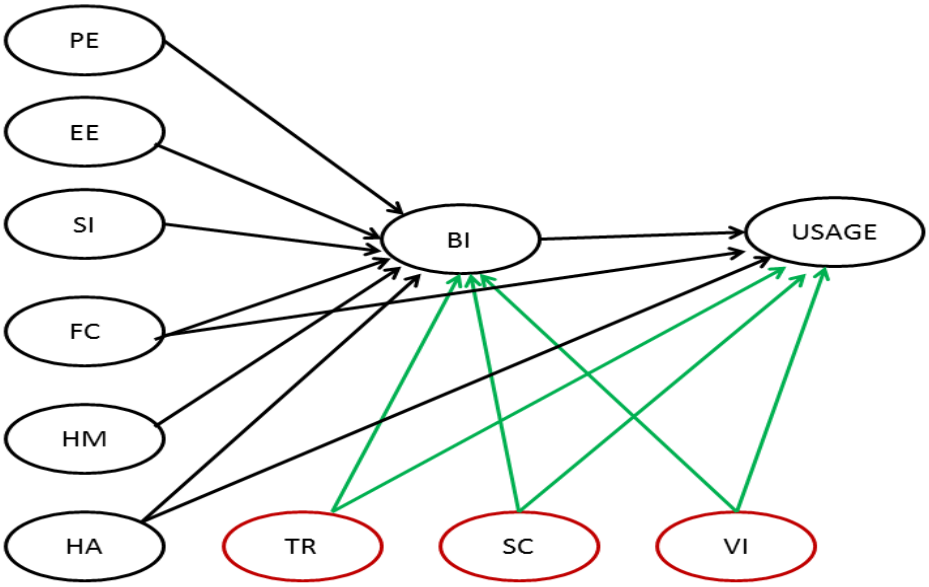
Apart from the UTAUT2 variables, three variables are identified in the context of SNS – Trust, Social Connectedness and Visibility. These three variables are found to be apt in studying the acceptance and usage of SNS from the literature review and hence used to extend the UTAUT2 model.

2.4 Conceptual Model

The literature review looked at the different models and theories formulated for explaining the acceptance and usage of technologies. The models have suggested the extensions to them by adding contextual variables and thus making them suitable for explaining the new technologies. Among the different models reviewed, Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) is a good model with good explanatory power for the acceptance and usage on a consumer use context. Social Networking Sites have emerged as an integral part of the daily life and with numerous sites available with varied features and uses, there arises a necessity to study the acceptance and usage of these sites. The conceptual model is formulated to explain the acceptance and usage of Social Networking Sites based on UTAUT2. From the literature review, Trust, Social Connectedness and Visibility were found to be significant factors when considering the usage of Social Networking Sites. Hence these three factors- Trust, Social

Connectedness and Visibility are used to extend UTAUT2 to explain the usage of Social Networking Sites and hence the conceptual model is proposed.

The conceptual model is depicted in figure 2.11



(PE- Performance Expectancy, EE-Effort expectancy, SI-Social Influence, FC-Facilitating Conditions, HM- Hedonic Motivation, Ha-Habit, TR-Trust, SC-Social Connectedness, VI-Visibility, BI-Behavioural Intention)

Figure 2.11: Conceptual Model

Chapter 3

RESEARCH METHODOLOGY

Contents

This chapter explains the methodology and the statistical methods adopted to test the hypotheses and answer the research questions. The chapter includes rationale for the study, research problem, objectives of the study, conceptual framework, hypotheses and the research methods.

3.1 Rationale for the study

Technology acceptance has been a part of the information systems research for the past many years. There are different theories and models explaining the acceptance and use of information technologies/systems. With new technologies coming into place, there is always a need to

relook at the models. Unified Theory of Acceptance and Use of Technology (UTAUT), by Venkatesh et al. (2003) is one of the most established models for explaining technology acceptance. Venkatesh et al. (2012) modified UTAUT and named it UTAUT2 to suit the consumer use context. UTAUT2 is used widely to explain the acceptance and use of new technologies. Researchers have used this model and tried to extend the model to explain the acceptance and use of different technologies and information systems Studies point out the necessity of extending and modifying these models to suit the new contexts.

Social networking sites (SNS) have emerged as an integral part of everyday life. SNS have become a type of online communities where people are free to express their ideas and communicate freely with others. Different SNS serve different purpose and cater to different strata of people. Reports say that a large number of new accounts are created everyday on different social networking sites. But the number of active users in these sites is reported to be much smaller when compared to the total user accounts.

Researchers have studied the behaviour of people using social networking sites and the factors associated with the usage, but the use of technology acceptance models for studying SNS are very few. Studies have rarely reported the incorporation of psychological factors to the technology acceptance models. No major studies have been reported from India on the acceptance and use of social networking sites.

3.2 Statement of the problem

Information system researchers have long been studying the acceptance and use of technologies. Several models and theories are formulated by different researchers to explain technology acceptance over the years. These models have identified different factors that influence the usage of technology and systems. Though all these models have been tested, validated and extended to explain the acceptance of different technologies/ systems, the advent of new technologies still makes the process ongoing. Various contextual variables are added to these models to make the model more robust and thus increase the explanatory power of usage and acceptance. Of the different online technologies available, Social Networking Sites (SNS) have made a drastic change in the world. SNS has become an inevitable part of the whole e-world. Numerous SNS have come up serving different purposes and with different features. Users create accounts on these sites and it is seen that many of the accounts remain inactive. Hence it is worth investigating what makes people accept and use a particular SNS. The extant theoretical models of technology acceptance, as they stand today, need to be modified to explain the acceptance and use of SNS. The study attempts to frame a model by extending Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) to explain the acceptance and usage of Social Networking Sites.

3.3 Research Objectives

3.3.1 Primary objective

To frame a model to explain the acceptance and usage of social networking sites

3.3.2 Secondary objectives

1) To examine whether a modified UTAUT2 can explain the user acceptance of social networking sites better than the original UTAUT2.

2) To study variation in the proposed model across different types of Social Networking Sites.

3) To study variation in the proposed model across gender and age groups.

3.4 Research Hypotheses

Based on literature, the following alternate hypotheses have been formulated

H1: Performance Expectancy has a significant effect on behavioural intention to use Social Networking Sites

H2: Effort Expectancy has a significant effect on behavioural intention to use Social Networking Sites

H3: Social Influence has a significant effect on behavioural intention to use Social Networking Sites

H4: Facilitating Conditions has a significant effect on behavioural intention to use Social Networking Sites

H5: Hedonic Motivation has a significant effect on behavioural intention to use Social Networking Sites

H6: Habit has a significant effect on behavioural intention to use Social Networking Sites

H7: Trust has a significant effect on behavioural intention to use Social Networking Sites

H8: Social Connectedness has a significant effect on behavioural intention to use Social Networking Sites

H9: Visibility has a significant effect on behavioural intention to use Social Networking Sites

H10: Facilitating Conditions has a significant effect on Usage of Social Networking Sites

H11: Habit has a significant effect on Usage of Social Networking Sites

H12: Social Connectedness has a significant effect on Usage of Social Networking Sites

H13: Visibility has a significant effect on Usage of Social Networking Sites

H14: Trust has a significant effect on Usage of Social Networking Sites

H15: Behavioural Intention has a significant effect on Usage of Social Networking Sites

3.5 Theoretical and Operational Definitions for the variables in the study

3.5.1 Performance Expectancy

a) ***Theoretical Definition***

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 (Venkatesh et al.,2003).The definition has been modified to suit the customer context as the degree to which using a technology will provide benefits to consumers in performing certain activities (Venkatesh et al.,2012).

b) ***Operational Definition***

Operationally, Performance Expectancy is defined as the degree to which an individual believes that using social networking sites will provide benefits to users in performing the activities they intended to. It takes into account the perception of usefulness of these social networking sites and is measured in terms of the use of these sites in daily life. This is measured using four items adapted from Venkatesh et al. (2012).

3.5.2 Effort Expectancy

a) ***Theoretical Definition***

Effort Expectancy is defined as the degree of ease associated with the use of the system. (Venkatesh et al.,2003).In the consumer context, Effort Expectancy has been defined as the degree of ease associated with the consumers' use of technology (Venkatesh et al.,2012).

b) ***Operational Definition***

Operationally, Effort Expectancy is defined as the degree of ease associated with using social networking sites. It describes the ease of effort in using these sites and is measured in terms of the ease of learning to use these sites. Effort Expectancy is measured using four items adapted from Venkatesh et al. (2012).

3.5.3 Social Influence

a) ***Theoretical Definition***

Social Influence is defined as the degree to which an individual perceives that important others believe he or she should use the new system (Venkatesh et al.,2003).This has been modified for the consumer context and defined as the extent to which consumers perceive that important others(eg.family and friends) believe they should use a particular technology (Venkatesh et al.,2012).

b) **Operational Definition**

Operationally, Social Influence is defined as the extent to which users perceive that people who are near and have influence over them (eg. Family, friends, colleagues) believe that they should use social networking sites. It is measured using three items adapted from Venkatesh et al. (2012).

3.5.4 Facilitating Conditions

a) *Theoretical Definition*

Venkatesh et al. (2003) have defined Facilitating Conditions as the degree to which an individual believes that an organisational and technical infrastructure exists to support use of system. Venkatesh et al. (2012) further defines Facilitating Conditions as the consumers' perceptions of the resources and support available to perform a behaviour.

b) Operational Definition

Operationally, Facilitating Conditions is defined as the users' perceptions of the resources and support available to use social networking sites. It is measured in terms of the availability of resources (devices and technology) and help/support the users get to use these sites. Facilitating Conditions is measured using four items from Venaktesh et al. (2012).

3.5.5 Hedonic Motivation

a) *Theoretical Definition*

Hedonic Motivation is defined as the fun or pleasure derived from using a technology (Venkatesh et al.,2012). Brown and Venkatesh (2005) defined hedonic motivation as an enjoyment or happiness resultant from using a technology.

b) ***Operational Definition***

Operationally, Hedonic Motivation is defined as the fun or pleasure users get when they use social networking sites. This is measured using the three items adapted from Venaktesh et al. (2012)

3.5.6 Habit

a) ***Theoretical Definition***

Habit is normally viewed in two ways. Kim and Malhotra(2005) has viewed habit as a prior behaviour. Habit has been defined as the extent to which people tend to perform behaviours automatically because of learning (Limayem et al., 2007).

b) Operational Definition

Operationally, Habit is defined as the extent to which users tend to use social networking sites automatically. It is measured in terms of trying to use the social networking sites in daily life, the use becoming natural and feeling addicted to use these sites. Habit is measured using four items adapted from Venkatesh et al.(2012)

3.5.7 Trust

a) Theoretical Definition

Mayer et al (1995) has defined trust as "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party". Trust was conceptualised as "individual willingness

to depend based on the beliefs in ability, benevolence, and integrity" (Gefen et al., 2003)

b) Operational Definition

Trust is operationally defined as a set of beliefs that the social networking sites will keep its promises on terms of use and personal information on these sites is kept confidential. It is measured in terms of the level of confidence in using these sites while giving the personal information. Trust is measured using 4 items adapted from Gefen et al. (2003), Koufaris et al. (2004) and Kim(2009)

3.5.8 Social Connectedness

a) *Theoretical Definition*

Social connectedness refers to a person's subjective awareness of being in close relationship with the social world *in toto* (Lee & Robbins, 1995).Social connectedness is a short term experience of belonging and relatedness.

b) *Operational Definition*

Operationally, Social Connectedness is defined as the degree of closeness and feeling of staying in touch within relationships, relating to each other when using social networking sites. In short, it refers to the relationship people have with others on the social networking sites. It is measured in terms of feeling closeness to people on SNS, finding actively involved in their connections' lives, feeling being part of the online community and finding the people

online friendly and approachable. Social Connectedness in this study is measured using 10 items adapted from Lee et al. (2001)

3.5.9 Visibility

a) ***Theoretical Definition***

Visibility can thought of as a "mean, methods and opportunities for presentation"(Bregman & Haythornthwaite,2003). "Visibility refers to the manager's subjective feeling of explicit prominence about oneself that results from experiences, interactions and socio-emotional exchanges with others and that which affords a person to feel upfront and physically visible" (Mampilly,1998).

b) ***Operational Definition***

Operationally, visibility is defined as the feeling of making oneself noted in the online community of social networking sites. It is measured in terms of participating and initiating discussions, updating profiles and status, asking questions, and feeling happy when they are contacted by others based on the information provided on these sites. Visibility is measured using 10 items adapted from Reddy et al.(1988).

3.5.10 Behavioural Intention

a) ***Theoretical Definition***

Behavioural intention measures a person's relative strength of intention to perform a behaviour (Ajzen, 1991). Behavioural Intention is defined as the degree to which a person has formulates conscious

plans to perform or not perform some specified future behaviour (Aarts et al, 1998).

b) ***Operational Definition***

Operationally, Behavioural Intention is defined as the intention to continue to use social networking sites in future. This is measured in terms of the intention to continue the use of social networking sites in daily life and frequently. It is measured using three items from Venkatesh et al. (2012).

3.5.11 Usage

a) ***Theoretical Definition***

A behaviour can be defined as an action directed at a target, performed in a certain context, and at a certain point in time (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 2010).Use behaviour is treated as actual usage in information systems research (Davis et al., 1989; Venkatesh et al., 2003;Venkatesh et al.,2012)

b) ***Operational Definition***

Operationally, Usage describes the type of use and the actual time of use of social networking sites by a user. The type of use is measured by the extent of use of the different varied features offered by the Social Networking Sites. Nine main features are used to measure the type of use and the actual time is measured by one item which asks for the time actively spent for using SNS

3.6 Scope of the study

Scope of the study defines the boundaries of the research. The researcher is trying to define the boundaries of this research with respect to population, place or location, time or period and the sources from which data and information can be collected. The study considered the Facebook and LinkedIn among the different Social Networking Sites.

3.6.1 Population

There are numerous Social Networking Sites (SNS) available and used for varied purposes. Facebook, Google+ etc are used for general purposes while LinkedIn, Quora,Xing etc are used for professional networking. Facebook is the largest in terms of number of users amongst all SNS across the world and LinkedIn is the largest in terms of number of users among the global professional networking sites. The study has chosen two representative SNS - Facebook and LinkedIn based on the difference in nature of the uses of these sites and both being the top in terms of number of users in their respective categories. Most of the SNS insists a minimum age of 18 years to create an account while some sites permits lower age too. The study has chosen users who are 18 years and older. In the recent times, SNS are also used for various commercial purposes. In the case of commercial users, the major motive is money making and hence the factors of the base model need to be revisited. Further, it moves from a consumer use context to organisational setting. Hence those users were excluded from the study. The study has taken only those users who use SNS voluntarily and for personal purposes alone.

Hence the population is defined as the non commercial users of Social Networking Sites who are above the age of 18 years.

3.6.2 Place of Study

The study was conducted in Kerala.

3.6.3 Period of the study

The study is cross sectional and the period of data collection was from August 2014 to December 2014.

3.6.4 Data Source and Data Collection

Facebook and LinkedIn were chosen among the different Social Networking Sites. Primary data was collected from the users of Facebook and LinkedIn. Details and statistics of the social networking sites were collected through secondary sources published online.

The survey research method was used to collect data and questionnaires were distributed to eligible respondents both in person and through online- using Google Docs.

3.7 Research design

The study is both descriptive and explanatory in nature. The study is descriptive as it describes the characteristics of the different variables used in the study for the Social Networking Sites- Facebook and LinkedIn. Further, it studies the use of Social Networking Sites and is

thus explanatory. The study also tries to look into the acceptance of the different Social Networking Sites.

3.8 Sampling design

The units of observation are users who use social networking sites, Facebook and LinkedIn. Facebook and LinkedIn were chosen taking the following factors into consideration. Facebook,Twitter and LinkedIn are the most commonly used SNS in India. (social media users & usage in India, 2014, report published on December 2013by eStatsIndia.com)

Of all the social networking sites, Facebook is the largest in terms of number of users (1.2 billion monthly active users worldwide and 108 million users in India as on May 2014). India is ranked 2 in terms of number of users on Facebook, U.S, being rank 1. In India, Facebook stands in the first place, followed by Google+, Twitter and LinkedIn (http://wearesocial.net/tag/india/, 2014). Since Google+ shares most of the features as same as those of Facebook, it was decided to take Facebook for the survey. Twitter, is termed as a microblogging site and has only 17% share among the social network users India (http://www.thehindu.com/sci-tech/technology/internet/twitter-accounts-for-only-17-of-indian-social-network-users/article6830300.ece). Reports have shown that most of the accounts on twitter are inactive. Moreover Twitter offers limited features when compared with those of Facebook. Hence Twitter was not considered for the study.

LinkedIn is termed as a professional networking site and mainly used for professional purposes. Users use this as a platform for job

search, recruitment and connecting with others professionally. As on May 2014, the number of users of LinkedIn is 296 million world wide and is 24 million in India. In the category of professional networking sites, LinkedIn is the largest in terms of number of users and hence LinkedIn was chosen for the study.

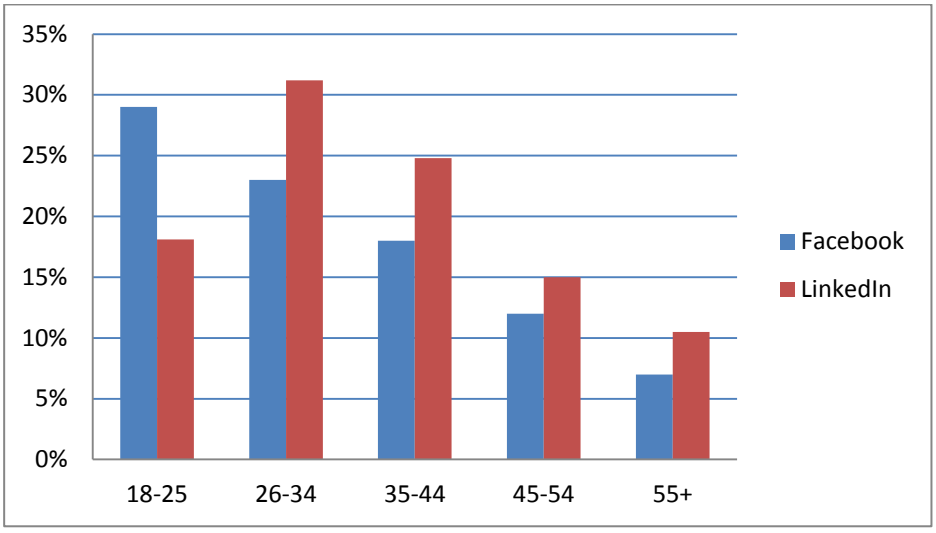
Only Social Networking Sites were considered for the study. There are other applications offered under the broad umbrella of social media. WhatsApp is one such offering and used by a large number of users and has been widely accepted by the users. WhatsApp is a cross platform mobile messaging app. Though WhatsApp had a large number of users, it was decided not to consider this in the research, since WhatsApp was offered only through smart phones at the time of data collection and is more categorised under the head of social media and not under social networking sites. Moreover, the study was intended on the use of social networking sites with varied features. At the time of data collection, WhatsApp is used only for chat, sharing of pictures and videos. Hence, WhatsApp was not considered for the study.

The sample was chosen across Kerala. The researcher has used the method of quota sampling. Quota sampling is a non-probabilistic version of stratified sampling method for selecting survey participants. Quota sampling is a two stage restricted judgemental sampling. The first stage is on developing the control strategies. Here, the SNS-Facebook/LinkedIn, age and gender are identified based on judgement and from the national statistics available. The sample elements are then chosen from these assigned quotas to match the requirements. The

quota was chosen based on the statistics available as per the number of users of Facebook and LinkedIn. The ratio of the number of users of Facebook to LinkedIn is approximately 4:1. This was based on the national statistics available on the number of users of Facebook & LinkedIn, May 2014). Hence the sample size was chosen to meet this criterion.

Age and gender are shown to be significant demographic factors that affect the acceptance and use of information systems/ technologies. Venkatesh et al.(2003) and Venkatesh et al.(2012) has stated age and gender as moderators in UTAUT and UTAUT2 respectively. Also, different studies on technology acceptance have proved the role of age and gender in the use of different systems and technologies (Raman and Don (2013);Wu et al.(2008)).Further, in the studies related to Social networks, studies have shown the significant role of age and gender (Feng and Xie (2014); Lankton and McKnight(2011); Bateman et al.(2011); Sheldon(2008)). Hence it was decided to fix the quota based on age and gender. The quota was fixed according to the statistics available on the age and gender profiles of the users of these sites.

The following figure (Figure 3.1) shows the distribution of users as per their age in the case of Social networking users of Facebook and LinkedIn.



(Source: http://www.startuptimes.in/2013/05/age-demographics-of-social-networking.html)

Figure 3.1: Demographic profiles of SNS users (Facebook and LinkedIn)

The sample was chosen to suit the age wise distribution as per the statistics available. The sample was chosen across Kerala from the users of Facebook and LinkedIn to meet the criteria of age distribution discussed above. For the age group of 18-25, the data was collected from different colleges across the state. For the rest of the age group data was collected from different organisations, online groups and communities and from the alumni databases of the colleges. The statistics says that male users of social networking sites are marginally higher than the females and hence gender was also taken as a criterion to choose the sample (Social Media users & usage in India 2014, report published on December 2013, eStatsIndia.com).

The quota was hence fixed to meet the proportion of age and gender accordingly.

Inclusion criteria

1) Users above the age of 18 were chosen for the study.
2) Only those users who use the sites for non commercial purposes were chosen for the study

The sample size required for the study was estimated based on the focus of the study and the analysis design. The analysis is done using Structural Equation Modelling (SEM) and hence, requires sufficiently large samples. So the sample size estimation considered the requirements of SEM. According to Anderson and Gerbing (1984), a sample size of 150 is usually sufficient to obtain a converged and proper solution for models with three or more indicators per factor. Boomsma (1982) recommended a sample size of 400.

The study focuses on the usage of social networking sites and also intended to analyse the variation in the model across the different sites. Hence, the quota was fixed at 1200 for Facebook and 300 for LinkedIn.

3.9 Tools for Data Collection

3.9.1 Questionnaire Structure

The questionnaire consisted of two parts. Part A was designed to capture the demographic profile of the respondents like gender, age and place of residence. Part B was designed with the questions to measure the constructs of the study. There were two questionnaires- one for Facebook users and the other for LinkedIn users. The questionnaire was reviewed by eight experts (five from academia and three from industry who are users of Social Networking sites) for the content validity.

3.9.2 Data collection Method

Survey method was used for collecting the data required for the study. Respondents were the users of Facebook and LinkedIn. Both online and offline method was used to administer the questionnaires.

3.9.3 Measures of the constructs

1. UTAUT2 constructs

The constructs of UTAUT2- Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC), Hedonic Motivation (HM), Habit (HA), Behavioural Intention (BI) are adapted from the original scales by Venkatesh et al. (2012). The number of items measuring each construct is shown in the table 3.1

Table 3.1: Number of items of measuring the variables from UTAUT2

Construct	No. of items
Performance Expectancy	4
Effort Expectancy	4
Social Influence	3
Facilitating Conditions	4
Hedonic Motivation	3
Habit	4
Behavioural Intention	3

2. Trust

Trust is measured using items adapted from Gefen et al. (2003), Koufaris et al., (2004). 4 items measured the construct.

3. Social Connectedness

Social connectedness is measured using items adapted from Lee and Robbins(1995).

10 items are used to measure the construct.

4. Visibility

The measures for visibility are adapted from the visibility credibility inventory (Reddy and Williams, 1988). 10 items are used to measure the construct.

5. Usage

Measures of Usage are adapted from Venkatesh et al.(2012). 9 items are used to measure the construct. Usage was measured by variety and frequency of use. Usage was also measured by the time spent actively on these sites.

All the items except for USAGE were measured on a 7-point Likert Scale (1-Strongly Disagree to 7-Strongly Agree).Variety and frequency of Use was measured on a 7-point scale (with 1- Never and 7-Many times a day).

3.10 Pretesting and Pilot testing

The pretesting of questionnaire was done by administering the questionnaire to 25 users (both Facebook and LinkedIn). Minor changes were made to the questionnaire design to improve understanding and certain items were reworded to simplify, after the feedback from the

respondents. The pilot test was conducted with a sample size of 250 Facebook users and 100 LinkedIn users.

3.10.1 Reliability

Reliability of an instrument is the degree to which it yields a consistent score of the variable under consideration. Cronbach's alpha is commonly used to measure the reliability. An initial level of reliability testing was done with the sample collected during the pilot survey.The reliability measures (Cronbach's alpha) for the items showed an acceptable level (Table 3.2) except for Social Connectedness and Visibility.

Table 3.2: Cronbach's alpha after the pilot test

Variable	Cronbach's alpha
Performance Expectancy	0.923
Effort Expectancy	0.903
Social Influence	0.892
Facilitating Conditions	0.876
Hedonic Motivation	0.930
Habit	0.921
Trust	0.882
Social Connectedness	0.642
Visibility	0.673
Behavioural Intention	0.901
Usage	0.911

As per the results obtained from the analysis of the pilot data, three items were deleted from Social Connectedness and two items from

Visibility. This was done since these items showed a lower load values to their respective constructs. After deleting, the reliability analysis was further done which showed an increase in the Cronbach's alpha values for both the constructs (Social connectedness - 0.821 and Visibility - 0.846). The inter item correlation and item to total correlations values also were greater than 0.5 and hence the questionnaire can be taken as a reliable measurement tool (Hair et al.,2006).

3.11 Final survey

The final questionnaire consisted of 60 questions after incorporating the changes from the pilot survey. The respondents had to indicate the responses on a 7-point Likert scale, ranging from "Strongly disagree" to "Strongly agree". The demographic questions included age, gender and location.

Both online and offline method was used for the survey. The online survey was done by using Google Docs. The respondents were limited to the state of Kerala

3.12 Limitations of the study

There are many new applications under the broad category of social media and the study has focussed only on the social networking sites available across different platforms. Only two Social Networking Sites are considered for the study based on the classification of the purposes of these sites. Hence the generalizability may be limited to such types of sites alone. The data is found not to strictly follow the distributional assumptions of MLE. Hence use of alternative methods

might have improved the validity of the findings. The study has not considered the difference in platforms offering the access to these sites. The study has focussed on the voluntary users of Social Networking Sites and those users who use them for commercial and organisational purposes are not included. The sample has been chosen based on the national statistics available and the state wise reports weren't available. Hence the comparison between sample and population parameters may vary.

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Chapter 4

ASSESSMENT OF THE CONCEPTUAL MODEL

Contents

This chapter presents the results obtained from the data analysis. Structural Equation Modelling was used to examine the hypothesized model. The results of analysis and hypotheses testing are presented in this chapter. The results are discussed in terms of their relationship with research objectives.

4.1 Data collection

The data were collected during the period of June 2014 to November 2014. A total of 1500 questionnaires (1200 Facebook and 300 LinkedIn) were administered to the users. For Facebook, 700 was administered offline and rest by online while for LinkedIn, 200 was administered offline, the rest by online. Google Forms was used for online collection. 1190 filled questionnaires were received, counting together both Facebook and LinkedIn. 472 questionnaires were received online and the rest by offline. The response rate was 79.3%.Out of this 998(744Facebook +254 LinkedIn) usable questionnaires were used for analysis after removing incomplete questionnaires.

4.2 Profile of the respondents

4.2.1 Classification based on gender

Out of the 998 respondents, 54.7% were men and 45.3% were women. The details are given in Table 4.1

Table 4.1: Classification of respondents based on gender

Group		**Gender**		**Total**
		Male	**Female**	
Facebook	Frq	360	384	744
	Percent	48.4	51.6	100
LinkedIn	Frq	186	68	254
	Percent	73.2	26.8	100
Total	**Frq**	546	452	998
	Percent	54.7	45.3	100
Abbreviations used: Frq=frequency				

Out of the 744 respondents for Facebook, 48.4% are men and the remaining 51.6% are women. Out of 254 respondents for LinkedIn, 73.2% are men, while remaining 26.8% are women.

4.2.2 Classification based on Age

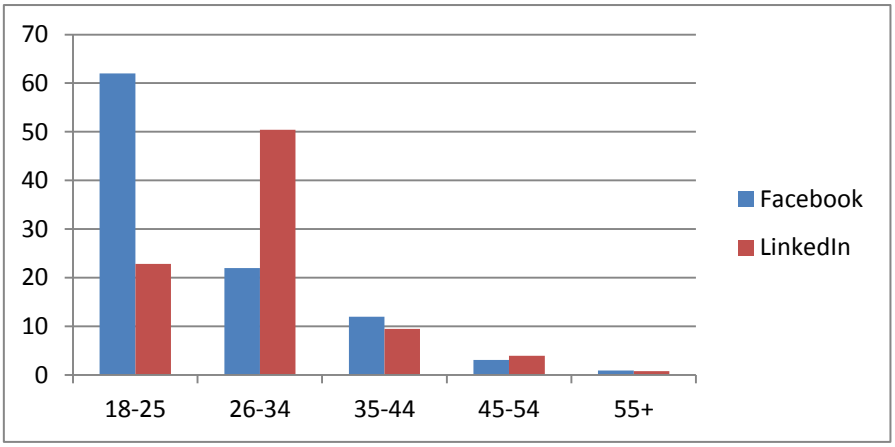


Figure 4.1: Classification of respondents based on age (Percentage wise)

The figure 4.1 shows the classification of the respondents based on age. It is seen that the highest number of users for Facebook falls in the age group 18-25, while that of LinkedIn falls in the age group 26-34.

The above sample characteristics are in tune with that of the population in case of both gender and age.

4.3 Flow of Analysis

The flow of the analysis is as follows. The test for reliability check is done at the first level. Cronbach's alpha is used for this purpose. Next,

Confirmatory Factor Analysis (CFA) is done to confirm the factor structure and the validity is tested further. This is followed by the assessment of the structural model. For CFA and assessing the structural model, Structural Equation Modelling (SEM) with AMOS 21 is used. The model is then tested along with the original UTAUT2 model with the same data set to check if the proposed model has greater explanatory power over the base model. The method of nested model comparison is used for this purpose. Further the model is assessed to find out if there is any variation in model across Social Networking Sites – Facebook and LinkedIn. This is done using multigroup analysis method (Ho, 2006). The same method is followed to check for the variation of the model across gender and age.

4.4 Reliability Test

Reliability refers to the extent to which a scale produces consistent results if repeated measurements are made. Reliability can be defined as the extent to which measures are free from random error. It is assessed by determining the proportion of systematic variation in a scale. This is done by determining the association between scores obtained from different administrations of the scale (Malhotra and Dash, 2010). There are several methods to establish reliability, which include test-retest method, equivalent forms, split –halves method and internal consistency method. Internal consistency is estimated using a reliability coefficient called Cronbach's alpha (Cronbach, 1951).

Here, reliability is assessed by the method of coefficient alpha, or Cronbach's alpha. This coefficient varies from 0 to 1. An alpha of 0.70 or above can be taken as the cut-off for reliability of a scale (Nunnally, 1978). The Cronbach's alpha calculated for the variables are shown in table 4.2. The reliability is measured on the combined data of both Facebook and LinkedIn. It can be seen from the table, all the factors had Cronbach's alpha value above 0.70, which is the cut off value and hence reliability is established.

Table 4.2a: Cronbach's alpha of measurement tools

Variable	Cronbach's alpha
Performance Expectancy	0.946
Effort Expectancy	0.916
Social Influence	0.940
Facilitating Conditions	0.876
Hedonic Motivation	0.950
Habit	0.961
Trust	0.935
Social Connectedness	0.956
Visibility	0.898
Behavioural Intention	0.939
Usage	0.901

Further the descriptive statistics are given in table 4.2b. The Mean and Standard Deviation is calculated for the variables and the total sample size is 998

Table 4.2b: Descriptive Statistics

Variable	Mean	Standard Deviation
Performance Expectancy	4.43	1.39
Effort Expectancy	5.77	0.88
Social Influence	4.54	1.47
Facilitating Conditions	5.64	0.81
Hedonic Motivation	5.07	1.29
Habit	3.82	1.62
Trust	3.98	1.44
Social Connectedness	4.16	1.34
Visibility	3.96	1.23
Behavioural Intention	4.7	1.36

4.5 Testing for Common Method Bias

"Common method bias is a main source of measurement error and can arise due to a common rater, a common measurement context, a common item context, or from the characteristics of the items themselves" (Podsakoff et al.,2003). To test Common Method Bias, Harman's one factor test is normally used. All the items are combined to do an exploratory factor analysis (EFA) and the majority of the variance contributed by one dominant factor is seen. Appendix1 depicts the EFA (PCA) with all the items. The first component accounts for only 28.058% of the total variance, which is below the cut off value of 50% (Roni, 2014).

4.6 Confirmatory Factor Analysis (CFA)

Confirmatory Factor Analysis (CFA) focuses on the extent to which the observed variables are generated by the underlying factors. CFA is used to provide a confirmatory test of the measurement theory. A measurement theory specifies how measured variables logically and systematically represent constructs involved in a theoretical model (Hair et al., 2012). CFA is mainly used when the researcher has some knowledge of the underlying latent variable structure (Byrne, 2010). Estimation of the measurement model is used to assess the fit of the data to a hypothesized model. The measurement model is concerned with the relations between observed and latent variables. (Ho,2006). The measurement model provides a test for the reliability of the observed variables employed to measure the latent variables. The focus of CFA is primarily on the link between observed and latent variables within the framework of Structural Equations Modelling (SEM).

Software package IBM AMOS 21 was used to do CFA. The following are the commonly used fit indices to assess the fit between a model and a data set which in turn proves its validity.

The Goodness-of- Fit Index (GFI): GFI is one of the most commonly reported measures of the model fit. GFI is a measure of the relative amount of variance and covariance in the sample data that is jointly explained by the hypothesized model (Byrne, 2010). The index range from 0 to 1, and values close to 1 are termed as good fit. GFI can be overly influenced by sample size.

Adjusted Goodness-of- Fit Index (AGFI) :AGFI is an extension of GFI and it adjusts for the number of degrees of freedom in the specified model. The value also ranges from 0 to 1, and values close to 1 are termed as good fit.

The Root Mean Square Residual (RMR): This represents the average residual value derived from the fitting of the variance –covariance matrix for the hypothesized model to that of the sample data. The standardized RMR (SRMR) represents the average value across all standardized residuals and ranges from 0 to 1. To be termed as a well fitting model, the value should be small (normally less than 0.05).

Bentler and Bonett's Fit Index (NFI or TLI): This index is a good indicator of the convergent validity of the questionnaire. A scale with TLI values of 0.9 or above is an indication of strong convergent validity (Bentler and Bonett, 1980).

Comparative Fit Index (CFI): CFI is a measure of overall goodness of fit and uses a Chi- square distribution. The value ranges from 0 to 1 and the value 1 indicates a perfect fit. Values of 0.90 above are often considered to indicate good fit.

Relative Fit Index (RFI): Represents a derivative of the NFI and the coefficient value ranges from 0 to 1(Bollen, 1986). The values close to 1 are termed as good fit.

Incremental Fit Index (IFI): Addresses the issues of parsimony and sample size that are associated with the NFI. The computation of IFI is

similar to NFI and it considers the degrees of freedom too. This index also varied from 0 1to 1, and the values closer to 1 are termed as good fit.

Root Mean Square Error of Approximation (RMSEA) :It takes into account the error of approximation in the population. Values less than 0.05 indicated a good fit.

Apart from these values, the following set of statistics are used to address the issue of parsimony in the assessment of the model fit.

Akaike's(1987) Information Criterion (AIC) and Bozdogan's (1987) consistent version of the AIC(CAIC) : Both are used in the comparison of two or more models, with smaller values representing a better fit of the hypothesized model (Hu &Bentler,1995).They share the same conceptual framework

Brown-Cudeck Criterion (BCC) and Bayes Information Criterion (BIC) : These indices operate in the same manner as AIC and CAIC,but impose greater penalties than AIC and CAIC for model complexity (Byrne, 2010).

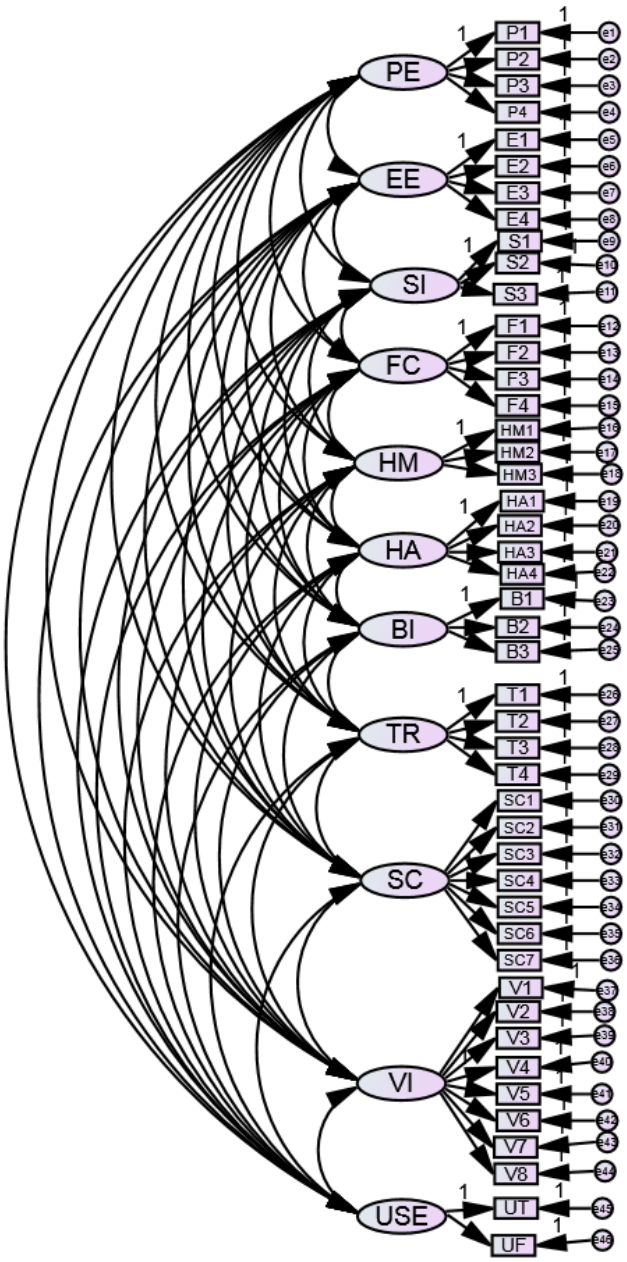
4.6.1 Distributional Assumptions

Maximum Likelihood (ML) methods are employed for estimating the parameters. A major assumption of ML is that the data follows multivariate normal distribution. The kurtosis of every item was checked and was found to vary from -1.437 to 1.846 except for three items (2 of Facilitating Conditions -2.727, 2.897and 1 from Effort Expectancy-

2.891). We can conclude that no item is substantially kurtotic as these values are lesser than the cut-off score 7 suggested by Kline(2005). Mardia's normalised estimate was considered for testing multivariate normality. When the sample is sufficiently large and multivariate normal, Mardia's normalised estimate is distributed as a unit normal variate and large positive values reflect significant positive kurtosis and large negative values reflect significant negative kurtosis. (Byrne, 2010). According to Bentler (2005), values>5 indicates data is non normally distributed. In the study the value is found as 21.934showing that the data shows non normal characteristics. "MLE estimators are quite robust to violation of normality. Ie, the estimates are good estimates even when the data are not normally distributed"(Chou & Bentler, 1995).Based on these arguments, the researcher has decided to proceed with MLE method in SEM procedures.

4.6.2 Confirmatory Factor Analysis (CFA) of the hypothesized model

The measurement model includes the items measuring the constructs in the conceptual model. The measurement model is depicted in figure 4.2



PE-Performance Expectancy, EE-Effort Expectancy, SI-Social Influence, FC-Facilitating Conditions, HM-Hedonic Motivation, HA-Habit, BI-Behavioural Intention, TR-Trust, SC-Social Connectedness, VI-Visibility, USE-USAGE

Figure 4.2: Measurement model

The values of fit measures obtained from CFA for the conceptual model are as follows:

Chi- squared with 934 degrees of freedom (934)=1923.522, $p<0.01$; the ratio of chi square to number of degrees of freedom (normed χ^2) = 2.059. The fit indices are given in table 4.2

Table 4.3: Fit indices of the measurement model

FIT indices	**Values**
Comparative Fit Index (CFI)	0.975
Goodness of Fit Index (GFI)	0.920
Adjusted Goodness of Fit Index (AGFI)	0.908
Normed Fit Index (NFI)	0.953
Relative Fit Index (RFI)	0.948
Standardized Root Mean Squared Residual (SRMR)	0.0329
Root Mean Square Error of Approximation (RMSEA)	0.033

The values of the fit indices shows good fit as the values are close to 1 and hence the measurement model can be considered as a good fit model. Further the following indices are measured to ensure the fit of the hypothesized model.

The Akaike's Information Criterion (AIC), Browne-Cudeck Criterion (BCC), Bayes Information Criterion (BIC) and consistent version of the AIC (CAIC) values for hypothesised model, saturated model and independence model are reported in table 4.3

Table 4.4: Model Comparison Indices of the measurement model

Model Comparison Indices				
Model	**AIC**	**BCC**	**BIC**	**CAIC**
Hypothesized model	2217.522	2232.067	2938.668	3085.668
Saturated model	2262.000	2268.962	7465.119	8546.119
Independence model	40797.329	40801.881	41022.994	41068.994
Abbreviations used: AIC= Akaike's Information Criterion; BCC= Browne-Cudeck Criterion; BIC= Bayes Information Criterion; CAIC= Consistent Akaike's Information Criterion				

From the table it is evident that all the values (AIC, BCC, BIC and CAIC) are lowest for the hypothesized model and hence the hypothesized model can be accepted with a good fit.

Hoelter (1983)Critical N focuses directly on adequacy of sample size, rather than on model fit. It is used to estimate a sample size that would be sufficient to yield an adequate model fit for a χ^2 test(Hu &Bentler,1995). Hoelter's critical N values which are greater than 200 show that the sample size of this study is satisfactory for the model. (Byrne 2010, p.93).

The results show that Hoelter's 0.05 and 0.01 critical N values are 522 and 538. Hence the sample size is deemed to be satisfactory for running the model.

From the above results, it can be seen that the measurement model show very good fit as all the fit indices are above 0.90. Hence, the present measurement model can be accepted. The further testing of the structural model can thus be initiated by fixing this measurement model.

4.7 Validity Tests

The validity of a scale may be defined as the extent to which differences in observed scale scores reflect true differences among objects on the characteristic being measured, rather than systematic or random error. Validity is defined as the extent to which any measuring instrument measures what it is intended to measure (Carmines and Zeller, 1990).

4.7.1 Content Validity

Content validity is a subjective but systematic evaluation of how well the content of scale represents the measurement task at hand (Malhotra and Dash, 2010). Content validity of an instrument refers to the degree to which it provides an adequate depiction of the conceptual domain that it is designed to cover (Hair et al., 1998). In the case of content validity, the evidence is subjective and logical, rather than statistical. Also termed as face validity, this can be established through review of the questionnaire by experts in the field. The questionnaire was scrutinized by academicians and experts in the field and certain items were reworded and hence the face validity was ensured.

4.7.2 Construct validity

Construct validity addresses the question of what construct or characteristic the scale is measuring. It is the extent to which a set of measured items actually reflects the theoretical latent construct those

items are designed to measure (Hair et al., 2012). Construct validity includes convergent, discriminant and nomological validity.

4.7.2.1 Convergent validity

Convergent validity is the extent to which the scale correlates positively with other measures of the same construct. It assesses the degree to which two measures of the same concept are correlated. (Hair et al, 2012). Three measures are used for measuring convergent validity: factor loadings, Average variance Extracted (AVE) and construct reliability. AVE is the average amount of variance in indicator variables that a construct is managed to explain. To have sufficient convergent validity, the standardized factor loadings are to be atleast greater than 0.5 and ideally greater than 0.7. From the CFA results, the standardized factor loading, corresponding to each item of the latent construct in the model is significant ($p<0.01$) and the values are greater than 0.7 (Appendix 2)

The average variance extracted (AVE) should be estimated for each latent construct in the model and its value should exceed 0.5 for each latent construct, in order to have sufficient convergent validity (Fornell and Lacker ,1981). AVE is calculated as the sum of the squared standardized factor loadings divided by the number of items, for each latent variable. The AVE values are given in the Table 4.5 .All the AVE values are found to be greater than 0.5 and so the tools are said to satisfy convergent validity.

Table 4.5: Average Variance Extracted

Variables	AVE
Performance Expectancy(PE)	0.799
Effort Expectancy(EE)	0.737
Social Influence(SI)	0.807
Facilitating Conditions(FC)	0.639
Hedonic Motivation(HM)	0.829
Habit(HA)	0.863
Trust(TR)	0.762
Social Connectedness(SC)	0.758
Visibility(VI)	0.696
Behavioural Intention(BI)	0.829
USAGE	0.748

4.7.2.2 Discriminant validity

Discriminant validity is the extent to which a measure doesn't correlate with other constructs from which it is supposed to differ. i.e, it is the degree to which two conceptually similar concepts are distinct. (Hair et al., 2012). To check discriminant validity, we need to do an appropriate Average Variance Extracted (AVE) analysis. We test to see if the square root of every AVE value belonging to each latent construct is much larger than any correlation among any pair of latent constructs. i.e, we check if the items of the construct explain more variance than do the items of other constructs.

The table 4.6 depicts the AVE comparison. We can see from the table that the square root of the AVE of each latent construct is larger

than the correlation of all the other pair of latent constructs. Hence the discriminant validity has been established.

Table 4.6: Discriminant validity

	VI	PE	EE	SI	FC	BI	HM	HA	TR	SC	USAGE
VI	**0.834**										
PE	0.510	**0.894**									
EE	0.109	0.161	**0.859**								
SI	0.266	0.277	0.099	**0.899**							
FC	0.068	0.180	0.505	0.062	**0.800**						
BI	0.501	0.481	0.286	0.265	0.250	**0.909**					
HM	-0.032	0.056	0.397	-0.036	0.306	0.184	**0.911**				
HA	0.465	0.447	0.231	0.262	0.204	0.612	0.194	**0.930**			
TR	0.163	0.150	-0.025	0.126	-0.032	0.196	-0.156	0.075	**0.874**		
SC	0.555	0.431	0.225	0.246	0.203	0.581	0.233	0.477	0.088	**0.871**	
USAGE	0.618	0.653	0.189	0.297	0.163	0.670	0.129	0.630	0.213	0.718	**0.865**

Abbreviations used: PE-Performance Expectancy, EE-Effort Expectancy, SI-Social Influence, FC-Facilitating Conditions, HM-Hedonic Motivation, HA-Habit, BI-Behavioural Intention, TR-Trust, SC-Social Connectedness, VI-Visibility

4.7.2.3 Nomological validity

Nomological validity is the extent to which the scale correlates in theoretically predicted ways with measures of different but related constructs. It is the degree that the summated scale makes accurate predictions of other concepts in a theoretically based model. (Hair et al. 2012). Nomological validity is tested by examining whether the

correlations between the constructs in the measurement model is as expected.

From the table 4.7, correlations between the constructs are found to be positive and also significant ($p<0.001$). Thus the inter-construct correlations are consistent with the conceptual model/hypothesis stated. Thus the nomological validity of the stated model is established.

Table 4.7: Correlations

	PE	EE	SI	FC	HM	HA	TR	SC	VI
PE	1								
EE	0.189	1							
SI	0.258	0.14	1						
FC	0.213	0.479	0.134	1					
HM	0.141	0.38	0.022	0.291	1				
HA	0.427	0.309	0.244	0.247	0.291	1			
TR	0.514	0.115	0.262	0.15	0.022	0.464	1		
SC	0.422	0.234	0.261	0.228	0.284	0.466	0.478	1	
VI	0.503	0.16	0.266	0.103	0.078	0.474	0.505	0.598	1

Abbreviations used: PE-Performance Expectancy, EE-Effort Expectancy, SI-Social Influence, FC-Facilitating Conditions, HM-Hedonic Motivation, HA-Habit, TR-Trust, SC-Social Connectedness, VI-Visibility

The reliability and validity of the measurement has been ensured above. The CFA also shows a good fit for the model and hence, the measurement model is finalised .Next, we initiate the assessment of the structural model based on the finalised measurement model.

4.8 Assessing the Structural Model

The analysis of the proposed model was done using Structural Equation Modelling (SEM). As suggested by Anderson & Gerbing (1998), a two stage approach was employed. First the measurement model is assessed and this was followed by testing of the structural model. As explained above, the assessment of the measurement model was done using the CFA and found to be acceptable with good fit. Hence, with this accepted measurement model, the assessment of the structural model is initiated.

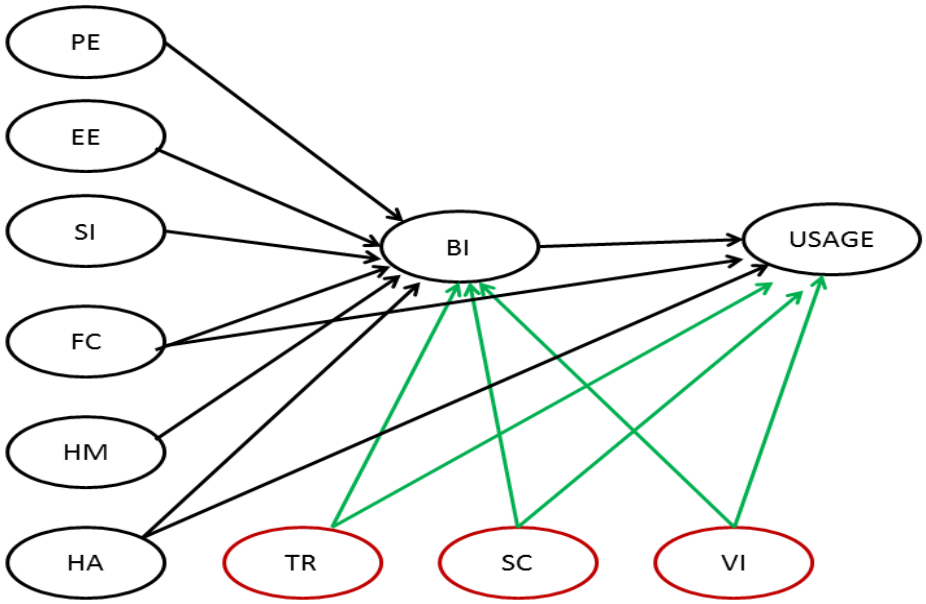
The following steps are done to assess the structural model.

First the conceptual model is tested with the integrated data of both Facebook and LinkedIn. As mentioned in the earlier chapter, the conceptual model is formulated by adding three variables- Trust, Social Connectedness and Visibility to UTAUT2. Next, the model is tested to check if there is any mediation effect of Behavioural Intention (BI) on USAGE for the added variables- Social Connectedness (SC), Trust (TR) and Visibility (VI).

Secondly, the conceptual model is tested with the original UTAUT2 model. This is done to check if the conceptual model explains USAGE better than the original model with the data set.

Finally, the moderating role of Social Networking Sites (Facebook and LinkedIn) is tested to check if there is any variation in the factors explaining the USAGE across the different types of SNS. Also, the model is checked for the moderating effect of gender and age.

The structural model is depicted in the Figure 4.3 below



Abbreviations used: PE-Performance Expectancy, EE-Effort Expectancy, SI-Social Influence, FC-Facilitating Conditions, HM-Hedonic Motivation, HA-Habit, TR-Trust, SC-Social Connectedness, VI-Visibility, BI- Behavioural Intention

Figure 4.3: Conceptual Model

The final model is evaluated with SEM using AMOS 21.0. The model is checked for fit and the fit indices and the statistics are reported. The chi – square value= 1912.888 with 937 degrees of freedom and is found to be significant ($p<0.05$). The fit indices are displayed in the table 4.8 below.

Table 4.8: Fit indices of the structural model

Indicators	Values
Normed Chi-square	2.042
GFI	0.920
AGFI	0.908
SRMR	0.033
NFI	0.953
RFI	0.948
IFI	0.975
TLI	0.973
CFI	0.975
RMSEA	0.032

Abbreviations used: GFI- Goodness of Fit Index, AGFI- Adjusted Goodness of Fit Index, SRMR- Standardized Root Mean Square Residual, NFI- Normed Fit Index, RFI-Relative Fit Index, IFI-Incremental Fit Index, TLI- Tucker-Lewis Index, CFI-Comparative Fit Index, RMSEA-Root Mean Square Error of Approximation

From the table, it is evident that the conceptual models fits well, as all the fit indices shows a good fit and are above the acceptable levels.

Next the model is tested for the parsimony and the values are reported in table 4.9

Table 4.9: Model comparison indices of the structural model

Model	AIC	BCC	BIC	CAIC
Hypothesized model	2202.888	2217.235	2914.222	3059.222
Saturated model	2162.000	2268.962	7465.119	8546.119
Independence model	40797.329	40801.881	41022.994	41068.994

Abbreviations used: AIC- Akaike's Information Criterion, BCC- Brown-Cudeck Criterion, BIC- Bayes Information Criterion, CAIC- Consistent Akaike's Information Criterion

It is seen that the BCC, BIC and CAIC values are lower than the Saturated model and the Independence Model, while the AIC value is closer to the saturated model than the to the independence model. This shows, by comparative fit measures the hypothesized conceptual model is better than both the saturated and the independence model.

The conceptual model shows a good fit and hence can be accepted. Next the paths are checked for the significance. This is done to check if our stated hypotheses hold or not. The table 4.10 below shows the regression weights and significance. (The red coloured lines shows the p values > 0.05)

Table 4.10: Regression coefficients

Regression Weights: (Group number 1 - Default model)						
			Estimate	**S.E.**	**C.R.**	**P**
BI	←	PE	0.124	0.028	4.472	***
BI	←	EE	0.114	0.05	2.28	0.023
BI	**←**	**SI**	**0.022**	**0.025**	**0.906**	**0.365**
BI	**←**	**HM**	**0.028**	**0.028**	**1.007**	**0.314**
BI	←	SC	0.253	0.03	8.555	***
BI	←	VI	0.123	0.039	3.135	0.002
BI	←	TR	0.113	0.024	4.713	***
BI	**←**	**FC**	**0.085**	**0.055**	**1.546**	**0.122**
BI	←	HA	0.282	0.027	10.348	***
USAGE	**←**	**FC**	**0.068**	**0.04**	**1.709**	**0.088**
USAGE	←	HA	0.101	0.024	4.265	***
USAGE	←	SC	0.117	0.025	4.668	***
USAGE	←	VI	0.235	0.031	7.491	***
USAGE	**←**	**TR**	**0.000**	**0.020**	**.018**	**0.986**
USAGE	←	BI	0.187	0.03	6.221	***

Abbreviations used: PE-Performance Expectancy, EE-Effort Expectancy, SI-Social Influence, FC-Facilitating Conditions, HM-Hedonic Motivation, HA-Habit,

TR-Trust, SC-Social Connectedness, VI-Visibility, BI- Behavioural Intention, S.E- Standard Error, C.R- Critical Ratio

For the integrated data of both Facebook and LinkedIn, it can be seen from the table that five relations are not significant. The effect of Social Influence, Hedonic Motivation and Facilitating Condition on Behavioural Intention and the effect of Facilitating Conditions and Trust on Usage are found to be insignificant.

From these analysis, the following conclusions are made on the hypotheses stated (Table 4.11)

Table 4.11: Hypotheses testing

H1	PE has a significant effect on BI	Accepted
H2	EE has a significant effect on BI	Accepted
H3	***SI has a significant effect on BI***	***Rejected***
H4	***FC has a significant effect on BI***	***Rejected***
H5	***HM has a significant effect on BI***	***Rejected***
H6	HA has a significant effect on BI	Accepted
H7	TR has a significant effect on BI	Accepted
H8	SC has a significant effect on BI	Accepted
H9	VI has a significant effect on BI	Accepted
H10	***FC has a significant effect on USAGE***	***Rejected***
H11	HA has a significant effect on USAGE	Accepted
H12	SC has a significant effect on USAGE	Accepted
H13	VI has a significant effect on USAGE	Accepted
H14	***TR has a significant effect on USAGE***	***Rejected***
H15	BI has a significant effect on USAGE	Accepted

Abbreviations used: PE-Performance Expectancy, EE-Effort Expectancy, SI-Social Influence, FC-Facilitating Conditions, HM-Hedonic Motivation, HA-Habit, TR-Trust, SC-Social Connectedness, VI-Visibility, BI- Behavioural Intention

The analysis of hypotheses shows that Performance Expectancy (PE), Effort expectancy (EE), Habit (HA), Trust (TR), Social Connectedness (SC) and Visibility has a positive significant effect on Behavioural Intention (BI). Social Influence (SI), Facilitating Conditions (FC) and Hedonic Motivation (HM) are found to be insignificant in predicting BI. In the case of USAGE, Habit (HA), Social Connectedness (SC), Visibility(VI) and BI were found to be significant direct predictors while, Facilitating Conditions (FC) and Trust (TR) were found to be have no significant direct effect.

The standardized regression coefficients are given in the table 4.12 below.(those in red colour are the non significant paths)

Table 4.12: Standardized Regression weights

Standardized Regression Weights: (Group number 1 - Default model)				
			Estimate	**Significance**
BI	←	PE	0.134	Yes
BI	←	EE	0.069	Yes
BI	***←***	***SI***	***0.023***	***No***
BI	***←***	***HM***	***0.028***	***No***
BI	←	SC	0.278	Yes
BI	←	VI	0.108	Yes
BI	←	TR	0.117	Yes
BI	***←***	***FC***	***0.046***	***No***
BI	←	HA	0.318	Yes
USAGE	***←***	***FC***	***0.059***	***No***
USAGE	←	HA	0.181	Yes
USAGE	←	SC	0.205	Yes
USAGE	←	VI	0.326	Yes
USAGE	***←***	***TR***	***0.012***	***No***
USAGE	←	BI	0.297	Yes

Abbreviations used: PE-Performance Expectancy, EE-Effort Expectancy, SI-Social Influence, FC-Facilitating Conditions, HM-Hedonic Motivation, HA-Habit, TR-Trust, SC-Social Connectedness, VI-Visibility, BI- Behavioural Intention

From the table, it is seen that Habit (HA) is the main predictor of Behavioural Intention (BI), followed by Social Connectedness (SC). Visibility is the main predictor of USAGE, followed by Behavioural Intention. The model is found to explain 53% variation in Behavioural Intention and 66 % in USAGE. Hence it can be concluded that the conceptual model can be used to explain the usage of social networking sites.

Next the mediation effect of Behavioural Intention on Usage for the added variables namely Trust, Social Connectedness and Visibility is checked.

4.9 Assessing the Mediation role of Behavioural Intention (BI)

The conceptual model was proposed by adding three variables- Trust, Social Connectedness and Visibility to the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2). All the relations specified in UTAUT2 were retained in the study. Hence the mediation effect of Behavioural Intention for the variables in the UTAUT2 was not again checked in this research. The analysis of the conceptual model in the last section showed that Social Connectedness (SC)and Visibility (VI) has a significant effect on Behavioural Intention (BI) as well as on USAGE, while Trust(TR) had a significant effect on BI and an insignificant effect on USAGE. Hence it was decided to check for the mediation effect of the added variables to the UTAUT2 alone.

The mediation analysis is done on Trust (TR), Social connectedness (SC) and Visibility (VI) with Behavioural Intention (BI) to USAGE. The

other relations in the original UTAUT2 model were kept the same and the mediation check was not employed for them. Here the mediator is BI and the dependent variable is USAGE. The procedural method of Baron and Kenny (1986) was followed to interpret the mediation analysis.

Initially, the mediation analysis was done to check if Behavioural Intention (BI) mediates the relationship between Trust (TR) and USAGE. The method of regression analysis was chosen. First, USAGE was regressed on Trust (β=0.129, $p<0.05$, R^2=0.129). Here $p<0.05$ and hence the relation is significant. Second, Behavioural Intention was regressed on Trust (β=0.188, $p<0.05$, R^2=0.035). The $p<0.05$ values shows that the relation is significant. Third, USAGE was regressed on Behavioural Intention (β=0.531, $p<0.05$, R^2=0.282). Here also, $p<0.05$ and hence the relation stands significant. Lastly, USAGE was regressed on Trust while controlling for Behavioural Intention (β=0.030, $p>0.05$, R^2=0.283).Since here the p-value >0.05, and the relation is insignificant. Since the other three relations stands significant and while controlling Behavioural Intention, the relation becomes insignificant, it points out to a chance of full mediation. Also it can be noted that the R^2 value shows an increase when USAGE was regressed on Trust while controlling Behavioural Intention (R^2=0.283). ie., there is an increase in the variation explained. Hence, it can be concluded that Behavioural Intention fully mediates the relationship between Trust and USAGE.

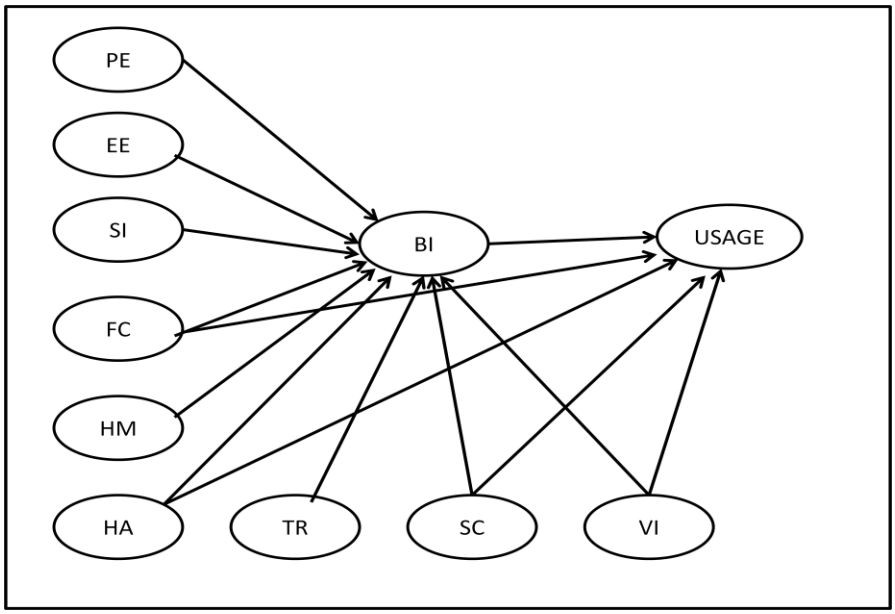
Next the mediation analysis was done to check if Behavioural Intention (BI) mediates the relationship between Social Connectedness (SC) and USAGE. The same process as explained above is done. First

USAGE was regressed on SC (β=0.503, $p<0.05$, R^2=0.253). Next, BI was regressed on SC (β=0.565, $p<0.05$, R^2=0.319).Third, USAGE was regressed on BI (β=0.531, $p<0.05$, R^2=0.282).Lastly, USAGE was regressed on SC while controlling for BI (β=0.298, $p<0.05$, R^2=0.343). Here it can be seen that the relationship between SC and USAGE weakened (from β=0.503, $p<0.05$ to β=0.298, $p<0.05$) but still remained significant ($p<0.05$) when controlling the effects for the mediating variable BI. Here all the relations stand significant. The R^2 value increased to 0.343 from 0.253. Hence it can be concluded that BI partially mediates the relationship between SC and USAGE.

Last the mediation analysis was done to check if Behavioural Intention (BI) mediates the relationship between Visibility (VI) and USAGE. First USAGE was regressed on VI (β=0.517, $p<0.05$, R^2=0.267). Next, BI was regressed on VI (β=0.479, $p<0.05$, R^2=0.230). Third, USAGE was regressed on BI (β=0.531, $p<0.05$, R^2=0.282). Lastly, USAGE was regressed on VI while controlling for BI (β=0.340, $p<0.05$, R^2=0.372). Here it can be seen that the relationship between VI and USAGE weakened (from β=0.517, $p<0.05$ to β=0.340, $p<0.05$) but still remained significant ($p<0.05$) when controlling the effects for the mediating variable BI. The R^2 value increased to 0.372 from 0.267. Hence it can be concluded that BI partially mediates the relationship between VI and USAGE.

Thus, BI partially mediates the relationship between SC, VI to USAGE while BI fully mediates the relationship of TR to USAGE.

Hence the primary objective to frame an extended model to explain the acceptance and usage of social networking sites is achieved. Since BI fully mediates the relationship of trust to usage, the finalised conceptual model (figure 4.4) can be used to explain the usage of social networking sites.



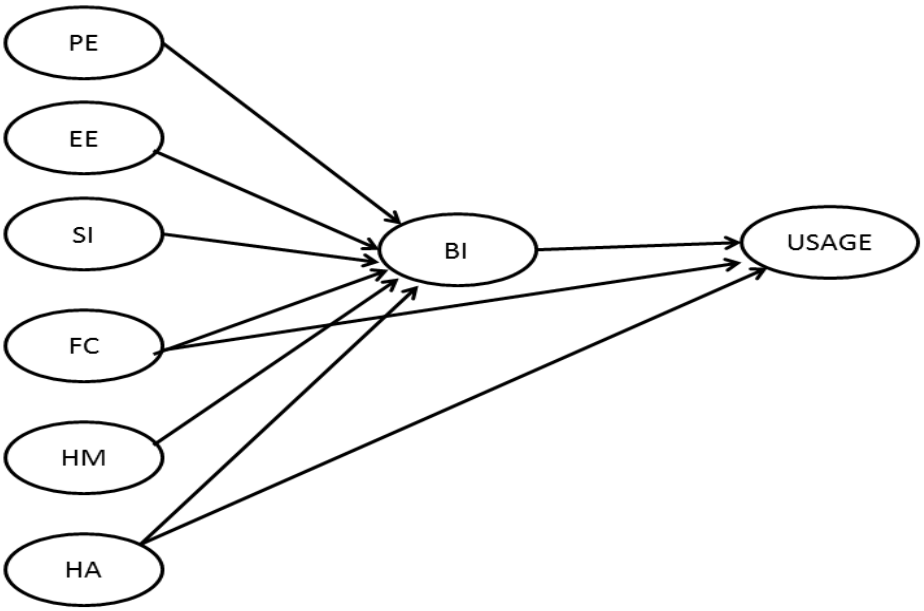
Abbreviations used: PE-Performance Expectancy, EE-Effort Expectancy, SI-Social Influence, FC-Facilitating Conditions, HM-Hedonic Motivation, HA-Habit, TR-Trust, SC-Social Connectedness, VI-Visibility, BI- Behavioural Intention

Figure 4.4: Finalised Conceptual Model

4.10 Comparing the conceptual model and UTAUT2 model

The conceptual model framed above is found to explain the usage of social networking sites and has a good explanatory power. To check whether the conceptual model explains the usage better than the original

UTAUT2 model, the proposed conceptual model is tested with the original UTAUT 2 model on the same data set. The nested model comparison is used for this purpose. " A model M_2 is said to be nested in another model M_1 if the set of freely estimated parameters in M_2 is a subset of those in M1 and is denoted as $M_2<M_1$. "(Anderson & Gerbing, 1998). The UTAUT 2 model and the conceptual model proposed here can be called as nested since they are hierarchical models based on the same data set (Ho, 2006).The UTAUT 2 model is represented in the figure 4.5 below. It can be noted that UTAUT2 is a subset of the conceptual model.



Abbreviations used: PE-Performance Expectancy, EE-Effort Expectancy, SI-Social Influence, FC-Facilitating Conditions, HM-Hedonic Motivation, HA-Habit, BI- Behavioural Intention

Figure 4.5: UTAUT2

Since these nested models possess different degrees of freedom, their goodness of fit can be directly compared via multimodel analysis. The following steps are done for this process.

1) Defining the full Unconstrained model with all the paths (the conceptual model).

2) Defining the Constrained model in which the 5 paths (Trust→Behavioural Intention, Social Connectedness→ Behavioural Intention, Visibility→Behavioural Intention, Social Connectedness→Usage, Visibility→Usage) are constrained to zero. When the paths are constrained to zero, it is equivalent to those paths not being estimated (UTAUT2)

Here, the unconstrained model (1) is the proposed conceptual model and the constrained model (2) is the original UTAUT2 model. The model is tested using AMOS.

The results on testing both the models are as in table 4.13 below.

Table 4.13: Chi square values of the comparison of models

Model	NPAR	CMIN	DF	P	CMIN/DF
Unconstrained model	144	1912.888	937	0.000	2.042
Constrained model	139	2178.920	942	0.000	2.313
Saturated model	1081	0.000	0		
Independence model	46	40705.329	1035	0.000	39.329

Abbreviations used: NPAR- number of parameters in the model, CMIN- Chi-Square statistic, DF-Degrees of Freedom, CMIN/DF- Relative(Normed) Chi-Square

RMR, GFI

Table 4.14 : Fit Indices of the comparison of models

Model	RMR	GFI	AGFI	PGFI
Unconstrained model	.067	.920	.908	.798
constrained model	.101	.911	.898	.794
Saturated model	.000	1.000		
Independence model	.693	.184	.148	.176

Abbreviations used: RMR- Root Mean Square Residual, GFI- Goodness of Fit Index, AGFI- Adjusted Goodness of Fit Index, PGFI- Parsimony Goodness of Fit Index

Table 4.15: Baseline Comparisons of the models

Baseline Comparisons					
Model	**NFI**	**RFI**	**IFI**	**TLI**	**CFI**
Unconstrained model	0.953	0.948	0.975	0.973	0.975
Constrained model	0.946	0.941	0.969	0.966	0.969
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Abbreviations used: NFI- Normed Fit Index, RFI-Relative Fit Index, IFI-Incremental Fit Index, TLI- Tucker-Lewis Index, CFI-Comparative Fit Index, RMSEA- Root Mean Square Error of Approximation

Assuming model Unconstrained model to be correct:

Table 4.16: Nested model comparisons

Model	DF	CMIN	P	NFI	IFI	RFI	TLI
constrained model	5	266.032	.000	.007	.007	.007	.007

Abbreviations used: DF-Degrees of Freedom, CMIN- Chi-Square statistic, NFI- Normed Fit Index, RFI-Relative Fit Index, IFI-Incremental Fit Index, TLI- Tucker-Lewis Index.

It can be seen from the above tables(table 4.14, table 4.15 and table 4.16) that both the unconstrained model (conceptual model) and the constrained model (the UTAUT2 model) have good fit. The next step is to check which model fits better since both these models is found to have a good fit (fit indices>0.90). The goodness of fit can be directly compared since both these models are nested and have different degrees of freedom. The chi square difference between the constrained and unconstrained model is 266.032 (2178.920-1912.888). With 5 degrees of freedom (942-937), this statistic is significant at the 0.05 level. This shows that there is a significant difference between both the models.

In the case where both the model fits well and are theoretically plausible, the models can be compared by the percentage variance explained of the dependent variable or by the comparison of fit indices (Werner and Schermelleh-Engel, 2010). They further states that if the chi square difference value is significant, the model with more freely estimated parameters can be preferred over the model in which certain parameters are constrained.

The squared multiple correlation values in AMOS represent the proportion of variance explained by predictors of the dependent variable (Byrne, 2010). For the conceptual model, the squared multiple correlation value for Behavioural Intention is **0.527** and for USAGE is **0.661** while for the UTAUT2 model, the squared multiple correlation value for Behavioural Intention is **0.468** and for USAGE is **0.618**.ie, the conceptual model explains 52.7% variation in predicting Behavioural Intention while for UTAUT2 model, it explains only 46.8% variation.

The conceptual model explains 66.1% variation in predicting USAGE while UTAUT2 explains only 61.8% variation. The proposed conceptual model hence explains more variation than the original UTAUT2 model in this case.

Further, we use the comparison indices (AIC, BCC and BIC measures) to check for the comparison of the models for parsimony.

Table 4.17: Model Comparison Indices of nested models

Model	AIC	BCC	BIC	CAIC
Unconstrained Model	2200.888	2215.137	2907.317	3051.317
Constrained Model	2456.920	2470.674	3138.820	3277.820

Abbreviations used:AIC- Akaike's Information Criterion, BCC- Brown-Cudeck Criterion, BIC- Bayes Information Criterion, CAIC- Consistent Akaike's Information Criterion

From the table 4.17, looking at the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC), the unconstrained model (the conceptual model) yielded lower values. This indicates that the conceptual model is has a better fit over the UTAUT2 model.

Thus it can be concluded that the proposed model has a better explanation of Behavioural Intention to continue and usage of Social Networking Sites than the UTAUT2 model.

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Chapter 5

VARIATION OF THE CONCEPTUAL MODEL ACROSS THE SOCIAL NETWORKING SITES, GENDER AND AGE

Contents

The chapter discusses the tests done for checking for the variation in the conceptual model across the type of Social Networking Sites, gender and age. First, the conceptual model is analysed to check if the different social networking sites (Facebook and LinkedIn) moderates the relationships established. Secondly, the moderation effect of gender and finally the moderation effect of age are explored. The multigroup analysis method proposed by Ho (2006) is followed in all the cases.

5.1 Assessing the variation in the model across Social Networking Sites

The conceptual model has been found to be a good fit model in the previous chapter. Further the model is checked to find if there is any variation in the model for the different Social Networking Sites (SNS). The two SNS chosen are Facebook and LinkedIn. Facebook was chosen being the most popular SNS and classified in the hedonic category.

LinkedIn was chosen since it is classified as a professional networking site and offers different features from Facebook. Both Facebook and LinkedIn are the largest in terms of number of users in their respective categories.

For checking if there is any varation in the conceptual model across the SNS - Facebook and LinkedIn, the Multigroup Analysis method by Ho (2006) is followed. First the measurement model is tested to find out if it the model is same for both the groups. The multigroup CFA is done for this purpose. The difference in regression weights are found out and incorporated when analysing the structural model for both the groups. Multigroup path analysis is done and the paths are analysed to find if there is any significant difference for both the groups.

5.1.1 Evaluation of the measurement model for variation across SNS

The Multigroup Analysis method proposed by Ho (2006) was used for testing the two groups- Facebook and LinkedIn on the conceptual model. To find out differences for the two groups (Facebook and LinkedIn) in the path model, it is necessary to first test whether the factor structure in the measurement model is same for both the groups. If the analysis shows no significant differences in regression weights (i.e., factor loadings) in the measurement model between the groups, then the same regression weights can be used for both groups. But if the analysis shows significant differences in the regression weights between Facebook and LinkedIn, then these differences must be incorporated while the structural path model is estimated.

The steps for testing the differences in groups are as follows

1) First set up separate but identical measurement models for the Facebook and LinkedIn samples

2) Link the models to the respective data sets

3) Set up an invariant model (in which both Facebook and LinkedIn models are constrained to have same regression weights) and a variant model (in which they can have different regression weights)

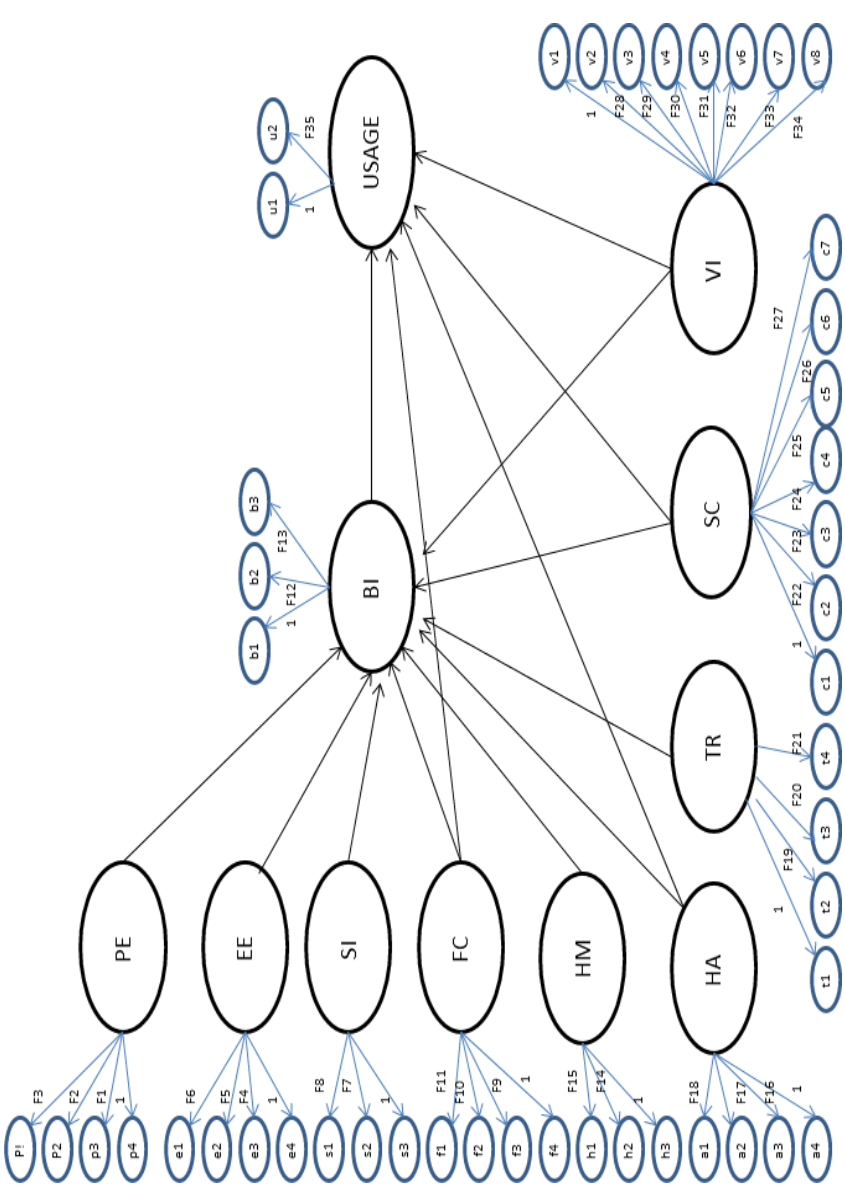
4) Employ the Critical Ratio test to test for differences in the regression weights for both these groups.

Two groups are created namely, Facebook and LinkedIn. The regression weights are labelled F1 to F35 for Facebook (figure 5.1) and similarly L1 to L35 for LinkedIn. Two models are created: First, Group invariant model, wherein, the constraints are imposed that all the regression weights are equivalent. Second: Group variant model, where both groups have different regression weights. Hence, no constraints are imposed in the variant model. The critical ratio test is employed to obtain the critical ratio statistics for the differences among the regression weights.

The model is run using AMOS 21 and the SEM results are as follows.

For the group invariant (ie, the constraint imposed model), χ^2 value with 1903 degrees of freedom=3222.418 ($p<0.05$).

For the group variant (ie, the unconstraint model), χ^2 value with 1868 degrees of freedom=3128.370 ($p<0.05$).



Abbreviations used: PE-Performance Expectancy, EE-Effort Expectancy, SI-Social Influence, FC-Facilitating Conditions, HM-Hedonic Motivation, HA-Habit, TR-Trust, SC-Social Connectedness, VI-Visibility, BI- Behavioural Intention

Figure 5.1: Group Model with named regression weights for Facebook

It can be seen that the chi- square values for both the models are statistically significant. Hence, the fit of the models can be directly compared using the nested model comparisons statistics.

The chi square difference value for the two models is 94.048 (3222.418 -3128.370) with 35 degrees of freedom (1903-1868). This value is significant at 0.05 level ($p<0.05$). Thus, the two models differ significantly in their goodness of fit (Ho,2006). Ie, there is a difference in the measurement models of the two groups represented by Facebook and LinkedIn.

The next step is to find out difference of the paths in the model for the SNS. The pairwise comparison critical ratio test is carried out on the regression weights obtained from the group variant model (ie, the unconstrained model). Critical Ratio (CR) > 1.96 points to a pair of paths which are significantly different at 0.05 level.

The pairwise parameter comparisons are shown in Appendix 3.

It is seen that 13 of the pairwise comparisons for are significant (C.R > ±1.96, $p < .05$). i.e, they show difference for the two groups in the model. These 13 regression weights will be allowed to vary both in the invariant and variant model. The rest are constrained to be invariant. This measurement model is finalised and used to analyse the path model for checking the variation across SNS. Next, the path analysis is initiated to check which paths differ for these SNS, or in other words, which all paths are moderated by the nature of SNS. For this, the procedure of multigroup path analysis (Ho, 2006) is used.

5.1.2 Analysing the paths of the structural model for checking the variation of model across SNS

In the procedure of multigroup path analysis, we check whether the pattern of structural relationships hypothesized in the path model is same for Facebook and LinkedIn. Ie, we check if any paths (relationships) in the model differ for Facebook and LinkedIn.

The steps for doing the multi group path analysis are as follows.

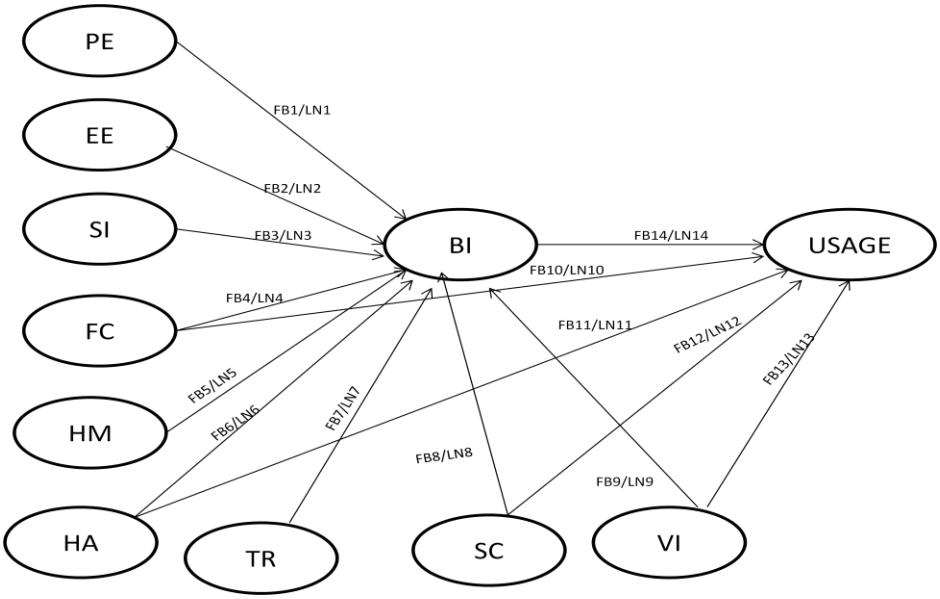
1) Steps 1 and 2 are to be followed as in the measurement model mentioned earlier

2) Set up an invariant path model (in which Facebook and LinkedIn are hypothesized to share the same path coefficients) and a variant path model (in which Facebook and LinkedIn are hypothesized to have different path coefficients)

3) Employ the Critical Ratio test to test for differences in the path coefficients.

The hypothesis to be tested is that the path model holds for both Facebook and LinkedIn. i.e, it requires that every path coefficient for the Facebook sample to be equal to the corresponding path coefficient for the LinkedIn sample. Here, in the invariant path model, we constrain all paths (14 paths for Facebook and the corresponding 14 for LinkedIn) to equality. The paths are PE→BI, EE→BI, SI→BI, FC→BI, HM→BI, HA→BI, TR→BI, SC→BI, VI→BI, FC→USAGE, HA→USAGE, SC→USAGE, VI→USAGE, BI→USAGE. The paths are named as FB1

to FB14 for Facebook sample and LN1 to LN14 for LinkedIn sample. The model is as shown in the figure 5.2.



Abbreviations used: PE-Performance Expectancy, EE-Effort Expectancy, SI-Social Influence, FC-Facilitating Conditions, HM-Hedonic Motivation, HA-Habit, TR-Trust, SC-Social Connectedness, VI-Visibility, BI- Behavioural Intention

Figure 5.2: The path model for Facebook/LinkedIn

The model is run using AMOS 21 and the SEM results are as follows.

For the group invariant, χ^2value with 1910 degrees of freedom = 3231.007 ($p<0.05$).

For the group variant, χ^2 value with 1896 degrees of freedom =3157.518 ($p<0.05$).

It can be seen that the chi square values for both the path models are statistically significant. Hence, the fit of the two models can be directly compared using the nested model comparisons.

The chi square difference value for the models is 73.489 (3231.007 - 3157.518) with 14 degrees of freedom (1910-1896) is found to be significant at the 0.05 level ($p<0.05$).Thus, the two models differ significantly in their goodness of fit. Hence it can be concluded that the path models for Facebook and LinkedIn differ.ie, there is a moderating effect by SNS on the paths in the model.

The fit indices are reported in table 5.1

RMR, GFI

Table 5.1: Fit indices for the structural model for checking the variation across SNS

Model	RMR	GFI	AGFI	PGFI
Invariant model	.076	.879	.863	.777
Variant model	.070	.881	.865	.773
Saturated model	.000	1.000		
Independence model	.655	.176	.139	.168

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Invariant model	.922	.915	.966	.963	.966
Variant model	.923	.916	.968	.965	.968
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Abbreviations used: RMR- Root Mean Square Residual, GFI- Goodness of Fit Index, AGFI- Adjusted Goodness of Fit Index,PGFI-Parsimony Goodness of Fit Index, NFI- Normed Fit Index, RFI-Relative Fit Index, IFI-Incremental Fit Index, TLI- Tucker-Lewis Index, CFI-Comparative Fit Index.

Since, there are two models, the invariant model (in which the paths are constrained to equality) and the variant model (in which the paths are assumed to vary), there arise the need to check which model fits well and better. It can be seen from table 5.1 that both the models have good fit and the variant model has a slighter better fit than the invariant model.

Further to conclude on the model with better fit, we use the comparison indices (AIC and BIC measures) which are given in Table 5.2

Table 5.2: Comparison indices for the structural model for checking variation across SNS

Model	AIC	BCC	BIC	CAIC
Invariant model	3735.007	3809.942		
Variant model	3689.518	3768.617		
Saturated model	4324.000	4966.897		
Independence model	41415.680	41443.038		

Abbreviations used:AIC- Akaike's Information Criterion, BCC- Brown-Cudeck Criterion, BIC- Bayes Information Criterion, CAIC- Consistent Akaike's Information Criterion

From the results of AIC and BIC measures (table 5.2), the variant model (the model hypothesized to have different path coefficients) can be said to be more parsimonious and better fitting than the invariant model, since the values of AIC and BCC for the Variant model are less than those of the invariant model. On the basis of model comparisons findings, the estimates of the variant model are preferable over the invariant model's estimates. Ie, there is a moderation effect on certain paths by the SNS.

The next step is to identify the paths where the path coefficients differ. For this, we use the critical ratio difference test. This test is done by checking which path values have their critical ratio values greater than ±1.96(t test at α=5%). Since the variant model (the model hypothesized to have different path coefficients) is found to be a better one than the invariant (the model hypothesized to have same path coefficients), we use the critical ratio test on the variant model. The pairwise comparison critical ratio test is carried out on the path coefficients of the variant group model. The table 5.3 gives the values of the pairwise parameter comparison.

Table 5.3: Critical Ratios for differences between parameters for the variant model for checking the variation across SNS

Critical Ratios for Differences between Parameters (Variant model)														
	FB1	**FB2**	**FB3**	**FB4**	**FB5**	**FB6**	**FB7**	**FB8**	**FB9**	**FB10**	**FB11**	**FB12**	**FB13**	**FB14**
LN1	2.49	0.81	3.53	2.06	-0.07	-0.60	2.17	-0.47	2.38	1.42	2.35	2.48	-0.62	0.99
LN2	0.81	-0.44	1.72	0.80	-1.40	-2.05	0.47	-1.90	0.96	0.00	0.63	0.77	-1.97	-0.56
LN3	1.07	-0.49	2.30	0.94	-1.68	-2.65	0.65	-2.42	1.17	0.02	0.86	1.04	-2.44	-0.70
LN4	-0.42	-1.37	0.37	-0.19	-2.33	-3.00	-0.75	-2.85	-0.14	-1.05	-0.62	-0.47	-2.89	-1.65
LN5	-2.42	-3.00	-1.11	-1.30	-4.85	-7.00	-3.14	-6.50	-1.45	-2.92	-2.96	-2.61	-6.07	-4.54
LN6	1.80	0.06	3.03	1.45	-1.04	-1.87	1.41	-1.66	1.75	0.65	1.62	1.78	-1.74	0.04
LN7	1.39	-0.13	2.47	1.20	-1.17	-1.92	1.02	-1.74	1.44	0.39	1.20	1.36	-1.82	-0.20
LN8	0.31	-0.94	1.35	0.41	-2.07	-2.94	-0.08	-2.74	0.54	-0.53	0.09	0.27	-2.76	-1.24
LN9	1.87	0.12	3.10	1.51	-0.96	-1.77	1.49	-1.57	1.82	0.72	1.70	1.86	-1.67	0.12
LN10	-1.52	-2.35	-0.58	-0.97	-3.61	-4.66	-1.95	-4.43	-1.01	-2.11	-1.80	-1.60	-4.36	-3.00
LN11	1.12	-0.49	2.39	0.97	-1.70	-2.71	0.69	-2.46	1.20	0.04	0.90	1.09	-2.48	-0.71
LN12	1.98	0.28	3.14	1.62	-0.73	-1.44	1.62	-1.26	1.93	0.88	1.82	1.97	-1.37	0.34
LN13	1.57	-0.12	2.80	1.29	-1.24	-2.11	1.17	-1.90	1.57	0.45	1.38	1.55	-1.97	-0.20
LN14	3.41	1.65	4.41	2.82	0.90	0.53	3.13	0.63	3.21	2.32	3.31	3.42	0.43	2.01

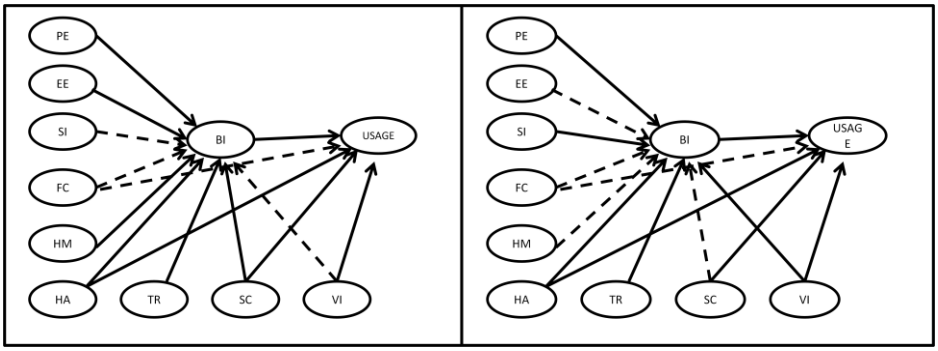
It can be seen that the following path coefficients are significant (C.R > ±1.96). (FB1-LN1, FB3-LN3, FB5-LN5, FB8-LN8, FB10-LN10, FB12-LN12, FB13-LN13, FB14-LN14,). These paths are respectively PE→BI, SI→ BI, HM→BI, SC→BI, FC→USAGE SC→USAGE, VI→USAGE and BI→USAGE.

The effects of the above paths differ for the Facebook and LinkedIn samples. Hence, we can conclude that there is a moderating effect by the social networking sites (SNS) on these paths. Ie, SNS moderates the effect of PE, SI, HM and SC on BI and the effect of SC, FC, VI and BI on USAGE. The following table 5.4 shows the paths with the standardized regression coefficients and their differences in the case of Facebook and LinkedIn.

Table 5.4: Effect of moderation of SNS

Paths	FACEBOOK		LINKEDIN		Difference Δβ
	p value	β value	p value	β value	
PE → BI	0.038	0.071	0.000	0.243	0.172
EE→ BI	0.008	0.090	0.060	--	0.090
SI →BI	0.953	--	0.007	0.151	0.151
FC →BI	0.452	--	0.675	--	--
HM →BI	0.000	0.167	0.168	--	0.167
HA →BI	0.000	0.311	0.000	0.225	0.086
TR →BI	0.001	0.090	0.005	0.143	0.053
SC→ BI	0.000	0.306	0.127	--	0.306
VI →BI	0.403	--	0.000	0.201	0.201
FC→ USAGE	0.060	--	0.540	--	--
HA →USAGE	0.002	0.161	0.005	0.207	0.046
SC→ USAGE	0.016	0.141	0.000	0.249	0.108
VI →USAGE	0.000	0.387	0.001	0.219	0.168
BI→ USAGE	0.000	0.302	0.000	0.391	0.089

The table 5.4 shows that the moderating effect is highest for Social Connectedness (SC) on Behavioural Intention (BI), followed by Visibility (VI) on BI. Considering the case of Usage, the moderating effect is highest for Visibility (VI), followed by Social Connectedness (SC).



Facebook LinkedIn

Abbreviations used: PE-Performance Expectancy, EE-Effort Expectancy, SI-Social Influence, FC-Facilitating Conditions, HM-Hedonic Motivation, HA-Habit, TR-Trust, SC-Social Connectedness, VI-Visibility, BI- Behavioural Intention

Dotted lines represent insignificant paths and all other paths in the diagram are significant

Figure 5.3: The difference in path model for Facebook and LinkedIn

The figure 5.3 shows the models for Facebook and LinkedIn with significant and insignificant paths. It can be seen that the effect of Performance Expectancy (PE) on Behavioural Intention (BI) is significant for both Facebook and LinkedIn ($p<0.05$). Comparing the coefficients, it can be seen that the effect of PE is larger for LinkedIn than Facebook. The usefulness of these sites hence determines the intention to continue using these sites, though both these sites are used for different purposes. The effect of Effort Expectancy (EE) on BI is

found to be significant for Facebook, while insignificant for LinkedIn. This can be mainly because LinkedIn is used more by professionals and hence the ease of use is found to be insignificant factor while Facebook is a commonly used SNS by almost all walks of people and therefore, the ease of use of the site is found to be significant parameter in determining the intention to continue the use. The effect of Social Influence (SI) on BI is not significant for Facebook while the effect is significant in the case of LinkedIn. This shows that the social influence or peer influence is significant in the case of LinkedIn. Almost a major percentage of people have an account on Facebook and hence the peer influence might have no significance, whereas LinkedIn page has become a necessity for professionals.

Facilitating Conditions (FC) was found to be not significant in the case of both Facebook and LinkedIn. The recent times have seen such advancements in technology that access to resources and knowledge of using these technologies are available easily. Moreover, these SNS are available on all handheld devices. Hence FC is found to be not significant in determining the usage of SNS. Hedonic Motivation (HM) is found to be significant in predicting BI in the case of Facebook while the effect is not significant in the case of LinkedIn. This is understandable since Facebook is used more from enjoyment perspective and LinkedIn is used for a professional purpose. Habit (HA) is found to be significant in determining both the intention to continue the use as well as the usage in the case of both Facebook and LinkedIn. Users have developed a habit of using these sites irrespective of the purposes they

offer. The comparison of the coefficients reveals that Habit of using Facebook is more than that of LinkedIn.

In the case of the newly added variables, Trust (TR) is found to be significant in predicting the intention to continue in the case of both Facebook and LinkedIn. Users reveal their personal information on these sites and hence it is found to be a determinant of the intention to continue the use of SNS. Social Connectedness (SC) is found to be significant in predicting BI in the case of Facebook while not significant in LinkedIn. Visibility (VI) in turn, significantly predicts BI in the case of LinkedIn, while not significant in Facebook. This can be mainly because of the difference in the purpose of use of these sites where users need to be more visible in a professional platform. LinkedIn is mainly used by professionals. Many of the companies use LinkedIn for recruitment purposes. Hence for career advancement and growth, users always update their profiles, participate in discussions etc to be visible online. Facebook is more used on an enjoyment perspective. Both SC and VI are found to be significant in predicting USAGE in Facebook and LinkedIn. The need to remain connected and be in the notice of others drives people to post their daily life happenings, pictures and videos. One of the main uses of SNS is to remain connected with others. BI also is found to be significant in predicting USAGE in both the case of Facebook and LinkedIn.

The model for Facebook explains 53% variation on Behavioural Intention and 65% variation in explaining the Usage while for

LinkedIn; it explains 56% variation on Behavioural Intention and 67% on Usage.

5.2 Assessment of the conceptual model for moderation effect of gender

The next objective is to check whether gender has a moderating effect on the usage of SNS. The similar method of mulitgroup analysis described above is used for this purpose and the analysis is done with the help of SEM. First the evaluation of the measurement model is done (multigroup CFA) and after finalising the measurement model, the structural model is evaluated for path analysis (multigroup path analysis).The method proposed by Ho(2006) is followed here too.

5.2.1 Evaluation of the measurement model to check for moderation effect of gender

For assessing the measurement model, two groups are created namely, male and female and linked to the data sets of male and female samples respectively. The regression weights are labelled M1 to M35 for Males and F1 to F35 for females. Two models are created: the group invariant model (where the constraints are imposed that all regression weights are equivalent) and the group variant model (where no constraints are imposed).

The multigroup CFA results are as follows.

For the group invariant, χ^2 value with 1903 degrees of freedom =3100.148 ($p<0.05$).

For the group variant, χ^2 value with 1868 degrees of freedom =3055.603 ($p<0.05$).

The chi- square values for both the models are statistically significant. The fit of the models can be directly compared using the nested model comparisons statistics.

The chi square difference value for the two models is 44.545 (3100.148-3055.603) with 35 degrees of freedom (1903-1868). This value is not significant at 0.05 level ($p>0.05$). Thus, the two models don't differ significantly in their goodness of fit.

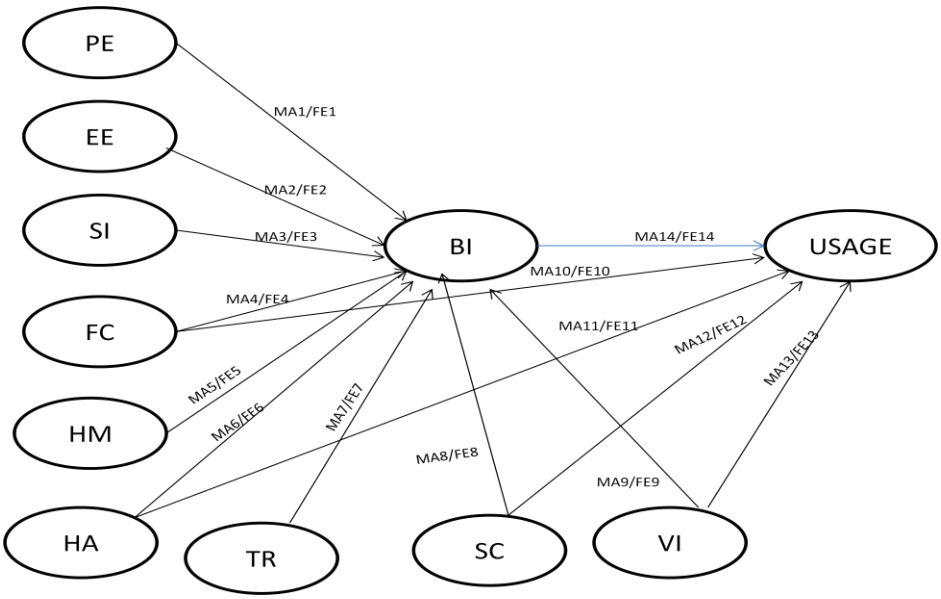
The next step is to find out the difference of the paths in the measurement model.The pairwise comparison critical ratio test is carried out on the regression weights obtained from the group variant model. The pairwise parameter comparisons are as in the Appendix 4

From the pairwise comparisons, it is seen that 6 of the regression weights are significant (C.R > ±1.96, p < .05). These differences in regression weights are to be incorporated into the multigroup analysis of the structural path model. Ie, these 6 paths will be allowed to vary while the rest are constrained to be invariant. This finalised measurement model is then used to analyse the path model for checking the variation across gender.

5.2.2 Analysing the paths of the structural model for checking the variation of model across gender

The process here is to check whether the pattern of structural relationships hypothesized in the path model is same for male and

female users. The hypothesis to be tested is that the path model holds for both male and female users. Here, in the invariant path model, we constrain all the paths (14 for Males and the corresponding 14 for Females) to equality. The paths are named as MA1 to MA14 for Males and FE1 to FE14 for Females. The model is as shown in the figure 5.4



Abbreviations used: PE-Performance Expectancy, EE-Effort Expectancy, SI-Social Influence, FC-Facilitating Conditions, HM-Hedonic Motivation, HA-Habit, TR-Trust, SC-Social Connectedness, VI-Visibility, BI- Behavioural Intention

Figure 5.4: The path model for male/female

The model is run using AMOS 21 and the SEM results are as follows.

For the group invariant, χ^2 value with 1917 degrees of freedom = 3100.128 ($p<0.05$).

For the group variant, χ^2 value with 1903 degrees of freedom = 3071.074 ($p<0.05$).

It can be seen that the chi square values for both the path models are statistically significant. The fit of the two models can be directly compared using the nested model comparisons. The chi square difference value for the models is 29.054(3100.128-3071.074) with 14 degrees of freedom (1917-1903) is found to be significant at the 0.05 level ($p>0.05$).Thus, the two models differ significantly in their goodness of fit. The results of the analysis are as shown in the table 5.5 and table 5.6

Table 5.5: Fit indices for the structural model for checking variation across gender

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Invariant model	.084	.879	.864	.780
Variant model	.079	.880	.864	.775
Saturated model	.000	1.000		
Independence model	.665	.187	.151	.179

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Invariant model	.925	.919	.970	.967	.970
Variant model	.926	.919	.970	.968	.970
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Abbreviations used: RMR- Root Mean Square Residual, GFI- Goodness of Fit Index, AGFI- Adjusted Goodness of Fit Index, PGFI-Parsimony Goodness of

Fit Index, NFI- Normed Fit Index, RFI-Relative Fit Index, IFI-Incremental Fit Index, TLI- Tucker-Lewis Index, CFI-Comparative Fit Index.

Table 5.6: Comparison indices for the structural model for checking variation across gender

Model	AIC	BCC	BIC	CAIC
Invariant model	3590.128	3641.763		
Variant model	3589.074	3640.661		
Saturated model	4324.000	4779.659		
Independence model	41443.460	41462.849		

Abbreviations used:AIC- Akaike's Information Criterion, BCC- Brown-Cudeck Criterion, BIC- Bayes Information Criterion, CAIC- Consistent Akaike's Information Criterion

It can be seen from table 5.5 that both the invariant and variant models have good fit indices and to conclude on the better ft model we use the comparison indices From the table 5.6, it can be seen that the AIC and the BCC values are lower for the variant model. This indicates that the variant model (the model in which the paths were allowed to vary) is both more parsimonious and better fitting than the invariant model (the model in which the paths were constrained to equality). On the basis of these findings, it is assumed that the variant model is correct and the estimates of the variant model are preferable over the invariant model.

Next, the pairwise comparison critical ratio test is carried out on the path coefficients of the variant group model to identify the paths where the path coefficients differ. The paths are identified by the value of critical ratio greater than ±1.96(t test at α=5%).

The table 5.7 gives the values of the pairwise parameter comparison.

Table 5.7: Critical Ratios for Differences between Parameters (Variant model) for the variation across gender

Critical Ratios for Differences between Parameters (Variant model)														
	MA1	**MA2**	**MA3**	**MA4**	**MA5**	**MA6**	**MA7**	**MA8**	**MA9**	**MA10**	**MA11**	**MA12**	**MA13**	**MA14**
FE1	0.05	0.53	2.39	0.16	1.76	-2.62	0.27	-3.71	-0.13	0.61	-0.07	-1.46	-1.03	-0.76
FE2	0.16	0.50	1.57	0.23	1.19	-1.50	0.29	-2.26	0.03	0.54	0.08	-0.82	-0.57	-0.40
FE3	-1.40	-0.50	1.00	-0.81	0.34	-4.21	-1.27	-5.25	-1.34	-0.52	-1.52	-2.88	-2.35	-2.00
FE5	-1.63	-0.86	0.22	-1.12	-0.29	-3.83	-1.52	-4.72	-1.59	-0.90	-1.72	-2.82	-2.42	-2.14
FE8	1.32	1.48	3.68	1.04	3.06	-1.30	1.61	-2.45	0.95	1.64	1.19	-0.25	0.11	0.33
FE9	0.06	0.47	1.78	0.16	1.32	-1.94	0.22	-2.83	-0.08	0.52	-0.03	-1.10	-0.79	-0.59
FE10	-0.86	-0.25	1.01	-0.54	0.50	-3.05	-0.72	-3.96	-0.91	-0.24	-0.95	-2.08	-1.70	-1.45
FE11	-0.88	-0.06	1.93	-0.41	1.16	-4.10	-0.70	-5.23	-0.90	-0.03	-1.03	-2.57	-1.99	-1.62
FE12	-1.60	-0.56	1.11	-0.87	0.35	-4.77	-1.49	-5.84	-1.48	-0.59	-1.74	-3.21	-2.59	-2.19
FE14	1.25	1.41	3.97	0.95	3.25	-1.71	1.59	-2.94	0.84	1.59	1.11	-0.50	-0.09	0.17
FE7	-0.01	0.51	2.49	0.13	1.82	-2.83	0.22	-3.95	-0.19	0.59	-0.13	-1.59	-1.13	-0.84
FE4	-0.39	0.00	0.91	-0.24	0.57	-1.93	-0.27	-2.63	-0.47	0.02	-0.46	-1.29	-1.04	-0.88
FE13	2.58	2.42	5.02	1.92	4.39	-0.05	2.95	-1.26	2.03	2.68	2.45	0.93	1.24	1.40
FE6	3.08	2.76	5.65	2.22	5.00	0.35	3.50	-0.93	2.41	3.06	2.95	1.33	1.62	1.77

From the table 5.7, it can be seen that two paths are significant (CR> ±1.96). These paths correspond to SC→BI and SC→USAGE Ie, gender moderates the relationship of Social Connectedness with both Behavioural Intention and USAGE.

The beneath table 5.8 shows the paths with the standardized regression coefficients and their differences for male and female users of SNS.

Table 5.8: Effect of moderation of gender

Paths	Male		Female		
	p value	β value	p value	β value	Difference Δβ
PE → BI	0.000	0.129	0.006	0.130	0.001
EE→ BI	0.181	--	0.108	--	--
SI→BI	0.863	--	0.262	--	--
FC →BI	0.109	--	0.365	--	--
HM →BI	0.351	--	0.877	--	--
HA →BI	0.000	0.310	0.000	0.317	0.007
TR →BI	0.000	0.117	0.003	0.118	0.001
SC→ BI	0.000	0.354	0.000	0.218	0.136
VI →BI	0.008	0.117	0.040	0.097	0.020
FC → USAGE	0.131	--	0.297	--	--
HA →USAGE	0.000	0.198	0.012	0.196	0.002
SC → USAGE	0.000	0.295	0.175	--	0.295
VI →USAGE	0.000	0.227	0.000	0.473	0.246
BI→ USAGE	0.000	0.235	0.000	0.415	0.180

From the table 5.8, it can be seen that the moderating effect is highest for Social Connectedness (SC) on Behavioural Intention (BI) and on USAGE.

Performance Expectancy (PE) has been found to be a significant predictor of the intention to continue the use (BI) of Social Networking

Sites (SNS) in the case of both males and females. i.e, irrespective of gender, people find SNS useful in their daily life. In the case of males and females, Effort Expectancy (EE) is found to be insignificant in determining BI. SI is also found to be an insignificant predictor of BI for both males and females. This shows that the peer influence is not a factor in determining SNS irrespective of the gender. The relationship of Facilitating Conditions with BI and Usage is insignificant for both the gender. HM also doesn't predict BI for both males and females. The enjoyment in using these sites is not a factor in determining the intention to continue the use of SNS. Habit (HA) is found to be a significant predictor of BI and Usage for both males and females. The use of SNS has developed as a habit for male and female users.

Irrespective of gender, Trust (TR) is found to be significant in determining BI. Male and female users feel secure to reveal their personal information on SNS. Social Connectedness (SC) is a significant predictor of BI for both males and females and the effect is stronger for males than females. In determining actual usage, SC is found to be significant for males and insignificant for females.ie, Male users use SNS for connecting with peers when compared to female users. Visibility (VI) is a significant predictor of BI and Usage for males and females. This shows that being visible online is one of the major uses of SNS irrespective of gender.

5.3 Assessment of the conceptual model for moderation effect of age

The conceptual model was assessed to find the moderating effect of age on the relationships. The procedure of multigroup analysis proposed by Ho (2006) was followed as above. Age was classified into two groups- one ranging from 18-25 years and the other those who are above 26 years. The groups were chosen based on the statistics that the number of users of SNS is more under the age of 25 (figure 4.1)

5.3.1 Evaluation of the measurement model to check for moderation effect of age

The model was run for two groups and the data set was linked accordingly. Two models are created: the invariant model (where the constraints are imposed that all regression weights are equivalent) and the variant model (where no constraints are imposed). The regression weights are labelled Y1 to Y35 for the first group of younger age and O1 to O35 for the second group. The multigroup CFA is done for checking the measurement model and the results are as follows.

For the group invariant, χ^2 value with 1903 degrees of freedom =3024.445 ($p<0.05$).

For the group variant, χ value with 1868 degrees of freedom =2966.555 ($p<0.05$).

The chi- square values are statistically significant for both the models and hence the fit of the models can be directly compared using nested model comparisons statistics.

The chi square difference value for two models is 57.89 (3024.445-2966.555) with 35 degrees of freedom (1903-1868). This value is significant at 0.05 level and can be concluded that the models differ significantly in their goodness of fit.

The pairwise comparison critical ratio test is carried out on the regression weights obtained from the group variant model to find the differences in the regression weights. Critical Ration>1.96 points to a pair of path which are significantly different at 0.05 level.

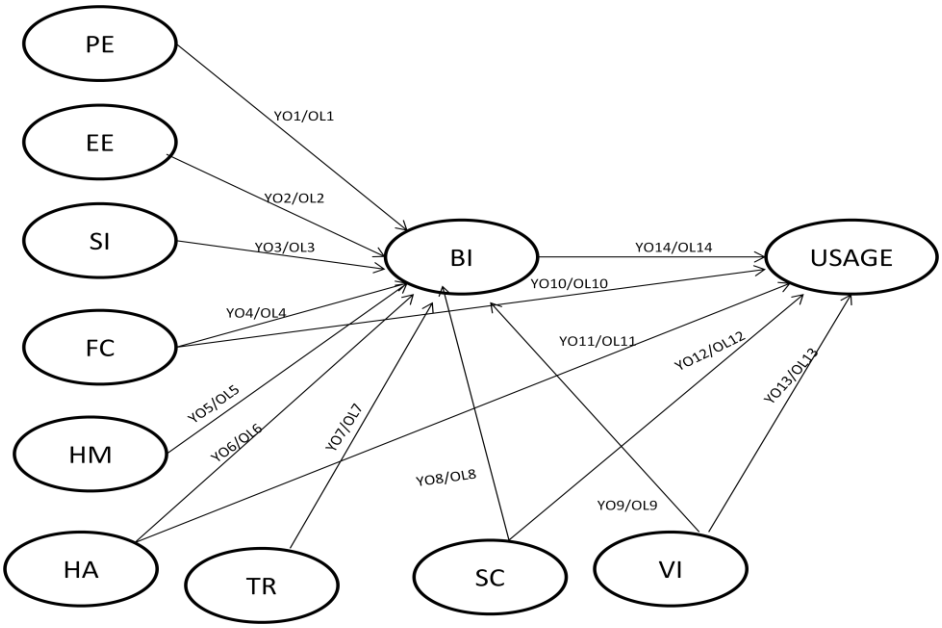
The pairwise parameter comparisons are as in the Appendix 5

From the pairwise parameter comparisons, it can be seen that 3 of the regression weights are significant (C.R > ±1.96, p < .05). These differences in regression weights are to be incorporated into the multigroup path analysis of the structural path model. Ie, these 3 paths will be allowed to vary while the rest are constrained to be invariant. This finalised measurement model is then used to analyse the path model for checking the variation across age.

5.3.2 Analysing the paths of the structural model for checking the variation of model across age

This is done to check whether the pattern of structural relationships hypothesized in the path model is same for the two age groups. The hypothesis to be tested is that the path model holds for both the age groups specified here. Here, in the invariant path model, we constrain all the paths (14 for the age group under 25 years and 14 for the age group above 25 years) to equality. The same procedure done for the

moderation check of groups and gender is followed here too. The paths are named as YO1 to Y014 and OL1 to OL 14 respectively for the two age groups. Figure 5.5 represents the path model



Abbreviations used: PE-Performance Expectancy, EE-Effort Expectancy, SI-Social Influence, FC-Facilitating Conditions, HM-Hedonic Motivation, HA-Habit, TR-Trust, SC-Social Connectedness, VI-Visibility, BI- Behavioural Intention

Figure 5.5: The path model for the age groups

The SEM results are as follows.

For the group invariant, χ^2 value with 1920 degrees of freedom =3023.366 ($p<0.05$).

For the group variant, χ^2 value with 1906 degrees of freedom =3001.075 ($p<0.05$).

It can be seen that the chi square values for both the path models are statistically significant. The fit of the two models can be directly compared using the nested model comparisons. The chi square difference value for the models is 22.291(3023.366 – 3001.075) with 14 degrees of freedom (1920-1906) is found to be not significant at the 0.05 level ($p<0.05$).Thus, the two models does not differ significantly in their goodness of fit. i.e, there is no moderation effect for the age groups on the proposed model. The fit indices for the model are given in table 5.9

RMR, GFI

Table 5.9: Fit indices for the structural model for checking variation across age

Model	RMR	GFI	AGFI	PGFI
invariant	.082	.882	.867	.784
variant	.079	.883	.868	.779
Saturated model	.000	1.000		
Independence model	.694	.182	.146	.175

Abbreviations used: RMR- Root Mean Square Residual GFI-,AGFI- Adjusted Goodness of Fit Index, PGFI- Parsimony Goodness of Fit Index

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
invariant	.928	.922	.972	.970	.972
variant	.928	.922	.973	.970	.972
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Abbreviations used: NFI- Normed Fit Index, RFI-Relative Fit Index, IFI-Incremental Fit Index, TLI- Tucker-Lewis Index, CFI-Comparative Fit Index

It can be seen from table 5.9 that the fit indices shows a good fit for the model and hence the comparison indices are checked further to conclude on the better group model. Table 5.10 shows the comparison indices.

AIC

Table 5.10: Model comparison indices for the structural model for checking variation across age

Model	AIC	BCC	BIC	CAIC
invariant	3507.366	3558.498		
variant	3513.075	3567.165		
Saturated model	4324.000	4780.804		
Independence model	41940.966	41960.405		

Abbreviations used:AIC- Akaike's Information Criterion, BCC- Brown-Cudeck Criterion, BIC- Bayes Information Criterion, CAIC- Consistent Akaike's Information Criterion

The comparison indices from table 5.10 shows that the values for both AIC and BCC are lower for the invariant model (the model in which it is hypothesized that the paths are constrained to be equal) and hence it can be chosen over the variant model (the model in which the paths were allowed to vary). I.e, there is no variation in the paths specified in hte model across the age groups. Hence it can be concluded that there is no moderation effect for the chosen age groups on the relations specified in the model. This can be due to the skewness in the age of the sample chosen.

5.4 Conclusion

The analysis results shows that the conceptual model exhibits variation in the case of the Social networking Sites (SNS) - Facebook and LinkedIn. This means there is a difference in the explanation of the model in terms of Facebook and LinkedIn.i.e, the factors that explain the usage of these sites differ The difference in the use of different SNS is substantiated in the study Habit is the most significant influencer for the intention and usage of SNS, irrespective of the difference in the nature of use of SNS. Further the moderation effect of gender is analysed and it is found that gender moderates the relationship of social connectedness with behavioural intention.ie, there is a difference seen in the case of usage of SNS by males and females. The responses shows that males are seen to use these sites for connecting with others rather than females. In this study, age was found to have no difference in explaining the usage of SNS.

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Chapter 6

DISCUSSION

Contents

The present research aims to frame an extended model to explain the intention to continue and use social networking sites. First, a model was proposed by extending the UTAUT2 model with three added variables- Trust, Social Connectedness and Visibility. This model was tested using structural equation modelling. Second, the model was compared and tested with the base model UTAUT2 with the same data set. Third, the model was checked for the variation with respect to different types of social networking sites, gender and age.

6.1 Framing an extended model to explain the usage of social networking sites

One of the major areas of research in information systems is the study of acceptance and use of technologies/systems. Researchers have formed different theories and models to explain the acceptance of technologies. The rapid advancements in information technologies and systems still make the research on this area ongoing. Prior studies always point out the necessity to extend and modify the extant models to suit the context. The extension of these models is done by adding factors to the context of use of these technologies and systems.

Amongst the different models and theories, the UTAUT model, developed by Venkatesh et al. (2003) is one of the most commonly used model to explain the user acceptance. This model claims to have a better explanation of user acceptance over other models, since it was framed with the base of eight extant models. The UTAUT model was further extended by Venkatesh et al. (2012) and named UTAUT2 to suit the consumer use context. Researchers have extended the UTAUT2 model to explain different technologies and systems.

The main objective of the study was to frame an extended model to explain the acceptance and usage of Social Networking Sites (SNS). Social Networking Sites have become a part of common man in daily life. Numerous sites have opened up with varying uses and features. Different SNS serve different strata of people with different uses and features. Though there are many sites only a few of them retain their users and keeps on attracting them. The need for this study arises from

this fact that what are the factors that explain the acceptance and usage of SNS. Since UTAUT2 was developed to explain the consumer use context, the model was chosen as the base model for this study. The researcher has tried to extend UTAUT2 with three variables – Trust, Social Connectedness and Visibility. These three variables were chosen from literature since they are found to be significant factors in the context of use of SNS. It was hypothesized that the UTAUT2 variables (Performance Expectancy, Effort Expectancy, Social Influence, Facilitating conditions, Hedonic Motivation and Habit) and the three variables-Trust, Social Connectedness and Visibility have a significant influence on the behavioural intention and the usage of the social networking sites. Usage was measured in terms of the type of use and the frequency of usage.

It was found that the proposed conceptual model can be accepted with a good fit and it explained 66% variation in the usage and 53% variation in explaining the behavioural intention to use social networking sites.

The study has shown that Trust is a significant predictor of Behavioural Intention to use SNS. This is in line with the studies of Information System researchers who have found trust to be a determinant of the use of different systems and technologies. Trust is a strong factor governing the use of information systems, especially online technologies. The key role of trust in the information systems usage context where transmission of personal and sensitive information is required has been established in prior research (Venkatesh et al., 2011; Cyr et al., 2008; Salo et al., 2007). Gefen et al. (2003) have investigated

the various antecedents and consequences of trust and have stated trust as a direct predictor of behavioural intentions in using websites. The key role of trust in the information systems usage context where transmission of personal and sensitive information is required has been established in prior research (Venkatesh et al., 2011). Gefen et al. (2003) have investigated the various antecedents and consequences of trust and have stated trust as a direct predictor of behavioural intentions in using websites. According to Lankton et al. (2011), trusting beliefs in social networking websites increase continuance intention. In the current study too, trust is found as a significant variable influencing the intention to continue the use of social networking sites and hence in tune with the extant researches. The use of social networking sites includes sharing of personal information online and people post photos and videos and hence, trust plays a key role on the use of these sites. Social networking sites normally have privacy control settings and users have the options to choose the people they want to view and use their information. Further the model was checked for the moderation effect of SNS, gender and age. Trust was found to be a significant predictor of behavioural intention to use both the SNS-Facebook and LinkedIn. In the case of gender also, trust was found to have a significant influence on behavioural intention irrespective of the gender. Hence it can be seen that trust is a prominent factor when considering the use of SNS.

Social Connectedness is found to be a good predictor of Behavioural Intention in this study. The use of social networking sites normally revolves around the concept of remaining connected with others. Social networks

have evolved from the interaction of people and online social networking sites have provided a platform for virtual interactions. According to Lee et al. (2001), people having high levels of social connectedness tend to feel close to others, identify with others and participate in social groups and activities. Kobler et al. (2010) have stated that people create profiles and update their status to increase their feel of being connected. The study has reasserted the fact that people want to remain connected and one of the main reason they use these social networking sites is for connectedness. These sites provide a platform to connect with their friends, relatives and colleagues. It also helps them to remain connected with the rest of the world. Many campaigns are initiated by these virtual connections. Further, SNS were found to have the highest moderating effect on the relation between Social Connectedness and Behavioural Intention. The use of different SNS serves different purposes and some SNS are specifically used to remain connected alone. The present study also shows that gender moderates the effect of Social Connectedness on the intention to continue the use of social networking sites. This is in tune with the study by Lee & Robbins (2000), where they have reported the differences in the sense of connectedness for men and women. Social Connectedness was found to have a stronger effect on Behavioural Intention for male users than the female users in this study.

The study results show that the added variable- Visibility also has a significant influence on the Behavioural Intention as well as Usage of Social Networking Sites (SNS). Visibility is found to be the main

predictor of Usage in the study. People update their profiles, post photos and opinions so that they get noticed by others in the network. Visibility has been studied in prior research in the organisational contexts. The need to be visible to superiors and the top management has been studied in the organisations. Online visibility have also been researched to measure the organisations' visibility (Dreze et al., 2004).They have stated the factors that contribute to both offline and online visibility of a company's website. Their findings support that online visibility is an important concept for a company. The same holds for the use of social networking sites too. People use these sites and make sure their online presence is noted by participating in communities, discussions etc. SNS constitute a platform for users to participate and develop a feeling of co-presence and social presence. The study supports the prior researches where researchers have pointed out the use of SNS for self presentation (Herring & Kapidzic(2015); Schwammlein & KatrinWodzicki(2012)). Further it was seen that SNS moderates the relationship between Visibility and Behavioural Intention. Visibility was found to be insignificant in predicting the Behavioural Intention in the case of Facebook while the relation is significant in the case of LinkedIn. This shows that on a professional platform, Visibility is a significant predictor. Chiang & Suen (2015) in their study on self presentation on LinkedIn states that for hiring recommendations recruiters use the self presentation signals in online communities. The study results also support this study and reveals that visibility is a major predictor of usage of SNS in the case of LinkedIn. The study also shows that irrespective of gender,

Visibility remains a significant factor in determining the Behavioural Intention as well as the Usage of SNS.

The research has extended the UTAUT2 model with the three variables – Trust, Social Connectedness and Visibility. These three factors are found to have an important role in the acceptance and usage of Social Networking Sites and hence the extended model is found to be a suitable one for the purpose.

The results show that Performance Expectancy (PE) has a significant influence on the behavioural intention to continue the use of social networking sites. People find these sites useful in their daily life. PE has been found to significantly influence the behavioural intention in prior researches too. PE has been found to be a strong determinant of behavioural intention in the original UTAUT and UTAUT2 models (Venkatesh et al. (2012); Venkatesh et al.(2003)).

Effort Expectancy (EE) was found to have a significant influence on behavioural intention. This shows that people find it easy to use social networking sites. The results also indicates that it is easy to learn and be skilful in using the different features offered by these sites.EE acts similar to the perceived ease of use (PEOU) in TAM and has been found to be a significant predictor of behavioural intention in many studies(Martins et al.,2014;Oye et al.,2011;Venkatesh et al.,2011). The ease of use of the features offered by these sites makes people attracted to these sites. Further it is seen that EE was found to be not significant in the case of LinkedIn while a significant effect was noticed for Facebook.

LinkedIn is mainly used by professionals for networking purposes and hence the easiness of use of the site is not a significant factor in predicting the usage of the site

From the analysis, it was seen that Habit significantly influences Behavioural Intention and Usage. This result is consistent with that of the original UTAUT2 model. The results show that habit is the main predictor of the intention to continue the use of social networking sites. People have developed a habit of using these sites and it has become a part of their daily life. Prior researches have pointed out the role of habit and being addicted to internet use (Young & Rogers, 1998). The use of social networking sites have also been found to be addictive (Dhaha, 2013; Moore et al.,2012;Sherman,2011). Habit is found to be one of the main predictor of the usage of Social Networking Sites.

The analysis shows that Social Influence, Hedonic Motivation and Facilitating Conditions were found to be not significant with behavioural intention to continue the use and Facilitating Conditions was found to be not significant in explaining the usage.

Facilitating conditions (FC) referred to the availability of resources and technical help that are needed to use the social networking sites. The availability of hand held devices and cheap internet rates make this possible for common man and hence this variable becomes insignificant in the case of use of these sites. Here it is found that the variable becomes insignificant in predicting both the intention to continue the use as well as usage. This is in contradiction with majority of the studies

with UTAUT where facilitating conditions have been found to significantly influence usage (Venkatesh et al., 2012; Wu et al., 2008). Facilitating conditions have also found to be insignificant in predicting the intentions in some prior studies. Kaba et al. (2014) states that FC are no longer issues that impact SNS continued use intention. According to his words, "humans have an innate desire to communicate and this desire drives them to communicate with whatever means/technology is available."

Social Influence (SI) is measured here as the peer influence to use social networking sites. The users were asked about the extent to which they perceive social influence from others (friends, family and others) to use SNS. In the study, SI was found to have an insignificant influence on the intention to continue the use of these sites. Venkatesh et al. (2003) have reported that the usage of a system depends on the user's beliefs rather than on the opinion or advice of others. There are numerous studies with different systems and technologies which support our findings that social influence doesn't influence the intention to continue the use of a technology. Selamat et al. (2011) have reported in their study that social pressure has no influence on personal computing usage.

6.2 Comparing the proposed model and the original UTAUT2 model

The second objective of the study was to explore whether the proposed model can explain variation in the user acceptance and usage of social networking sites better than the extant model. The area of information systems research has always focussed on extending the

models of technology acceptance by adding variables and increasing the predictive power of the models. The use of social networking sites is voluntary and the UTAUT2 constructs alone are not sufficient to explain the usage. Hence the addition of psychological variables is significant in studying the user acceptance of social networking sites. Moore et al. (2012) have stated that personality influences the use of Facebook and adds that incorporating personality into existing models of technology adoption and use (TAM, UTAUT) will explain the use of these sites better.

In this study, the UTAUT2 model was extended by adding three variables – Trust, Social Connectedness and Visibility to explain the use of social networking sites. The model was found to be reliable and acceptable with a good fit. Hence, the proposed conceptual model was then tested with the original UTAUT2 model to ensure if it explains the variation better than the original model. The test was done using the chi square difference test and the nested model comparison was done to compare the models. The comparison indices and the squared multiple correlation values also shows that the proposed model explains the usage better than the original model with the same data set. Both the Behavioural Intention and Usage is found to be better explained by the proposed model when compared to the UTAUT2 model.

There have been prior researches that extended the original UTAUT model with added determinants to explain different technologies. Venkatesh et al. (2013) have stated the extension of future research to UTAUT2 can be done with added determinants and across different

countries. Wu et al (2014) have tested an extended model of UTAUT with satisfaction and trust and found trust to be a significant predictor of intention than the UTAUT variables. Zhou (2011) have studied UTAUT in the mobile internet continuance perspective and found that perceived enjoyment and attention focus have strong effects on user satisfaction and usage. UTAUT has been extended to test different online systems like internet banking (AlAlwan et al., 2014), online tax filing (Carter et al., 2011), mobile technologies (Park et al.,2007).

6.3 Assessing the variation in the model for the different Social Networking Sites, gender and age.

The next objective is to find out if Social Networking Sites has a moderating effect on the relationships specified in the model. The check was done to find out if there is any difference in the factors on acceptance of different social networking sites (SNS). Numerous SNS are available across worldwide but people continue to use only some of these sites. Though these sites offer varied features and serve different purposes, only certain sites emerge top in keeping the users stick on to them. In this study, two SNS were taken- Facebook and LinkedIn to find out if these sites play a moderating role on the continued use and usage of SNS. . The use of these two sites-Facebook and LinkedIn differ as Facebook is used more on a hedonic perspective while LinkedIn is normally termed as a profession network and hence, a utilitarian perspective. The features provided by these two sites also differs. There are many applications and games available on Facebook while LinkedIn concentrates more on the profiles and communities. People use LinkedIn

more for a serious discussion and for professional networking. A LinkedIn profile reads more like a profession resume and the focus is on employment and education unlike Facebook, where the focus is more on hobbies and other favourites. These differences were kept in mind on choosing these two social networking sites.

The model was tested using multi group analysis and the test results show that there is a moderating effect by the Social Networking Sites on some of the relationships. The effects of Performance Expectancy (PE), Social Influence (SI), Hedonic Motivation (HM) and Social Connectedness (SC) on Behavioural Intention differ for Facebook and LinkedIn. A significant difference is found on the effect of Social Connectedness (SC), Facilitating Conditions (FC), Visibility (VI) and Behavioural Intention (BI) on Usage too. The moderating effect is highest for SC, followed by PE.

The results show that the influence of Performance Expectancy (PE), Habit (HA) and Trust (TR) on the intention to continue the use (BI) of Social Networking Sites (SNS) is significant for both Facebook and LinkedIn. The use of SNS from a utilitarian perspective is thus proved. People find both Facebook and LinkedIn useful in their daily life activities and use it for different purposes accordingly. People have developed a habit of using these sites as it has become a part of their routine. Both the SNS-Facebook and LinkedIn allow sharing of personal information and pictures. The results show that people trust these sites and hence reveal the personal information on these sites.

Effort Expectancy (EE) is found to have significant effect on BI in the case of Facebook while the effect is insignificant in the case of LinkedIn. LinkedIn is mainly used more on a professional networking motive and hence EE have been found significant while Facebook is used by different strata of people. Similarly, Hedonic Motivation (HM) is found to have a significant effect on BI in the case of Facebook while insignificant for LinkedIn. This can be explained by the fact that LinkedIn is more used for professional networking while Facebook is more used on a hedonic motive. Facebook provides different fun related activities, games etc. LinkedIn is more used as a serious discussion forum. There are different applications available on Facebook which makes the use of Facebook more enjoying and entertaining.

Social Connectedness (SC) is found to have a significant effect on BI in the case of Facebook while insignificant on LinkedIn. People use LinkedIn to be connected professionally and hence the use of LinkedIn revolves around building professional networks. Facebook is used to connect with family, friends and peers. People share pictures, jokes, news and fun to be remain connected amongst their peers and let them know the things happening in their lives.

Social Influence (SI) was found to have an insignificant effect on BI for Facebook while the effect is significant in the case of LinkedIn. The peer influence to continue on LinkedIn is more than that on Facebook since LinkedIn is commonly used to be professionally connected. The influence of the colleagues, superiors and friends to use LinkedIn as a professional networking platform makes them continue the use of

LinkedIn. The effect of VI on BI is significant in the case of LinkedIn while insignificant for Facebook. Visibility is more emphasized on LinkedIn since being a professional network. People update their resume, work records etc. on LinkedIn so that they are noted by the recruiters, companies and thus move their career ahead.

Habit (HA), Social Connectedness (SC) and Visibility (VI) is found to have a significant effect on the usage of both the Social Networking Sites. Though the effect of SC and VI had difference on the intention to continue the use of these sites, both the factors influence the actual usage of these sites.

The study results also show that gender has a moderating role on the model. This is in support of the extant researches that there are gender differences in the use of Social Networking Sites (Gokulsing, 2014; Mazman et al., 2011;Thelwall et al.,2010). The gender moderates the relationship of Social Connectedness (SC) with the intention to continue the use of SNS and the usage of these sites. The study has shown no effect of age on the model. This may be due to the skewness of the data relating to age and hence forms one of the limitations of the study.

6.4 Theoretical Contributions

The work contributes to the stream of literature on the formation of an extended model in explaining the use of Social Networking Sites. The major theoretical contribution is in modifying UTAUT2 for the use context of social networking sites by adding three factors to the model.

The addition of psychological and personality variables to the extant model makes the model have more explanatory power. Three such drivers are added to UTAUT2-Trust, Social Connectedness and Visibility. Trust is a strong factor determining the use of online applications (Lankton et al., 2011; Gefen et al., 2003). The main use of the social networking sites is to stay connected with the people around us and hence, social connectedness is a driving force on the use of social networking sites. Visibility is also a good predictor in explaining the use of social networking sites. Hence the model proposed is an addition to the existing models of technology acceptance and use.

Trust has been found to be an influencing factor in many of the technology acceptance researches. Researchers have pointed out trust to be a relevant factor in user's decision when they choose to disclose their personal information to another party (Schoenbachler et al., 2002; Hoffman et al.,1999). This study also points out the relevance of trust in using Social Networking Sites (SNS). Trust is a significant predictor in determining the intention to continue the use of SNS and the result shows that trust remains significant for both male and female users. Thus the study adds to the existing researches and points out to theory the significance of trust in the case of SNS.

Man, being termed as a social being, always chooses to remain connected with his fellow beings. With the advent of online technologies offering platforms to remain connected with no boundaries, this need has been strengthened. The study has tried to add Social Connectedness to the extant model and found the factor to be significant in predicting the

usage of social networking sites.SNS offers different groups and communities and varied features so that users can always remain connected with their peers online. The study throws light to the significance of social connectedness as a good predictor of the usage of social networking sites. The study has also revealed the significance of visibility as a determinant of the usage of SNS. People share their pictures, post comments, update their status and participate in online discussions so that they are visible to their peers and others. Hence, the extended model proposed here is an addition to the extant studies in the area of information systems/technology research and is found to have a good explanation of the usage of social networking sites.

Though there are numerous Social Networking Sites, many of these sites can be categorised on the perspective of being hedonic and utilitarian. With a large number of SNS available, people tend to create accounts, but stick on to the use of only certain SNS. There are only few studies that tried to investigate the difference in usage of different SNS (Ernst et al.,2013). The attempt in this study reveals that there is a moderating effect of Social Networking Sites on the use of these sites. The study has taken two sites categorised as hedonic and utilitarian based on the use and the features they offer, and found the difference in the factors predicting the intention to continue the use of these sites. The comparison of these sites adds to the theory of the use of SNS in the difference of the factors that determine the usage of the sites. Gender is found to have a moderating effect on the relationship of social connectedness with the usage of SNS. This contributes to the existing

literature on gender differences on the use of SNS (Sponcil et al., 2013; Muscanell et al., 2011; Sherman,2011). Male users find the need to be connected stronger than female users on using SNS.

Hence the study contributes to the literature of SNS by identifying the factors that predict the intention to continue the use of sites as well as the usage of these sites.

6.5 Practical Implications

From a practical perspective, insights provided by the study can help SNS developers understand user motivation and thus design more effective marketing strategies. The SNS can use the understanding of these factors to enhance user's acceptance and make them continue the use of these sites. The purposes of different SNS are varied and hence each SNS can focus on the factors of user acceptance accordingly. The difference in these factors can be considered while making additions and improvements to the features of these sites. New SNS are introduced with varied features and the SNS developers need to understand the major factors that drive the usage of these sites. The study shows that the three added variables-Trust, Social Connectedness and Visibility are significant and important predictors of usage of SNS. Trust is one major factor that drives the behavioural intention to use SNS. Hence the SNS can tighten their privacy and security policies and invite more users to their sites. It is known that SNS sell the data of the users to other companies. This is a major charge against many SNS seriously eroding the trust factor. SNS can have open policies and agreements with their

users and thus ensure credibility. This will attract more users to their sites and also keep the existing user base. One of the major problems faced while using SNS is the fake profiles. SNS developers can design certain check measures which can restrict such fake profiles by checking for the authenticity. The number of SNS in market continues to grow and hence these sites need to build user loyalty and manage continued usage. Strengthening trust in an SNS will increase the popularity of the site and attract more users.

One of the main uses of SNS is to remain connected with the people around and the study has shown that Social Connectedness is a prominent factor for intention and usage of SNS. Though most of the SNS provide different features by which users can remain connected with others, certain features like localized and closed sub networks within SNS if offered, might be of use to different sectors of people. Gender was found to have a moderating effect on the relationship between social connectedness and usage of SNS. Hence the sites can consider the differences in gender while offering the features. Further the online marketers can also focus on their prospective customers accordingly. Many of the sites offer different ways in which users remain connected with others. For eg., certain games in Facebook allow users to interact with others while playing. This is one method by which the people connect with others and hence attract users to these sites. SNS can obtain feedback from users and offer new features to keep them attached to their sites and also take measures to attract new users.

Visibility is seen as a major predictor of usage of SNS in this study. People use the professional networking sites to be more visible and moving ahead in their career. The study has practical implication for recruiters and job seekers. SNS like LinkedIn are used as an extended online resume and the job aspirants can thus use the different features provided by the site that makes them more visible online. The participation in online communities and discussions regarding their area of interest etc are made visible on their profiles, thus bringing them into the light of the recruiters. SNS need to formulate marketing communication strategies that create habit of the use of these sites and thus make the users continue to use their sites since.

Habit is one important factor that significantly influences the usage of SNS. The enjoyment in using these sites can be enhanced by introducing different applications and targeting different sectors of people. SNS are used as a stress buster by a large number of users.

Gender also has a major role in the use of the Social Networking Sites and hence focus on the applications can be directed from this perspective. Further, SNS developers can think of some gender focussed sites alone like ladies alone SNS or gents alone SNS and offer features accordingly. With fierce competition, more and more SNS come into play and certain sites which were very popular and had huge user base couldn't cope up and had to be shut down. Maintaining user base and boosting the time spent on the site is a major challenge faced by most of the SNS. Hence SNS developers should always be in track to add new features by understanding the factors that drive the usage of SNS. In

addition to attracting new users, SNS purveyors should be mindful in promoting stronger attachments and make the existing users continue to use their sites.

6.6 Scope for future research

The study has focussed on Social Networking Sites (SNS) and future studies can be directed to test the model across the broad offerings of Social Media. Future research can focus on adding more psychological variables and also personality dimensions to make the model more robust.

Research can also be conducted on the offering of SNS on different platforms since the advent of smart phones and tablets have made the SNS available on mobile platforms and the users have switched on to the use of these sites on these platforms in recent times.

Future studies can be directed towards the moderating role of the different demographic variables like educational level, profession, cultural differences etc. Studies can be done to incorporate different comparisons like new users and continuing users.

Another possible direction for future research is to consider the commercial users of SNS and the organisational uses of SNS.

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Appendices

Appendix - 1

Factor Analysis for testing Common Method Variance

Total Variance Explained						
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	15.151	28.058	28.058	15.151	28.058	28.058
2	5.773	10.691	38.749			
3	3.294	6.099	44.848			
4	2.724	5.044	49.893			
5	2.439	4.516	54.409			
6	2.425	4.491	58.899			
7	2.122	3.929	62.828			
8	1.963	3.635	66.463			
9	1.866	3.455	69.919			
10	1.532	2.836	72.755			
11	1.112	2.060	74.815			
12	.915	1.695	76.509			
13	.721	1.336	77.845			
14	.706	1.308	79.153			
15	.643	1.191	80.344			
16	.592	1.097	81.441			
17	.529	.980	82.421			
18	.491	.910	83.331			
19	.488	.904	84.235			
20	.458	.847	85.082			
21	.444	.823	85.905			
22	.432	.800	86.705			
23	.423	.784	87.489			
24	.410	.759	88.249			
25	.382	.707	88.956			

26	.371	.687	89.643			
27	.339	.627	90.271			
28	.328	.607	90.878			
29	.318	.588	91.466			
30	.297	.550	92.016			
31	.285	.528	92.544			
32	.277	.514	93.058			
33	.257	.476	93.534			
34	.250	.463	93.997			
35	.241	.447	94.443			
36	.236	.436	94.880			
37	.215	.399	95.279			
38	.207	.383	95.661			
39	.189	.350	96.011			
40	.184	.341	96.352			
41	.181	.335	96.687			
42	.173	.320	97.007			
43	.170	.315	97.322			
44	.160	.297	97.619			
45	.149	.276	97.895			
46	.147	.272	98.167			
47	.146	.270	98.437			
48	.138	.256	98.693			
49	.134	.248	98.941			
50	.130	.240	99.181			
51	.126	.233	99.414			
52	.118	.218	99.632			
53	.106	.197	99.829			
54	.093	.171	100.000			
Extraction Method: Principal Component Analysis.						

Appendix - 2

Standardized factor loadings of items for testing convergent validity

			Estimate
PE4	<---	PE	0.910
PE3	<---	PE	0.904
PE2	<---	PE	0.910
PE1	<---	PE	0.891
EE4	<---	EEE	0.804
EE3	<---	EEE	0.914
EE2	<---	EEE	0.810
EE1	<---	EEE	0.892
SI3	<---	SI	0.909
SI2	<---	SI	0.919
SI1	<---	SI	0.920
FC4	<---	FC	0.759
FC3	<---	FC	0.805
FC2	<---	FC	0.814
FC1	<---	FC	0.814
BI1	<---	BI	0.895
BI2	<---	BI	0.928
BI3	<---	BI	0.922
HM3	<---	HM	0.943
HM2	<---	HM	0.930
HM1	<---	HM	0.917
HA4	<---	HA	0.932
HA3	<---	HA	0.905
HA2	<---	HA	0.944
HA1	<---	HA	0.935
TR1	<---	TR	0.872
TR2	<---	TR	0.884
TR3	<---	TR	0.874

TR4	<---	TR	0.912
SC1	<---	SC	0.875
SC2	<---	SC	0.819
SC3	<---	SC	0.894
SC4	<---	SC	0.883
SC5	<---	SC	0.877
SC6	<---	SC	0.884
SC7	<---	SC	0.872
V9	<---	VI	0.717
V8	<---	VI	0.808
V7	<---	VI	0.712
V6	<---	VI	0.718
V5	<---	VI	0.745
V4	<---	VI	0.758
V3	<---	VI	0.730
V2	<---	VI	0.741
U1	<---	USAGE	0.746
U2	<---	USAGE	0.709

Appendix 3

Pairwise parameter comparisons values for checking the variation of model across SNS

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16	F17
L1	-0.55	-2.02	-1.93	-4.07	-2.07	-4.00	-3.35	-4.58	-2.22	-2.42	-1.62	-2.75	-2.17	-0.87	-0.74	-2.13	-4.79
L2	0.13	-1.25	-1.17	-3.32	-1.43	-3.26	-2.52	-3.69	-1.61	-1.80	-1.02	-1.93	-1.39	-0.20	-0.10	-1.32	-3.81
L3	-0.16	-1.49	-1.41	-3.48	-1.64	-3.42	-2.72	-3.84	-1.80	-1.99	-1.23	-2.15	-1.62	-0.47	-0.36	-1.57	-3.96
L4	3.16	2.00	2.06	-0.12	1.44	-0.09	0.87	-0.14	1.20	1.03	1.74	1.43	1.88	2.77	2.80	1.99	-0.04
L5	0.61	-0.55	-0.48	-2.44	-0.81	-2.39	-1.64	-2.63	-0.99	-1.16	-0.47	-1.12	-0.66	0.31	0.39	-0.60	-2.65
L6	2.96	1.87	1.93	-0.14	1.36	-0.11	0.80	-0.15	1.14	0.97	1.65	1.33	1.76	2.61	2.64	1.86	-0.06
L7	1.21	-0.60	-0.50	-3.16	-0.91	-3.09	-2.24	-3.70	-1.13	-1.36	-0.44	-1.49	-0.78	0.69	0.79	-0.69	-3.96
L8	3.67	1.85	1.93	-1.17	0.99	-1.11	0.13	-1.36	0.68	0.45	1.39	0.97	1.67	2.96	2.96	1.85	-1.34
L9	2.99	2.24	2.28	0.81	1.89	0.83	1.50	0.84	1.73	1.60	2.10	1.87	2.17	2.76	2.79	2.23	0.92
L10	3.51	2.78	2.81	1.35	2.41	1.37	2.05	1.39	2.24	2.12	2.61	2.41	2.70	3.28	3.31	2.77	1.49
L11	3.30	2.55	2.58	1.09	2.18	1.11	1.80	1.12	2.01	1.88	2.39	2.17	2.47	3.07	3.10	2.54	1.21
L12	0.80	-0.59	-0.51	-2.76	-0.88	-2.70	-1.89	-3.06	-1.07	-1.27	-0.48	-1.28	-0.73	0.43	0.52	-0.65	-3.14
L13	1.03	-0.37	-0.29	-2.58	-0.70	-2.53	-1.69	-2.87	-0.90	-1.09	-0.30	-1.07	-0.51	0.65	0.73	-0.43	-2.94
L14	-0.46	-2.40	-2.27	-4.67	-2.25	-4.58	-4.07	-5.59	-2.40	-2.63	-1.70	-3.36	-2.59	-0.86	-0.69	-2.58	-6.17
L15	3.27	1.15	1.25	-2.03	0.35	-1.96	-0.79	-2.45	0.05	-0.20	0.81	0.13	0.94	2.46	2.46	1.13	-2.63
L16	3.56	2.02	2.09	-0.68	1.26	-0.63	0.53	-0.77	0.97	0.75	1.62	1.27	1.87	2.99	3.01	2.02	-0.69
L17	5.89	4.28	4.34	1.16	3.08	1.19	2.67	1.31	2.71	2.48	3.39	3.50	4.11	5.16	5.09	4.33	1.56
L18	4.67	3.04	3.10	0.07	2.04	0.11	1.44	0.07	1.71	1.48	2.39	2.24	2.87	3.99	3.96	3.06	0.23
L19	1.91	0.74	0.80	-1.30	0.31	-1.26	-0.39	-1.41	0.10	-0.07	0.64	0.16	0.62	1.56	1.61	0.71	-1.37
L20	1.30	0.23	0.28	-1.63	-0.11	-1.60	-0.81	-1.75	-0.30	-0.46	0.20	-0.31	0.12	1.00	1.06	0.19	-1.72
L21	3.73	2.63	2.68	0.55	2.04	0.58	1.55	0.58	1.80	1.63	2.32	2.09	2.52	3.35	3.37	2.62	0.71
L22	2.19	1.30	1.35	-0.35	0.93	-0.32	0.42	-0.37	0.75	0.61	1.19	0.85	1.21	1.93	1.97	1.28	-0.30
L23	2.63	1.56	1.62	-0.38	1.10	-0.35	0.52	-0.41	0.88	0.72	1.39	1.04	1.46	2.29	2.33	1.54	-0.33
L24	1.33	0.19	0.25	-1.75	-0.16	-1.71	-0.90	-1.89	-0.36	-0.53	0.17	-0.38	0.07	1.01	1.07	0.15	-1.87
L25	2.45	1.37	1.42	-0.59	0.91	-0.56	0.31	-0.64	0.70	0.53	1.21	0.83	1.26	2.12	2.16	1.35	-0.56
L26	1.63	0.55	0.60	-1.35	0.17	-1.31	-0.50	-1.44	-0.02	-0.19	0.49	0.01	0.44	1.32	1.37	0.51	-1.40
L27	2.16	1.12	1.17	-0.75	0.71	-0.71	0.11	-0.80	0.51	0.35	1.00	0.61	1.02	1.85	1.89	1.10	-0.73
L28	2.68	1.39	1.46	-0.87	0.84	-0.83	0.15	-0.96	0.60	0.41	1.18	0.76	1.26	2.26	2.30	1.37	-0.90
L29	2.14	0.86	0.93	-1.33	0.39	-1.28	-0.36	-1.45	0.17	-0.02	0.74	0.23	0.74	1.74	1.79	0.83	-1.42
L30	2.76	1.40	1.47	-0.97	0.82	-0.92	0.09	-1.07	0.57	0.38	1.17	0.73	1.27	2.31	2.35	1.38	-1.01
L31	1.28	-0.07	0.01	-2.25	-0.43	-2.20	-1.34	-2.48	-0.64	-0.83	-0.05	-0.73	-0.20	0.90	0.97	-0.12	-2.52
L32	2.75	1.41	1.48	-0.92	0.84	-0.88	0.13	-1.02	0.59	0.40	1.19	0.76	1.28	2.31	2.34	1.39	-0.96
L33	2.18	0.84	0.91	-1.43	0.35	-1.38	-0.44	-1.58	0.12	-0.07	0.71	0.18	0.71	1.76	1.81	0.81	-1.55
L34	2.58	1.20	1.27	-1.18	0.64	-1.13	-0.13	-1.31	0.39	0.19	0.99	0.52	1.06	2.12	2.17	1.17	-1.26
L35	-9.77	-10.74	-10.65	-11.60	-9.98	-11.53	-11.55	-12.37	-9.92	-10.05	-9.51	-11.24	-10.83	-9.72	-9.48	-10.90	-12.75

	F18	F19	F20	F21	F22	F23	F24	F25	F26	F27	F28	F29	F30	F31	F32	F33	F34	F35
L1	-4.59	-2.18	-2.62	-5.44	1.44	-1.42	0.88	0.79	0.17	0.11	-1.16	-3.34	-1.47	2.20	-0.68	-1.76	-1.51	3.46
L2	-3.62	-1.45	-1.87	-4.56	1.99	-0.69	1.47	1.39	0.80	0.75	-0.66	-2.80	-1.01	2.59	-0.20	-1.26	-1.03	3.78
L3	-3.78	-1.68	-2.08	-4.70	1.64	-0.95	1.13	1.05	0.49	0.44	-0.86	-2.95	-1.18	2.33	-0.41	-1.44	-1.21	3.54
L4	0.11	1.69	1.32	-1.05	4.67	2.46	4.26	4.18	3.71	3.65	1.75	-0.22	1.28	4.73	2.18	1.18	1.34	5.63
L5	-2.50	-0.76	-1.12	-3.46	2.15	-0.08	1.72	1.65	1.17	1.12	-0.22	-2.17	-0.57	2.72	0.20	-0.77	-0.57	3.82
L6	0.08	1.58	1.23	-1.02	4.40	2.31	4.01	3.93	3.49	3.44	1.68	-0.23	1.22	4.55	2.09	1.13	1.29	5.45
L7	-3.71	-0.89	-1.42	-4.72	3.62	0.13	2.98	2.85	2.09	2.01	-0.12	-2.51	-0.54	3.61	0.40	-0.79	-0.55	4.71
L8	-1.11	1.35	0.80	-2.55	6.01	2.57	5.42	5.28	4.54	4.43	1.40	-1.02	0.83	5.18	1.93	0.70	0.90	6.05
L9	1.02	2.05	1.80	0.20	3.97	2.54	3.70	3.65	3.34	3.31	2.13	0.65	1.77	4.30	2.44	1.70	1.83	5.10
L10	1.58	2.58	2.34	0.76	4.47	3.07	4.20	4.16	3.86	3.82	2.61	1.15	2.24	4.75	2.92	2.19	2.31	5.52
L11	1.31	2.34	2.10	0.48	4.29	2.85	4.02	3.97	3.66	3.63	2.39	0.90	2.03	4.59	2.71	1.97	2.09	5.38
L12	-2.96	-0.83	-1.26	-3.98	2.66	-0.03	2.15	2.06	1.48	1.42	-0.20	-2.34	-0.58	3.09	0.27	-0.80	-0.58	4.21
L13	-2.75	-0.63	-1.06	-3.80	2.91	0.20	2.39	2.30	1.71	1.65	-0.04	-2.20	-0.43	3.27	0.43	-0.65	-0.43	4.37
L14	-5.88	-2.52	-3.05	-6.47	2.20	-1.61	1.47	1.34	0.51	0.43	-1.14	-3.56	-1.47	2.66	-0.61	-1.80	-1.52	3.93
L15	-2.34	0.63	0.03	-3.65	5.99	1.98	5.32	5.15	4.29	4.16	0.91	-1.62	0.37	4.90	1.47	0.18	0.41	5.81
L16	-0.49	1.59	1.11	-1.87	5.56	2.63	5.04	4.93	4.30	4.22	1.61	-0.67	1.06	5.12	2.11	0.95	1.14	6.00
L17	1.76	3.67	3.16	0.05	7.92	4.91	7.42	7.29	6.65	6.54	3.11	0.77	2.43	6.75	3.63	2.41	2.57	7.40
L18	0.43	2.50	2.00	-1.13	6.74	3.67	6.22	6.09	5.44	5.34	2.25	-0.09	1.64	5.88	2.77	1.57	1.74	6.65
L19	-1.21	0.47	0.10	-2.28	3.46	1.21	3.03	2.96	2.47	2.42	0.77	-1.21	0.35	3.76	1.20	0.21	0.39	4.76
L20	-1.58	-0.01	-0.35	-2.56	2.74	0.66	2.34	2.27	1.82	1.78	0.37	-1.51	0.00	3.20	0.78	-0.16	0.02	4.22
L21	0.85	2.31	1.96	-0.31	5.16	3.07	4.78	4.70	4.25	4.20	2.27	0.35	1.79	5.17	2.69	1.72	1.87	6.01
L22	-0.18	1.08	0.79	-1.10	3.38	1.66	3.05	2.99	2.62	2.59	1.26	-0.41	0.89	3.76	1.62	0.79	0.93	4.67
L23	-0.19	1.29	0.95	-1.25	4.03	1.99	3.65	3.58	3.14	3.09	1.44	-0.44	1.01	4.26	1.84	0.90	1.06	5.18
L24	-1.72	-0.05	-0.41	-2.73	2.84	0.65	2.42	2.35	1.87	1.83	0.34	-1.60	-0.04	3.27	0.76	-0.21	-0.02	4.31
L25	-0.42	1.10	0.75	-1.48	3.88	1.80	3.49	3.42	2.97	2.93	1.28	-0.62	0.85	4.13	1.69	0.73	0.90	5.07
L26	-1.26	0.31	-0.04	-2.27	3.07	0.98	2.67	2.60	2.15	2.11	0.62	-1.27	0.24	3.47	1.03	0.09	0.27	4.47
L27	-0.60	0.87	0.54	-1.61	3.53	1.54	3.15	3.08	2.66	2.61	1.09	-0.76	0.69	3.86	1.49	0.56	0.73	4.81
L28	-0.73	1.07	0.66	-1.92	4.37	1.91	3.91	3.83	3.30	3.24	1.24	-0.84	0.77	4.42	1.70	0.64	0.83	5.37
L29	-1.25	0.57	0.17	-2.38	3.81	1.37	3.36	3.27	2.75	2.69	0.85	-1.22	0.41	4.00	1.30	0.26	0.45	4.99
L30	-0.84	1.06	0.63	-2.07	4.54	1.95	4.07	3.97	3.42	3.35	1.23	-0.91	0.75	4.51	1.70	0.62	0.80	5.45
L31	-2.34	-0.33	-0.75	-3.41	3.07	0.48	2.58	2.49	1.93	1.87	0.17	-1.95	-0.23	3.41	0.63	-0.43	-0.22	4.48
L32	-0.78	1.07	0.66	-2.00	4.49	1.95	4.03	3.94	3.39	3.32	1.24	-0.88	0.77	4.49	1.71	0.64	0.82	5.43
L33	-1.37	0.53	0.12	-2.53	3.93	1.38	3.46	3.37	2.82	2.75	0.83	-1.29	0.38	4.06	1.29	0.22	0.42	5.06
L34	-1.08	0.86	0.43	-2.30	4.39	1.75	3.90	3.81	3.24	3.17	1.08	-1.08	0.60	4.38	1.55	0.46	0.65	5.34
L35	-12.60	-10.58	-10.86	-12.81	-8.34	-10.32	-8.79	-8.83	-9.27	-9.27	-8.41	-10.09	-8.26	-5.94	-8.07	-8.82	-8.51	-4.07

Appendix 4

Pairwise parameter comparisons values for checking the variation of model across Gender

	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15	W16	W17
f1	-0.439	-2.137	-1.449	-4.928	-1.448	-4.698	-3.691	-5.585	-3.308	-3.578	-2.897	-4.101	-3.02	-0.771	-2.553	-3.565	-6.905
f2	1.633	-0.132	0.52	-3.26	0.173	-3.041	-1.663	-3.56	-2.009	-2.293	-1.574	-2.101	-1.064	1.62	-0.212	-1.446	-4.692
f3	0.603	-1.097	-0.44	-4.033	-0.619	-3.811	-2.611	-4.475	-2.631	-2.907	-2.21	-3.03	-1.991	0.439	-1.325	-2.436	-5.66
f4	4.368	3.106	3.542	0.399	3.007	0.552	2.04	0.672	0.825	0.565	1.23	1.697	2.401	4.467	3.273	2.278	0.107
f5	1.979	0.803	1.239	-1.621	0.934	-1.466	-0.232	-1.547	-0.937	-1.18	-0.563	-0.549	0.15	1.936	0.816	-0.045	-2.17
f6	3.875	2.654	3.083	0.044	2.606	0.196	1.612	0.277	0.512	0.258	0.907	1.28	1.972	3.939	2.784	1.836	-0.288
f7	3.004	1.256	1.868	-2.018	1.314	-1.812	-0.215	-2.061	-1.052	-1.34	-0.604	-0.659	0.322	3.158	1.377	0.054	-3.028
f8	3.645	1.947	2.529	-1.339	1.9	-1.141	0.533	-1.254	-0.527	-0.816	-0.078	0.094	1.031	3.847	2.141	0.818	-2.125
f9	2.109	1.026	1.428	-1.254	1.135	-1.11	0.071	-1.146	-0.658	-0.892	-0.3	-0.223	0.421	2.068	1.046	0.249	-1.703
f10	2.468	1.386	1.784	-0.91	1.466	-0.767	0.437	-0.774	-0.358	-0.592	0.003	0.143	0.781	2.443	1.425	0.62	-1.317
f11	2.371	1.28	1.682	-1.025	1.369	-0.881	0.323	-0.898	-0.455	-0.69	-0.094	0.027	0.671	2.342	1.314	0.505	-1.45
f12	1.455	-0.279	0.367	-3.356	0.05	-3.138	-1.792	-3.665	-2.096	-2.377	-1.665	-2.223	-1.196	1.414	-0.38	-1.582	-4.787
f13	1.569	-0.193	0.46	-3.309	0.124	-3.09	-1.723	-3.618	-2.048	-2.331	-1.614	-2.16	-1.122	1.547	-0.282	-1.508	-4.754
f14	1.297	-0.331	0.281	-3.285	-0.008	-3.077	-1.761	-3.539	-2.09	-2.365	-1.669	-2.172	-1.2	1.226	-0.43	-1.558	-4.572
f15	2.809	1.206	1.775	-1.88	1.281	-1.685	-0.159	-1.877	-0.987	-1.267	-0.554	-0.573	0.34	2.896	1.297	0.092	-2.75
f16	2.223	0.405	1.06	-2.846	0.613	-2.628	-1.146	-3.074	-1.672	-1.96	-1.227	-1.598	-0.554	2.303	0.411	-0.903	-4.186
f17	5.216	3.188	3.828	-0.658	2.862	-0.447	1.583	-0.449	0.071	-0.24	0.558	1.069	2.109	5.797	3.673	1.961	-1.391
f18	5.344	3.356	3.983	-0.46	3.013	-0.253	1.783	-0.213	0.22	-0.09	0.707	1.276	2.295	5.905	3.843	2.161	-1.116
f19	1.698	0.133	0.712	-2.796	0.372	-2.597	-1.233	-2.94	-1.734	-2.007	-1.314	-1.633	-0.709	1.666	0.097	-1.018	-3.877
f20	2.162	0.614	1.178	-2.341	0.778	-2.147	-0.724	-2.405	-1.378	-1.652	-0.955	-1.124	-0.223	2.174	0.633	-0.497	-3.288
f21	5.578	3.993	4.506	0.685	3.695	0.86	2.708	1.059	1.101	0.81	1.557	2.286	3.12	5.886	4.345	3.027	0.398
f22	-3.28	-4.737	-4.07	-6.978	-3.653	-6.749	-6.181	-7.917	-5.033	-5.279	-4.668	-6.528	-5.494	-3.948	-5.462	-6.153	-9.274
f23	0.011	-1.615	-0.97	-4.411	-1.06	-4.192	-3.087	-4.896	-2.962	-3.231	-2.553	-3.488	-2.472	-0.229	-1.904	-2.933	-6.067
f24	-1.402	-2.989	-2.319	-5.57	-2.177	-5.342	-4.482	-6.296	-3.865	-4.126	-3.472	-4.866	-3.817	-1.849	-3.5	-4.388	-7.597
f25	-1.553	-3.12	-2.454	-5.665	-2.293	-5.438	-4.599	-6.396	-3.953	-4.212	-3.563	-4.978	-3.937	-2.013	-3.639	-4.509	-7.687
f26	-0.99	-2.604	-1.935	-5.259	-1.857	-5.033	-4.105	-5.933	-3.612	-3.876	-3.213	-4.496	-3.447	-1.381	-3.06	-3.995	-7.215
f27	-0.856	-2.456	-1.797	-5.119	-1.747	-4.895	-3.937	-5.747	-3.517	-3.781	-3.118	-4.328	-3.294	-1.219	-2.876	-3.82	-6.992
f28	0.959	0.032	0.388	-1.927	0.205	-1.797	-0.802	-1.864	-1.331	-1.541	-1.011	-1.055	-0.488	0.873	0.005	-0.658	-2.362
f29	2.872	1.912	2.264	-0.185	1.959	-0.058	1.069	-0.011	0.245	0.025	0.583	0.804	1.37	2.853	1.959	1.238	-0.473
f30	1.311	0.458	0.783	-1.383	0.593	-1.264	-0.309	-1.288	-0.881	-1.081	-0.575	-0.544	-0.024	1.24	0.446	-0.171	-1.731
f31	-1.669	-2.597	-2.217	-4.444	-2.23	-4.304	-3.465	-4.557	-3.562	-3.765	-3.257	-3.715	-3.112	-1.859	-2.74	-3.352	-5.141
f32	1.912	0.969	1.323	-1.056	1.08	-0.928	0.132	-0.938	-0.544	-0.758	-0.214	-0.127	0.439	1.858	0.979	0.288	-1.418
f33	1.874	0.918	1.277	-1.129	1.033	-0.998	0.07	-1.015	-0.603	-0.819	-0.271	-0.193	0.381	1.819	0.927	0.227	-1.503
f34	1.326	0.44	0.778	-1.462	0.58	-1.338	-0.355	-1.37	-0.935	-1.14	-0.622	-0.599	-0.059	1.254	0.428	-0.213	-1.832
f35	-5.912	-6.612	-6.302	-7.96	-6.151	-7.842	-7.3	-8.16	-7.023	-7.183	-6.789	-7.488	-7.001	-6.148	-6.814	-7.236	-8.658

	W18	W19	W20	W21	W22	W23	W24	W25	W26	W27	W28	W29	W30	W31	W32	W33	W34	W35
f1	-5.446	-1.441	-1.739	-5.518	-2.148	-3.981	-0.575	-1.822	-1.682	-2.073	-1.756	-4.139	-1.58	2.279	-2.605	-2.953	-2.861	4.899
f2	-3.244	0.443	0.099	-3.714	-0.444	-2.17	1.324	0.045	0.162	-0.277	-0.481	-2.923	-0.411	3.612	-1.39	-1.75	-1.641	5.969
f3	-4.235	-0.477	-0.793	-4.537	-1.267	-3.017	0.383	-0.86	-0.734	-1.144	-1.104	-3.501	-0.984	2.926	-1.978	-2.33	-2.229	5.406
f4	1.108	3.428	3.142	0.253	2.617	1.43	4.07	3.128	3.194	2.829	2.075	-0.097	1.983	5.516	1.216	0.886	1.008	7.383
f5	-1.203	1.176	0.927	-1.841	0.501	-0.708	1.784	0.896	0.974	0.65	0.304	-1.766	0.313	3.601	-0.481	-0.792	-0.688	5.705
f6	0.689	2.982	2.709	-0.112	2.213	1.038	3.606	2.691	2.759	2.408	1.747	-0.384	1.676	5.121	0.911	0.588	0.705	7.029
f7	-1.633	1.742	1.378	-2.365	0.765	-0.853	2.607	1.345	1.445	0.986	0.441	-2.014	0.438	4.513	-0.498	-0.863	-0.743	6.686
f8	-0.784	2.386	2.022	-1.628	1.389	-0.153	3.226	1.998	2.088	1.63	0.935	-1.507	0.895	4.955	-0.012	-0.377	-0.252	7.033
f9	-0.813	1.368	1.136	-1.443	0.735	-0.386	1.931	1.108	1.179	0.878	0.519	-1.463	0.517	3.645	-0.236	-0.534	-0.433	5.676
f10	-0.432	1.719	1.485	-1.086	1.074	-0.033	2.28	1.459	1.528	1.224	0.813	-1.171	0.797	3.937	0.052	-0.247	-0.144	5.928
f11	-0.557	1.618	1.383	-1.206	0.972	-0.146	2.183	1.356	1.426	1.121	0.722	-1.269	0.711	3.862	-0.04	-0.34	-0.237	5.869
f12	-3.358	0.297	-0.04	-3.81	-0.567	-2.283	1.166	-0.095	0.023	-0.408	-0.575	-3.001	-0.498	3.487	-1.475	-1.833	-1.725	5.862
f13	-3.307	0.386	0.043	-3.766	-0.495	-2.224	1.265	-0.011	0.106	-0.331	-0.52	-2.959	-0.446	3.569	-1.426	-1.786	-1.678	5.935
f14	-3.226	0.218	-0.1	-3.706	-0.602	-2.242	1.041	-0.153	-0.041	-0.451	-0.606	-2.979	-0.529	3.341	-1.485	-1.836	-1.73	5.712
f15	-1.461	1.665	1.329	-2.191	0.759	-0.764	2.468	1.296	1.391	0.964	0.454	-1.926	0.451	4.369	-0.456	-0.811	-0.693	6.534
f16	-2.715	0.958	0.596	-3.276	0.012	-1.711	1.857	0.55	0.662	0.204	-0.139	-2.611	-0.096	4.003	-1.068	-1.434	-1.32	6.293
f17	0.15	3.598	3.151	-0.933	2.355	0.703	4.565	3.146	3.231	2.682	1.607	-0.995	1.506	5.936	0.577	0.187	0.326	7.867
f18	0.393	3.753	3.311	-0.716	2.519	0.899	4.704	3.308	3.39	2.848	1.742	-0.848	1.632	6.04	0.714	0.325	0.465	7.948
f19	-2.592	0.638	0.324	-3.165	-0.186	-1.747	1.43	0.278	0.382	-0.022	-0.285	-2.629	-0.234	3.587	-1.162	-1.51	-1.402	5.887
f20	-2.027	1.09	0.772	-2.674	0.244	-1.274	1.872	0.733	0.831	0.424	0.054	-2.287	0.08	3.903	-0.83	-1.179	-1.067	6.137
f21	1.618	4.326	3.959	0.533	3.278	1.917	5.108	3.956	4.025	3.568	2.483	0.07	2.341	6.379	1.513	1.147	1.285	8.188
f22	-7.935	-3.964	-4.183	-7.66	-4.41	-6.232	-3.187	-4.295	-4.139	-4.444	-3.513	-5.739	-3.208	0.266	-4.257	-4.577	-4.509	3.205
f23	-4.686	-0.986	-1.282	-4.926	-1.713	-3.443	-0.155	-1.354	-1.226	-1.614	-1.45	-3.804	-1.305	2.501	-2.299	-2.643	-2.548	5.043
f24	-6.202	-2.278	-2.545	-6.178	-2.889	-4.695	-1.455	-2.637	-2.494	-2.85	-2.334	-4.652	-2.116	1.586	-3.144	-3.48	-3.396	4.309
f25	-6.306	-2.409	-2.671	-6.273	-3.005	-4.801	-1.594	-2.764	-2.62	-2.971	-2.427	-4.732	-2.204	1.469	-3.23	-3.564	-3.482	4.206
f26	-5.811	-1.909	-2.187	-5.848	-2.557	-4.355	-1.077	-2.274	-2.133	-2.502	-2.08	-4.416	-1.882	1.866	-2.904	-3.244	-3.157	4.54
f27	-5.605	-1.778	-2.056	-5.688	-2.434	-4.207	-0.953	-2.14	-2.003	-2.372	-1.995	-4.325	-1.805	1.934	-2.819	-3.158	-3.07	4.586
f28	-1.587	0.352	0.158	-2.107	-0.169	-1.175	0.84	0.128	0.194	-0.061	-0.253	-2.049	-0.219	2.551	-0.925	-1.195	-1.106	4.575
f29	0.311	2.202	1.991	-0.321	1.613	0.628	2.703	1.969	2.03	1.754	1.322	-0.531	1.288	4.198	0.605	0.324	0.424	6.061
f30	-1.02	0.746	0.565	-1.534	0.253	-0.67	1.196	0.538	0.599	0.36	0.13	-1.575	0.147	2.767	-0.512	-0.77	-0.683	4.679
f31	-4.339	-2.217	-2.394	-4.705	-2.662	-3.751	-1.722	-2.44	-2.36	-2.599	-2.442	-4.217	-2.306	0.373	-3.071	-3.334	-3.26	2.677
f32	-0.639	1.274	1.072	-1.215	0.72	-0.275	1.768	1.046	1.11	0.845	0.533	-1.29	0.533	3.371	-0.16	-0.436	-0.341	5.314
f33	-0.713	1.228	1.023	-1.291	0.668	-0.34	1.728	0.997	1.061	0.793	0.484	-1.353	0.487	3.35	-0.214	-0.491	-0.397	5.309
f34	-1.094	0.738	0.551	-1.621	0.229	-0.727	1.205	0.524	0.586	0.339	0.104	-1.644	0.122	2.817	-0.554	-0.818	-0.73	4.763
f35	-8.027	-6.269	-6.39	-8.218	-6.542	-7.457	-5.886	-6.438	-6.366	-6.534	-6.068	-7.507	-5.844	-3.8	-6.539	-6.748	-6.702	-1.478

Appendix 5

Pairwise parameter comparisons values for checking the variation of model across Age

	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15	W16	W17
x1	-0.781	-3.096	-2.787	-5.208	-0.808	-4.831	-4.407	-5.9	-3.139	-3.431	-3.273	-3.262	-2.335	-1.645	-3.095	-3.987	-7.409
x2	1.535	-0.751	-0.475	-3.662	0.688	-3.29	-2.155	-3.655	-1.619	-1.938	-1.748	-0.856	0.05	0.856	-0.647	-1.481	-4.689
x3	-0.043	-2.258	-1.973	-4.646	-0.337	-4.277	-3.565	-5.018	-2.62	-2.917	-2.749	-2.394	-1.51	-0.806	-2.216	-3.05	-6.249
x4	4.193	2.23	2.445	-1.302	2.733	-0.956	0.906	-0.446	0.592	0.26	0.478	2.19	2.961	3.733	2.404	1.729	-0.871
x5	2.47	0.594	0.812	-2.441	1.518	-2.1	-0.634	-1.928	-0.58	-0.888	-0.693	0.53	1.272	1.954	0.718	0.054	-2.494
x6	3.734	1.839	2.05	-1.524	2.445	-1.183	0.566	-0.746	0.34	0.017	0.228	1.793	2.539	3.266	1.995	1.338	-1.187
x7	2.877	0.502	0.774	-2.869	1.537	-2.492	-1	-2.555	-0.802	-1.139	-0.93	0.423	1.36	2.267	0.661	-0.183	-3.44
x8	3.819	1.494	1.75	-2.162	2.197	-1.788	-0.02	-1.559	-0.118	-0.464	-0.242	1.438	2.352	3.279	1.686	0.877	-2.248
x9	2.883	1.58	1.731	-0.982	2.194	-0.707	0.689	-0.258	0.516	0.255	0.426	1.541	2.055	2.521	1.675	1.219	-0.522
x10	3.557	2.243	2.393	-0.431	2.757	-0.155	1.338	0.382	1.071	0.804	0.982	2.209	2.727	3.206	2.347	1.891	0.149
x11	2.828	1.487	1.642	-1.117	2.123	-0.837	0.572	-0.4	0.41	0.145	0.319	1.446	1.976	2.456	1.584	1.114	-0.68
x12	3.3	1.163	1.404	-2.246	1.963	-1.885	-0.233	-1.674	-0.27	-0.602	-0.391	1.103	1.945	2.765	1.325	0.576	-2.308
x13	3.793	1.676	1.91	-1.861	2.325	-1.502	0.275	-1.158	0.103	-0.233	-0.016	1.625	2.458	3.288	1.852	1.117	-1.714
x14	1.133	-1.333	-1.028	-4.109	0.379	-3.726	-2.796	-4.375	-2.002	-2.322	-2.136	-1.463	-0.483	0.366	-1.251	-2.165	-5.691
x15	3.045	0.604	0.882	-2.839	1.612	-2.458	-0.936	-2.522	-0.752	-1.093	-0.881	0.526	1.488	2.433	0.773	-0.092	-3.436
x16	3.031	0.743	1.003	-2.651	1.687	-2.279	-0.723	-2.237	-0.616	-0.951	-0.741	0.671	1.573	2.45	0.904	0.095	-3.023
x17	5.806	3.389	3.634	-0.937	3.475	-0.559	1.749	0.149	1.128	0.756	1.006	3.373	4.317	5.377	3.662	2.853	-0.285
x18	5.34	2.918	3.168	-1.265	3.153	-0.887	1.293	-0.305	0.804	0.437	0.68	2.892	3.84	4.883	3.175	2.357	-0.814
x19	0.957	-1.054	-0.807	-3.739	0.374	-3.386	-2.306	-3.665	-1.805	-2.105	-1.926	-1.15	-0.351	0.331	-0.969	-1.703	-4.518
x20	0.855	-1.061	-0.826	-3.693	0.324	-3.348	-2.264	-3.571	-1.802	-2.096	-1.921	-1.152	-0.391	0.255	-0.979	-1.678	-4.352
x21	5.297	3.366	3.57	-0.409	3.584	-0.065	2.033	0.693	1.464	1.123	1.354	3.342	4.098	4.886	3.564	2.911	0.398
x22	-0.289	-2.206	-1.961	-4.523	-0.492	-4.177	-3.374	-4.675	-2.625	-2.906	-2.746	-2.317	-1.553	-0.946	-2.158	-2.872	-5.603
x23	1.594	-0.493	-0.242	-3.383	0.796	-3.025	-1.804	-3.207	-1.419	-1.73	-1.542	-0.583	0.245	0.979	-0.387	-1.142	-4.04
x24	-0.879	-2.952	-2.678	-5.086	-0.894	-4.727	-4.166	-5.543	-3.113	-3.395	-3.24	-3.091	-2.262	-1.637	-2.933	-3.72	-6.735
x25	0.692	-1.366	-1.11	-3.983	0.178	-3.626	-2.632	-4.013	-2.026	-2.325	-2.149	-1.471	-0.652	0.036	-1.29	-2.047	-4.948
x26	-0.61	-2.676	-2.406	-4.896	-0.713	-4.537	-3.898	-5.274	-2.927	-3.212	-3.054	-2.808	-1.983	-1.347	-2.646	-3.427	-6.415
x27	1.047	-0.992	-0.743	-3.71	0.429	-3.355	-2.262	-3.636	-1.764	-2.066	-1.886	-1.089	-0.279	0.416	-0.905	-1.649	-4.503
x28	1.991	0.547	0.718	-2.035	1.372	-1.741	-0.418	-1.453	-0.429	-0.699	-0.527	0.496	1.068	1.573	0.64	0.128	-1.824
x29	4.958	3.546	3.701	0.509	3.845	0.798	2.556	1.532	2.079	1.789	1.987	3.52	4.075	4.616	3.677	3.195	1.351
x30	2.574	1.264	1.417	-1.259	1.929	-0.983	0.374	-0.576	0.245	-0.015	0.154	1.223	1.74	2.204	1.356	0.896	-0.858
x31	-1.651	-3.126	-2.933	-5.04	-1.557	-4.74	-4.042	-5.084	-3.395	-3.635	-3.5	-3.214	-2.625	-2.18	-3.094	-3.643	-5.734
x32	3.33	1.919	2.08	-0.854	2.492	-0.565	0.953	-0.066	0.722	0.445	0.628	1.88	2.437	2.952	2.028	1.537	-0.341
x33	3.377	1.963	2.125	-0.821	2.529	-0.531	0.995	-0.025	0.757	0.479	0.663	1.925	2.483	3	2.073	1.581	-0.298
x34	1.997	0.599	0.765	-1.935	1.399	-1.647	-0.337	-1.343	-0.363	-0.628	-0.458	0.55	1.103	1.591	0.689	0.195	-1.692
x35	-8.82	-10.04	-9.853	-10.66	-7.533	-10.39	-10.712	-11.574	-9.173	-9.334	-9.276	-10.166	-9.67	-9.41	-10.102	-10.595	-12.455

	W18	W19	W20	W21	W22	W23	W24	W25	W26	W27	W28	W29	W30	W31	W32	W33	W34	W35
x1	-6.521	-2.961	-3.523	-6.546	0.718	-2.787	-0.234	0.377	-1.432	-0.439	-0.929	-3.157	-1.981	1.329	-1.597	-2.377	-3.217	3.552
x2	-3.88	-0.836	-1.404	-4.456	2.788	-0.562	2.017	2.587	0.822	1.742	0.433	-1.795	-0.744	2.702	-0.253	-1.045	-1.929	4.567
x3	-5.431	-2.215	-2.762	-5.72	1.323	-2.007	0.461	1.034	-0.689	0.242	-0.499	-2.696	-1.579	1.727	-1.163	-1.937	-2.782	3.831
x4	-0.242	1.962	1.448	-1.349	5.126	2.296	4.569	5.035	3.534	4.286	2.344	0.227	1.069	4.498	1.671	0.901	0.001	5.916
x5	-1.869	0.432	-0.058	-2.738	3.476	0.707	2.855	3.316	1.873	2.621	1.227	-0.842	0.064	3.319	0.582	-0.162	-1.016	4.994
x6	-0.574	1.604	1.106	-1.614	4.672	1.915	4.105	4.559	3.107	3.843	2.085	0.001	0.849	4.2	1.426	0.67	-0.212	5.682
x7	-2.628	0.305	-0.285	-3.443	4.042	0.64	3.347	3.919	2.096	3.018	1.202	-1.061	-0.061	3.517	0.495	-0.316	-1.235	5.183
x8	-1.479	1.22	0.635	-2.501	4.886	1.587	4.26	4.809	3.031	3.914	1.81	-0.442	0.5	4.117	1.099	0.286	-0.647	5.631
x9	-0.103	1.441	1.082	-0.922	3.614	1.649	3.154	3.476	2.473	3	1.941	0.231	0.935	3.642	1.405	0.783	0.045	5.146
x10	0.567	2.084	1.722	-0.301	4.272	2.303	3.825	4.147	3.138	3.663	2.475	0.754	1.435	4.19	1.932	1.303	0.552	5.607
x11	-0.247	1.345	0.978	-1.077	3.58	1.559	3.107	3.439	2.407	2.948	1.866	0.126	0.846	3.599	1.321	0.688	-0.06	5.121
x12	-1.6	0.938	0.391	-2.564	4.35	1.266	3.72	4.233	2.594	3.423	1.613	-0.572	0.356	3.839	0.926	0.139	-0.766	5.415
x13	-1.023	1.418	0.874	-2.071	4.8	1.76	4.201	4.704	3.084	3.896	1.948	-0.231	0.667	4.17	1.259	0.471	-0.442	5.667
x14	-4.789	-1.36	-1.958	-5.147	2.507	-1.098	1.663	2.283	0.374	1.374	0.144	-2.137	-1.031	2.473	-0.555	-1.362	-2.253	4.413
x15	-2.602	0.393	-0.209	-3.425	4.215	0.74	3.522	4.107	2.235	3.175	1.266	-1.017	-0.013	3.606	0.552	-0.267	-1.194	5.251
x16	-2.251	0.533	-0.042	-3.129	4.153	0.867	3.482	4.033	2.277	3.164	1.346	-0.89	0.084	3.631	0.646	-0.158	-1.072	5.264
x17	0.472	2.949	2.338	-0.921	6.728	3.403	6.22	6.765	4.932	5.802	2.971	0.679	1.537	5.332	2.231	1.395	0.413	6.547
x18	-0.045	2.514	1.905	-1.348	6.302	2.952	5.765	6.316	4.476	5.357	2.676	0.385	1.268	5.034	1.941	1.108	0.135	6.321
x19	-3.814	-1.116	-1.628	-4.419	2.129	-0.877	1.394	1.902	0.347	1.173	0.159	-1.963	-0.946	2.305	-0.491	-1.245	-2.088	4.232
x20	-3.685	-1.123	-1.616	-4.311	1.985	-0.893	1.273	1.758	0.276	1.066	0.119	-1.962	-0.964	2.216	-0.517	-1.257	-2.086	4.147
x21	1	3.041	2.53	-0.25	6.154	3.4	5.652	6.101	4.63	5.354	3.139	1.031	1.811	5.288	2.461	1.689	0.771	6.533
x22	-4.915	-2.192	-2.681	-5.359	0.923	-1.999	0.149	0.646	-0.844	-0.032	-0.635	-2.711	-1.655	1.453	-1.261	-1.993	-2.799	3.562
x23	-3.317	-0.595	-1.125	-4.001	2.754	-0.33	2.035	2.555	0.945	1.788	0.543	-1.613	-0.61	2.73	-0.122	-0.891	-1.756	4.566
x24	-5.964	-2.866	-3.383	-6.197	0.476	-2.692	-0.392	0.154	-1.463	-0.573	-1.006	-3.146	-2.019	1.151	-1.646	-2.397	-3.211	3.372
x25	-4.219	-1.404	-1.925	-4.756	1.909	-1.172	1.144	1.667	0.073	0.924	-0.023	-2.163	-1.121	2.143	-0.676	-1.435	-2.278	4.117
x26	-5.653	-2.613	-3.13	-5.944	0.718	-2.429	-0.13	0.411	-1.199	-0.317	-0.84	-2.979	-1.867	1.316	-1.482	-2.234	-3.052	3.495
x27	-3.788	-1.058	-1.577	-4.397	2.226	-0.815	1.488	2.002	0.425	1.261	0.209	-1.926	-0.906	2.368	-0.445	-1.204	-2.052	4.285
x28	-1.35	0.427	0.036	-2.142	2.822	0.64	2.297	2.658	1.545	2.134	1.139	-0.675	0.119	2.947	0.576	-0.078	-0.84	4.613
x29	1.79	3.328	2.94	0.777	5.668	3.586	5.233	5.571	4.491	5.041	3.489	1.687	2.342	5.295	2.911	2.248	1.445	6.541
x30	-0.435	1.134	0.775	-1.235	3.317	1.339	2.848	3.173	2.165	2.696	1.688	-0.026	0.692	3.391	1.153	0.53	-0.205	4.938
x31	-5.212	-3.101	-3.491	-5.669	-0.648	-2.956	-1.303	-0.914	-2.062	-1.421	-1.622	-3.443	-2.472	0.179	-2.162	-2.803	-3.507	2.386
x32	0.111	1.754	1.368	-0.78	4.096	1.986	3.618	3.964	2.88	3.443	2.205	0.41	1.133	3.998	1.639	0.985	0.21	5.468
x33	0.154	1.797	1.41	-0.742	4.142	2.03	3.665	4.011	2.925	3.49	2.239	0.442	1.165	4.035	1.673	1.018	0.241	5.499
x34	-1.234	0.481	0.101	-2.017	2.803	0.689	2.293	2.642	1.565	2.135	1.171	-0.609	0.167	2.943	0.619	-0.024	-0.774	4.595
x35	-11.976	-9.803	-10.12	-11.922	-7.737	-9.789	-8.476	-8.12	-9.088	-8.494	-7.289	-8.893	-7.729	-5.746	-7.719	-8.257	-8.781	-2.668

Appendix - 6

Questionnaire for Facebook

Do you have a Facebook account Yes ☐ No ☐

If No, thank you for participating in this survey.

If Yes, do you use Facebook for personal use Yes ☐ No ☐

If No, thank you for participating in this survey.

If Yes, please mark your choices for the following questions

I. Age : _____

II. Gender:
Male ☐ Female ☐

III. On an average how much time **PER DAY** have you spent **ACTIVELY** using Facebook? _____

		Strongly Disagree	**Disagree**	**Somewhat Disagree**	**Neither Agree nor Disagree**	**Somewhat Agree**	**Agree**	**Strongly Agree**
1	I find Facebook useful in my daily life							
2	Learning how to use Facebook is easy for me							
3	Using Facebook increases my chances of achieving things that are important to me							

4	My interaction with Facebook is clear and understandable							
5	I find Facebook easy to use							
6	People who are important to me think that I should use Facebook							
7	Using Facebook helps me accomplish things more quickly							
8	I have the knowledge necessary to use Facebook							
9	It is easy for me to become skilful at using Facebook							
10	Facebook is compatible with other technologies I use							
11	I can get help from others when I have difficulties using Facebook							
12	People whose opinions that I value prefer that I use Facebook							
13	Using Facebook is fun							
14	The use of Facebook has become a habit for me							
15	I have the resources necessary to use Facebook							
16	I must use Facebook							
17	People who influence my behavior think that I should use Facebook							

18	Using Facebook is very entertaining							
19	I intend to continue using Facebook in future							
20	Facebook is trustworthy							
21	Using Facebook has become natural to me							
22	Facebook gives the impression that it keeps promises and commitments							
23	I am addicted to using Facebook							
24	I feel secure putting my personal information in Facebook							
25	Using Facebook increases my productivity							
26	Using Facebook is enjoyable							
27	I will always try to use Facebook in my daily life							
28	I believe that Facebook keeps my best interests in mind							
29	I plan to continue to use Facebook frequently							
30	I am in tune with the Facebook world							
31	I feel comfortable in the presence of strangers when I'm on Facebook							
32	I feel close to people on Facebook							

33	I see Facebook connections as friendly and approachable							
34	I often volunteer to lead in my group							
35	I am able to connect with other people on Facebook							
36	I jump right into whatever discussions the group members are dealing with							
37	I find myself actively involved in Facebook connections' lives							
38	I take the initiative to contact other people and add them to my network							
39	I normally ask questions to seek answers in the online forum							
40	My Facebook connections feel like family							
41	I feel happy when people contact me based on my credentials							
42	I often update my online profile to be visible for others							
43	I often initiate discussions in the online forum							
44	I volunteer my thoughts and ideas without hesitation among my circle							

45. I use Facebook for

		Never	**Rarely**	**Occasionally**	**Sometimes**	**Frequently**	**Usually**	**Many times a day**
i	Passing Time							
ii	Relation maintenance							
iii	Like							
iv	Comment							
v	Follow people/pages							
vi	Chat							
vii	Status update							
viii	Play games							
ix	Photo / video sharing							

Questionnaire cross reference

Variable name	**Item code**	**Question Number**
Performance Expectancy (PE)	*P1, P2, P3, P4*	1, 3, 7, 25
Effort Expectancy (EE)	*E1, E2, E3, E4*	2, 4, 5, 9
Social Influence (SI)	S1, S2, S3	6, 12, 17
Facilitating Conditions (FC)	F1, F2, F3, F4	8, 10, 11, 15
Hedonic Motivation (HM)	HM1, HM2 , HM3	13, 18, 26
Habit (HA)	HA1, HA2, HA3, HA4	14, 16, 21, 23
Trust (TR)	T1, T2, T3, T4	20, 22, 24, 28
Social Connectedness (SC)	SC1, SC2, SC3, SC4, SC5, SC6, SC7	30, 31, 32, 33, 37, 35, 40
Visibility (VI)	V1, V2, V3, V4, V5, V6, V7, V8	34, 38, 39, 36, 41, 42, 43,44
Behavioural Intention (BI)	B1, B2, B3	19, 27, 29
Usage		45

Questionnaire for LinkedIn

Do you have a LinkedIn account Yes ☐ No ☐

If No, thank you for participating in this survey.

If Yes, do you use LinkedIn for personal use Yes ☐ No ☐

If No, thank you for participating in this survey.

If Yes, please mark your choices for the following questions

I. Age : _____

II. Gender:

Male ☐ Female ☐

III. On an average how much time **PER DAY** have you spent **ACTIVELY** using LinkedIn? _____

		Strongly Disagree	**Disagree**	**Somewhat Disagree**	**Neither Agree nor Disagree**	**Somewhat Agree**	**Agree**	**Strongly Agree**
1	I find LinkedIn useful in my daily life							
2	Learning how to use LinkedIn is easy for me							
3	Using LinkedIn increases my chances of achieving things that are important to me							
4	My interaction with LinkedIn is clear and understandable							

5	I find LinkedIn easy to use							
6	People who are important to me think that I should use LinkedIn							
7	Using LinkedIn helps me accomplish things more quickly							
8	I have the knowledge necessary to use LinkedIn							
9	It is easy for me to become skilful at using LinkedIn							
10	LinkedIn is compatible with other technologies I use							
11	I can get help from others when I have difficulties using LinkedIn							
12	People whose opinions that I value prefer that I use LinkedIn							
13	Using LinkedIn is fun							
14	The use of LinkedIn has become a habit for me							
15	I have the resources necessary to use LinkedIn							
16	I must use LinkedIn							
17	People who influence my behavior think that I should use LinkedIn							
18	Using LinkedIn is very entertaining							

19	I intend to continue using LinkedIn in future							
20	LinkedIn is trustworthy							
21	Using LinkedIn has become natural to me							
22	LinkedIn gives the impression that it keeps promises and commitments							
23	I am addicted to using LinkedIn							
24	I feel secure putting my personal information in LinkedIn							
25	Using LinkedIn increases my productivity							
26	Using LinkedIn is enjoyable							
27	I will always try to use LinkedIn in my daily life							
28	I believe that LinkedIn keeps my best interests in mind							
29	I plan to continue to use LinkedIn frequently							
30	I am in tune with the LinkedIn world							
31	I feel comfortable in the presence of strangers when I'm on LinkedIn							
32	I feel close to people on LinkedIn							
33	I see LinkedIn connections as friendly and approachable							

34	I often volunteer to lead in my group							
35	I am able to connect with other people on LinkedIn							
36	I jump right into whatever discussions the group members are dealing with							
37	I find myself actively involved in LinkedIn connections' lives							
38	I take the initiative to contact other people and add them to my network							
39	I normally ask questions to seek answers in the online forum							
40	My LinkedIn connections feel like family							
41	I feel happy when people contact me based on my credentials							
42	I often update my online profile to be visible for others							
43	I often initiate discussions in the online forum							
44	I volunteer my thoughts and ideas without hesitation among my circle							

45. I use LinkedIn for

		Never	**Rarely**	**Occasionally**	**Sometimes**	**Frequently**	**Usually**	**Many times a day**
i	Passing Time							
ii	Networking							
iii	Initial Communication							
iv	Build connections							
v	Follow							
vi	Involve in groups							
vii	Endorse and recommendations							
viii	Jobs & interests							
ix	Share information							

Questionnaire cross reference

Variable name	**Item code**	**Question Number**
Performance Expectancy (PE)	*P1, P2, P3, P4*	1, 3, 7, 25
Effort Expectancy (EE)	*E1, E2, E3, E4*	2, 4, 5, 9
Social Influence (SI)	S1, S2, S3	6, 12, 17
Facilitating Conditions (FC)	F1, F2, F3, F4	8, 10, 11, 15
Hedonic Motivation (HM)	HM1, HM2 , HM3	13, 18, 26
Habit (HA)	HA1, HA2, HA3, HA4	14, 16, 21, 23
Trust (TR)	T1, T2, T3, T4	20, 22, 24, 28
Social Connectedness (SC)	SC1, SC2, SC3, SC4, SC5, SC6, SC7	30, 31, 32, 33, 37, 35, 40
Visibility (VI)	V1, V2, V3, V4, V5, V6, V7, V8	34, 38, 39, 36, 41, 42, 43,44
Behavioural Intention (BI)	B1, B2, B3	19, 27, 29
Usage		45

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List of Publications

Journal Publications

[1]. K. Praveena, Sam Thomas (2015),"The need to feel connected: Extending UTAUT to explain use of social networking sites", *Journal of Basic and Applied Research International* (ISSN 2395-3438 (print),2395-3446 (online)), vol.6, issue 4, pp.222-230.

[2]. Praveena, K., Sam Thomas.(2014), 'Continuance Intention to Use Facebook: A Study of Perceived Enjoyment and TAM ', *Bonfring International Journal of Industrial Engineering and Management Science,* (ISSN 2277-5056), vol.4, issue1, pp.24-29

[3]. Praveena, K., Sam Thomas.(2013), "Continuance Intention to Use Facebook: Role of Perceived Enjoyment and Trust*", The International Journal of Business and Management* , (ISSN 2321 – 8916), vol.1, issue 6, pp.26-32.

Doctoral Consortium

[1]. Participated and presented this research work in the Doctoral Consortium at the IFIP Working Group 8.6 at Mysore in collaboration with IIM, Bangalore in June 2013.

Conference Participation

[1]. Presented paper titled "Explaining User acceptance of Information Systems-A review of the theoretical models" in the International Conference on "Trends and Challenges in Global Business Management" Placitum 2013 , November 2013, held at Sree Narayana Gurukulam College of Engineering, Kolenchery, Kerala. Paper published in conference proceedings as

[2]. "Explaining User acceptance of Information Systems-A review of the theoretical models", Praveena, K., Sam Thomas (2013), pp.167-171, ISBN 978-93-82338-84-0

[3]. Presented paper titled A study on the continuance intention to use Facebook" in the one day national conference on 'Information Systems: Emerging trends and technologies' , sponsored by UGC, February, 2013 held at Rajagiri College of Social Sciences, Kochi, Kerala.

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