# Investigating the role of gender as a moderator in influencing the intention to use and actual use of mobile telephony

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**Abstract**
This paper has extended the original Unified Theory of Acceptance and Use of Technology (UTAUT) model through usage space dimensions to investigate the role of Gender in influencing the Intention to use and Actual Usage of Mobile Telephony. A framework based on Usage Space dimensions was developed by reviewing literature and then validating it in the context of Intention to Use and Actual Usage of Mobile telephony. The framework empirically examined the influence of gender as a moderator on the four determinants of the UTAUT model on the Intention to Use and examined for gendered differences in the causality between Intention to Use and Actual Usage among 417 responses. The framework was validated by using Structural Equation Modelling.

Among the four determinants considered in the UTAUT model, the influence of gender as a moderator was found in the case of Performance Expectancy (PE), Effort Expectancy (EE) and Facilitating Conditions (FC). Gender as a moderator did not influence the Intention to Use for Social Influence (SI). Gender as a moderator had a very small positive influence, more for men than for women in the case of Actual Usage (AU). The Intention to Use was found to have two distinct use patterns: Inter- Intention to Use (use for world outside) and Intra- Intention to Use (use for self). While the analysis here reinforces earlier studies that point to similarity across genders on the intensity and frequency, there were significant differences in the patterns, motivations and attitudes towards Mobile use that follow conventional gender roles. This Study provides a new research approach towards understanding how users based on gender make use of the multiple features, services and applications in their Mobile phone devices across everyday life dimensions through the Usage space dimensions. A significant new finding of this study revealed that the influence of Intention to Use on Actual Usage is a complex phenomenon and had two distinct use patterns; Inter and Intra Intention to Use.

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## 1. Introduction
The Mobile telephony as a technology device has been instrumental in transforming the manner in which individuals and institutions remain socially connected in everyday life. Mobile Phones in its uses and practices have become an accepted part of everyday life. It has penetrated every aspect of daily lives, owned by almost every socio- economic profile in the urban context and become a basic element of work and social life (Campbell, S.W., Ling, R., & Bayer, 2014; Jacobson, R. P.,Mortensen, C. R., & Cialdini, 2011; Taipale & Fortunati, 2014). Mobile Telephony has facilitated the restructuring of daily routines, blurring the lines between public- private, shaping social patterns and habits. The Mobile phone is a good example of a device that dislocates the traditional concept of space and time, enabling its user to bring – not only their network but the world with them. How

the Mobile Phone and the related technologies is experienced is not totally predetermined by technological functionality or public representations but is structured by social life (Haddon, 2001).

The embeddedness and integration of Mobile Phones in everyday life has been studied in depth by Ling from the individual perspective and from the perspectives of social processes and structures (Ling R, 2004, 2010, 2012). According to Ling, Mobile communication has changed the structure and arrangement of communication at both micro and macro levels. Ling observed that the level of embeddedness of the Mobile is so deep and unconscious that its actual value and need is felt only in the absence of the Mobile device.  Mobile Phone in the modern society seems to integrate time, space and communication concepts making it "flexibly instinctive" (Ling R., 2012).

At the individual level, Mobile Phone as  a medium of communication has become embedded within the very  arrangement of everyday life (Farman, 2012; Ito, M., Okabe, D., & Anderson, 2010). It has become as important as the wallet, keys and ID's that individuals carry everywhere with them. Mobile telephony use is a complex and contradictory phenomenon; at one end it enables better organization and coordination of everyday life and at the same time it increases the level of complexity of everyday life.

The introduction of any new technology in society and its subsequent access and control is determined by the hierarchies of patriarchy, class and other social variables including gender. The Gendered nature of the Mobile phone is located within and derived from the interactions between various meaning and actual use of the medium. Science and Technology studies (STS) and feminist scholarship approaches focus on the mutual shaping of gender and technology, in which technology is conceptualized as both a source and consequence of gender relations.

Urban professionals as a specific user group are a unique set who by the very nature of work compulsions are required to use their Mobiles extensively. These professionals have to negotiate the contradictory demands of private and professional spheres. To view their intentions towards using Mobiles and their actual usage while negotiating within the public and private spheres using a gendered lens would provide useful insights that engender their reality in their professional and personal lives.

The objective of this study is twofold. To investigate the role of gender in moderating the determinants influencing the Intention to Use Mobile Phone and to investigate the role of gender in influencing causality between Intention to Use and Actual Usage of Mobile Phone in everyday Life.

The study has been arranged into four sections. The first section provides an overview of the literature followed by the section that outlines the proposed research framework. The next section pertains to the research method used in the study. The last section presents an analysis of the results, discussion, conclusions, implications, limitations and future research scope of the study.

## 2. Literature Review

The literature review section has five parts. The first part reviews the literature around Mobile use practices specifically from a gendered perspective. The next part has reviewed studies based on the Unified Theory of Acceptance and Use of Technology (UTAUT), the framework used for this study. This is followed by reviewing everyday life as a concept in Mobile uses and usage space dimensions for expressing Mobile usage and the last part identifies the research gap.

### 2.1 Mobile uses from a gendered perspective

Several studies investigated the gender-technology relationship for differences in the perception and meaning of technology and its actual uses and also explore to reasons for these

differences. (Aronsson, G., Dallner, M., & Aborg, 1994; Busch, 1995) concluded that differences existed in terms of actual usage experience with the technology, the level of training, the ability to exercise autonomy in use and trust. (Faulkner, 2001; Henwood, 1993) highlighted that technology in everyday use and conceptualization was masculine in its orientation. According to (Jin, R., & Punpanich, 2011), technological devices continue to be representatively and symbolically more associated with men than women. (Borges & Joia, 2015) in their study of executives in Brazil found that the gendered differences in perception was rooted to structural issues that differentiate women and men based on social roles, work, family, emotional issues etc. Within Gender and Mobile use, (Ganito, 2012) concluded that the mobile phone reinforced the traditional gendering of time and the gendered division of labour. Feminization of Mobile was studied by (Lim, 2014; Shade, 2007) who concluded that the scripts used in the advertising, selling, styling and functionality of the Mobile Phones reinforced traditional gender differences in roles and relations. The gendered scripts emphasize women's primary need and uses of Mobile for social networking, leisure pursuits and maintaining familial communication.

Previous researches have also examined the practical and actual Mobile use patterns, possible reasons for the gender differences (Cardoso, G, Gomes, M. d. C, Espanha, R, & Araújo, 2007; Geser, 2006; Wang, Xiang, & Fesenmaier, 2014), cross cultural gendered usage and attitudinal patterns (Baron & Campbell, 2012), highlighting structural issues ( van Deursen, Bolle, Hegner, 2015), the gender differences in meaning making, role taking and relationships in relation to Mobile Phones (Lim, 2014), gendered identities (Lemish & Cohen, 2005), Mobile use as a site for power, control and domination (Doron, 2012), gendered difference in perception of Mobile (Forgays, Hyman, & Schreiber, 2014; Gupta & Jain, 2015), Mobile as a source of liberation or oppression

(Hjorth & Lim, 2012) , transnational mothering (Qiu, 2008; Vancea & Olivera, 2013).

The literature review indicates that structures, social processes, economic cultural, political realities need to be considered in understanding the manifestation of gender differences in Mobile use. Keeping urban professionals as a specific user group of this study, it can be assumed that across both genders, Mobile engagement would be intensive and on the higher side. However, there is need to examine whether intention and actual use of Mobiles are influenced by factors like societal role, work requirements, age, lifestyle, family obligations, and personal needs.

## 2.2 The UTAUT model

The Unified Theory of Acceptance and Use of Technology (UTAUT), is a well-established technology acceptance and use model that was formulated by (Venkatesh et al. 2003). The UTAUT model was developed to explain user intentions to use an information system and subsequent usage behaviour. As compared to the eight previous independent models from which the UTAUT model of Venkatesh et al emerged, UTAUT has been able to explain up to 70% of the of the variation in usage intention (acceptance) of technology. The UTAUT suggests that the four core constructs that directly determine technology acceptance (behavioural intention) and use (behaviour) are: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), and Facilitating Conditions (FC) as shown in (Fig 1). In the UTAUT model, PE, EE and SI have direct effects on Behavioural Intention, which along with FC have direct effects on Use Behaviour. In addition to these variables the theory also considers "Moderating Factors which moderate the relations between various constructs and Intention to Use. The Moderators are Gender, Age, Experience, and Voluntariness of use" (Ahmad, 2014). The UTAUT model is presented as (Fig. 1).

This model has been extensively cited, empirically tested, validated, replicated, used

and modified since its original version across technologies, industries, cultures, countries. In Institutional and organizational context , UTAUT has been tested in Educational institutions e.g. (Birch, A., & Irvine, 2009), Government organizations e.g. (Zhan, Y., Wang, P., & Xia, 2011), in Health care e.g. (Ifinedo, 2012; Venkatesh, V., Sykes, T. A., & Zhang, 2011), within Business organizations e.g. (Anderson, J. E., & Schwager, 2004), in Digital libraries e.g. (Singh, Sharma, & Singh, 2015). (Williams et al, 2015),in their exhaustive review of 174 literature on UTAUT based researches from 2004 onwards, found that Mobile technology was the most widely examined technology within communication systems.

It is important to note here, that the original UTAUT study was based on examining the user acceptance of "new" technologies that were introduced and was used to investigate the user's initial perception, and, perception after gaining familiarity with the technology after a period of time. The UTAUT model established the influence of the four constructs of Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Condition in determining the Intention to Use (IE) and Actual Usage (AU) and also established that Intention to Use (IE) predicts the Actual Usage (AU). No study so far has examined or established the relationship of Facilitating Conditions on the Behaviour Intention. This study premises that organizational, environmental, and technical infrastructure that comprises Facilitating Conditions is likely to influence the Intention to use and proposes to examine this dimension also.
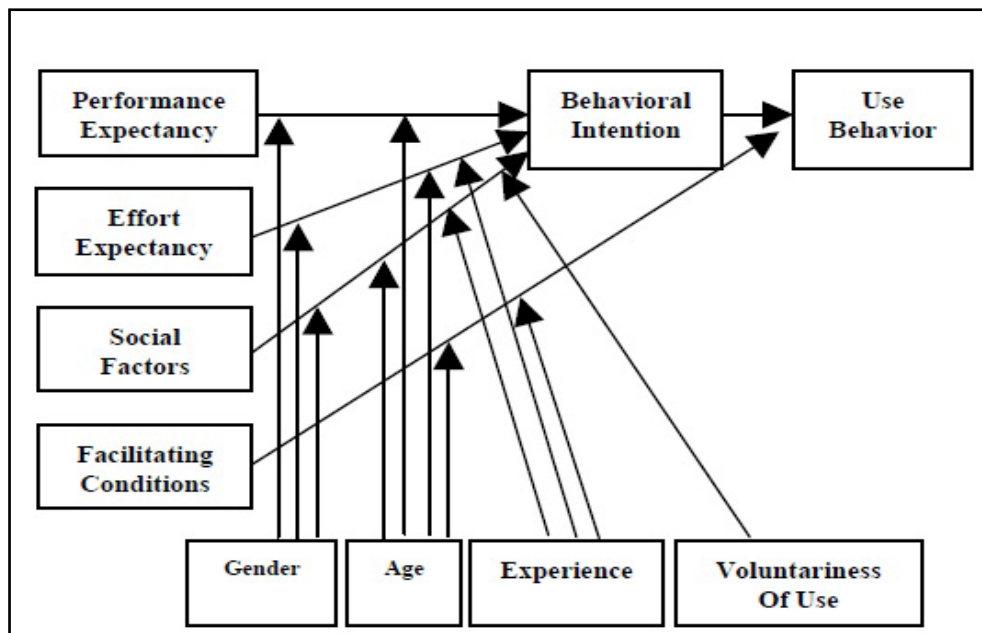


**Fig 1 UTAUT Model**
**Source: Venkatesh et al. 2003**

With respect to moderating variables, while studies by (Carmen C. Lewis, Cherie E. Fretwell, 2013; Jaradat & Faqih, 2014; Yi Shun Wang, Ming Cheng Wu, 2009) have considered gender as a moderating variable in the adoption of technologies, studies by (Guo, 2015; Yi Shun Wang, Ming Cheng Wu, 2009) specifically examined gender as the moderating variable in Mobile use. Apart from these, there is very limited research that has been done to investigate how gender moderates the

determinants influencing the Intention to Use of Mobiles among users.

Lastly , the original UTAUT study ( Venkatesh et al. 2003) used only three items to measure the Intention to Use ("I intend to use the technology in the next <n> months , I predict that I would use the technology in the next <n> month and I plan to use the technology in the next <n> months). The Actual use was measured either with only one item or with system logs. This indicates that until now, the UTAUT model has looked at Intention to Use as a simple variable. Mobile use is an integral part of everyday life now and not a newly adopted technology and has become a one stop technology device to meet most everyday technology needs of individuals such as relationships, work, leisure, information sourcing, financial transactions etc. Therefore, the Intention to Use Mobile is complex and needs a deeper investigation especially for the types and variety of usage. The UTAUT model if used as is, to investigate the Mobile Phone adoption and uses would not be very helpful in understanding which features, applications and services are being used by users as they are contextual and constantly evolving.

**2.3 Everyday Life**
Everyday life " is a modern phenomenon and its impact on human existence and perception (repetitive and uniform aspects of everyday) is associated with industrialization, urbanization and the capitalistic economy"(Lefebvre, 1984). Gender has been an important factor in the conception of everyday life. Woman and their everyday life have commonalities to the nature of everyday (mundane, invisible, insignificant, undervalued and yet indispensable) (Featherstone, 1992). Time, Space and Modality determine everyday life (Felski, 1999). Every day is one of the most omnipresent and non-negotiable taken for granted lived reality in the human living process. Everyday life encompasses the public and private sphere, including domestic activities besides routine form of work, leisure, travel, and socializing. Every day is actually a way of experiencing the world within

the act of performing a set of routine activities within the world. Tasks that appear awkward, strange, difficult initially become second nature gradually like driving or in the current context navigating technology in everyday life. The pragmatic need for repetition, familiarity and taken for grantedness in everyday life is a necessary pre- condition to human survival. (Dén-Nagy, 2014) has observed that the stringent demarcation between the time for work, family, leisure as part of everyday routines are getting diffused with technology intervention.

The Mobile Phone as a device has had a very big role and made a deep impact on the way people have become accustomed to remain socially connected in everyday life. Mobile Phones in its uses, practices have become a natural part of everyday life. It has penetrated every aspect of daily life, owned by almost every socio-economic profiles in the urban context and become a fundamental constituent of social life (Campbell, S.W., Ling, R., & Bayer, 2014; Jacobson, R. P.,Mortensen, C. R., & Cialdini, 2011; Taipale & Fortunati, 2014). (Bayer, Campbell, & Ling, 2016) developed a model to depict how societal norms and psychological perspectives influence the manner in which connection habits get triggered in everyday Mobile use. (Harmon & Mazmanian, 2013) identified that Mobile use at once triggers two contradictory discourses; of completely integrating technologically, becoming proficient in multi-tasking or becoming completely disintegrated from Mobile use in everyday life as it distracts and leads to addiction. However, the reality seems somewhere in between.

(Campbell & Park, 2008) concluded that the personal nature of technology as symbolized by Mobiles is contributing to a completely new type of social arrangement which needs to be understood along with examining the social consequences arising with the large-scale adoption and use of Mobile technologies. (Wajcman, Bittman, Johnstone, Brown, & Jones, 2008) found that Mobile use has spread across income and occupation levels; varied based on

age; convenience and micro-coordination was mentioned as the most important reason for use; connecting with family through texting was the most frequent use; managers, traders & production workers were found to be using the Mobiles most; majority of respondents followed mobile etiquettes like turning their mobile on silent in public settings; safety and indispensability was the typical association with the Mobile . (Barkhuus & Polichar, 2011) found users to have very individual ways of using their devices that involved complex interplay of adoption, rejection, adjustment, prioritization, creative options for adapting the features and functions in order to make it suitable to the specific needs of users in everyday life.

From Mobile infrastructure point of view, (Lord et al., 2015) explored the role of mobile devices in relation to network connectivity and online services in everyday lives. Everyday life thus, is an important and valuable context for studying Mobile intention to use and usage. There are no comprehensive studies that have examined everyday life use of Mobile Phones as multi-functional and convergent multimedia devices from an urban professional's perspective.

## 2.4 Usage Spaces
The purpose for using Mobiles Phones were identified by (Ling, R., & Yttri, 1999) as " Safety & Security , Micro coordination and Hyper coordination" . The Intention to Use Mobile has been summarized as " Mobility , Immediacy and Instrumentality along with sociability and affection " by (Han Sze Tjong, S., Weber, I., & Sternberg, 2003). Motivational needs of " Personal , Navigation and Social" have been classified by (Tamminen, S., Oulasvirta, A., Toiskallio, K., & Kankainen, 2004). According to (Katz, J. E., & Sugiyama, 2005), "power, status and identity" also influence Mobile Phone use. Safety and security as a need for using Mobile Phones has been mentioned by (Campbell, S. & Russo, 2003; Katz, J. E., & Sugiyama, 2005; Ling, R., & Yttri, 1999). All these motivational needs point to Mobile uses being around particular

usage spaces such as functionality, safety, relationships navigation, status etc.

Mobile Usage around particular usage spaces has previously been conceptualized by (Marcus, A., & Chen, 2002a, 2002b, Marcus, 2005a, 2005b) who used the six dimensions of "Identity , Self Enhancement, Relationships, Information, Commerce and Entertainment. These usage space was subsequently tested in the Mobile Phone Technology Usage Model (MOPTUM) by (van Biljon, 2006) who concluded that usage spaces can represent usage variety in a way that is usable and useful to understand actual Mobile use. Usage variety was defined as "the different applications for which, or the different situations in which, a product is used" (van Biljon, 2006).

The review of literature on Mobile usage along usage dimensions suggests that it is easier to express Mobile usage in non- technical terms. Moreover, comparing specific features, services and applications that are technical, continuously evolving and termed differently by different manufacturers is cumbersome. Previous studies validate that usage space dimension is a better, more useful and usable construct to measure Mobile Intention to Use and Actual Usage as compared to the one-dimensional construct used in the original UTAUT. It must however be noted that usage spaces mentioned by previous studies have undergone significant expansion over the last decade and need to be reviewed for additional new usage spaces that will be able to reflect the current contexts.

## 2.5 Research Gap
The Unified Theory of Acceptance and Use of Technology (UTAUT) has mostly examined user acceptance of new technologies. Besides establishing the influence of independent Variables (PE, EE, SI, FC) and validating a strong positive relationship between Intention to Use and Actual Usage, there are no previous studies that have examined the role of gender as a moderator in influencing Intention of Use on Actual Usage using usage spaces as a measure and using everyday life as a concept. (Michael D

Williams Nripendra P Rana Yogesh K Dwivedi, 2015) concluded that publications and conferences on UTAUT research have mainly emerged from the US. Thus, there exists opportunities for original research that are region, cultural and context specific. Looking at studies that have specifically considered the moderating effects of gender on Mobile uses, a significant gap in research exists in examining how gender impacts the adoption of mobile usage in the urban Indian context.

## 3. Research Framework and Hypotheses

According to (Williams et al, 2011; Dwivedi et al, 2011), gender as a moderating variable in UTAUT cited articles has not been considered along with all constructs of UTAUT model.

The literature review reveals that the original UTAUT and subsequent studies thereafter have only examined the relationship between Facilitating Conditions and Actual Usage and have overlooked the influence of Facilitating Condition on Intention to use. This study will also examine this relationship.

The research framework (Fig. 2) aims to fill these gaps and explore the moderating role of gender in the domain of Mobile usages among one of the most intensive users of Mobiles, urban professionals.

### Objectives

The study will examine two objectives. The corresponding hypotheses are mentioned alongside the objectives.

1. To investigate the role of gender in moderating the determinants influencing the Intention to Use Mobile Phone.

The following Hypotheses are proposed:

**H1:** The influence of Facilitating Condition (FC) on the Intention to Use (IE) Mobile Phone will not be moderated by gender.

**H2**: The influence of Performance Expectancy (PE) on Intention to Use (IE) Mobile Phone will not be moderated by gender.

**H3:** The influence of Effort Expectancy (EE) on Intention to Use (IE) Mobile Phone will not be moderated by gender.

**H4**: Social Influence (SI) on Intention to Use (IE) Mobile Phone will not be moderated by gender.

**H5:** The influence of Facilitating Condition (FC) on the Actual Usage will not be moderated by gender.

2. To investigate the role of gender in influencing causality between Intention to Use and Actual Usage of Mobile Phone in everyday life?

The following hypothesis is proposed:

**H6**: The Intention to Use (IE) Mobile Phone will not be moderated by gender in influencing its Actual Usage.
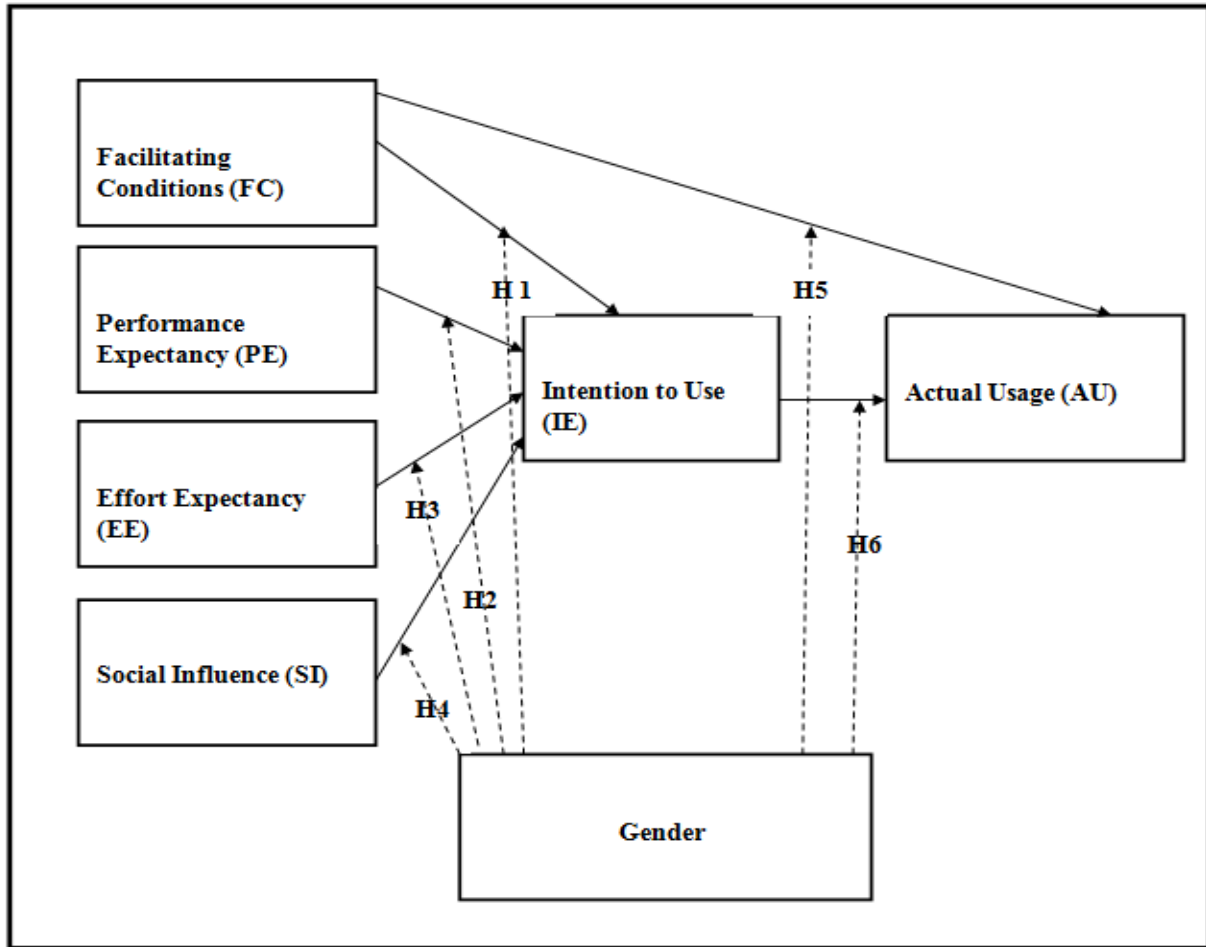
**Fig. 2: Research Framework**

The working definitions of the Independent Variables, Intention to Use (IE), and Actual Usage (AU) used in this study are provided as (Table 1). This study has examined the Intention to Use (IE) and Actual Usage (AU) from the point of usage space based on the original Usage Space Model conceptualized by (Marcus, A., & Chen, 2002a, 2002b, Marcus, 2005a, 2005b). Using Marcus and Chen's Usage space model and the MOPTUM model (van Biljon, 2006) as a starting point and based on exploratory interviews, this study identified 12 Usage Spaces that urban professionals usually used in everyday life. Subsequently using Focused Group Discussions, the usage spaces were reduced to 10 as depicted in (Fig. 3).

The Usage Space dimensions along with their definitions have been summarized as (Table 2).

| S. No. | Variable | Original Definition | Relevant References | Working Definition |
|---|---|---|---|---|
| 1 | Facilitating Conditions (FC) | The degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system. | (Viswanath Venkatesh, Michael G. Morris, Gordon B. Davis, 2003) pp453 | The degree to which an urban professional believes that organizational, environmental and technical infrastructure exists to support the use of Mobile Phones in everyday life. |
| 2 | Performance Expectancy (PE) | The degree to which the individuals believe that the use of the technologies will results in performance gains. This may also be viewed as the <u>perceived usefulness</u> of the technologies. | (Viswanath Venkatesh, Michael G. Morris, Gordon B. Davis, 2003) pp 447 | The degree to which an urban professional believes that using a Mobile Phone would improve his or her everyday performance. |
| 3 | Effort Expectancy (EE) | The degree of ease of use of the technologies. | (Viswanath Venkatesh, Michael G. Morris, Gordon B. Davis, 2003) pp 450 | The degree of simplicity associated with the use of Mobile Phones in everyday life. |
| 4 | Social Influence (SI) | The extent to which the individuals believe that important others believe that they should use the technologies. | (Viswanath Venkatesh, Michael G. Morris, Gordon B. Davis, 2003) pp 451 | The degree to which an urban professional perceives that important others believe he or she should use Mobile Phones in everyday life. |
| 5 | Intention to Use (IE) | Behaviour intention to enact the behaviour of a technology. | (Davis, 1989; Marcus, A., & Chen, 2002; Viswanath Venkatesh, Michael G. Morris, Gordon B. Davis, 2003) pp 456 | The degree to which the urban professional perceives his or her motivation in the purpose and variety of using Mobile Phones in the various dimensions of everyday life. |
| 6 | Actual Usage (AU) | The actual use of the mobile phone measured in terms of frequency of use, type of uses (i.e. how many different applications), dimensions of uses in everyday life. | (van Biljon, 2006) | The degree to which the urban professional uses Mobile Phones in the various dimensions of everyday life. |

**Table 1 Working Definitions**

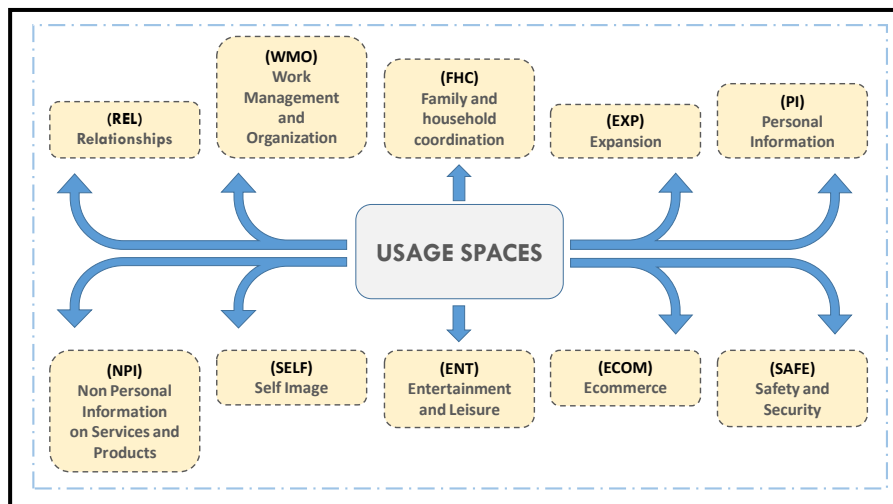| S. No. | Usage Space Dimensions | Definition |
|---|---|---|
| 1 | Relationships (REL) | Building and maintaining relationships e.g. phoning, messaging friends, family. |
| 2 | Work Management and Organization (WMO) | Making arrangements, coordinating, scheduling, communicating for official activities. |
| 3 | Family and Household Coordination (FHC) | Meal planning, arranging for goods, services, coordinating, scheduling, supervise children while on the move etc. |
| 4 | Expansion (EXP) | Using Mobiles as a tool for exploring and finding one's way in new environments, location navigation etc. |
| 5 | Personal Information (PI) | Finding personal information such as Phone books, reminders, alarm, creating personal history of photos, messages, recording and storing things, personal health and medical tracker, spiritual discourses, blogging etc. |
| 6 | Non-Personal Information on Services and Products (NPI) | Finding information such as current news, prices, sport results, weather, dictionary, reading, stock market etc. |
| 7 | Self-Image (SELF) | Enhancing image by brand, model, ringtone, accessories, profile picture, other ways of personalizing of the phone. |
| 8 | Entertainment and Leisure (ENT) | Listening to music, jokes, playing games, watching videos or subscribing to chat rooms, reading etc. |
| 9 | E Commerce (ECOM) | Financial transactions, e.g. electronic banking, transactions, notifications from the bank, online shopping, travel booking, booking movie shows etc. |
| 10 | Safety and Security (SAFE) | Ensuring and enhancing safety e.g. allowing people to call for assistance, summon aid or assistance in emergencies. |

**Table 2 Usage Space Dimensions Definitions**



**Fig. 3 The Usage Space Dimension**

## 4. Research Method

This section will provide an outline of the research method used in this study.

### 4.1 Participants

The data for this study has been collected from urban professionals located in the National Capital Region (NCR), Delhi. NCR provides a good representation of the Organized sector consisting of Government and Private which includes Indian and Multinational Companies across diverse sectors. The tertiary sector consisting of trade, hotels and restaurants, transport, communications, financial and insurance services, real estate, public administration and other social and personnel services is the key driver of NCR's economy (Economic Survey of Delhi, 2013). It can therefore be concluded that for selecting the Sampling Universe for this research study, NCR has all the criteria required for providing a good representation of the sample of urban professionals.

### 4.2 Construct measurement

The study used standardized statements from the original UTAUT model study with minor modifications for measurement of the Independent Variables (Venkatesh et al. 2003). The Intention to Use and Actual Use were adapted and modified from the MOPTUM model (van Biljon, 2006) and from inputs obtained from exploratory interviews. The pretest for content validity was established with the help of Expert Opinions and Focus Group Discussions for item refinement, addition and deletion. A pilot test was performed on 100 respondents in order to calculate the reliability measure, to assess the consistency of the statements, which showed satisfactory internal reliability and convergent validity. A total of 10 statements for the Independent Variables, 12 statements for Intention to Use and 15 statements for Actual Usage were used to measure the Variables. A five-point Likert scale was used for measuring, 1 being (Strongly Agree) and 5 being (Strongly Disagree).

### 4.3 Research Instrument

A structured questionnaire was used to measure the Intention to Use and Actual Usage behaviour through self-reported usage on a five-point Likert scale, which was different than the original UTAUT model that used log data. The instrument was designed as per the constructs defined previously. The questionnaire contained closed-ended questions about the various items in each construct. The questionnaire was pre-tested for its structure on a sample of 100 respondents selected through convenience sampling for the purpose of testing the reliability of the questionnaire. Analysis of the pilot study indicated that few of the items within some constructs were not explaining the relation among the constructs. Therefore, necessary modifications were done to establish a more valid relationship among the constructs. A total of 29 statements out of the initial 37 statements altogether were validated and finally used in the model.

### 4.4 Data Collection and Sampling

Data Collection process was undertaken between June and September 2016. The study was proposed on a stratified random sampling which means that groups and categories which are particularly relevant for exploring the research objectives (Gender, Age, Industry Diversity, Managerial Levels in Organizations) were selected to guide the sampling process. Since the study is through a gendered lens, it was essential to bring out comparative data to look at the gendered differences in the Intention to use and Actual Usage of Mobile phones in everyday life of urban professionals. The Structured questionnaire form was administered to a total of 422 professionals in the age group of 21- 60 years. A total of 417 responses were considered valid and have been included in the study out of which 126 (30.21%) were from women and 291(69.78%) were from men.
*The sample were selected from professionals who belonged to the top 10 occupational group as per the quintile income classes in terms of share of employment in terms of highest Quintile*

*income class in Delhi* (Institute of Human Development, 2013)*, were part of the Managerial cadre in the Corporate sector and belonged to the upper most segment of the consuming class-A1, A2 and B1 of the socio-economic classification, and segments of urban India. These profiles were familiar with electronic gadgets, owned Mobile Phones and were using them in their daily life.*

The survey was conducted in three ways; Paper and Pen version, Online version on Google Form and a WhatsApp link also linked to the Google Form. All versions were in English considering the educated profile of the participants. The Paper and Pen version was administered to professionals either in their offices as groups or individually.

## 5. Data Analysis and Results

The data was imported to SPSS 21 and was coded in specific variables. The data were quantitatively analysed and interpreted using SPSS 21 tools. The Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM) were conducted using AMOS 21 software. Establishing the reliability of the different constructs was followed by Exploratory Factor analysis (EFA) after which Confirmatory Factor Analysis (CFA) was performed using structural equation modelling (SEM) to confirm the findings. The following sub-sections describe the result of the analysis.

### 5.1 Reliability Analysis

Cronbach's α was used to evaluate reliability. Values of 0.7 and above are normally considered acceptable (Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, 1998). Though the Cronbach's coefficient alpha value of .657 for PE and .611 for FC were below the 0.7 threshold, they were not dropped from the model because of their importance in the original model (Table 3). Besides as mentioned by (Field, 2013), values below 0.7 can be expected when working with psychological constructs owing to the diversity of the constructs being measured.

### 5.2 Validity Analysis

Most researchers agree that EFA is usually preferred for developing scales and CFA is more appropriate for validating scales (Hurley et al. 1997). The Independent Variables: PE, EE, SI and FC, are all constructs that have been previously tested in the UTAUT model and therefore construct validity was not required to be verified. Therefore, CFA for establishing the validity of the model was directly performed to check the loadings of the factors, considering that there was an a priori, theoretically-driven specification of factors, i.e., the exact number of factors and how these factors are related to their items (Brown, 2006; Hair et al. 2010).

For Intention to Use (IE) and Actual Usage (AU), factor loadings and KMO and Bartlett's test of sphericity were considered to check validity.

EFA was conducted to check the construct validity. Principal Component Analysis Extraction Method was used and Varimax Rotation Method with Kaiser Normalization converged in 3 iterations for both IE and AU as shown in (Table 4 and 5). It was interesting to observe that in the case of IE, all factors that were concerned with coordinating and using Mobile with the world outside that included Relationship, Work Management & Organization and Family &Household Coordination loading under Component 2 These have been termed in this study as Inter Factors. All factors that involved coordinating and using Mobile for personal self-included Expansion, Personal Information, Non-Personal Information, Self-Image, Entertainment and Ecommerce loaded on Component1 and have been termed Intra Factors. The value of Kaiser-Meyer-Olkin results (Table 6) were all above 0.8 which is good as anything above 0.7 is acceptable. Barlett's test of sphericity is also significant (.000) as the resultant value is less than .005 (Table 6). Thus, the measures of the scale used in the study show good content validity. Reliability and convergent validity of the factors were estimated by composite reliability and average variance extracted (Table 7). CR of each construct was above or close to 0.7 and AVE of each construct above or close to 0.5, and AVE was less than CR (Bagozzi, RP & Yi, 1988; Hair et al. 2010), showed good internal consistency .

| Factors | Abbreviation | N of Items | Cronbach's Alpha |
|---|---|---|---|
| Facilitating Conditions | FC | 3 | .611 |
| Performance Expectancy | PE | 2 | .657 |
| Effort Expectancy | EE | 2 | .750 |
| Social Inclusion | SI | 3 | .730 |
| Intention to Use | IE | 12 | .865 |
| Actual Usage | AU | 15 | .885 |

**Table 3 Reliability Statistics**

| | IE | |
|---|---|---|
| | Component | |
| | 1 | 2 |
| Relationships (REL) IE | | .797 |
| Work Management and Organization (WMO) IE | | .832 |
| Family and Household Coordination (FHC) IE | | .560 |
| Expansion (EXP) IE | .579 | |
| Personal Information 1 (PI 1)IE | .673 | |
| Personal Information 2 (PI 2) IE | .810 | |
| Personal Information 3 (PI 3) IE | .748 | |
| Non-Personal Information (NPI) IE | .775 | |
| Self-image (SELF) IE | .584 | |
| Entertainment (ENT) IE | .820 | |
| E-commerce (ECOM) IE | .724 | |

**Table 4 Rotated Component Matrix (IE)**
Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization (Rotation converged in 3 iterations)

| | AU | |
|---|---|---|
| | Component | |
| | 1 | 2 |
| Relationships 1 (REL 1) AU | | 0.769 |
| Relationships (REL 2) AU | | 0.904 |
| Expansion 2 (EXP2) AU | 0.69 | |
| Personal Information 2 (PI2) AU | 0.67 | |
| Non-Personal Information (NPI) AU | 0.736 | |
| E-commerce 1 (ECOM 1) AU | 0.841 | |
| E-commerce 2 (ECOM 2) AU | 0.871 | |
| | | |
| Safety 2 (SAFE2) AU | | 0.719 |

**Table 5 Rotated Component Matrix (AU)**
Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization (Rotation converged in 3 iterations)

.

| | | IE | AU |
|---|---|---|---|
| **Kaiser-Meyer-Olkin Measure** | | 0.87 | 0.822 |
| **Bartlett's Test of Sphericity** | Approx. Chi-Square | 478.059 | 398.126 |
| | df | 55 | 36 |
| | Sig. | 0 | 0 |

**Table 6 KMO and Bartlett's Test**

| Construct | Items | Factor Loading | | CR | AVE |
|---|---|---|---|---|---|
| FC | 3 | fc1 | 0.761 | 0.7457 | 0.495474 |
| | | fc2 | 0.643 | | |
| | | fc3 | 0.702 | | |
| PE | 2 | pe1 | 0.699 | 0.61162 | 0.441253 |
| | | pe2 | 0.627 | | |
| EE | 2 | ee1 | 0.78 | 0.800072 | 0.667197 |
| | | ee2 | 0.852 | | |
| SI | 3 | si1 | 0.761 | 0.74654 | 0.496266 |
| | | si2 | 0.668 | | |
| | | si3 | 0.681 | | |
| IE | 11 | REL | 0.797 | 0.779054 | 0.149185 |
| | | WMO | 0.832 | | |
| | | FHC | 0.560 | | |
| | | EXP | 0.579 | | |
| | | PI1 | 0.673 | | |
| | | PI2 | 0.810 | | |
| | | PI3 | 0.748 | | |
| | | NPI | 0.775 | | |
| | | SELF | 0.584 | | |
| | | ENT | 0.820 | | |
| | | ECOM | 0.724 | | |
| AU | 8 | REL1 | 0.769 | 0.841901 | 0.240692 |
| | | REL2 | 0.904 | | |
| | | SAFE 2 | 0.719 | | |
| | | EXP 2 | 0.690 | | |
| | | PI2 | 0.670 | | |
| | | NPI | 0.736 | | |
| | | ECOM1 | 0.841 | | |
| | | ECOM2 | 0.871 | | |

**Table 7 Internal Consistency**

### 5.3 Confirmatory Factor Analysis (CFA)

A confirmatory factor analysis using AMOS 21 was performed to test the measurement model. Seven common model-fit measures were used to assess the model's overall goodness of fit: the ratio of Chi Square (CMIN) to degrees of freedom (*df*), Goodness-of-fit index (GFI), Adjusted Goodness-of-Fit Index (AGFI), Normalised Fit Index (NFI), Comparative Fit Index (CFI), Root Mean Square Residual (RMR) and Root Mean Square Error of Approximation (RMSEA). A model is considered a good fit if the value of the chi-square test is insignificant, and at least one incremental fit index (like CFI, GFI, TLI, AGFI, etc.) and one badness of fit index (like RMR, RMSEA, SRMR, etc.) meet the predetermined criteria. Most measures were in the acceptable range which satisfy the criteria for goodness-of-fit as provided in (Table 8).

The comparison of all fit indices with their corresponding acceptable values provides evidence of a good model fit. df, degrees of freedom, goodness-of-fit index; AGFI, adjusted goodness-of-fit index; NFI, normalised fit index; CFI, comparative fit index; RMSR, root mean square residual; RMSEA, The Root Mean Square Error of Approximation.

### 5.4 Hypotheses Testing

Structural Equation Modeling (SEM) was used in order to test the hypotheses pertaining to Intention to Use and Actual Usage. The SEM tested all the six proposed hypotheses in the proposed model at $p < 0.05$ significance level. The empirical analysis reveals that alternate Hypotheses H1a, H2a, H3a are accepted. This means that the Influence of Facilitating Conditions (FC), Performance Expectancy (PE) and Effort Expectancy (EE) on Intention to Use (IE) Mobile Phone will be moderated by gender among urban professionals. Null hypothesis H4o and H5o are accepted which means that the influence of Social Influence (SI) on Intention to Use (IE) Mobile Phone and the influence of Facilitating Condition on the Actual Usage (AU) will not be moderated by gender among urban

professionals. H6a is accepted which means that that the Intention to Use Mobile Phone among Urban Professionals will be moderated by Gender in influencing its Actual Usage. (Table 9) provides the overall results. (Fig. 4) depicts the Standardized path coefficients for men and women, at significance level, p < *0.05.*

### 6. Discussion and Conclusion

The Study found that gender as a moderator had an influence in case of FC, PE, EE. This is one of the only studies in the recent past that has examined the relationship between FC- IE. The study revealed that gender as a moderator was stronger for women than for men in case of FC-IE. Although, this study has not specifically examined the possible causes for the same, the overall picture suggests that women largely depend on the significant others (usually spouses, children, colleagues) on their Mobile decisions and extending this further, also on the infrastructural support to enable Mobile use. Future studies should investigate this dimension for providing an explanation to this causality.

The influence of gender as a moderator in the case of PE was such that it was strong and positive for men and negative for women. This confirms previous researches by (Abdulwahab Lawan, 2012; Carmen C. Lewis, Cherie E. Fretwell, 2013; Chian-Son Yu, 2012; Viswanath Venkatesh, Michael G. Morris, Gordon B. Davis, 2003) that established that PE is stronger for men than for women. In the context of urban professional men, one can hypothesize that they are more task oriented and this reflects in the PE being stronger. The earlier literature reviewed also mentions that gender differences in PE can also be attributed to gender roles and the socialization process which gets reflected even in Mobile use. Gender roles are deeply embedded and more enduring, so any change to occur would be a gradual process.

| Fit Indicators | Observed Value Independent Variables | Observed Value Intention to Use (IE) | Observed Value Actual Usage (AU) | Observed Value SEM Model Fit | Recommended Value | Source |
|---|---|---|---|---|---|---|
| CMIN/DF | 3.079 | 3.259 | 3.585 | 2.839 | 1≤CMIN/DF≤3: Very Good Between 2-5: Acceptable | (Kline, 2004) |
| GFI | .955 | 0.942 | .959 | .937 | ≥0.9 | (Joreskog & Sorbom, 2002) |
| AGFI | .914 | 0.911 | .922 | .898 | ≥0.8 | (Hu, L.-T., & Bentler, 1999) |
| NFI | .922 | 0.911 | .765 | .682 | ≥0.8 | (Bentler, P. M., & Bonett, 1980) |
| CFI | .945 | 0.936 | .812 | .755 | ≥0.8 | (Bollen, 1986) |
| RMR | .027 | 0.047 | .065 | .057 | ≤0.07 | (Browne, M.W. & Cudeck, 1993) |
| RMSEA | .071 | 0.074 | .079 | .066 | <0.05: good fit; <0.08: reasonable fit | (Steiger J H, 2007) |

**Table 8: Model Fit Summary**

| Relationship | Estimate | | | P value | | | Results | | | Hypotheses |
|---|---|---|---|---|---|---|---|---|---|---|
| | Overall | W | M | Overall | W | M | Overall | W | M | |
| H1 FC-IE | 0.53 | 0.57 | 0.48 | *** | 0.127 | *** | Sig | NS | Sig | Accept H1a |
| H2 PE-IE | 0.17 | -0.13 | 0.5 | 0.201 | 0.54 | 0.006 | NS | NS | Sig | Accept H2a |
| H3 EE–IE | 0.44 | 0.5 | 0.45 | *** | 0.053 | *** | Sig | Sig | Sig | Accept H3a |
| H4 SI–IE | -0.16 | -0.294 | -0.26 | 0.427 | 0.425 | 0.206 | NS | NS | NS | Accept H4o |
| H5 FC-AU | 0.09 | 0 | 0.1 | 0.231 | 0.217 | 0.984 | NS | NS | NS | Accept H6o |
| H6 IE-AU | 0.87 | 0.73 | 0.86 | *** | *** | *** | Sig | Sig | Sig | Accept H7a |

* sig, p < *0.05*

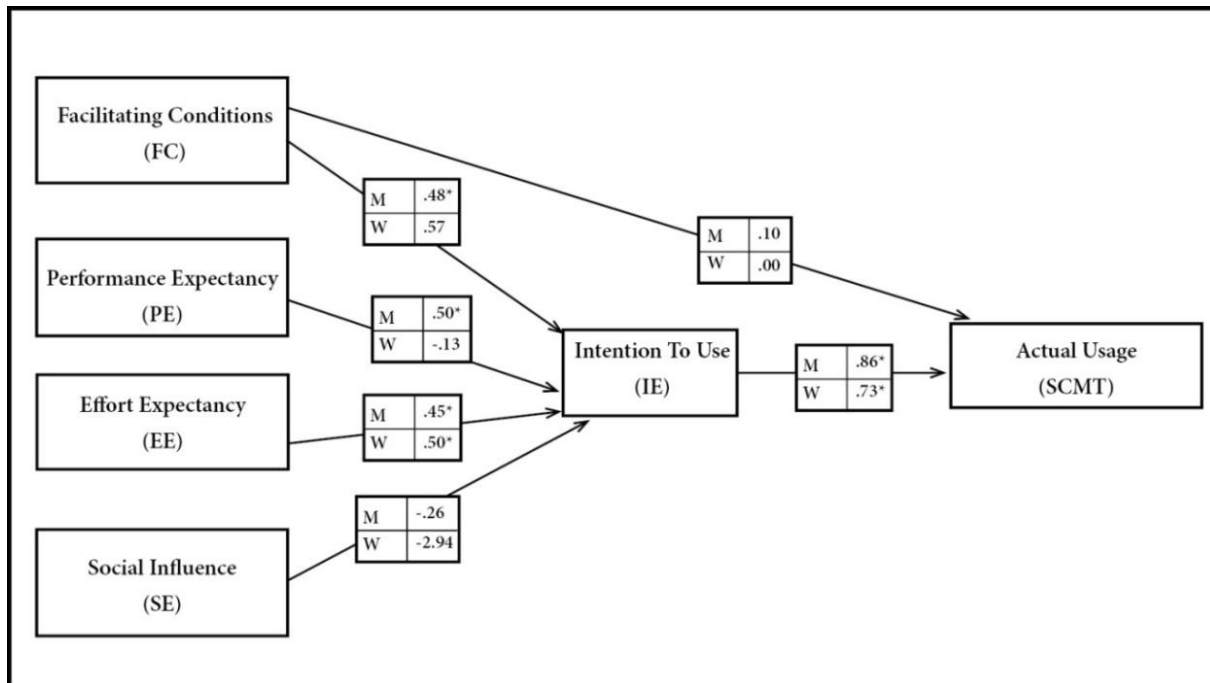**Table 9: Results of Hypotheses Testing**

**Fig. 4 Standardized path coefficients for Men and Women, * sig, p < *0.05***

In case EE, gender as a moderator was stronger for women than for men which confirms previous researches by (Carmen C. Lewis, Cherie E. Fretwell, 2013; Viswanath Venkatesh, Michael G. Morris, Gordon B. Davis, 2003). However, it is to be noted that with sustained and repetitive usage, the expertise increases which is likely to reduce the influence of EE on IE.

The effect of Social Influence (SI) was insignificant and gender as a moderator did not influence the Intention to use. This finding is contrary to the literature review that indicates that the socialization process and the gendered nature of social roles would influence the SI on IE such that it would be stronger for women than for men (Abdulwahab Lawan, 2012; Carmen C. Lewis, Cherie E. Fretwell, 2013; Viswanath Venkatesh, Michael G. Morris, Gordon B. Davis, 2003; Yi Shun Wang, Ming Cheng Wu, 2009). Or even otherwise where it was found to be stronger for men than for women (Yi Shun Wang, Ming Cheng Wu, 2009). This can be explained such that Mobile technology particularly in the context of urban professionals is not a new

technology and "with experience the role Social influence is likely to reduce" ( Venkatesh et al. 2003, pp 453). The embeddedness and integration of Mobile in everyday life across genders is so deep that life would not function smoothly without the Mobile. Therefore, it can be inferred that Mobile use for urban professionals in mandatory work context or in personal and social context has moved out of the ambit of the influence of important significant others in everyday life.

The path coefficient for FC- AU was also not found to be significant for either men or women. This implies that FC has little role to play in Actual Usage. This can be explained such that urban professionals have found multiple ways to navigate and solicit support for their use in the form of carrying dongles, modems to remove any actual barriers and hindrance such as poor network connectivity to sustained Mobile use.

With respect to gender and the relation between IE- AU, there was high positive, significant causality between Intention to Use (IE) and Actual Usage (AU), being stronger for men than

for women. This means that the intention to adopt and subsequent use of Mobile Phones also follows the traditional gendered pattern as found in most other technologies where it is initially acquired and adopted by men followed by women. The reason for this gendered pattern has been mentioned in several studies on gender- technology relationship that were discussed previously in the literature review section (Aronsson, G., Dallner, M., & Aborg, 1994; Borges & Joia, 2015; Busch, 1995; Faulkner, 2001; Henwood, 1993; Jin, R., & Punpanich, 2011) .

The study has revealed that the Intention to Use shows two distinct patterns in use when studied from the Usage Space dimensions: Self Usage termed as "Intra Intention to Use" and usage in relation to the world outside termed as "Inter Intention to Use" are important findings of this study that warrant more detailed study across different usage groups. The empirical model used in this study shows that in the case of Intention to Use (IE), the Usage spaces follow a clear distinction between using Mobile for Self-Intra IE (Expansion, Personal Information, Non-Personal Information, Self-Image, Entertainment and Ecommerce) and using Mobile with the World outside- Inter IE (Relationship, Work Management & Organization and Family &Household Coordination). This also implies that the influence of Intention to Use on Actual Usage is a complex phenomenon and future studies using UTAUT to study Mobile usage should look at Intention to Use as a multi-dimensional variable.

**Implications, limitations and future research scope**
The Practical Implications of this research demonstrates the value of studying reported Intention and Actual usage using a new approach of usage dimensions to analyse adoption on a practical level in the Indian context. It is clear that not everybody uses all the features, applications or services available on the Mobile and therefore the presented approach of studying usages across separate usage

dimensions gives a better analysis.  For organizations, it provides insights on how differently and similarly Mobiles are being deployed by professionals based on gender. This study has provided an overview on Mobile usage, their negotiation within the public and private spheres which reveal areas for organizations to work on policies to enable professionals to manage their conflicting priorities such as balancing work and family life. From a broader standpoint, the study provides useful insights to further socio- cultural studies of mobile communications through a gendered lens. For Mobile Companies, it provides data that can be utilized for moving the focus from mere functionality of Mobile Features and Services to incorporating the socio- cultural dimensions in designing Mobile Phones and Services.

Although the sample from NCR, Delhi was adequate for the purposes of the present study, future studies could include different and more diverse samples from across India to further enhance variability in responses. Like in all questionnaire-based studies, this study also captured only self-reported usage of the respondents. This can be resolved in future research by undertaking  actual observational studies and capturing real time data, using a multi method approach that could make the observations and data more accurate and richer. Another limitation of such a study is the contextual nature of Mobile Uses which are moving targets, are continuously evolving and rapidly changing which makes it difficult to generalize.

With respect to future research directions, future studies using UTAUT to study Mobile usage should look at Intention to Use as a multi-dimensional variable. This study pointed out the high causality between FC–IE which suggests that future studies must consider FC as an important determinant that influences the Intention to use Mobiles. However, the scope of this study did not include investigating the results between the strong causality of FC–IE and weak FC–AU. It is suggested that future studies

should examine this dimension for explaining the causality. There is a potential to explore extending the UTAUT model beyond Behaviour Intention and Actual Use Behaviour to also measure consequences and impact in different life spaces of everyday life. The UTAUT model can be quantitatively used to substantiate trends and directions of long-term longitudinal Mobile use consequences and impact.

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