

Running head: MTV USE IN BANGLADSH AND OTHER COUNTRIES

Intention to use and adopt More-Than-Voice (MTV) services at Bottom of Pyramid (BOP) level:

Bangladesh and other developing countries

By

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Abstract

More than voice feature of mobile phones is becoming increasingly popular and this has garnered considerable research in the field of Information and Communication Technology (ICT). Since, two-thirds of mobile phone users around the world are from poor countries, there is research being focused on this population. I explored the consumers' perceptions of the adoption and use of More-Than-Voice (MTV) services at the Bottom of Pyramid (BOP) level in five countries: Bangladesh, India, Pakistan, Thailand and Sri Lanka. Further investigation was conducted to see if there were any differences between Bangladesh and other countries. I also investigated if the results were moderated by age, gender, mobile phone ownership or location. To explore these research questions I applied a combination of three technology acceptance models: TAM, UTAUT and UTAUT2 and then proposed a set of hypotheses for MTV services at the BOP. The data set I used came from Teleuse@BOP4. This was a large-scale survey on use and adoption of ICT conducted by an ICT policy and regulation think-tank in Asia Pacific region, LIRNEasia. After performing a qualitative data analysis, the findings suggested that perceived usefulness, perceived ease of use and price value were significant in predicting the intention to use MTV services at the BOP level. The result also suggests that intention to use MTV services in Bangladesh was different than other Teleuse@BOP4 countries when perceived usefulness and social influence were considered; Perceived Usefulness was found to have negative and Social Influence was found to have positive impact for Bangladesh with other countries. Contrary to other studies in the ICT for development (ICT4D) literature, the issue of age and gender was found to be insignificant. This research contributes to the knowledge of emerging ICT4D research because the study looks specifically at Bangladesh to identify the consumers' behavioral intention to use and adopt MTV services at a BOP level. The results of

this study could be useful for the decision makers, stakeholder and government. The results could also be useful for ongoing ICT4D research that tries to better understand the factors that influence use and adoption of MTV at BOP in Bangladesh and countries in the region.

Introduction

More than Voice (MTV) services are gaining attention from both academics and practitioners. MTV services go beyond the use of mobile phones for voice calls and these services are available either directly on mobile phones or through mobile phones. The use and adoption of MTV services in developing countries has become widespread, even by those who are defined as bottom of the pyramid (BOP) in economic terms. BOP is a term that is used to define those individuals who earn an income of less than two dollars per day as an employed individual (Prahalad, 2006). The potential of MTV services is significant for those individuals defined as BOP mobile phone users. However, the use and adoption of mobile phones and their services varies due to poverty, age, gender, country and ownership of the mobile phone (GSM Association, 2009; Ahmed, 2013). Motivated by how these variables affect MTV uses, this study proposes and validates a theoretical model for the use and adoption of MTV services in Bangladesh and other developing countries at the BOP level. One aspect of this research involves reviewing the technology acceptance model (TAM), unified theory of acceptance and use of technology (UTAUT) and extended UTAUT called, UTAUT2 and exploring them to the MTV services at BOP level in developing countries. This contextualization is done with the intent of extending the TAM, UTAUT and UTAUT2 to mobile MTV services. This study is significant to ICT for Development (ICT4D) literature because it explores the use of TAM, UTUT AND UTAUT2 to explain the use and adoption of MTV services at the BOP level in developing countries.

More-Than-Voice (MTV) services

More-than-voice (MTV) services are mobile phone based ICT (Information and Communication Technology) services that go beyond voice calls. For example, today, mobile

phones send, process, and receive text, images and video. MTV can be used for a variety of activities like sending and receiving payments as well. According to Zainudeen and Ratnadiwakara (2011), the term more-than-voice refers to, “services and applications accessible through mobile phones beyond voice and peer-to-peer SMS. Examples of MTV services include mobile money services, government services, agricultural information services, social networking services” (p.46). Similarly, Lokanathan and Nilusha (2012) define MTV services as applications and services beyond voice calls available on or through mobile phones. Such MTV services are sending or receiving voice, text, images and video, being used for services such as payment for services rendered, access to information and retrieval of information (Lokanathan & Nilusha, 2012). People use mobile phones for various purposes like making grocery lists, recording voice memos, listening to music, tracking caloric intake and posting to different social media accounts (Wortham, 2010, p. 2).

Use of MTV

Today mobile phones are used more for data than for voice calls. A 2010 *New York Times* stated that in the United States the amount of MTV services on mobile devices in 2009 surpassed the amount of voice data in cell phone calls (Wortham, 2010). By the end of 2009, MTV activities outnumbered the voice traffic around the world (Higginbotham, 2010). An article by (Smith, Spence, & Rashid, 2011) claimed that mobile phone services were making substantial contributions to economic, social and governance domains by increasing access to timely and relevant information and expanding possibilities for “connectedness between people” (2011, p. 78). Smith et al (2011) categorize information sharing and connectedness into three network dimensions: a) social networks, very important especially in the rural and poor contexts; b) economic networks, connecting citizens and financial institutions, expanding market boundaries,

improving supply chains and c) governance networks, increased access to government services, political mobilization, election monitoring, early warning system, crisis management, etc (p. 78).

The authors agreed that mobile phone services were the enabler and/ or enhancers for a wide range of public and private goods and services.

MTV in developing countries

MTV usage in developing countries enables a mobile revolution expanding the mobile phone services from just voice to other services. The *Economist* reported that MTV services possess huge potential for growth as two-thirds of the populations have access to these services. MTV could be used as a medium on which many other services could be built and used (“Not just talk,” 2011). MTV can also be used for educational purposes in developing countries. For instance, one MTV service used in Bangladesh supports the education of spoken-English with the support of BBC World Service (“Not just talk,” 2011).

In India, until the mid- 1990s it was considered a luxury to own a mobile phone. In 2005 and 2006 an average of 1.77 million new mobile subscribers were added every month with 100 million subscribers in June 2005 (Kumar & Thomas, 2006, p. 298). SMS is considered to be the most popular MTV service in the developing countries as the technology is robust and reliable; it works well even in the rural areas that have sporadic coverage (Kang & Maity, 2012). Therefore, MTV has significant potential to increase communication, economic well-being and educational growth in developing countries due to the widespread adoption of mobile phones.

Bottom of Pyramid or Base of Pyramid (BOP)

Bottom of Pyramid or base of pyramid (BOP) is another concept significant to this research topic, which has garnered considerable research over the years. US president Franklin

D. Roosevelt first mentioned BOP in April 7, 1932 (Jiang, Kandachar, & Freudenthal, 2011; Louw, 2010). In his radio address he said,

These unhappy times call for the building of plans that rest upon the forgotten, the unorganized but the indispensable units of economic power, for plans like those of 1917 that build from the bottom up and not from the top down, that put their faith once more in the forgotten man at the bottom of the economic pyramid (Geisst, 2009, p.550).

BOP is used to define people who face very poor economic conditions and are at the bottom of the social structure. Prahalad and Hart (2006), defined BOP as the billions of people living on less than \$2 per day. According to a report by the joint venture of Group Special Mobile Association (GSMA) Development Fund and Cherie Blair Foundation for Women, the household income at the BOP level is below US\$75 per month and majority of them are not employed and have not attended secondary school (GSM Association, 2009).

Adoption and use of MTV services at BOP level in developing countries

The use and adoption of mobile phone beyond voice services is attracting many researchers since two-thirds of the mobile phone users around the world are from developing countries (Zuckerman, 2010, p.99).

The object of this research is to explore TAM, UTAUT and UTAUT2 to explain MTV use and adoption at the BOP level in Bangladesh. Therefore, I have decided to start the literature review from a broad perspective starting with mobile phone adoption in developing countries at the BOP level. Various research has shown that while mobile phones were once thought of as a luxury item however, in six Asian countries including Bangladesh, Pakistan, India, Sri Lanka, Philippines, and Thailand were shown to display characteristics that mobile phone services were necessities at the BOP (Agüero, Silva, & Kang, 2011). This strengthens the indication that

adoption and use of mobile phones are increasing among the poor. In addition, research findings from Silva et al. (2011), Dolan et al (2012) and Karnani (2007) revealed that usage and adoption of the mobile phone and its services are increasing and becoming affordable at BOP.

This research explores a data set produced by LIRNEAsia called Teleuse@BOP4. LIRNEAsia is a pro-poor, pro-market think tank and research organization working to improve people's lives in the Asia Pacific (LIRNEAsia, 2008). In this paper, the data set produced from a survey in 2011 pioneered by LIRNEAsia will be called Teleuse Data at the bottom of the pyramid 4, or Teleuse@BOP4 data and the countries studied will be called Telesue@BOP4 countries.

This research is framed within the research area of Information and Communication Technologies for Development (ICT4D). Based on existing literature, it is clear that few studies have been done regarding the use and adoption of MTV services at a BOP level. There are no comparative studies that examine the perception of use and adoption of MTV in Bangladesh and other developing countries.

To a degree, users at the BOP level in Teleuse@BOP countries have started using this technology voluntarily. To explain this voluntary use and adoption of MTV services at BOP level this study used TAM, UTAUT and UTAUT2 models. The model developed from these three theories suggests a relationship among variables, which is tested against theTeleuse@BOP4 data set. The results will then be compared back to the rest of the Teleuse@BOP4 countries to determine if there are any differences between Bangladesh and the other countries regarding the use and adoption of MTV services.

Literature review

Adoption and use of ICT for developing countries

The remarkable growth of Information and Communication Technologies (ICTs) and the greater integration of world markets are driving the global economy (Baliamoune-Lutz, 2003). For simplicity I define ICT as Internet, computers, mobile phones and their applications, infrastructure and the people related to this technology. The various ways of using ICT devices and the numbers of ICT users are increasing rapidly. Telecommunications is fast becoming an important sector in the economies of developing nations. Therefore, the study of ICT4D (ICT for Development) is important in understanding the users behavior relative to ICT equipment like the mobile phone in developing countries. ICT4D literatures provide valuable knowledge around computing and communications devices such as mobile phones, software, services and systems. ICT4D is mostly associated with applications in developing world but the scope is disadvantaged populations anywhere in the world (Dias, 2014). There is significant literature on ICT4D; the ICT sector is dynamic and under pressure to evolve. Therefore this sector demands continuous research and development to advance the fields.

ICT4D literature typically explores demographic variables as significant determinants of ICT usage, such as; gender, geographic location, age, income, and level of education. One study of developing countries showed that income influenced the use of computer and Internet but not mobile phone use within the ICT infrastructure (Rad, Kurt, & Polatöz, 2013; Baliamoune-Lutz, 2003). Similar results show that education positively influences the use of computer and Internet services but not the use of mobile phones (Baliamoune-Lutz, 2003). In developing countries people are very poor and have low levels of education, however almost two-thirds of mobile phone users in the world are from developing countries (Zuckerman, 2010); the reason may be

that income and education do not prevent the use of mobile phones. The ICT4D literature also suggests that the active use of technologies by third world women has been an important requirement for sustainability of ICT projects (Asiedu, 2012, p.1188). There is variation of ICT use between men and women in developing countries. Women, for instance, have less access to education than men; potentially impacting their ability to use and learn from technology (Kim et al., 2012, p.329). Some studies of mobile technology in India suggested that males were more likely to be the dominant technology users and female were more likely to defer to their male peers (Kim et al., 2012, p.331). Likewise, the users in urban areas were found to be more comfortable in using technology (Kim et al., 2012, p.331). Mobile phones are used as the principal communication device in rural areas even where the household income is low (Rad, Kurt, & Polatöz, 2013, p.102). At the same time, in rural areas, as the income level increases the number of mobile phone owner increases as well (Rad, Kurt, & Polatöz, 2013). Another variable that affects ICT usage is age. A study found that the use of ICT was highest among young people and that as age increased, the ratio of ICT use decreased and that it reached the lowest level in old age (Rad, Kurt, & Polatöz, 2013, p.99).

A study specific to Bangladesh discussed the significance of social influence, perceived usefulness, and perceived ease of use influence the behavioral intention to use a mobile-based market information systems (Islam, 2011). Similarly, a study from India showed that social influence and facilitating conditions positively impact the use of the ICT (Gupta, Dasgupta, & Gupta, 2008). In Pakistan, research suggests that a consumer's intention to adopt mobile banking services was significantly influenced by social influence, perceived risk, perceived usefulness, and perceived ease of use (Kazi & Mannan, 2013). Because ICT reduces transaction costs by

enabling timely and affordable communication, price value is considered to be a very important factor for using ICT devices or services. (Silva, Harsha, & Ratnadiwakara, 2008).

The literature around ICT4D suggests that perceived usefulness, perceived ease of use, social influence, price value, facilitating conditions, age, gender, location, country are important determinants for the use of ICT devices and its services.

Theoretical background: TAM, UTAUT and UTAUT2

Over the last few decades there have been many models of technology acceptance developed. There also have been many models that are extensions of the current model or a combination of two or more models (Birch & Irvine, 2009).

Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1977, Ajzen & Madden, 1986) developed by Martin Fishbein and Icek Ajzen, is a widely studied model of technology adoption from the perspective of social psychology and it is concerned with consciously intended behaviour (Davis, Bagozzi, & Warshaw, 1989). In 1985, Fred Davis developed a Technology Acceptance Model (TAM) and proposed TAM in 1986 in his doctoral thesis (Legris, Ingham, & Collette, 2003). Technology Acceptance Model (TAM) (Davis, 1986) is an adaptation of TRA and is capable of explaining end users' behavior across the use of computing technologies (Davis, Bagozzi, & Warshaw, 1989). The Theory of Planned Behavior (TPB) that was introduced by Ajzen in 1985, applied by many researchers to the study of technology adoption (Ajzen, 1991). As an extension to TAM, Venkatesh et al. proposed Unified Theory of Acceptance and Usage of Technology (UTAUT) in 2003 (Venkatesh, Morris, Davis, & Davis, 2003)

TAM

Information systems (IS) researchers have extensively investigated TAM and have applied it in various contexts and have received empirical support from numerous studies (Kuo, Liu, & Ma, 2013). Davis (1986) proposed that TAM has two salient concepts that are said to influence people's attitudes toward accepting a technology: perceived usefulness (PU) defined as the extent to which a person believes that using the system will enhance his or her job performance and perceived ease of use (PEOU) defined as the extent to which a person believes that using the system will be free of effort (Kuo, Liu, & Ma, 2013, p.6).

UTAUT

To date the UTAUT is the most comprehensive IT adoption theory and is based on a review and synthesis of eight theories/models which were developed from the disciplines of psychology and sociology and then used to explain the use and acceptance of technology (Min, Ji, & Qu, 2008). The eight theories are: Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), the Motivational Model, Theory of Planned Behavior (TPB), the PC Utilization Model, the Innovation Diffusion Theory (IDT), the Social Cognitive Theory (SCT), and the integrated model of technology acceptance and planned behavior (Venkatesh, Thong, & Xu, 2012). The UTAUT model has four key constructs that influence the use and adoption information technology (IT): performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh et al., 2003, p.475). Here,

“performance expectancy is defined as the degree to which using a technology will provide benefits to consumers in performing certain activities; effort expectancy is the degree of ease associated with consumers' use of technology; social influence is the extent to which consumers perceive that important others (e.g., family and friends)

believe they should use a particular technology; and facilitating conditions refer to consumers' perceptions of the resources and support available to perform a behavior" (Venkatesh, Thong, & Xu, 2012 , P. 159).

Performance expectancy is similar to the degree to which an individual believes that using the system will help him or her, is similar to TAM's perceived usefulness (Min, Ji, & Qu, 2008).

Effort expectancy, referring to the degree of ease associated with the use of the system, is similar to TAM's perceived ease of use (Min, Ji, & Qu, 2008).

UTAUT2

In 2012 Venkatesh et al. proposed an extension of UTAUT to UTAUT2 to pay particular attention to the consumer user context (Venkatesh, Thong, & Xu, 2012). They presented UTAUT2 by adding three key constructs and relationships to the UTAUT. These three constructs are: hedonic motivation, price value and experience and habit. Hedonic motivation is defined as the pleasure originated from using a technology and it has been shown to play an important role in determining technology acceptance and use. Price value is defined as the impact of the cost and pricing structure of a certain technology on users' technology use. Experience is defined as the use of a certain technology for a significant amount of time from the initial use by an individual. Finally, habit is defined as the extent to which people's tendency to use or perform on certain technology automatically because of learning that technology (Venkatesh, Thong, & Xu, 2012).

While proposing the UTAUT2 the authors identified three key constructs from prior research on the use and adoption of technologies, they altered some of the existing relationships in the original UTAUT and introduced new relationships (Venkatesh, Thong, & Xu, 2012).

Individual difference variables moderators, such as age, gender, and experience are also theorized into UTAUT2 to moderate various relationships (Venkatesh, Thong, & Xu, 2012).

Application of TAM, UTAUT

TAM and UTAUT can be applied across technologies, people, settings and times and both can be used to explain technology acceptance (Kuo, Liu, & Ma, 2013). TAM has been used to examine the adoption of mobile chat (Nysveen, Pedersen, & Thorbjørnsen, 2005), use of e-commerce (Zhang, Prybutok, & Strutton, 2007), users purchasing behavior in e-commerce (Zhang, Prybutok, & Koh, 2006), mobile commerce (Cyr, Head, & Ivanov, 2006), mobile-commerce adoption (Pedersen, Methlie, & Thorbjørnsen, 2002). The UTAUT model is not as widely used as TAM but it has gradually drawn researchers' attention in the vast IT field. It has been recently applied to exploring user acceptance of mobile technologies (Zhou, Lu, & Wang, 2010). UTAUT is now used to examine online social support in using instant messaging (Lin & Anol, 2008), social media in public relations (Curtis et al., 2010), frequency of computer use and differences in information and communication technology skills (Verhoeven, Heerwegh, & De Wit, 2010), and in the use of ICT in developing countries (Gupta, Dasgupta, & Gupta, 2008). UTAUT is successfully used to provide insight into cross-cultural technology acceptance differences (Oshlyansky, Cairns, & Thimbleby, 2007), in mobile commerce acceptance (Koivumäki, Ristola, & Kesti, 2008, Min, Ji, & Qu, 2008), international comparison of internet banking (Im, Hong, & Kang, 2011), mobile banking acceptance (Zhou, Lu, & Wang, 2010), more than voice services such as SMS (Carlsson, Carlsson, Hyvonen, Puhakainen, & Walden, 2006).

Why this study uses both TAM and UTAUT

There are a significant numbers of studies that have used both TAM and UTAUT theories (Al-Qeisis, n.d.; Algharibi & Arvanitis, 2011; Anderson & Schwager, 2004; Saleh Alwahaishi & Václav Snášel, 2013). Using TAM alone, it is not possible to predict the influence of volitional, situational and social conditions: the influence of significant others, perceived ability and control are not present in TAM and may influence IT usage (Abbasi, Chandio, Soomro, & Shah, 2011; Taylor & Todd, 1995). In addition, TAM can only explain about 40% of system use and some literature suggests that significant factors such as human and social change processes are not included in TAM (Legris, Ingham, & Colletette, 2003, p.91). In order to overcome these limitations I have proposed a model that incorporates necessary constructs from TAM, UTAUT and UTAUT2. This research applies a model of intention to use and adopt MTV services at the BOP level in developing countries using TAM, UTAUT and UTAUT2 theories

Research model and hypotheses development

Model presentation

This study proposes to validate the model presented in Figure. 1 based on the IT acceptance literature, especially that of Davis (1986), Venkatesh et al., (2003) and Venkatesh, Thong, and Xu (2012). This research model is based on TAM, UTAUT and UTAUT2 respectively, with some modification and substitution of independent variables to contextualize these theories to MTV services. Figure 1 proposes that the intention to use and the adoption of MTV services are constructed as a function of perceived usefulness, perceived ease of use, social influence, price value and facilitating conditions. Intention is the extent to which the user would reuse MTV services in future. Moreover, perceived usefulness is defined as the extent to which the user believes that using MTV services would fulfill a purpose. Perceived ease of use is the extent to which a user believes that using MTV services is effortless. Social influence describes the extent to which the user perceives that others approve of their MTV usage and users believed that most of their peers were using MTV services. Additionally, price value is the extent to which the user is impacted by the cost and pricing of MTV services. Lastly, facilitating condition is defined as the extent to which the users believe that they have the resources necessary to use MTV services. This model also takes into consideration the moderators age, gender, ownership and location to see if they are being applied individually to moderate the user's intention to use MTV services.

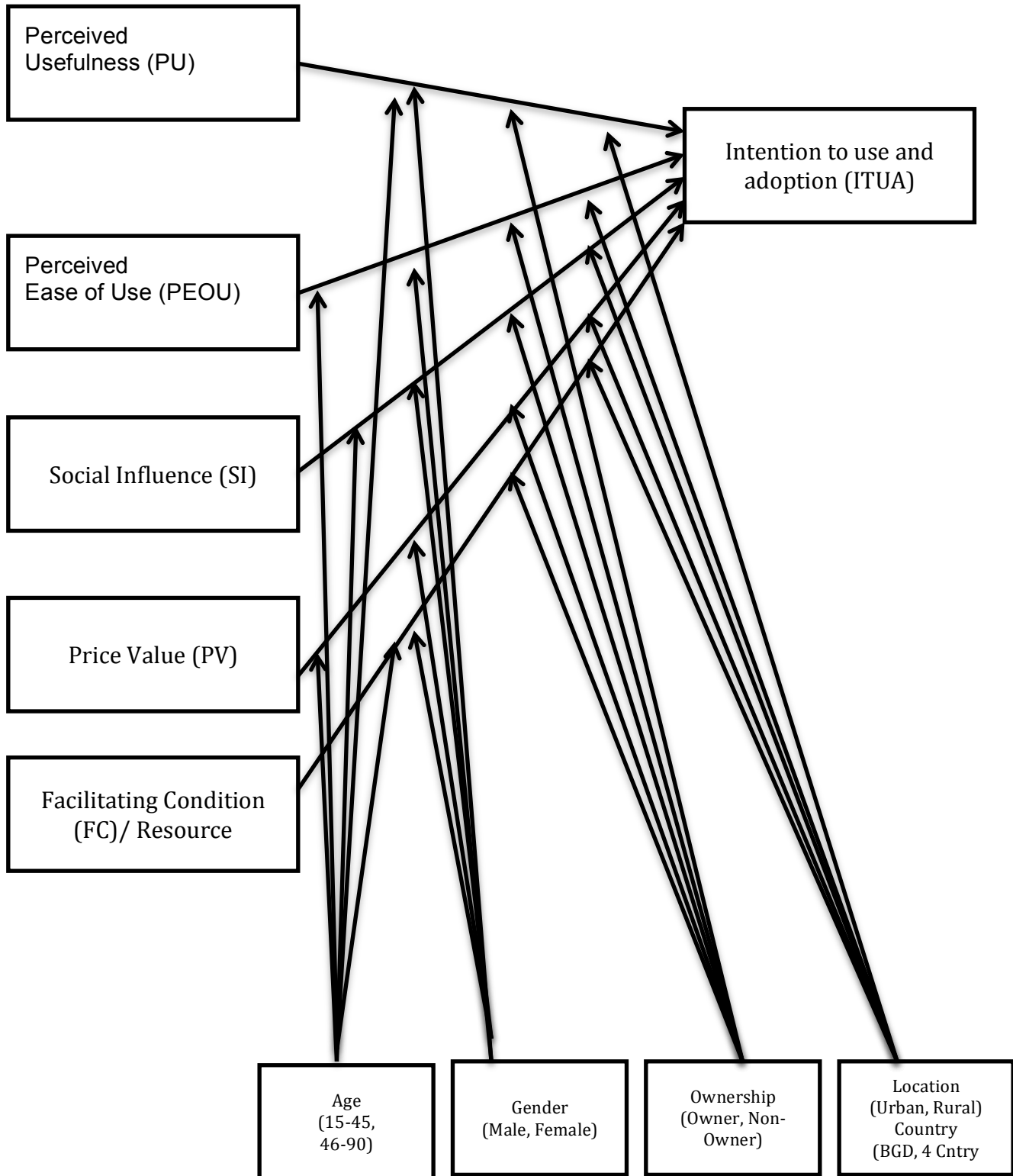


Figure 1. Proposed Model for use of MTV services at BOP level

Hypotheses development

Perceived usefulness (PU)

Perceived usefulness is one of the Davis’ (1986) proposed salient beliefs of TAM that determine people’s attitude toward accepting a technology. It is defined as the extent of a person’s belief that using the system will enhance his or her job performance (Kuo, Liu, & Ma, 2013, p.6). Therefore, the perceived usefulness of using MTV services is defined as the extent to which a user believes that using the MTV services is useful, will increase his or her chances of achieving things that are important to him or her, will help him or her to accomplish things more quickly and will give him or her more information.

Table 1 <i>The variables shown in Figure 1 is in Matrix format</i>					
Independent Variable	Moderators				Dependent Variable
PU	PU x Age	PU x Gender	PU x Ownership	PU x Location& Country	Intention to use and adopt (ITUA)
PEOU	PEOU x Age	PEOU x Gender	PEOU x Ownership	PEOU x Location& Country	
SI	SI x Age	SI x Gender	SI x Ownership	SI x Location& Country	
PV	PV x Age	PV x Gender	PV x Ownership	PV x Location& Country	
FC	FC x Age	FC x Gender	FC x Ownership	FC x Location& Country	
	Age	Gender	Ownership	Location& Country	

Table 1 Variables in Matrix format

Perceived usefulness (PU) influences users' intention to use a technology. People's intention to use a technology represents a direct effect, based largely on a cognitive appraisal of how the system will improve their performance (Davis, Bagozzi, & Warshaw, 1989). A study conducted by Tseng, Hsu and Chuang (2012) showed how a user might have a positive intention to use a technology or technological service if he or she finds it useful (Tseng, Hsu, & Chuang, 2012). Hsu and Lu (2004) proved that perceived usefulness is positively related to attitude toward playing an on-line game, as players want to play on-line games only if they found them useful. Zhang and Mao (2008) found that perceived usefulness of SMS advertising messages positively predicts the intention to accept SMS advertising messages. They suggest that SMS advertising by nature was considered to be a service not a technology tool and this study extended the dimension of understanding usefulness in the TAM literature from technology tool to any service that use technology (Zhang & Mao, 2008).

Gender, age, ownership of mobile phone and urban and rural location have influence in PU when using a technology. The perceptions of usefulness to technology usage are more positively influenced by men's decisions (Venkatesh & Morris, 2000). Similarly, some studies also found that "male respondents tend to perceived Mobile-commerce favorably" (Yang, 2005, p.257). Mathieson (1991) studied the predicting of user intentions by comparing the technology acceptance model with the theory of planned behavior and he considered different ages for this study. In addition, Yang (2005) proved that age positively predicts consumer perception of usefulness in adopting mobile-commerce. Similarly, Pavlou (2003) studied consumer acceptance of electronic commerce using technology acceptance model and he considered both gender and age for his study. Both gender and age play a significant role in the perception of usefulness and perception of ease of use. To understand whether TAM applies in other cultures Straub, Keil and

Brenner (1997) compared the TAM model across three different countries: Japan, Switzerland, and the United States and the results suggested that the model might not predict technology use across all cultures. This study found that perception of usefulness was significant across the sample populations (Straub, Keil, & Brenner, 1997). The location of the user for example, the country where they reside in is one of the important elements of mobile technology. Location based more-than-voice services such as global positioning system, location based SMS, tourist, weather services play a positive role in perception of usefulness and perception of ease of use (Kaasinen, 2005). Further, a study by Samah (2011) shows that perceived usefulness influences technology usage among the rural people (Samah, 2011). Likely because women are more disadvantaged globally and are not necessarily the ones who have access to funds to enable them to purchase mobile devices. Overall the literature suggests that age and gender play a role in access to technology, which in turn enables middle aged men to be the primary adopters of technology (Lu, Yu, Liu, & Yao, 2003).

Therefore, older men, owner of the mobile phone and rural people show positive intention to use technology. Hence, based on these findings the following alternative hypothesis can be proposed:

H1: Perceived Usefulness (PU) will have a positive effect on the intention to use the MTV services.

H1a: Perceived Usefulness (PU), moderated by gender, will influence the usage of MTV services at BOP level, such that the effect is stronger for men.

H1b: Perceived Usefulness (PU), moderated by age, will influence the usage of MTV services at BOP level, such that the effect is stronger for older.

H1c: Perceived Usefulness (PU), moderated by country, will influence the usage of MTV services at BOP level, such that the effect is stronger in Bangladesh than other Teleuse@BOP countries.

H1d: Perceived Usefulness (PU), moderated by location, will influence the usage of MTV services at BOP level, such that the effect is stronger in rural people.

H1e: Perceived Usefulness (PU), moderated by mobile phone ownership, will influence the usage of MTV services at BOP level, such that the effect is stronger for mobile phone owners.

Perceived ease of use (PEOU)

Perceived ease of use is another of Davis's (1986) proposed salient factors in the technology adoption model of TAM. PEOU is defined as the extent to which a person believes that using the system will be free of effort (Kuo, Liu, & Ma, 2013, p.6). Perceived ease of use of using MTV services is defined as the extent to which a user believes that using the MTV service is easy to use, learning MTV how to use to easy or the interaction to MTV services is clear and understandable.

Perceived ease of use (PEOU) can have an influence on users' intention to use a technology. The easier systems influence the users' sense of efficacy and PEOU has been hypothesized to have a significant effect on the intention to use a technology (Davis, Bagozzi, & Warshaw, 1989). The perceived ease of use of SMS advertising messages positively predicted the consumers' intention to use SMS advertising (Zhang & Mao, 2008). Previous studies showed a user might have a positive intention to use a technology or technological service if he or she finds it easy to use (Tseng, Hsu, & Chuang, 2012). In on-line gaming the PEOU plays a critical role in game adoption (Hsu & Lu, 2004).

Gender, age, ownership of mobile phone and location have influence in PEOU when using a technology. Gender has a positive role in perceived ease of use of a technology and women were more strongly influenced by perceptions of ease of use (Venkatesh & Morris, 2000). Both gender and age play a significant role in perception of ease of use (Pavlou, 2003). Similarly, location based more-than-voice services have a positive role in perception of ease of use (Kaasinen, 2005). A study revealed that perceived ease of use is an important element to influence technology usage among the rural people (Samah, 2011). However, another study found that perception of ease of use was not found to be significant across different countries (Straub, Keil, & Brenner, 1997. Yang (2005) asked the consumers if they owned mobile devices and asked if they knew how to use these devices. The author clearly indicated a relationship between ease of use and ownership of mobile phone (Yang, 2005).

Therefore, older women, owner of the mobile phone and rural people show positive attitude in perceived ease of use of a technology. Hence, based on these findings the following alternative hypothesis can be proposed:

H2: Perceived ease of use (PEOU) will have a positive effect on the intention to use the MTV services.

H2a: Perceived ease of use (PEOU), moderated by gender, will influence the usage of MTV services at BOP level, such that the effect is stronger for women.

H2b: Perceived ease of use (PEOU), moderated by age, will influence the usage of MTV services at BOP level, such that the effect is stronger for older people.

H2c: Perceived ease of use (PEOU), moderated by country, will influence the usage of MTV services at BOP level, such that the effect is stronger in Bangladesh than other Teleuse@BOP countries.

H2d: Perceived ease of use (PEOU), moderated by location, will influence the usage of MTV services at BOP level, such that the effect is stronger for rural people.

H2e: Perceived ease of use (PEOU), moderated by mobile phone ownership, will influence the usage of MTV services at BOP level, such that the effect is stronger for mobile phone owners.

Social Influence (SI)

Social Influence (SI) is the extent to which consumers perceive that their close relationships, for example family and friends believe they should use a particular technology (Venkatesh, Thong, & Xu, 2012). The social influence of using MTV services can be defined as the extent to which the users believe that people who are close to them think that they should use it; people who influence their behaviors think they should use; they should use because they want to use same service people around them; they should use because it is common to use in their community.

Social influence in UTAUT is represented as subjective norm in other models such as TRA, TPB (Venkatesh, Morris, Davis, & Davis, 2003). It is the degree to which an individual perceives the technology is very important and believes that others should use the new technology (Venkatesh, Morris, Davis, & Davis, 2003). Social influence has a significant effect on behavioral intention to use a technology and the effect is positive in intention to use the technology (Gupta, Dasgupta, & Gupta 2008, Im, Hong, & Kang 2011). If someone of social significance recommends the use of mobile Internet technology, he or she has a good chance to follow his or her recommendation (Saleh Alwahaishi & Václav Snášel, 2013). Silva, Ratnadiwakara and Zainudeen (2011) Silva et al. (2011) discussed the importance of social influence in mobile adoption at the bottom of the pyramid (BOP). They showed that the likelihood of a respondent's adoption of a mobile phone increases for each additional member in

the network having adopted a phone. Even though in the context of traditional IT, TAM omitted social influences, TAM includes perceived critical mass and social norms, which significantly affects the intention to use the system (Hsu & Lu, 2004).

Gender, age, ownership of mobile phone and location as moderator have effect on social influence regarding the intention to use a system. Venkatesh et al. (2003) proved that the significance of social influence on intention to use the system moderated by gender and age such that the effect was stronger for women and older workers. Similarly, social influence on blended learning using technology strongly moderated by the older female student (Khechine, Lakhali, Pascot, & Bytha, 2014). Likewise, the effects of social influence on the intention to use a technology proved to be moderated by individual characteristics such as age, gender (Venkatesh, Thong, & Xu, 2012). However, Gupta, Dasgupta, and Gupta (2008) did not find a difference between men and women and claimed that both men and women think alike when it comes to the perception of how important others believe they should use the new system. The study by Gupta, Dasgupta, and Gupta (2008) focused on the adoption of ICT in a government organization in a developing country, where the employees have a minimum level of education. This paper focuses on people who earn a maximum of \$2 per day. Therefore, I will hypothesize that gender has an effect on social influence to the intention to use a system as a moderator and will discuss this further from the outcome of the Teleuse@BOP data analysis.

According to Im, Hong and Kang (2011) social influence surrounding a technology has a positive impact on users' intention to adopt it, but the authors did not find any significant difference in the impact of social influence between two countries (Korea and the U.S). However, due to the power distance (Hofstede, Hofstede, & Minkov, 2010) in Asian countries, the social norms and social influence positively influence academics' intention to use

technologies like the internet (Abbasi, Chandio, Soomro, & Shah, 2011). The authors defined power distance in Asian countries as, “The way of evaluating subordinates’ perception about the power between him and his superior” (Abbasi, Chandio, Soomro, & Shah, 2011, p. 33). MTV users have positive influence on non-users of MTV to adopt the same service and the MTV users closest five contacts who are also mobile owners have a positive influence on MTV adoption (Zainudeen & Ratnadiwakara, 2011). Social influence has significant potential to extend MTV services in rural areas, which has a direct impact on poverty and inequality (Silva, Ratnadiwakara, & Zainudeen, 2011). Another study showed that social influence has a positive influence on the behavioral intention towards continuous usage of Internet mostly via mobile phone in the rural areas (Muraina, Osman, & Ahmad, 2013).

Therefore, older women, owner of the mobile phone and rural users show a positive attitude in the social influence of technology usage. Hence, based on these findings the following additional hypotheses can be proposed:

H3: Social influence (SI) will have a positive effect on the intention to use the MTV services.

H3a: Social influence (SI), moderated by gender, will influence the usage of MTV services at BOP level, such that the effect is stronger for women.

H3b: Social influence (SI), moderated by age, will influence the usage of MTV services at BOP level, such that the effect is stronger for older people.

H3c: Social influence (SI), moderated by country, will influence the usage of MTV services at BOP level, such that the effect is stronger in Bangladesh than other Teleuse@BOP countries.

H3d: Social influence (SI), moderated by location, will influence the usage of MTV services at BOP level, such that the effect is stronger for rural people.

H3e: Social influence (SI), moderated by mobile phone ownership, will influence the usage of MTV services at BOP level, such that the effect is stronger for mobile phone owners.

Price Value (PV)

Price value is defined as the impact of the cost and pricing structure of a certain technology on users' technology use (Venkatesh, Thong, & Xu, 2012, p.160). This construct has been newly identified in UTAUT2 theory, providing that cost and pricing structures have significant impact on consumer technology adoption. The integration of price value into the UTAUT model is intended to address the cost issue of technology use in the consumer setting (Venkatesh, Thong, & Xu, 2012). Price value of using MTV services is defined as the extent to which the user paid for the mobile set when it was obtained; that the user pay for the service either by prepaid or postpaid billing system; the user's ability to save money using MTV; and for non-owners if the purchase of a mobile set is unaffordable.

The impact of the cost and price structure of a certain technology on a consumer's technology use is positive when the benefits of using a technology are perceived to be greater than the monetary cost (Venkatesh, Thong, & Xu, 2012). Studies show that price value has a positive impact on the intention to use a technology (Saleh Alwahaishi & Václav Snášel, 2013) and therefore price value is added as a predictor intention to use MTV services in the proposed model.

Gender, age, ownership of mobile phone and location have influence on PV when using a technology. Venkatech et al. (2012) expected that the effect of price value on behavioral intention to be moderated by age and gender and they found, "the effect of price value was more important to older women" (Venkatesh, Thong, & Xu, 2012, p.171). Different age groups who experienced mobile internet, was tested as a moderator that affects the price value of end users

adoption of ICT (Saleh Alwahaishi & Václav Snášel, 2013). One study demonstrated the validation of a technology acceptance model using UTAUT over nine culturally diverse countries (Oshlyansky, Cairns, & Thimbleby, 2007). Erica Briscoe, Ethan Trehitt and C.J. Hutto (2011) examined price value in three countries (US, China and India) and found that price and cultural differences play active role in technology adoption. Sharma and Xiaoming (2012) worked in Finland, US and Korea and found that a customers' intention to use mobile phones were positively associated with their intention to pay for the services. They claimed that Asians are more downside averse in their value-seeking traits than their western counterparts and generally have higher expectations in their purchasing decisions (Sharma & Xiaoming, 2012, p.144). Another study found that pricing structure is a stronger predictor in the rural sample in adopting broadband internet connection (LaRose et al., 2012). Several studies have claimed that due to poverty a significant number of people were not able to own a mobile phone, yet they are still using mobile phone services by borrowing the services in various ways (Agüero, Silva, & Kang, 2011; Rashid, 2011). These studies revealed that the main constraint to buying or owning a mobile phone is the significant amount of money needed to make the purchase (Rashid, 2011).

Therefore, older women, owner of the mobile phone and rural people show a positive attitude in pricing value of a technology usage. Based on these findings the following additional hypotheses can be proposed:

H4: Pricing Value (PV) will have a positive effect on the intention to use the MTV services.

H4a: Pricing Value (PV), moderated by gender, will influence the usage of MTV services at BOP level, such that the effect is stronger for women.

H4b: Pricing Value (PV), moderated by age, will influence the usage of MTV services at BOP level, such that the effect is stronger for older people.

H4c: Pricing Value (PV), moderated by country, will influence the usage of MTV services at BOP level, such that the effect is stronger in Bangladesh than other Teleuse@BOP countries.

H4d: Pricing Value (PV), moderated by location, will influence the usage of MTV services at BOP level, such that the effect is stronger for rural people.

H4e: Pricing Value (PV), moderated by mobile phone ownership, will influence the usage of MTV services at BOP level, such that the effect is stronger for mobile phone owners.

Facilitating Condition (FC) or Resource

Facilitating conditions refers to individual perceptions of the availability of the technology and/or organizational resources to access the technology (Venkatesh, Morris, Davis, & Davis, 2003). This variable affects an individual's perception about his or her control over the available technology. The facilitating condition of using MTV services is defined as the extent to which the users believe that they have the resources such as money, time, and technology infrastructure necessary to use MTV; they have the knowledge and ability necessary to use MTV and whenever they are having any problem using MTV, they can get helpful resources from their peers.

Facilitating conditions from UTAUT can have an influence on an individual's intention to use a technology (Venkatesh, Morris, Davis, & Davis, 2003). For example, an individual's intention to use a system will be lowered if the system does not provide necessary resources like technology infrastructure (Venkatesh, Brown, Maruping, & Bala, 2008). Similarly, if new resources are offered there is likely to be a positive impact on users' intention regarding use of the new system. Previous studies show that facilitating conditions have a significant impact on system usage (Kijisanayotin, Pannarunothai, & Speedie, 2009), but at a lower level of statistical

significance (Gupta, Dasgupta, & Gupta, 2008). Thus, there is an expectation that a positive relationship between users intention to use MTV with facilitating conditions on system use.

Gender, age, ownership of mobile phone and location have influence in facilitating resources when using a technology. Facilitating conditions, such as availability of external help, support and training influence women more to use that system (Venkatesh & Morris, 2000). Therefore, women will show more intention to use a technology or technology service if more importance is given on facilitating conditions exist. In addition, it was suggested that the effect of facilitating conditions on technology use was moderated by age (Venkatesh, Thong, & Xu, 2012) and was found strongly moderated in older subjects (Khechine, Lakhali, Pascot, & Bytha, 2014). Facilitating conditions can also vary from location to location as the infrastructure and resources are not available in the same manner in different location or countries (Nathalia Devina Widjaja, 2012). Owner and non-owners of mobile devices are also important aspect of the mobile phone adoption. The ownership of mobile phone has strong effect on the facilitating conditions and the owner of a mobile phone will show more intention to use MTV services (Zainudeen & Ratnadiwakara, 2011, GSM Association, 2009). Facilitating condition has a positive influence on the continuous use of broadband in rural areas (Muraina, Osman, & Ahmad, 2013).

Therefore, older people, women, owner of the mobile phone and rural people show positive attitude in facilitating conditions of a technology usage. Hence, based on these findings the following additional hypotheses can be proposed:

H5: Facilitating Conditions (FC) will have a positive effect on the intention to use the MTV services.

H5a: Facilitating Conditions (FC), moderated by gender, will influence the usage of MTV services at BOP level, such that the effect is stronger for women.

H5b: Facilitating Conditions (FC), moderated by age, will influence the usage of MTV services at BOP level, such that the effect is stronger for older people.

H5c: Pricing Value (PV), moderated by country, will influence the usage of MTV services at BOP level, such that the effect is stronger in Bangladesh than other Teleuse@BOP countries.

H5d: Facilitating Conditions (FC), moderated by location, will influence the usage of MTV services at BOP level, such that the effect is stronger for rural people.

H5e: Facilitating Conditions (FC), moderated by mobile phone ownership, will influence the usage of MTV services at BOP level, such that the effect is stronger for mobile phone owners.

Research statement

This study seeks to explore the perceptions towards the adoption and use of MTV services of mobile phones at the BOP level in five countries: Bangladesh, India, Pakistan, Thailand and Sri Lanka. This study will further investigate differences in adoption of MTV services between Bangladesh and the other Teleuse@BOP4 countries. Finally, this study will test if there is any difference in perception in the adoption and use of MTV with different moderators such as age, gender, mobile phone ownership and location.

Theoretical framework

A number of constructs were adopted from the TAM: perceived usefulness and perceived ease of use as independent variables and the dependent variable is the intention to use MTV. This study also adopted age and gender as two moderators from TAM. Social influence and facilitating condition are the two independent variables adopted from UTAUT. The fifth and last independent variable, price value was adopted from UTAUT2. Ownership, location (urban and

rural) and country were added as moderating variables along with age and gender to see if they moderate the users' perceived intention to use and adopt MTV services. Therefore in this study the independent, constructed variables are: perceived usefulness, perceived ease of use, social influence, facilitating condition and price value; the dependent variable is: intention to use MTV and the moderators are: age, gender, ownership, location and country.

Research methodology and data description

This study used a secondary data from the Teleuse@BOP study to assess the perception of adoption and use of more-than-voice (MTV) services at the BOP level in five countries and then compares the results between Bangladesh and other four Teleuse@BOP4 countries.

Secondary data

The four categories of data sources available for studies related to communication and culture are a) texts, b) direct observations of phenomena, c) self-reports of behaviours, belief, and/ or characteristics, and d) other-reports of behaviours, beliefs, and/ or characteristics (Merrigan, Huston, & Johnston, 2012, p.61). Sources are categorized as primary or secondary where the primary sources are the first-hand, direct, or unmediated facts about the behaviours that a researcher wishes to study (Merrigan, Huston, & Johnston, 2012). In contrast the secondary sources are the second-hand, indirect, or mediated facts about the behaviours that a researcher wishes to study (Merrigan, Huston, & Johnston, 2012).

The data¹ in this paper is drawn from of LIRNEasia's (www.lirneasia.net)

Teleuse@BOP4 study. The work was carried out with the aid of a grant from the International

¹ The data is a part of LIRNEasia's Teleuse@BOP4 study. The work was carried out with the aid of a grant from the International Development Research Centre, Ottawa, Canada and UKaid from the Department for International Development, UK.

Development Research Centre, Ottawa, Canada (www.idrc.ca) and UKaid from the Department for International Development, UK (www.dfid.uk). IDRC (International Development Research Centre) is a Canadian crown corporation established in 1970 which funds researchers in the developing world so they can build healthier, more prosperous societies with the aim to find solutions to their problems (“IDRC|CRDI,” 2014). The advantage of using secondary data for this study is that it saved time and money compared to studies that uses primary data collection (Sørensen, Sabroe, & Olsen, 1996). If conducted using primary data collection this study would have required travel to all five countries. Using data from Teleuse not only has saved time and money but also provided greater reliability. A significant number of researchers (Agüero, Silva, & Kang, 2011, p. 20; Lokanathan & Nilusha, 2012; Zainudeen & Ratnadiwakara, 2011; Zainudeen, Samarajiva, & Sivapragasam, 2011) have used this set of data in their research since Teleuse@BOP4 study has been proved reliable and effective. The data set is useful to this study because it asks many questions that attempt to measure the various use of mobiles phones and its services in different countries. Some other reasons why the Teleuse@BOP4 study is considered reliable are listed below. I received permission to use the data from LIRNEasia through email communication (R. S. Perera, personal communication, February 27, 2014). Teleuse@BOP4 study maintained consistency to enable comparisons by undertaking surveys in the same geographic regions (provinces, states) studied in 2005, 2006 and 2008. Each selected region’s urban and rural centers were randomly selected in the first time study in 2005. Within selected urban and rural centers, starting points were randomly selected with a fixed number of interviews conducted around each starting point. The amount of starting points selected from each centre was determined in proportion to the population of the selected centre. With the first household, the interviewer contacted one household member within the unit and recorded all the members

between 15 to 60 years old into a prepared Kish-grid. A Kish-grid is a method that supports a random selection among the members of the household (Kish, 1949; Smith, Chey, Jalaludin, Salkeld, & Capon, 1995). The grid records the name and age of the said household members and selects randomly the member of the household to be interviewed. If the selected member is not available, the interviewer makes an appointment to re-visit the house again. If the member is available, the survey begins with the screening section. If the selected member does not meet the intended criteria, the survey is closed and the respondent information is kept in the contact sheet. The interviewer then moves on to the next unit based on the pattern stated in earlier section. A turn-right (or left) ruling is administered in the event of reaching a junction/ end of the street.

The data is available in four waves: 2005 (Teleuse@BOP1), 2006 (Teleuse@BOP2), 2008-09 (Teleuse@BOP3) and 2011 (Teleuse@BOP4). Teleuse@BOP1 was conducted in India and Sri Lanka where total sample size was 3199 (LIRNEasia, 2006). Teleuse@BOP2 expanded across five countries in Asia, namely India, Pakistan, Philippines, Sri Lanka and Thailand where total sample size was 8600 (LIRNEasia, 2007). Teleuse@BOP3 focused on if and how mobile phones were being used for non-voice, or 'Mobile2.0' applications and was conducted in six countries in Asia, namely India, Pakistan, Bangladesh, Sri Lanka, the Philippines and Thailand where total sample size was 9750 (LIRNEasia, 2010). Teleuse@BOP4 was conducted in India, Pakistan, Bangladesh, Sri Lanka, Thailand, and most recently, Java (Indonesia), focused on the use of mobile phones for productive purposes where total sample was 9066 (LIRNEasia, 2012). In this paper I used only Teleuse@BOP4 as it covers most updated figures of the use of non-voice, or 'Mobile2.0' and it focused on the use of mobile phones for productive purposes, especially within the agriculture sector (LIRNEasia, 2012). The extensive survey and data collection have simplified and amalgamated nicely with this paper's research questions. By

establishing communication with the LIRNEasia team I have collected and examined their questionnaires and interview protocols and have permission to use their data.

Data processing

About Teleuse@BOP4 data

The Teleuse@BOP4 survey was conducted during the months of May-June in 2011 in the five countries namely Bangladesh, India, Pakistan, Sri Lanka and Thailand. It considered respondents at BOP level between the ages of 15 and 60 from both rural and urban settings. The study was conducted using quantitative and qualitative research methods among those who had used a telephone to make or receive at least one voice call in the three months prior to the survey (Silva, Ratnadiwakara, & Zainudeen, 2011; LIRNEasia, 2012). The Socio Economic Classification (SEC) groups D and E represented urban SEC and R2, R3, R4 represented rural SEC of BOP in this research. To define BOP, the SEC was based on the education and occupational status of the Chief Wage Earner of the household and ranges from A (top) to E (bottom) (Silva, Ratnadiwakara & Zainudeen, 2011). The BOP definition criteria used in each country was quite a big range (see Appendix A for more information) and the selection procedure was different across countries; because consumers' behavior in South and South East Asia vary in terms of ethnic origin, size of nations, population and their economic prospects (CKS-Consulting, 2009). The criteria used in Pakistan was based on occupation and education level of the head of the household for urban and education level of the chief wage earner and the type of house for rural areas. In India it was based on occupation and education level of the chief wage earner for rural and education level of the chief wage earner and type of house (wall & roof) for rural areas. For both Sri Lanka and Bangladesh the criteria were based on occupation and education level of the chief wage earner while in Thailand it was based on household income and education level of the chief wage earner.

The survey consisted of 9,066 face-to-face interviews among those who had used, but not necessarily owned a telephone in the previous three months. The study selected the target number of urban and rural centers by using a multi-stage stratified cluster sampling by probability proportionate to size (PPS). In multi-stage stratified cluster sampling regions (States / Provinces / Districts) were randomly selected. Regions (States / Provinces) to be covered were kept the same as in 2008 to enable comparisons. In this sampling process urban and rural centers were randomly selected within each selected region and within selected urban and rural centers, starting points were randomly selected with a fixed number of interviews conducted around each starting point. The amount of starting points selected from each centre was determined in proportion to the population of the selected centre. And with the first household, the interviewer contacted one household member within the unit and listed down all the members within 15 to 60 years. In each selected center, a common place such as a road, park, hospital etc. was designated the starting point for contacting households. Only one respondent was selected from each household using the KISH grid to be interviewed (Silva, Ratnadiwakara, & Zainudeen, 2011).

MTV users from Teleuse@BOP4 data

As mentioned previously the survey consisted of 9,066 face-to-face interviews among those who had used, but not necessarily owned a telephone in the previous three months. From the survey it was found that most of the sample were only voice service users. However, for the purposes of this study users who also used MTV services regardless of voice services were separated out. MTV is defined as any services provided by mobile phones except for voice service. From the questionnaire (see Appendix B for questionnaire: question 26) the interviewees were asked about the services they used. The services listed in the questionnaire were voice calls,

SMS to communicate with people, SMS to access banking and Payment Services (i.e. sending/receive money/credit to pay a payment or use banking services), SMS to access information services (i.e. Subscribed to information delivery of news, weather, health, government information), in-built application or mobile Internet to use banking or information services and never used a mobile phone. The sample size for MTV users is 1795, which is the sample size for this research. To identify the dependent and independent variables I considered responses based on the questions (see Appendix B for questionnaire: question 27).

Dependent and independent variables

The tables (Table 2 and Table 3) show how questions were grouped to measure the independent and dependent variables. The questions listed in the third column of both Table 2 and Table 3 is from Teleuse survey (see Appendix B for questionnaire: question 27). The respondents were given a SHOWCARD to answer how much they agree or disagree with these statements. The options were strongly disagree, disagree, neither agree or disagree, agree, strongly agree and N/A. The respondents were to choose the option that best express their view using the following scale:

1 = Strongly Disagree

2 = Disagree

3 = Neither Agree Nor Disagree

4 = Agree

5 = Strongly Agree

9 = N/A.

Table 2 <i>Independent variables with definition and the items considered for each variable</i>			
Sl.	Independent Variables	Definition	Questions (Items)
1	Perceived Usefulness (PU)	PU Is defined as the extent to which the user believed that using MTV services would fulfill the purpose	I find _____ to be useful in my life. Using _____ increases my chances of achieving things that are important to me. Using _____ helps me accomplish things more quickly. I find _____ gives me useful information.
2	Perceived Ease of Use (PEOU)	PEOU is the extent to which user believes that using MTV services is effortless.	I find _____ to be easy to use. I think learning how to use _____ is easy to me. My interaction with _____ is clear and understandable.
3	Social Influence (SI)	SI described the extent to which the user perceived that others approved of their MTV usage and users believed that most of their peers were using MTV services.	People who are close to me think that I should use. People who influence my behaviors think I should use. I use _____ because I want to use the same service people around me use. I use _____ because it is common to use in my community.
4	Facilitating Conditions (FC)	FC is defined as the extent to which the users believed that they had the resources necessary to use MTV services.	When I have problems in using _____, I can get help from my friends/family members. When I have problems in using _____, I can get help from the service providers or experts. I am confident of using _____ if I could ask someone for help if I got stuck.
5	Price value (PV)	PV is the extent to which the user is impacted of the cost and pricing of MTV services.	I think _____ is reasonably priced. I think _____ offers values for money.
Table 2 Items for each independent Variables			

Moderators

The moderator gender was tested using two variables: Male and Female. The Location had two variables as well, namely: urban and rural. To study if there is any difference in the use and adoption of MTV services at BOP level between Bangladesh and other countries, I have divided the Teleuse@BOP4 countries into Bangladesh and other four countries. The age span was 15-90 among the respondents. When I mention country in this study I am referring Bangladesh and rest of the 4 Teleuse@BOP4 countries. I have divided the respondents into two age groups where the first group is between ages 15 to 45 and second group is between ages 46 to 90. Age 45 was found as the median age of the ages reported in the survey. Median age is the number that is in the middle, with the same amount of numbers below and above where the age was arranged in value order from lowest to highest (Investopedia-US, 2014). Median seems to be mostly used the statistic compared to mean age when it comes to ages (Schrag, Cramer, Bach, & Begg, 2001; “Why is median age a better statistic than mean age?” 2012).

Table 3 <i>Dependent variables with definition and the items considered for each variable</i>			
Sl.	Dependent Variable	Definition	Questions (Items)
1	Behavioral Intention to use and adoption	Intention is the extent to which the user would like to reuse MTV services in future	I like the idea of using _____. I intend to use _____ in future. I expect that I would use _____ frequently in future.
Table 3 Items for each dependent Variables			

Handling missing, incomplete or erroneous data

The data collected from the teleuse@BOP4 were structured as closed questions where the interviewees were given a standard list of features or options to answer. At the same time throughout this research the LIRNEasia website was checked for any errors or updates. A larger number of missing values were identified from the data set. Due to the amount of missing data the location moderator (Urban and Rural) was unavailable for use in the data analysis stage. In addition, from the questionnaire and data set, it was not possible to identify the owner and non-owner of the mobile phone who used MTV services. Due to missing and incomplete data, both location and ownership moderators were not tested in this study (Burns & Bush, 2005). However, both moderators (location and ownership of mobile phone) were expected to be important constructs affecting MTV uses according to the previous literatures. Microsoft Excel was used to ensure the data were error free (Wilson, Hewitt, Thomas, Mohankumar, & Kovacs Burns, 2011). Empty cells were identified and corresponding rows were deleted in order to test data without any missing value. After discarding missing, incomplete and erroneous data there were total 1405 usable responses remaining; 78% of the response rate.

Analyses and results

The data were analyzed using International Business Machines Corporation's Statistical Package for the Social Science (IBM SPSS) software. Factor analysis, reliability, validity and the analysis of sample characteristics were conducted. In this section it has been described how dependent variables, independent variables and moderators were labeled. Then the validity testing followed by reliability testing of the sample data was discussed. Lastly, result of the analysis was explained.

Analysis begins by labeling data to reduce the quantity of information to be analyzed (Lewins & Silver, 2007). The five independent variables (perceived usefulness, perceived ease of use, social influence, price value and facilitating conditions) are labeled as PU, PEOU, SI, PV and FC respectively; the dependent variable, intention to use and adopt are labeled as ITUA. The items in the Table 2 and Table 3 were coded by attaching a numeric value after the label used for the dependent variable. For example PU1 will represent the item 'I find _____ to be useful in my life' of Perceived Usefulness (PU), PU2 will represent the item 'Using _____ increases my chances of achieving things that are important to me' of Perceived Usefulness (PU) and so on. All the items within the other independent variables (PEOU, SI, PV, FC) are similarly labeled. Likewise, the items within the dependent variable (ITUA) were coded. Moreover, the moderators Country, Gender and Age were labeled as CNTRY, GENDER and AGE respectively.

Factor analysis

Factor analysis is a statistical method used to test if multiple observed variables have similar patterns of responses because of their association with an underlying latent variable, the factor (Tucker & Lewis, 1973). In factor analysis, each factor captures a certain amount of the

overall variance in the observed variables and the factors that explain the least amount of variance are generally discarded (Rahn, 2008, para 2).

In this study, the data were initially analyzed using SPSS to identify relevant factors. Factor analysis results are illustrated in Table 4 and Table 5. Table 4 shows that the factor analysis resulted in five factors that measure the independent variables. A separate factor analysis was conducted for the dependent measure. Table 5 shows that the factor analysis resulted in one factor for the dependent variable. The relationship of each variable (for instances, PU1, PU2, PU3 and so on) to the underlying factor (PU, SI, PEOU, FC and PV) is expressed by the factor loading. In Table 4 the variable with the strongest association to the underlying latent variable, PU (Perceived Usefulness), is PU3 (Using _____ helps me accomplish things more quickly), with a factor loading of 0.791. It can also be said that the variable PU3 has a correlation of 0.791 with PU. This would be considered a strong association for a factor analysis in most research. Three other variables, PU2, PU1 and PU4, are also correlated with PU by 0.788, 0.754 and 0.649 respectively. Similarly, SI3, SI4 and SI2 are correlated with SI by 0.858, 0.825 and 0.722. Likewise all the variables are correlated with their respective PEOU, FC and PV. Based on the variables loading highly onto respective independent variables, it can be said that items loaded into factors as expected. In this research, variables such as perceived usefulness, perceived ease of use, social influence, price value and facilitating conditions could not be measured directly; this is why they are called latent variables (Loehlin, 1998). These variables can be measured by other 'quantifiable' variables (for example PU1, PU2, PU3, PU4, PEOU1, and so on), which reflect the underlying variables of interest. The Factor analysis attempted to explain the correlations between the observations in terms of the underlying factors.

Table 4 <i>Factor analysis for independent variables</i>					
Independent Variables					
	Rotated Component Matrix(a)				
			Component		
	PU	SI	PEOU	FC	PV
PU3: Using _____ helps me accomplish things more quickly	0.791				
PU2: Using _____ increases my chances of achieving things that are important to me	0.788				
PU1: I find _____ to be useful in my life	0.754				
PU4: I find _____ gives me useful information	0.649				
SI3: I use _____ because I want to use the same service people around me use		0.858			
SI4: I use _____ because it is common to use it in my community		0.825			
SI2: People who influence my behaviors think I should use _____		0.722			
PEOU2: I think learning how to use _____ is easy to me			0.826		
PEOU1: I find _____ to be easy to use			0.761		
PEOU3: My interaction with _____ is clear and understandable			0.671		
FC1: When I have problems in using _____, I can get help from my friends/family members				0.828	
FC2: When I have problems in using _____, I can get help from the service providers or experts				0.794	
FC3: I am confident of using _____ if I could ask someone for help if I got stuck				0.493	
PV1: I think _____ is reasonably priced					0.828
PV2: I think _____ offers values for money					0.794
Cronbach's alpha	0.858	0.806	0.829	0.666	0.850
Factor Mean	4.2761	4.2658	3.8782	3.9576	4.032
Factor Std. Deviation	0.7048	0.6848	0.8963	0.8065	0.9281
Extraction Method: Principal Component Analysis.					
Rotation Method: Varimax with Kaiser Normalization.					
a. Rotation converged in 6 iterations.					
Table 4 Factor analysis					

Reliability

The reliability of the factors was checked using Cronbach's alpha. In statistics Cronbach's α is a measure of internal consistency (Waldeck, 2014). Cronbach's alpha is the average of the correlation coefficient of each item with every other item (Waldeck, 2014). Alpha coefficient ranges in value from 0 to 1 and may be used to describe the reliability of factors extracted from questionnaires (Waldeck, 2014). The higher the score, the more reliable the generated scale. It has been indicated that 0.7 to be an acceptable reliability coefficient but lower thresholds (0.6) are also accepted in the exploratory work (Nunnally, 1978; Hsu & Lu, 2004).

Table 5 <i>Factor analysis for dependent variables</i>	
Dependent Variable	
Component Matrix(a)	
	Component
	ITUA
ITUA3: I expect that I would use _____ frequently in future	0.898
ITUA2: I intend to use _____ in future	0.879
ITUA1: I like the idea of using _____	0.84
Cronbach's alpha	0.843
Factor Mean	4.2644
Factor Std. Deviation	0.72846
Extraction Method: Principal Component Analysis.	
a. 1 component extracted.	
Table 5 Factor analysis	

In this research, A Cronbach's alpha of 0.65 or higher (Nunnally, 1978) was used as an acceptable value for internal consistency of the measures. The Cronbach's alpha of the dependent variable (intention to use and adopt MTV) is 0.843 (Table 5). The Cronbach's alpha for independent variables: PU, SI, PEOU, FC and PV ranged 0.858, 0.806, 0.829, 0.666 and 0.850 respectively (Table 4). These values support the statement that all the factors had adequate

reliability (Cronbach, 1951), though the 0.666 value is marginal but it is still acceptable (Nunnally, 1978).

Construct validity

The general concept of validity was traditionally defined as "the degree to which a test measures what it claims, or purports, to be measuring" (Brown, 1996, p.231). Construct validity is the experimental demonstration that a test is measuring the construct it claims to be measuring (Cronbach & Meehl, 1955). There are two aspects of construct validity proposed by Campbell and Fiske (1959): Convergent and Discriminant validity. Convergent validity is the degree to which multiple attempts to measure the same concept are in agreement which means there should be convergence between similar constructs (Bagozzi, Yi, & Phillips, 1991, p.425). Discriminant validity is the degree to which measures of different concepts are distinct which means there should be discrimination between dissimilar constructs (Bagozzi, Yi, & Phillips, 1991, p.425). Both aspects of construct validity work together: research can demonstrate the evidence for construct validity if it can prove the evidence of both convergent and discriminant validity (Trochim, 2005). The degree of validity between any two measures is estimated by correlation coefficient and this coefficient should be 'high' between similar measures and 'low' between dissimilar measures (Trochim, 2005). There is no fixed rule but the general rule is that convergent correlations need to be as high as possible and discriminant ones to be as low as possible (Bagozzi, Yi, & Phillips, 1991, p.427). Factors are considered to be convergent valid if all item-total correlations equal or exceed the recommended criterion of 0.40 and discriminant if less than 0.40 (Jayanti & Burns, 1998).

Table 6 <i>Convergent validity for dependent and independent variables</i>		
Convergent Validity	Item-Total Correlation	Cronbach's Alpha
Independent Measure		
PU: Perceived Usefulness		0.858
PU1: I find _____ to be useful in my life	0.723	
PU2: Using _____ increases my chances of achieving things that are important to me	0.733	
PU3: Using _____ helps me accomplish things more quickly	0.709	
PU4: I find _____ gives me useful information	0.648	
PEOU: Perceived Ease Of Use		
PEOU1: I find _____ to be easy to use	0.669	0.829
PEOU2: I think learning how to use _____ is easy to me	0.674	
PEOU3: My interaction with _____ is clear and understandable	0.619	
SI: Social Influence		
SI2: People who influence my behaviors think I should use _____.	0.618	0.806
SI3: I use _____ because I want to use the same service people around me use	0.748	
SI4: I use _____ because it is common to use it in my community	0.701	
FC: Facilitating Conditions		
FC1: When I have problems in using _____, I can get help from my friends/family members	0.545	0.666
FC2: When I have problems in using _____, I can get help from the service providers or experts	0.519	
FC3: I am confident of using _____ if I could ask someone for help if I got stuck	0.41	
PV: Price Value		
PV1: I think _____ is reasonably priced	0.739	0.850
PV2: I think _____ offers values for money	0.739	
Dependent Measure		
ITUA: Intention To Use and Adopt		0.843
ITUA1: I like the idea of using _____	0.657	
ITUA2: I intend to use _____ in future	0.719	
ITUA3: I expect that I would use _____ frequently in future	0.753	

Table 6 Convergent validity

Table 6 and Table 7 show the result from measuring the convergent and discriminant validity respectively. In the Table 6, the first column shows the independent and dependent variables (PU, PEOU, SI, FC, PV and ITUA) with their corresponding variables or factors (PU1, PU2,.....PEOU1,...SI1..., FC1,..PV1,..ITUA1,...and ITUA3). The second column shows the corresponding item-total correlation of a factor with rest of the factors within a variable. For example the value 0.723 is the correlation coefficient of PU1 with PU2, PU3 and PU4 that is higher than 0.4; this means PU1 has maintained the convergent validity with its other factors. In this way, the item–total correlations were examined to ensure that the factors have acceptable convergent validity. From Table 6 it can be seen that factors are maintaining adequate convergent validity as all items' total correlations equal or exceed the recommended criterion of 0.40 (Jayanti & Burns, 1998). Hence the result of this validity test supports the contention that the factors have adequate levels of convergent validity, i.e., the factors are empirically distinct.

To investigate whether the variables displayed adequate discriminant validity the across correlation coefficients are compared to the reliabilities (Cronbach's alpha value) of the variables (Gaski & Nevin, 1985). As mentioned in the Reliability section, all the independent variables exhibit good internal consistency since the Cronbach's alpha coefficients for the variable are acceptably high. In Table 7 diagonal entries are Cronbach's alpha coefficient and others are correlation coefficient. All correlations are significant at 0.01 levels. If the reliability of the construct is higher than the correlations between that construct and any other construct, the variable/ construct has an adequate level of discriminant validity (Gaski & Nevin, 1985; Hossain & Prybutok, 2008). In the Table 7, for example, the reliability of PEOU i.e., the value of Cronbach's alpha (which is 0.829) is higher than the correlation efficient between PEOU and PU

or PU and PEOU (which is 0.661). From the Table 7 it can be seen that in no case is the correlation between any variable and another as high as alpha coefficient. Hence, it is clear that the variables also have adequate levels of discriminant validity.

Table 7 <i>Discriminant validity for dependent and independent variables</i>					
Discriminant Validity					
Correlations					
	PU	PEOU	SI	FC	PV
PU	0.858				
PEOU	.661**	0.829			
SI	.465**	.445**	0.806		
FC	.520**	.422**	.348**	0.666	
PV	.518**	.498**	.542**	.418**	0.85
**. Correlation is significant at the 0.01 level (2-tailed).					
Table 7 Discriminant validity					

Result

In order to test the proposed hypotheses a multiple regression analysis method is employed. Regression Analysis is a statistical model for organizing data analysis. It is concerned with evaluating the relationship between a dependent variable and one or more independent variables. The analysis focuses on the explanation of a dependent variable (Y), as a function of multiple independent variables (from X1 to Xk) and thus helps one understand how the typical value of the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held fixed (Atkinson & Riani, 2000). In simple linear regression, the dependent variable is predicted from one independent variable and in multiple regressions the dependent variable is simultaneously predicted from two or more independent variables (Ezekiel & Fox, 1959). To identify the results between independent variable, moderators and dependent variable this research used multiple regression analysis. The regression analysis is performed in significant number of similar technology adoption researches (Hsu & Lu, 2004; Straub, Keil, & Brenner, 1997; Lee & Song, 2013).

The proposed research model (Figure 1) in this study had one dependent variable and five independent variables and three moderators. Summated scores of the respective factors were used to obtain the scores for both independent and dependent measures. For regression analysis, intention to use and adopt (ITUA) MTV services was used as dependent variable, and perceived usefulness (PU), perceived ease of use (PEOU), social influence (SI), price value (PV) and facilitating conditions (FC) as independent variables. The moderators in the Figure 1 such as country, gender and age together with their corresponding independent variables were also used as independent variables. In the regression analysis the independent variable used for moderators were PUxCNTRY, PUxGENDER, PUxAGE, PEOUxCNTRY, PEOUxGENDER, PEOUxAGE, SIxCNTRY, SIxGENDER, SIxAGE, PVxCNTRY, PVxGENDER, PVxAGE, FCxCNTRY, FCxGENDER and FCxAGE. The results of multiple regression analysis have been shown in Table 8.

In Table 8, the first column shows the name of the independent variables. The second column is the Standardized Beta Coefficient. Standardized coefficients or beta coefficients are used to compare the relative strength of the various predictors (variables) within the model (Shin & Johnson, 1978). The beta coefficients are all measured in standard deviations resulting from an analysis carried out on independent variables that have been standardized so that their variances are 1 (Jaccard, Wan, & Turrisi, 1990). The standardized beta coefficient of a variable can be calculated by subtracting its mean from each of its values and then dividing these new values by the standard deviation of the variable (Jaccard, Wan, & Turrisi, 1990). However in this study the result was collected from the computer test using SPSS. The interpretation of Standardized Beta Coefficient, for instance, the value of PU is 0.469 indicates that, for a unit increase in scores on PU (Perceived Usefulness), it is expected that scores on the ITUA (Intention to Use and Adopt

MTV) to increase by 0469 units, holding constant scores on rest of the variables. Similarly rest of the values can be interpreted with their corresponding variables. The third column in Table 8 show t-stat or t-statistic measures the likelihood that the actual value of the parameter is not zero. The t-statistic is used to test the hypothesis that the true value of the coefficient is non-zero, which confirms that the independent variables belong to the model; positive (+) and negative (-) value refers the direction of slope coefficients (Datar, Naik, & Radcliffe, 1998, p.210). The larger absolute value of t interprets the less chance that the actual value of the parameter could be zero. The fourth column represents the p-value, i.e., the probability of obtaining a test statistic. When the p-value is found to be less than a predetermined significance level, the study rejects the null hypothesis (Frost, 2013). The p-value gives the value that defines if the null hypothesis has any effect. A variable that has a low p-value is likely to be a meaningful addition to the model because changes in the variable's value are related to changes in the response variable (Montgomery, Peck, & Vining, 2012). Most scholars consider the p-value be less than 0.05 for a null hypothesis to be rejected i.e. the hypothesis is significant (Devore, 2011). SPSS calculates the t-statistic and its p-value under the assumption that t-statistics greater than 2 (or 1.96) in magnitudes, corresponding to p-values less than 0.05, the null hypothesis is then rejected and vice versa (Badescu, 2009). Therefore, from t-stat and p-value (column three and four of Table 8), the results of multiple regression analysis show that PU, PEOU, PV, PU x CNTRY and SI x CNTRY are significant predictors of intention to use and adopt MTV services. These findings support five hypotheses (H1, H2, H4, H1c and H3c). The results also show insufficient evidence for support of fifteen other hypotheses (H3, H5, H1a, H1b, H2a, H2b, H2c, H3a, H3b, H4a, H4b, H4c, H5a, H5b and H5c), suggesting that SI, FC, PUxGENDER, PUxAGE, PEOUxCNTRY, PEOUxGENDER, PEOUxAGE, SIxGENDER, SIxAGE, PVxCNTRY, PVxGENDER,

PVxAGE, FCxCNTRY, FCxGENDER and FCxAGE play insignificant roles in predicting the intention to use MTV services in the presence of the other variables. Column six of Table 8 gives the hypothesized effect of the resulted hypotheses. And the last column of the Table 8 shows if the predictors or variables are significant (yes) or not significant (no).

Predictors	Std. Beta Coeff.	t-Stat	p-Value	Hypothesis	Hypothesized Effect	Supported?
PU	0.469	7.66	0	H1	+	Yes
PEOU	0.236	4.048	0	H2	+	Yes
SI	-0.037	-0.686	0.493	H3	-	No
FC	0.073	1.457	0.145	H5	+	No
PV	0.148	2.532	0.011	H4	+	Yes
PUxCNTRY	-0.347	-3.247	0.001	H1c	-	Yes
PUxGENDER	-0.147	-0.895	0.371	H1a	-	No
PUxAGE	-0.042	-0.262	0.793	H1b	-	No
PEOUxCNTRY	0.161	1.504	0.133	H2c	+	No
PEOUxGENDER	-0.048	-0.304	0.761	H2a	-	No
PEOUxAGE	0.024	0.159	0.874	H2b	+	No
SIxCNTRY	0.218	2.883	0.004	H3c	+	Yes
SIxGENDER	0.088	0.8	0.424	H3a	+	No
SIxAGE	0.152	1.495	0.135	H3b	+	No
PVxCNTRY	-0.007	-0.1	0.921	H4c	+	No
PVxGENDER	0.056	0.467	0.64	H4a	+	No
PVxAGE	-0.141	-1.288	0.198	H4b	-	No
FCxCNTRY	-0.017	-0.213	0.831	H5c	-	No
FCxGENDER	0.045	0.384	0.701	H5a	+	No
FCxAGE	0.013	0.122	0.903	H5b	+	No

Table 8 Regression Table

Therefore from the result of the data analysis the significant hypotheses are listed below and the final model in Figure 2:

H1: Perceived Usefulness (PU) will have a positive effect on the intention to use the MTV services.

H2: Perceived ease of use (PEOU) will have a positive effect on the intention to use the MTV services.

H4: Pricing Value (PV) will have a positive effect on the intention to use the MTV services.

H1c: Perceived Usefulness (PU), moderated by country, will influence the usage of MTV services at BOP level, such that the effect is not stronger in Bangladesh than other Teleuse@BOP countries.

H3c: Social influence (SI), moderated by country, will influence the usage of MTV services at BOP level, such that the effect is stronger in Bangladesh than other Teleuse@BOP countries.

And the hypotheses that are not significant according to the result of the data analysis are:

H1a: Perceived Usefulness (PU), moderated by gender, will influence the usage of MTV services at BOP level, such that the effect is stronger for men.

H1b: Perceived Usefulness (PU), moderated by age, will influence the usage of MTV services at BOP level, such that the effect is stronger for younger.

H2a: Perceived ease of use (PEOU), moderated by gender, will influence the usage of MTV services at BOP level, such that the effect is stronger for women.

H2b: Perceived ease of use (PEOU), moderated by age, will influence the usage of MTV services at BOP level, such that the effect is stronger for older people.

H2c: Perceived ease of use (PEOU), moderated by country, will influence the usage of MTV services at BOP level, such that the effect is stronger in Bangladesh than other Teleuse@BOP countries.

H3: Social influence (SI) will have a positive effect on the intention to use the MTV services.

H3a: Social influence (SI), moderated by gender, will influence the usage of MTV services at BOP level, such that the effect is stronger for women.

H3b: Social influence (SI), moderated by age, will influence the usage of MTV services at BOP level, such that the effect is stronger for older people.

H4a: Pricing Value (PV), moderated by gender, will influence the usage of MTV services at BOP level, such that the effect is stronger for women.

H4b: Pricing Value (PV), moderated by age, will influence the usage of MTV services at BOP level, such that the effect is stronger for older people.

H4c: Pricing Value (PV), moderated by country, will influence the usage of MTV services at BOP level, such that the effect is stronger in Bangladesh than other Teleuse@BOP countries.

H5: Facilitating Conditions (FC) will have a positive effect on the intention to use the MTV services.

H5a: Facilitating Conditions (FC), moderated by gender, will influence the usage of MTV services at BOP level, such that the effect is stronger for women.

H5b: Facilitating Conditions (FC), moderated by age, will influence the usage of MTV services at BOP level, such that the effect is stronger for older people.

H5c: Pricing Value (PV), moderated by country, will influence the usage of MTV services at BOP level, such that the effect is stronger in Bangladesh than other Teleuse@BOP countries.

Lastly the hypotheses that could not be tested due to insufficient data are:

H1d: Perceived Usefulness (PU), moderated by location, will influence the usage of MTV services at BOP level, such that the effect is stronger in rural people.

H1e: Perceived Usefulness (PU), moderated by mobile phone ownership, will influence the usage of MTV services at BOP level, such that the effect is stronger for mobile phone owners.

H2d: Perceived ease of use (PEOU), moderated by location, will influence the usage of MTV services at BOP level, such that the effect is stronger for rural people.

H2e: Perceived ease of use (PEOU), moderated by mobile phone ownership, will influence the usage of MTV services at BOP level, such that the effect is stronger for mobile phone owners.

H3d: Social influence (SI), moderated by location, will influence the usage of MTV services at BOP level, such that the effect is stronger for rural people.

H3e: Social influence (SI), moderated by mobile phone ownership, will influence the usage of MTV services at BOP level, such that the effect is stronger for mobile phone owners.

H4d: Pricing Value (PV), moderated by location, will influence the usage of MTV services at BOP level, such that the effect is stronger for rural people.

H4e: Pricing Value (PV), moderated by mobile phone ownership, will influence the usage of MTV services at BOP level, such that the effect is stronger for mobile phone owners.

H5d: Facilitating Conditions (FC), moderated by location, will influence the usage of MTV services at BOP level, such that the effect is stronger for rural people.

H5e: Facilitating Conditions (FC), moderated by mobile phone ownership, will influence the usage of MTV services at BOP level, such that the effect is stronger for mobile phone owners.

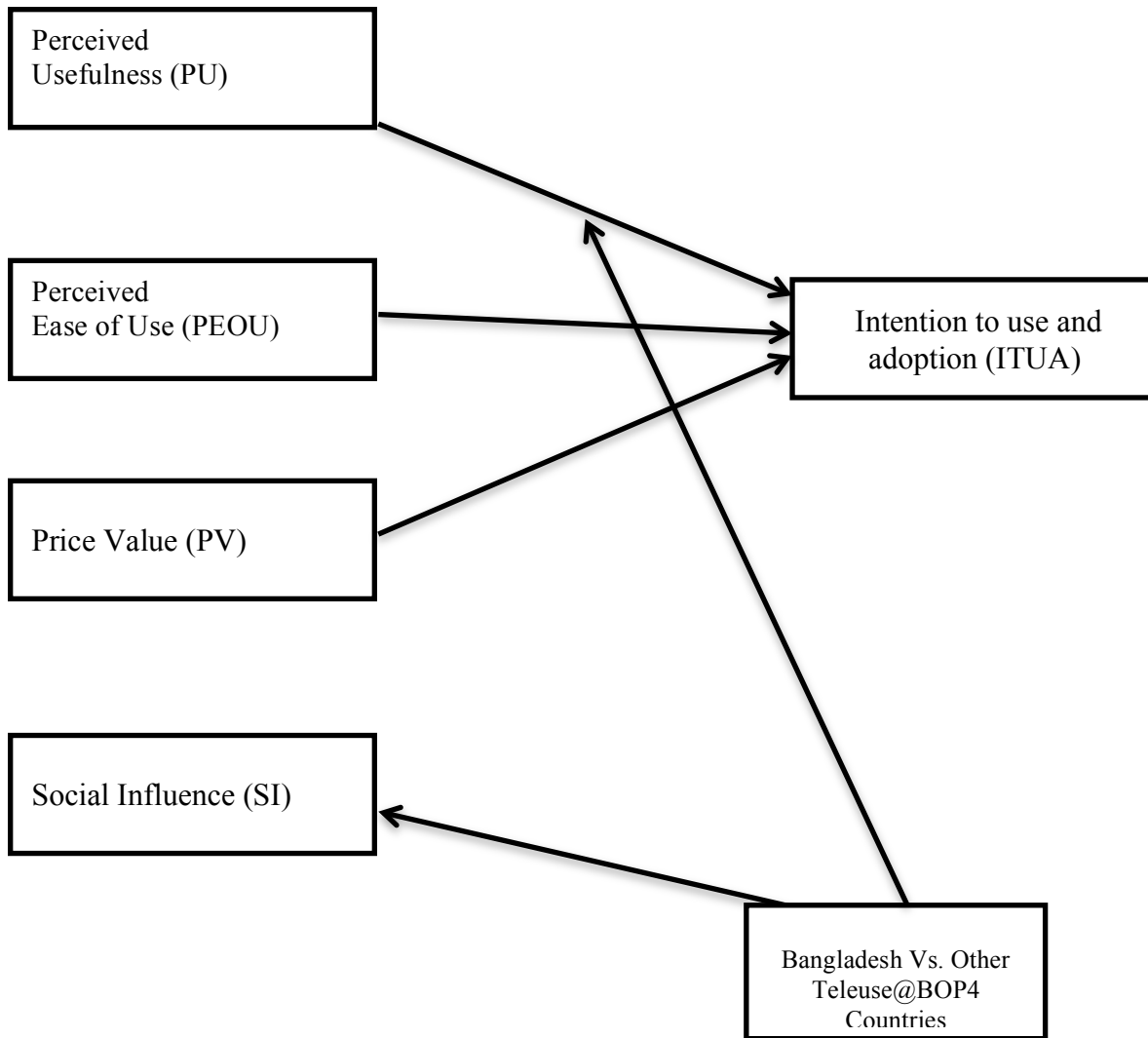


Figure 2. Proposed Model for use of MTV services at BOP level

Discussion and implication

The objective of this study was to explore the perception towards the adoption and use of more-than-voice (MTV) services of mobile phones at the BOP level in five countries specifically Bangladesh, India, Pakistan, Thailand and Sri Lanka. Then this study further investigated to see if there were any differences between Bangladesh and the other Teleuse@BOP4 countries. Further, any difference of perception in the adoption and use of MTV with different moderators such as age, gender, mobile phone ownership and location were identified. The findings suggest that perceived usefulness, perceived ease of use, and price value are significant in predicting the intention to use MTV services. The result further asserts that intention to the use of MTV services in Bangladesh is different than other Teleuse@BOP4 countries when PU and SI are considered. Unexpectedly, age and gender were found to be insignificant in predicting the intention to use MTV services. Based on the result of this study the Figure 2 asserts a final model of the intention to use and adoption of MTV services and its independent variables with moderators.

The findings suggest that perceived usefulness, perceived ease of use and pricing value are significant in predicting the intention to use and adopt MTV services at BOP countries (H1, H2, H4). This finding is consistent with considerable research on information technology acceptance (e.g., Zhang & Mao, 2008; Davis, 1989; Venkatesh, Thong, & Xu, 2012; Zhang & Mao, 2008). Another finding is that the influence of perceived usefulness (PU) of MTV services at BOP level is not as strong in Bangladesh as in Teleuse@BOP countries (H1c). Other significant results show that the effect of social influence of MTV services at BOP level is stronger in Bangladesh than in other Teleuse@BOP countries (H3c). However, contrary to the prior literature, the issue of social influence and facilitating conditions are found to be

insignificant in explaining the intention to use and adopt MTV services at BOP level (H3, H5). Similarly, gender and age, as moderators do not have any effect on all the independent variables such as: perceived usefulness, perceived ease of use, social influence, pricing value and facilitating condition (H1a, H1b, H2a, H2b, H3a, H3b, H4a, H4b, H5a and H5b). Likewise, country (Bangladesh Vs. other four Teleuse@BOP4 countries) as a moderator does not have any effect on three independent variables such as: perceived ease of use, pricing value and facilitating condition (H2c, H4c and H5c).

The effect of Perceived Usefulness (PU)

As hypothesized, perceived usefulness was found to have influence on the user's intention to accept MTV services at BOP level. From the result it has been established that perceived usefulness has a positive effect on the intention to use the MTV services. This implies that the higher the perceived usefulness of MTV services, the greater the consumer intention to use the services. Perceived usefulness, which taps into mobile phone users' subjective evaluations of the utility offered by MTV services, appears to be one of the most important factors in predicting behavioral intention to use and adopt. The results also validated various antecedents of perceived usefulness. The users think that the use of MTV services are really useful for their life, meaning that using the system will not only enhance their job performance (Kuo, Liu, & Ma, 2013) but also in all other aspects of life events (Kuo, Liu, & Ma, 2013). The consumers think that using the MTV services will increase the chances of achieving things that are important to them. For instance, users or adopters of MTV services are able to access local knowledge more readily and quickly (Sen, 2010, p.2). Some of the MTV services at BOP level are market information, community health service information, government services, agricultural information, social networking etc. (Zainudeen & Ratnadiwakara, 2011). This study confirms

that MTV services are a great source of information, which enables users to accomplish tasks more quickly, and thus increase efficiency in their lives.

The effect of country, age and gender on Perceived Usefulness (PU)

As hypothesized Perceived Usefulness (PU), moderated by country, will negatively influence the usage of MTV services at BOP level. This interprets that Bangladesh might not show similar effect of PU in MTV uses compare to other Teleuse@BOP4 countries. If any factor increases the perceived usefulness of MTV services in other Teleuse@BOP4 countries, that factor might not impact perceived usefulness in Bangladesh or vice-versa. For example, a Bangladeshi consumer believes, ‘using smart phone might help me to complete the work faster’. As per the results of this study another consumer within other Teleuse@BOP4 countries might not think same way. Therefore, users tend to use an MTV application or tool, or service in Bangladesh might not show similar behavioral intention by another user within other Teleuse@BOP4 countries or the other way around.

Contrary to the proposed hypothesis, this study found that there is no significance of age and gender moderators with Perceived Usefulness for the intention to use and adopt MTV service at BOP level. The finding supports the study done by Gupta et al. (2008). It can be interpreted that for male or female BOP mobile phone users of any age, the perceived usefulness of MTV services do not change or get affected on the intention to use.

The effect of Perceived Ease of Use (PEOU)

As hypothesized, perceived ease of use was found to have influence on the user’s intention to accept MTV services at BOP level. From the result it has been proven that perceived ease of use has a positive effect on the intention to use the MTV services. This implies that the higher the perceived ease of use of MTV services, the greater the consumer intention to use the

services. This result is in line with the research on the intention to use a technology (Davis, Bagozzi, & Warshaw, 1989). Perceived ease of use captures the cognitive effort that mobile phone users spend in dealing with MTV services, and its role in predicting behavioral intention is also evidenced. The less effort consumers believe they need to spend dealing with MTV services, the more likely they would be to use MTV services i.e., easier systems influence the users' sense of efficacy. Self-efficacy in using mobile phones was found to have a significant impact on how easy consumers perceive using MTV services to be. This finding indicated that the more capable an individual is of using a mobile phone, the more likely this person is to feel comfortable using MTV services delivered through the phone. Furthermore, the consumers also think that learning MTV services is easy for them and the services are easy to use since the interaction with the MTV services are clear and understandable.

At the BOP level the significance of perceived ease of use of MTV services is phenomenal as this is about very poor society. In developed countries any technological services like MTV services are created to meet the needs of society where in developing countries, technology influences society to go out of its comfort zone; adapt and accept the changing pace of technology (Islam & Grönlund, 2010; Leahy, 2010). In Bangladesh, CellBazaar is an exclusive provider of community-based, user-generated marketplace accessible through mobile phone (Zainudeen, Samarajiva, & Sivapragasam, 2011). Recently the name of CellBazaar has been changed to ekhanei.com (Rahman, 2014). The buying-selling process using this MTV services is simple; sellers can post, change or delete the listed good using their mobiles phone. Buyers, on the other hand can search for goods and services by price, brand, and location. CellBazaar works through SMS code and messages; to buy something one has to SMS 'buy' to 3838 and follow the instructions in the reply SMS. To sell, SMS 'sell' to 3838. One can also dial

3838 to get information on latest postings. Bangladeshi Currency BDT 2 (which is equivalent to CAD 0.0244) is charged for SMS to see the categories and follow the instructions (“CellBazaar: Mobile Phone Market,” 2010). This code can also be used to hear market postings through voice service, enabling users to browse by 13 categories dividing the country geographically into two parts: Dhaka and Outside Dhaka. The categories are Used, New, Job, Lifestyle, Industry, Agri-Retail, Agri-Wholesale, IT-Solution, Tutor, Vegetable, Real Estate, Pet, Service and To-let (“Ekhanei.com: The trusted choice for safe buying and selling in Bangladesh,” 2014). Once a buyer decides to purchase an item he uses the application to contact the seller by SMS or a direct phone call. Therefore the consumer who can only text is able to do m-commerce without even browsing the internet (Zainudeen, Samarajiva, & Sivapragasam, 2011). Similar phenomena have also been observed in developing countries in Africa, South Asia and rest of developing countries at BOP level (Ferris, Engoru, & Kaganzi, 2008; Leahy, 2010; Prahalad & Hammond, 2002). Therefore, the result of this study asserts that easier systems influence consumers to adopt MTV services by the poorest people in developing countries.

The effect of Country, age and Gender on PEOU

Contrary to the proposed hypothesis, this study found that there is no significance between Bangladesh and rest of the Teleuse@BOP countries on perceived ease of use of MTV services. This means that consumers’ sense of efficacy in all Teleuse@BOP4 countries is the same. The cognitive efforts that mobile phone users spend in dealing with MTV services are similar in all the studied countries. If a user in Bangladesh thinks that learning MTV services is easy, the same user in the context of other Teleuse@BOP4 countries will think the same. Hence, even though perceived ease of use is significant in the intention to use and adopt MTV services, it does not have different effects in different countries. Similarly, age and gender do not have any

significance in perceived ease of use of MTV services. Therefore all the users no matter male or female within any age group show similar cognitive effort in using MTV services.

The effect of Price Value (PV)

As hypothesized, the Pricing Value has a significant impact on the user's intention to accept MTV services at the BOP level. From the result it has been proven that cost and pricing structure of MTV services have a positive effect on the intention to use. This implies that the intention of using MTV services are influenced by the pricing structure and as such, price value has a positive impact on intention. This result supports the same contention with the research on the intention to use a technology (Venkatesh, Thong, & Xu, 2012).

The interpretation of this construct is that consumers will use MTV services if the services are reasonably priced and affordable. The use of mobile phone is increasing while their prices are decreasing in the least developed countries (ITU, 2011). Consumers also think that the services offered by the mobile phone companies truly offers value for their money. Mobile users in developing countries generally find SMS as their first text-based electronic communication tool. Some countries in South Asia such as Bangladesh, India, Pakistan, and Sri Lanka show a low fee for SMS. The services provided by the mobile phone operators in Bangladesh are low cost in many cases. One of the largest mobile phone operators in Bangladesh named Robi charges 0.50 BDT per SMS (Axiata, 2014), which is 0.0061 CAD. (Axiata, 2014); for 25 Megabyte of internet it is 25 BDT (Axiata, 2014a), which is 0.122 CAD. In India, for example one SMS costs Rs. 0.091 (Airtel, 2014), which is 0.0016 CAD. Hence, SMS is one of the most cost-effective ways to communicate to a wide population when compared to even a short call or voice message (Kang & Maity, 2012). Using the CellBazaar example, I showed how a poor person can buy or sell their products without any intermediaries and thus save a lot of money.

Hence, people at BOP level feels that most of the time the services offered within mobile phone is worth the money.

The effect of Country, age and Gender on PV

Contrary to the expectations of this study regarding Price Value of MTV services, the results show that there is no significance between Bangladesh and rest of the Teleuse@BOP4 countries. Similarly, age and gender do not appear as significant moderators with Price Value for the intention to use and adopt MTV service at BOP level. It can be interpreted that for the BOP mobile phone users in Teleuse@BOP countries of any ages no matter male or female, cost and pricing structure of MTV services have similar effect on the intention to use. Alternatively, in the last section it has been discussed that Price value has significance on the user's intention to accept MTV services at BOP level but the changes caused by Bangladesh or other Teleuse@BOP countries, age and/ or gender do not have any significance on those changes.

The effect of Social Influence (SI) and Facilitating Condition (FC)

Contrary to the proposed hypothesis, this study found that there is no significance in Social Influence to the intention to use and adopt MTV services at BOP level. This interprets that a consumer who is influenced by another person in other aspects will not use MTV service even though they get influenced to do so. Likewise, a consumer will not use MTV services even if people around him use it in his community. From the literature review it has been showed that social influence was found to be significant using Teleuse@BOP3 data and it was studied within all the mobile phone users. The paper by Silva et al. (2011) discussed the importance of social influence in mobile adoption at the bottom of the pyramid (BOP). They conducted a study using data from Teleuse@BOP3 survey in 2008 that was collected from Bangladesh, Pakistan, India, Sri Lanka, the Philippines and Thailand. Their results showed the likelihood of a respondent's

adoption of a mobile phone increases by 37% for each additional member in the network having adopted a phone. However, as discussed earlier this study is based on Teleuse@BOP4 data and focused only with MTV users. One possible explanation for the result of this study can be extrapolated from some studies where the authors claimed that privately consumed necessities are not socially relevant and are therefore not likely to be influenced by peers (Brinberg & Plimpton, 1986; Makgosa & Mohube, 2007). As noted earlier, mobile phones are regarded as an item of necessity even at BOP. Privately consumed necessities are defined as “neither observable nor exclusive because they are consumed out of public view and are used by everybody” and publicly consumed necessities is defined as “A public consumed necessity is a product that is observed when it is consumed and is also commonly owned.” (Makgosa & Mohube, 2007, p. 066). Since MTV services are not commonly owned, it can be said that MTV services are privately consumed necessities. Hence, it can be supportive to the result of this study that social influence has no significance to the intention to use and adopt MTV services.

Facilitating Conditions similarly do not have any significance to the intention to use and adopt MTV services according to the results of this study. This interprets that even if consumers think that they can get help from their friends and/ or family members when they are in a problem, will not influence to the intention to use MTV services at BOP level. In addition, if the consumers have the option to get help from the service providers or expert, their intention of using MTV services will not change. This study is contradictory to the notion that “an organizational and technical infrastructure exists to support use of the system” (Venkatesh, Brown, Maruping, & Bala, 2008, p.484). However, the interpretation of the result of this study can be seen in two ways. The first one is there is really no significance of facilitating conditions over the intention to use MTV services due to the nature of people from the BOP level; the

second one is the limitations (Venkatesh, Brown, Maruping, & Bala, 2008) of facilitating conditions which is the presence of incomplete information and/or uncertainty regarding a behavior (Ajzen, 1991). This limitation occurs when unforeseen events and impediments change the initial behavioral intention or when it involves imagining possible future events (Venkatesh, Maruping, & Brown, 2006).

The effect of Country, age and Gender on SI and FC

As hypothesized, the result shows that Social influence (SI), moderated by country influence the usage of MTV services at BOP level, such that the effect is stronger in Bangladesh than other Teleuse@BOP countries. This is an interesting and significant result as this study finds that Social Influence itself does not have any significance in intention to use and adopt MTV services. However, when country is added as a moderator it shows there is significance. This phenomenon reflects that Bangladesh is more affected by social influence than other Teleuse@BOP4 countries. Notably, this result is in line with the result of study done using Teleuse 2008 data (this study is based on Teleuse 2011 data) among the people who adopted mobile phone; Silva et al (2011) showed that Social Influence is “consistently significant and positive in all six country models, with the largest impacts coming in Bangladesh and Pakistan” (p.12). The authors claimed that influences on mobile phone adoption would be useful in understanding the adoption of “more-than-voice” services (Silva, Ratnadiwakara, & Zainudeen, 2011, p.13). In my study Bangladesh similarly shows larger impact on Social Influence in intention to use and adopt more-than-voice services. Since this study did not examine Pakistan, I cannot confirm this individual effect.

Contrary to the hypotheses of this study regarding Facilitating Conditions of MTV services, the results show that there is no significant difference between Bangladesh and rest of

the Teleuse@BOP countries. Similarly, age and gender do not appear as significant moderators with Social Influence and Facilitating Conditions for the intention to use and adopt MTV service at BOP level. It can be interpreted that for the BOP mobile phone users in Teleuse@BOP countries of any ages no matter male or female Facilitating Conditions of MTV services have similar effect on the intention to use. Since the results do not show any difference between men and women, based on the definition of social influence it can be said that both men and women think alike when it comes to the perception of how important others believe they should use the new system. Perhaps it may be that, at the BOP, other factors, such as perceived usefulness, perceived ease of use and pricing value are more important, and the consumers in the Teleuse@BOP countries studied are in fact similar and insignificant of age and gender at the BOP level. Likewise, the importance of incomes and socioeconomic statuses (Silva, Ratnadiwakara, & Zainudeen, 2011) at the BOP level could be another reason that make facilitating condition in Bangladesh similar and insignificant to other Teleuse@BOP countries, no matter of what the age or gender.

Why Bangladesh is Different

There can be many factors why there are differences between Bangladesh and the rest of the four countries in perceived usefulness and social influence. Culture and religion may play a part in this difference (David, 1977; Hofstede & Bond, 1988). Cultural factors influence purchasing behavior, including self-identity, and the suppression of emotion (Kacen & Lee, 2002; Khare, Pandey, & Bhardwaj, 2014). In addition, South Asia comprises of various religious groups: Bangladesh and Pakistan are predominantly Muslim, India Hindu, Thailand and Sri Lanka comprises of a Buddhist population (“Religions by country,” 2014). Consumer behavior varies within different religious groups (Mokhlis, 2010). Muslim consumers look into the price-

quality relationship of the products and services and will readily pay higher price for an item if they regard the quality is good related to its price (Mokhlis, 2010). This could be one of the reasons that Bangladesh is different from the other countries in perceived usefulness. In comparison, Buddhist consumers are more price conscious shoppers and Hindu shoppers are more neutral; Buddhist consumers look for best value for money and tend to choose products with lower prices (Mokhlis, 2010). Hindu consumers do not show any significant influence on value-for-money and price-quality relationship (Mokhlis, 2010). Briscoe, Trehwitt and C.J. (2011) found that price and cultural differences between countries play an active role in technology adoption. According to findings of some ICT4D literatures, culture, power, politics, ethics, values and conflict are some factors that may influence differences in technology adoption in various countries (Merritt, 2012). As a native from Bangladesh and from visits to some South Asian countries the results of the study makes sense to me. The people of Bangladesh trust others easily and also get influenced by people around them. While I was taking broadband internet connection, my friends influenced me to obtain it from a particular company. People of Bangladesh hardly do any research before purchasing a product or service; they rely heavily on recommendations from their friends and family. The result of this study that differences in adoption and use of MTV services between Bangladesh and the rest of the countries definitely resonates with my personal experience in Bangladesh.

Implications

This research presents a novel approach to the existing literature in information systems, communications and ICT for development research. First, it examines the behavioral intention of the mobile phone users who use more than voice (MTV) services in developing countries at the BOP level. This study fills the gap in our understanding of the role of mobile communication

beyond voice service used by the people who earn less than \$2/ per day. Second, in this study, it is proposed and supported that MTV services are technology driven due to the nature of how mobile phone works, and that the technology acceptance model predicts intention to use and adopt MTV services. This study extends the TAM model with UATUT and UTAU2 to examine if the intention to use and adopt of MTV services is different in other countries with Bangladesh. The finding provides new insights into studying MTV services in different developing countries. Third, this study contributes to current ICT4D research and practice in a number of ways by providing empirical evidence of MTV user behavior. Technology adoption is a key issue in ICT4D research, and as mobile phone users grow it is important to understand the behavior of MTV service users within the developing economic context. This study presents significant results on the MTV service users behavioral decision to use and adopt this technology service. The result shows that perceived usefulness, perceived ease of use and price value have effect on the use of MTV services. The result also added the knowledge of Social Influence to ICT4D literature that Bangladesh acts different than other different countries on intention to use MTV services. Another important insight gained from ICT4D research is that gender and age do not have any affect on using MTV service at BOP level.

The implications of this study to policy makers and business organizations are significant. Table 9 summarizes the key findings of this study and the policy or marketing implications that stem from the findings. Decision-makers can use the findings to help support their strategic management of the implementation of more MTV services such as SMS to access banking and payment services, SMS to access Information services, mobile based solutions for government services, health services, and so on. First, this study finds perceived usefulness effects positively among the MTV users in developing countries. Hence, if the users get more

services that provide more useful information and increases chance to accomplish tasks more quickly, there is more possibility that peoples' intention to use MTV services will increase. For example, in the survey the Teleusers were asked a question, "Could you tell me how many active mobile SIM cards/connections do you have in total that you regularly use?" (See Appendix B for questionnaire: question 10) and the result showed 564 out of total 9066 respondents used at least two connections. This is really a large number considering all the respondents earn less than \$2/day. The reason is not to gain social status, rather to get maximum benefits of using different connections offered by different mobile operators. The consumers will definitely go for any MTV service that seems to be useful in their life.

Secondly, perceived ease of use, according to this study has positive effects among the MTV user in developing countries, suggesting the decision makers must consider the efficacy of a new MTV service before they launch. The decision maker of the service provider should do a user research that will focus on the understanding user needs, behavior, technology knowledge, technical skill and capability. MTV services should be developed in such a way so that the services would be easy to use and consumers do not find any technical difficulty of using the services. One successful story in Bangladesh is Grameenphone's (largest telecom operator) health line service that was launched in 2006. As of December 2009, the company had provided 5.6 million people with free health care services for mothers and infants and (Hossain & Beresford, 2012).

Thirdly, this study suggests that pricing structure has a positive effect on intention to use MTV services government. Service providers should try offering more inexpensive MTV services. Lowering the price or at least keeping the price unchanged would optimize the use of MTV services. Recently Bangladesh has proposed a new tax on SIM replacements and 5 per cent

value-added tax increased on the mobile handset import (Correspondent, 2014). Policy makers should take this type of decisions more cautiously as any increase of tax would ultimately fall upon the consumers and the consumers might reduce the use of MTV services if they found them expensive.

<p>Table 9 <i>Concise summary of findings relate to the implications</i></p>	
<p>Perceived Usefulness (PU)</p>	
<p>Perceived usefulness has a positive effect on the intention to use MTV services. This implies that the higher the perceived usefulness of MTV services, the greater the consumer intention to use the services. Therefore, services that increase a user’s ability to accomplish tasks more effectively will increase the intention to use MTV services.</p>	<p>MTV services should address the direct and visible benefits relating to the consumers at BOP’s everyday needs and activities.</p> <p>Introduce practical services such as SMS banking and payment services, SMS information services, mobile based solutions for government services and health services.</p>
<p>Perceived Ease of Use (PEOU)</p>	
<p>Perceived ease of use was found to have influence on the user’s intention to accept MTV services at BOP level. The higher the perceived ease of use of MTV services, the greater the consumer intention to use the services.</p>	<p>Decision makers must consider the efficacy of a new MTV service before they launch. User research should focus on understanding user needs, behavior, technical knowledge, technical skill and capacity.</p> <p>MTV services should be developed in such a way that the services are easy to use with minimal technical knowledge.</p>
<p>Price Value (PV)</p>	
<p>The intention of using MTV services are influenced by the monetary cost and pricing structure has a positive effect on intention to use MTV services.</p>	<p>Service providers should focus on inexpensive MTV services – especially at the BOP level. Lowering the price or at least keeping the price unchanged would optimize the use of MTV services.</p> <p>This information could be used to influence and inform regulatory bodies with respect to the negative impact of raising taxation or user fees. Lower costs would result in higher usage, generating greater returns by volume.</p>

Unique to Bangladesh	
<p>Bangladesh acts different than other different countries on intention to use MTV services. Bangladesh shows different and significant relationships with other studied developing countries in perceived usefulness and social influence.</p> <p>When moderated by country the effect of Social influence (SI) is stronger in Bangladesh than other Teleuse@BOP4 countries.</p> <p>If any factor increases the perceived usefulness of MTV services in other Teleuse@BOP4 countries, that factor might not impact similar in Bangladesh or vice-versa</p>	<p>MTV providers can fine tune services relative to the factors that have greater influence within Bangladesh. Peer group influence, word of mouth, social acceptance can encourage consumers to greater usage in Bangladesh.</p> <p>Advertising and branding within Bangladesh should be designed to encourage consumers to refer friends and family and others in their network. These campaigns should be equally effective across genders.</p> <p>MTV service providers should initiate more market and user research to determine the exact disparities of perceived usefulness to the consumers in Bangladesh and other countries.</p>
Table 9 Summary	

Finally, the most important implication of the findings of this study is Bangladesh show different and significant relationships with other studied developing countries in Perceived Usefulness and Social Influence. The relationship is negative for Perceived Usefulness and positive for Social Influence. Policy makers and business organizations can utilize this result to maximize their efficiency. They can include policies that influence the use of MTV services between consumers and their peers. Peer group influence, word of mouth, social acceptance can encourage consumers to follow those policies. For example, the government in Bangladesh has been trying to encourage all mobile consumers to register their phone numbers (Ullah, 2012). But very few consumers want follow this policy. The government can provide incentives such as lowing registration fees if the consumers refer relatives or friends to complete registration. Social influence can play a crucial role in the decision making process of the business as well. Commercials can be designed encouraging consumers to refer friends and family and thus getting some referral bonus. They can also give more incentives such as free talk time and text

messaging options to friends. The international telecom operators could consider one important aspect of this result. Telenor, for example, owns the maximum share of the largest telecom in Bangladesh (known as Grameenphone), also has huge operations in India, Pakistan, Thailand, Sri Lanka and so on (Telenor, 2014). Similarly, Airtel, one of the largest in India, also has operations in Bangladesh, Sri Lanka and Africa (“Bharti Airtel,” 2014). While taking any unanimous decision for all the serving countries, these multinational companies may consider the disparities of perceived usefulness and social influence among the countries. However, it has already been observed that the style of commercials, website, logo, promotional packages, price rates for voice, SMS, Internet and etc. are not same in those countries. These companies should be more cautious about perceived usefulness as this is negatively significant between Bangladesh and other studied developed countries. In some case, perceived usefulness in Bangladesh might not be much stronger than other countries. The decision makers of MTV service providers should initiate more market and user research to find out the exact disparities of perceived usefulness to the consumers in Bangladesh and other countries. Similar to mobile phone operators, the mobile phone vendors such as Nokia, Ericsson, Huawei, Siemens etc., contractors, dealers, agencies may consider the implications of these results.

The findings of this study and its implications take us to the point where both MTV service providers and MTV service users can be benefitted from the utility of the MTV services. To reach that point, the process of the MTV services design artifact should address the direct and visible benefits relating to the consumers at BOP’s everyday needs and activities.

Limitations and future research

The present ICT4D study consists of four integrated traits: people, process, technology and contexts, more precisely for my study, consumers, MTV services and use, mobile technology and BOP respectively. This research contributes to the emerging ICT4D research trend by applying TAM, UTAUT and UTAUT2 to see the use and adoption of MTV services at the BOP level in developing countries. This study acknowledges any limitations as well as call for future research in the area of MTV services.

MTV definition

As previously mentioned this study has been developed based on secondary data and questionnaire. Hence, I was limited in my ability to add, change or manipulate any data or any part of the questionnaire. The services I considered as MTV services were the services listed only in the questionnaire such as SMS to communicate with people, SMS to access banking and Payment Services (i.e. sending/receive money/credit to pay a payment or use banking services), SMS to access information services (i.e. subscribed to information delivery of news, weather, health, government information), in-built application or mobile internet to use banking or information services and never used a mobile phone. If I had the opportunity I would have added more MTV services related to social networking, games, educational apps, etc. However, the services that were added to the questionnaire were very relevant to the consumers at BOP. Future research should include the latest and popular MTV services in the questionnaire so that all MTV users can be identified.

Moderators

One of the notable limitations in this study is the absence of supporting data for location and ownership of mobile phone. In the literature section I have provided ample references of the importance of these two moderators in the use of ICT. My proposed model predicted that they might have an effect on the intention to use and adopt MTV services at BOP level. But due to missing and invalid data this research was not able to consider location and ownership as moderators. This does not imply that these two moderators are any less important to the study of the use of MTV services. Further research should consider these moderators so that H1d, H1e, H2d, H2e, H3d, H3e, H4d, H4e, H5d, H5e hypotheses could be examined.

Actual use

The second limitation of this study is that the result shows the behavioral *intention* to use and adopt MTV services not the *actual* use of MTV services. Behavioral intention might not always lead to actual behavior (Wegner & Wheatley, 1999). However, according to the theory of reasoned action (TRA), if people show positive intention to use a system, they are more likely to do so (Ajzen & Fishbein, 1977). Also another research examined 79 relevant empirical studies in 73 articles and showed that the behavioral intention was likely to be correlated with actual usages (Turner, Kitchenham, Brereton, Charters, & Budgen, 2010). The future study may be done to compare intention to use MTV services versus actual use of MTV services.

Country and culture

One of the major areas of this research is to see if there is any difference in the use of MTV services between Bangladesh and other developing countries. The result reveals the intention to use and adopt MTV services in Bangladesh is different than other studied developing countries in terms of perceived usefulness and social influence, in all other cases it is similar.

This outcome adds more knowledge into the ICT4D literatures. Moreover, the stakeholders of mobile phone operators could consider this knowledge at the time of designing or redesigning MTV services. Future research is needed to ascertain whether the other countries such as India, Pakistan, Sri Lanka and Thailand individually have any differences with rest of the 4 countries. For example, one study can look to see if Sri Lanka has any differences in using MTV services with other developing countries. Similarly, culture inspired some authors (Irani & Dourish, 2009) who believe that it plays a role in terms of adoption, use and design of ICT. Hence, further study is suggested to see if culture plays a role in the adoption of MTV services.

Conclusion

MTV services are used globally and have become a keen area of research in the ICT field. I have explored in this study how intention to use MTV services differs in Bangladesh and four other developing countries. From a considerable amount of ICT4D literature I found very few studies on the intention to use MTV services. So the literature review was on a broad spectrum of articles. I utilized data from the large scale Teleuse survey that provides a good foundation for this study. The most intense part of this research has been data analyses. I developed and tested a model to see how perceived usefulness, perceived ease of use, social influence, price value and facilitating conditions affected country, age, gender, location and ownership. Among these variables and moderators, some missing data posed a challenge to get any relationship with ownership and location. However, the other data strongly showed consistent results with previous literatures and their findings. The result shows that i) Bangladesh is different than other developing countries when perceived usefulness and social influence are considered; Perceived usefulness has negative and social influence has positive impact for Bangladesh with other countries. ii) perceived usefulness, perceived ease of use and price value

have effect, iii) age and gender do not have any effect on the intention to use and adopt MTV services. This study is the first in the MTV literature to utilize and contextualize the TAM, UTAUT and UTAUT2 for explaining the use and adoption of MTV services at the BOP level in developing countries

Lastly, I submitted limitations of my study and areas of future research. Despite having limitations, this study has contributed to the ICT4D literature because it is one of the first attempts to see if there is any difference of the behavioral intention between Bangladesh and other developing countries by examining the consumers' behavioral intention to use and adopt MTV services at BOP level.

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Appendix A

BOP Definition criteria used in each country

Household Segment

- Pakistan SEC D & E,

Urban on based on occupation and education level of the head of the household

Rural on based on education level of the head of the household & type of House

- India SEC D & E,

Urban on based on occupation and education level of the chief wage earner

Rural on based on education level of the chief wage earner & type of House (wall & roof)

SEC D & E in urban areas and R3 and R4 in rural areas

- Sri Lanka: SEC D & E, based on occupation and education level of the chief wage earner
- Bangladesh: SEC D & E, based on occupation and education level of the chief wage earner
- Thailand: Household income & location viz. Urban / rural / Greater Bangkok

Growers Segment

The grower segment was a new component in the 2011 study and their teleuse habits and attitudes were captured via a face-to-face interview. For detailed definition of this segment please refer earlier slide

Non-growers segment

The non-grower segment was also a new component in the 2011 study and their teleuse habits and attitudes were also captured via a face to face interview. These were belonging to SEC B, C, D and E households

Back Checked [Executive]	1	2									[49]
Back Checked [Manager]	1	2									
Accompanied[Supervi sor]	1	2									[50]
Accompanied[Executi ve]	1	2									
Accompanied[Manag er]	1	2									
Open ended questions translated	1	2	NA 3								[51]
Open ended translation checked	1	2	NA 3								
Name of Supervisor					Sup. No.						[52- 54]
Name of Interviewer					Int. No.						[55- 57]
Date of Interview [DD/MM/YY]											[58- 63]
Starting time					[64- 67]	Ending Time					[68- 71]
	Random	1				Booster	2				[72]

FOR TABULATION											
	Yes	No	Name	Sign	Date						
Scrutinized [Tabulation Supervisor]	1	2									[73]
Name of Scrutinizer- Tabulation				Scrutinizer No.							[74-76]
Initials of the Coders- [Open ended]											

Good..... I am from _____, a leading market research agency in _____. We regularly conduct surveys and opinion polls on various subjects. We are currently carrying out one such survey in your _____ among consumers like yourself, to better understand the use of telecom. .

All the information given by you will be kept totally confidential. This information will be clubbed with information from other people engaged in farming, for statistical purposes only. There are no obvious physical, legal, or economic risks associated with participating in this study because your information will not used in an identifiable manner.

Participation in this survey is voluntary and if you choose to withdraw, you may withdraw at any time. However, we hope that you will take part in this survey since your participation is

important.

We would indeed be grateful if you could spare us some of your valuable time in answering these questions. The interview would not take more than 45 to 60 minutes of your time. THANK YOU.

			n					general	profession al
CWE – occupation code ↓		1	2	3	4	5	6	7	8
Unskilled workers	1	E2	E2	E2	E1	D	D	D	D
Skilled workers	2	E2	E1	E1	D	C	C	B2	B2
Petty traders	3	E2	D	D	D	C	C	B2	B2
Shop owners	4	D	D	D	C	B2	B1	A2	A2
Businessmen/industrialists with number of employees:									
- None	5	D	C	C	B2	B1	A2	A2	A1
- 1 – 9	6	C	B2	B2	B2	B1	A2	A1	A1
- 10+	7	B1	B1	B1	A2	A2	A1	A1	A1
Self employed professional	8	D	D	D	D	B2	B1	A2	A1
Clerical/salesman	9	D	D	D	D	C	B2	B1	B1
Supervisory level	A	D	D	D	C	C	B2	B1	A2
Officers/executives-junior	B	C	C	C	C	B2	B1	A2	A2
Officers/executives-middle/senior	C	B1	B1	B1	B1	B1	A2	A1	A1

RECORD SEC HERE

IF IT IS A URBAN CENTER, CONTINUE INTERVIEW ONLY IF RESPONDENT BELONGS TO SEC 'D' OR 'E' HOUSEHOLD, ELSE THANK AND TERMINATE. IF URBAN CENTER SKIP Q1C & Q1D

Q1C. Could you please tell me the education of the Chief Wage Earner? By Chief Wage Earner, I mean the person in the house who makes the highest contribution towards household expenses. **[RECORD VERBATIM AND POST CODE IN GRID BELOW]**

RECORD VERBATIM THE EDUCATION OF THE CWE:

EDUCATION	
Illiterate	1
Literate but no formal school	2
Up to 4th std.	3
5th to 9th std.	4
S.S.C / H.S.C.	5
Some college but not graduate	6
Graduate / Post Graduate (General)	7
Graduate / Post Graduate (Professional)	8

Q1D. Could you please look at the grid below and tell me which of these options best describe your house. **SINGLE CODE**

TYPE OF HOUSE	Code
Pucca house: Both roof and walls are made of Pucca materials.	1
Semi-pucca house: Either roof or walls are made of Pucca materials and the other of Kuchha materials.	2
Kuchha house: Both roof and walls are made of Kuchha materials.	3

USE Q1C & Q1D, TO CIRCLE THE APPROPRIATE CODE IN THE SEC GRID BELOW BASED ON THE EDUCATION AND TYPE OF HOUSE.

EDUCATION		TYPE OF HOUSE		
		Pucca (1)	Semi Pucca (2)	Kuchha (3)
Illiterate	1	R4	R4	R4
Literate but no formal school	2	R3	R4	R4
Up to 4th std.	3	R3	R3	R4
5th to 9th std.	4	R3	R3	R4
S.S.C / H.S.C.	5	R2	R3	R3
Some college but not graduate	6	R1	R2	R3
Graduate / Post Graduate (General)	7	R1	R2	R3
Graduate / Post Graduate (Professional)	8	R1	R2	R3

RECORD Rural SEC here		
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IF IT IS A RURAL CENTER, CONTINUE INTERVIEW ONLY IF RESPONDENT BELONGS TO SEC R1/R2/R3/R4, ELSE THANK AND TERMINATE

INTERVIEWER TO SAY

We are conducting this survey among individuals who are between the ages of 15- 60 years. In order to select an individual from your household for this survey, please tell me the name and age of all those who are between 15- 60 in your household.

KISH GRID - ALL MEMBERS OF A HOUSEHOLD AGED 15- 60YEARS WILL BE INCLUDED AND A RESPONDENT WILL BE SELECTED THROUGH THE KISH GRID.

INT: LIST DOWN NAMES AND AGE OF MEMBERS OF THE HOUSEHOLD. START LISTING FROM THE ELDEST TO YOUNGEST MEMBER IN THE HOUSEHOLD WITH IN REQUIRED AGE GROUP.

TAKE THE LAST DIGIT OF THE QUESTIONNAIRE NUMBER AND THE TOTAL NO

**OF THE FAMILY MEMBERS IN THE HOUSE HOLD.
REFER TO THE KISH GRID GIVEN BELOW. THE FIRST COLUMN INDICATES THE TOTAL NO OF FAMILY MEMBERS. CIRCLE THE NO. THE COLUMN ON THE RIGHT IS WHERE THE LAST DIGIT OF THE QUESTIONNAIRE NO SHOULD BE CIRCLED.
IDENTIFY THE INTERSECTION OF THE TWO CIRCLED NUMBERS. THE NO IN THE INTERSECTING CELL SHOULD BE REFERED BACK TO THE NAME LIST. INDIVIDUAL BELONGING TO THE INTERSECTING CELL NO IS THE SELECTED RESPONDENT.**

No. of person Aged	Take Last Digit of Household No.									
	0	1	2	3	4	5	6	7	8	9
1	1	1	1	1	1	1	1	1	1	1
2	1	2	1	2	1	2	1	2	1	2
3	3	1	2	3	1	2	3	1	2	3
4	1	2	3	4	1	2	3	4	1	2
5	4	5	1	2	3	4	5	1	2	3
6	2	3	4	5	6	1	2	3	4	5
7	1	2	3	4	5	6	7	1	2	3
8	7	8	1	2	3	4	5	6	7	8
9	6	7	8	9	1	2	3	4	5	6
10	7	8	9	10	1	2	3	4	5	6
11	2	3	4	5	6	7	8	9	10	11
12	4	5	6	7	8	9	10	11	12	1
13	7	8	9	10	11	12	13	1	2	3
14	11	12	13	14	1	2	3	4	5	6
15	6	7	8	9	10	11	12	13	14	15
16	12	13	14	15	16	1	2	3	4	5
17	8	9	10	11	12	13	14	15	16	17
18	16	17	18	1	2	3	4	5	6	7
19	10	11	12	13	14	15	16	17	18	19
20	20	1	2	3	4	5	6	7	8	9

THE SELECTED RESPONDENT WILL NEED TO ANSWER FROM HERE ONWARDS. IF RESPONDENT IS NOT AVAILABLE THEN FIX AN APPOINTMENT AND REVISIT.

INTERVIEWER TO REVISIT THE HOUSE ATLEAST THRICE BEFORE TERMINATING THE HOUSE ON THE NON AVAILABILITY OF THE RESPONDENT

ASK ALL

Q1E. Please tell me your primary occupation? *By primary occupation I mean the one that is the main source of income or contributes the most to your overall income.* [SC]

OCCUPATION		Code
Unskilled worker/labour		01
Skilled worker		02
Petty trader		03
Shop owner		04
Businessman/Industrialist with number of employees	None	05
	1 – 9	06
	10+	07
Self employed		08
Clerk/Salesman		09
Supervisory level		10
Officer/Executive-Junior		11
Officer/Executive-middle/Senior		12
Owner farmer		13
Leased farmer		14
Agricultural worker		15
Owner of livestock		16
Owner of fisheries		17

- Q2. Have you used any mode of telecommunication during the past 3 months to take or receive a telephone call? Access need not be through your own phone but can be through a neighbour's phone, a friend's phone, a communication booth or any other. It also need not be paid for. [SC]

Yes	1	CONTINUE
No	2	TERMINATE

ASK Q3 ONLY IF CODED '1' IN Q2, ELSE TERMINATE

- Q3. **SHOWCARD** When did you last use a phone to take or receive a call? It could be through your own phone, a neighbour's phone, a friend's phone, communication booth or any other. It also need not be paid for. [SC]

Today / Yesterday	1	CONTINUE	
During the last one week	2		
Between 1-2 weeks ago	3		
Between 2-3 weeks ago	4		
Between three to four weeks ago	5		
Between 1-2 months ago	6		
Between 2-3 months ago	7		
More than 3 months ago	8	TERMINATE	
Can't Remember	9		

ASK Q4 ONLY IF CODED '1' TO '7' IN Q3. ELSE TERMINATE.

- Q4a. **SHOW CARD & READ OUT RESPONSES.**

Please look at this card and tell me which of these methods have you used either to take

or receive a call during the past three months? You can select more than one response.
[MC]

ASK Q4b FOR EACH METHOD MENTIONED IN Q4a

Q4b. Please tell me if each of these methods were through a fixed line or through a mobile phone? [MC]

ASK Q4c FROM RESPONDENTS WHO HAVE MENTIONED MORE THAN ONE METHOD IN Q4a.

IF RESPONDENT USES ONLY ONE METHOD THEN DO NOT ASK FOR MOST USED METHOD BUT CODE THE SAME AND GO TO Q4d.

Q4c. Out of the modes that you have mentioned, please tell me what is the most frequently used method to take or receive calls in the past three months? [SC]

Q4d. Is your most used method through a fixed line or mobile? [SC]

	Q4a	Q4b (MC)		Q4c (SC)	Q4d (SC)	
	Methods used	Fixed	Mobile	Most used method	Fixed	Mobile
I use my own phone	01	1	2	01	1	2
I use the household (common) phone	02	1	2	02	1	2
Public access phones (E.g. Public pay phone booths, telecommunication centers/ nearby shop, public call offices, private pay phone booths)	03	1	2	03	1	2
A friend's or relative's phone (who is not a neighbour)	04	1	2	04	1	2
A neighbour's phone (can include friend or relative)	05	1	2	05	1	2
My work place / Office phone/employer's phone	06	1	2	06	1	2
Other household member's personal phone	07	1	2	07	1	2

ASK Q5 & Q6 ONLY TO THOSE WHO HAVE A HOUSEHOLD PHONE I.E CODED '02' IN Q4a AND '1' IN Q4b. ELSE GO TO Q7

Q5. You mentioned that your household has a landline (fixed) phone connection; please tell me how many such connections you have in your house?

--	--

IF RESPONDENT HAS MORE THAN ONE FIXED LANDLINE CONNECTION I.E. CODED MORE THAN 1 IN Q5. THEN SAY

You said you have__ (READ AS CODED IN Q5) fixed landline connections. Now, I would be asking a few

Questions regarding your primary fixed landline connection. By primary fixed landline connection I mean the connection which is used most often for making or receiving calls by your household.

Q6a. Please tell me if the primary fixed landline connection in your household is a wireless line or a wired line? By primary fixed landline connection I mean the connection which is used most often for making or receiving calls by your household. [SC]

Wireless	1
Wired	2
Don't know	9

Q6b. Please tell me if the primary fixed landline connection in your household is a prepaid/cash card connection or a postpaid/billing one? By primary fixed landline connection I mean the connection which is used most often for making or receiving calls by your household. [SC]

Prepaid	1
Postpaid	2
Don't know	9

ASK Q7 TO Q11 ONLY TO THOSE WHO HAVE THEIR OWN MOBILE PHONE I.E CODED '01' IN Q4a AND '2' IN Q4b.

Q7. How long has it been since you got your first mobile phone connection? **INT: IF LESS THAN ONE YEAR PLEASE MARK "0" IN EACH CELL FOR YEAR AND RECORD NO OF MONTHS.**

Number of months			
------------------	--	--	--

Example: If 3 years,

0	3	6
---	---	---

 enter as

INTERVIEWER TO SAY

You said you own a mobile phone. Now, I would be asking you a few questions regarding your primary mobile connection. By primary mobile connection I mean the mobile connection which you use most often for making or receiving calls, if you own more than one mobile

Q8. Please tell me whether your primary mobile connection is a prepaid/cash card connection or a postpaid/billing one? [SC]

(INT: IF MORE THAN ONE CONNECTION ASK FOR MAIN CONNECTION THAT RESPONDENT IS USING MORE OFTEN)

Pre Paid / Cash card	1
Post Paid / Billing card	2
Don't know	9

Q9. Can you please tell me who is the main mobile telecommunication service provider that you are using at present for your primary mobile connection? [SC]. **(INT: IF MORE THAN ONE CONNECTION ASK FOR MAIN CONNECTION THAT RESPONDENT IS USING MORE OFTEN)**

GrameenPhone	01	Warid	21
AKTEL	02	UFone	22
BanglaLink	03	Insta Phone	23
CityCell	04	Zong (China Mobile)	24
TeleTalk	05	Talk n' Text	25
Warid Telecom	06	Touch Mobile	26
Bharti Airtel	07	Dialog Telekom	27
Reliance Mobile	08	Mobitel	28
Vodafone /Hutch/Orange	09	Tigo	29
BSNL	10	Hutch	30
Tata Indicom	11	Airtel	31
Idea Cellular	12	DTAC	32
Aircel	13	Hutch	33
Spice	14	True Move	34
BPL Mobile	15	AIS	35
Shyam	16	CAT Telecom	36
HFCL	17	Thai Mobile	37
Virgin Mobile	18	Other (Specify)	
Mobilink	19	Don't know	99
Telenor	20		

Q10. Could you tell me how many active mobile SIM cards/connections do you have in total that you regularly use? [SC]

One	1
Two	2
Three	3
Four	4
Five or more	5

ASK Q11 IF RESPONDENT OWNS MORE THAN ONE SIM/CONNECTION I.E. CODED '2' or '3' or '4' or '5' IN Q10. ELSE GO TO Q12

Q11. You mentioned that you own more than one SIM/connection. Please tell me why do you own multiple SIMs/connections? [MC]

To get low local/STD call charges within each network	01
To get free services (e.g., calls, SMS, etc)	02
One connection is for my business contacts, the other is for my personal ones	03
If I run out of credit on one connection then I can use the other one	04
So that I can get coverage anywhere I go	05
Others, please specify	
Others, please specify	

Q12. **SHOWCARD** I have here a list of problems which consumers face while using mobile phones. As I read each problem please look at this scale and tell me how often you face any of the following problems in regard to your use of your mobile phone.

INTERVIEWER TO ASK IF THEY FACE ANY OTHER PROBLEMS AND HOW FREQUENTLY. Other than the problems mentioned do you face any more problems and how frequently do you face these problems? [MC].

1	2	3	4	5
I always face this problem	I very frequently face this problem	I occasionally face this problem	I rarely face this problem	I never face this problem

Q.12 (MC)		1	2	3	4	5
		I always face this problem	I very frequently face this problem	I occasionally face this problem	I rarely face this problem	I never face this problem
Often can't get signal, or signal strength is weak	01	1	2	3	4	5

Often can't get a call through (network is busy)	02	1	2	3	4	5
The connection is not clear when I get connected	03	1	2	3	4	5
Calls get dropped (cut off)	04	1	2	3	4	5
Other _____						
Other _____						
Other _____						
Other _____						
I do not face any of these problems	97					

ASK Q13a ONLY TO THOSE WHO HAVE THEIR OWN MOBILE PHONE I.E CODED '01' IN Q4a AND '2' IN Q4b.

Now I shall ask you some questions related to the mobile handset or handsets that you may own.

Q13a. Please tell me how many working mobile handsets do you personally currently own?
[SC]

One	1
Two	2
Three or more	3

Q13b. Are they all used by you only? [SC]

Yes	1
No	2

Q13c. Please think and tell me, how many mobile handsets have you owned in total till now?
By this I mean all the mobile handsets that you owned since acquiring your first mobile handset (including those you use at present)? **[RECORD NUMBER]**

Number of mobile handsets owned in total till now		
---	--	--

ASK Q14a to Q14d FOR MAIN HANDSET OWNED BY RESPONDENT

INTERVIEWER TO SAY

You said you own _____ (READ AS CODED IN Q13a) handsets. Now, I would be asking a few questions regarding your main mobile handset. By main mobile handset I mean the handset that you are using currently, and using the most.

Q14a. **SHOW BRAND LIST** Please tell me the brand name of the main handset that you are using now? [SC]

LG	101	Blackberry	107	Acer	113	Wellcom	119
Motorola	102	Apple iPhone	108	HTC	114	Plusphone	120
Philips	103	Micromax	109	Karbons Mobiles	115	Goldfish mobile	121
Sony Ericsson	104	Lava	110	GNET	116	Wellcom	122
Nokia	105	Videocon	111	i-mobile	117	Others	123
Samsung	106	Spice	112	Jfone	118		

Q14b. **SHOWCARD** Please tell me whether the main handset that you are using now was purchased brand new or second hand or was it gifted to you when you first obtained it. [SC]

Brand new	Second hand	Gifted or handed over	Don't know
1	2	3	9

Q14c. Does anyone assist you when you use your mobile handset? If so, then could you please tell me who assists you and what is the age of the person? [MC]

		Age	
Spouse	01		
Parents	02		
Children [Son/ daughter]	03		
Relatives	04		
Friends	05		
Shopkeeper	06		
Others (specify)			

No one assists me	99	X	X

ASK Q14d ONLY FROM RESPONDENTS WHO SAID BRAND NEW OR SECOND HAND IN Q14b ELSE GO TO Q15.

Q14d. You said you purchased _____ (INT: READ OUT THE RESPONSE FROM Q14b) when you obtained it. Could you please tell me how much you paid for it? (INT: ASK IN LOCAL CURRENCY. IF RESPONDENT DOES NOT KNOW THE PURCHASE VALUE OF MOBILE PHONE CODE "9" IN EACH CELL FOR Q14d COLUMN IN GRID BELOW.)

Approx. price paid						

Q15. For how long have you used your main mobile handset? By main mobile handset I mean the handset that you are using currently? [SC] **INT: IF LESS THAN ONE YEAR PLEASE MARK "0" IN EACH CELL FOR YEAR AND RECORD NO OF MONTHS.**

Number of months			
------------------	--	--	--

Example: If 3 years,

0	3	6
---	---	---

 enter as

Q16. **SHOW CARD** This is a list of features available in mobile phones. Please tell me which of these features does your main mobile handset have? [MC]. **RECORD IN GRID GIVEN BELOW Q17b**

Q17a. **SHOW CARD** Which of these features have you ever used? [MC]. **RECORD IN GRID GIVEN BELOW Q17b**

Q17b. Could you please tell me which of these features do you use on a regular basis? [MC]

	Q16	Q17a	Q17b
	Features present	Ever used	Regularly used
Color Screen	01	01	01
Touch Screen	02	02	02
SMS (text message)	03	03	03
MMS (picture message or color SMS)	04	04	04
Web/WAP Internet browser	05	05	05
Camera (photos/pictures)	06	06	06
Video recorder and player	07	07	07
Music player	08	08	08
FM Radio	09	09	09
Games	10	10	10
Download feature (games, wallpapers, applications, etc)	11	11	11
Alarm clock	12	12	12
Calendar	13	13	13
Calculator	14	14	14
Converter (for measurements, currency, etc)	15	15	15
Bluetooth /USB	16	16	16

Infa-red	17	17	17
Torch	18	18	18

ASK THIS SECTION (Q18-Q23) ONLY FROM THOSE WHO USE PREPAID CONNECTIONS I.E. CODED '1' IN Q8 OR '1' IN Q6b. ELSE GO TO INSTRUCTION BEFORE Q24.

Q18. How do you top-up or reload your prepaid balance on your phone? [MC]

Top-up cards/scratch cards	01
SMS top-up or reload from a shop/agent/dealer	02
SMS top-up or reload from others (family members/friends)	03
Internet top-ups or reload	04
I don't know how	05
Other (Specify)	

ASK Q19 ONLY IF RESPONDENT USES TOP UP/SCRATCH CARDS OR SMS TOP-UP OR RELOAD FROM A SHOP/AGENT/DEALER (CODED '01' OR '02' IN Q18). ELSE GO TO Q20.

Q19. How long does it take for you to usually travel to the location which is closest to your home where you can top-up or reload or buy a fixed amount charge card for your pre paid mobile connection? **(INT: RECORD VERBATIM IN MINUTES)**

Time taken to reach mobile phone top-up or reload destination (in minutes)			
--	--	--	--

Q20. What was the amount of your last top up / reload?
(INT: ASK IN LOCAL CURRENCY AND CODE. IF RESPONDENT DOESN'T KNOW THEN CODE "9" IN EACH CELL)

Value of the last top up / reload (in local currency)				
---	--	--	--	--

Q21. Considering your normal usage can you please tell me from the day of your last top-up / reload, how long do you think your top-up / reload will last? (Total number of days from the day of purchasing the top-up/reload to the day it is expected to finish)
(INT: IF RESPONDENT DOES NOT KNOW THEN CODE "9" IN EACH CELL)

Number of days			
----------------	--	--	--

Q22. How long do you keep your phone with a zero balance before topping-up / reloading? (Total numbers of days from the day of zero balance until purchasing of new top-up)
(INT: IF RESPONDENT DOES NOT KNOW THEN CODE "9" IN EACH CELL)

Number of days			
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SHOW CARD

Q23. I have here a list of problems which consumers face while topping-up / reloading. As I read each problem please look at this scale and tell me how often you face any of the following problems in regard to your use of your mobile phone.

INTERVIEWER TO ASK IF THEY FACE ANY OTHER PROBLEMS AND HOW FREQUENTLY.

Other than the problems mentioned below do you face any more problems and how frequently do you face these problems? Please give answers with the help of this scale. [MULTIPLE CODE].

1	2	3	4	5
I always face this problem	I very frequently face this problem	I occasionally face this problem	I rarely face this problem	I never face this problem

Q.23 (MC)		1	2	3	4	5
		I always face this problem	I very frequently face this problem	I occasionally face this problem	I rarely face this problem	I never face this problem
Top-ups/re-load services are not always available	0 1	1	2	3	4	5
The amount of credit that I receive is usually less than what I paid for	0 2	1	2	3	4	5
It takes a long time for the balance to be updated	0 3	1	2	3	4	5
The top-up card value that I want is often not available	0 4	1	2	3	4	5
I can't always check my balance when I want to	0 5	1	2	3	4	5
Others (please specify)						
Others (please specify)						
Others (please specify)						

ASK Q24a TO Q24d TO ALL RESPONDENTS

Q24a. From your family, friends and business acquaintances, think of the five people that you are in touch with most frequently in a typical week? This could be through face-to-face communication, post, email, telephone, or any other kind of communication. Please tell me the names of these five people whom you are in touch with most frequently. Please be sure that these names are just for reference purpose and would not be recorded in the data. **RECORD IN GRID BELOW Q24d**

ASK THIS SECTION (Q25-Q29) ONLY FROM MOBILE PHONE OWNERS I.E CODED '01' IN Q4a AND '2' IN Q4b. ELSE GO TO Q30

Q25. SHOW CARD & READ OUT RESPONSES. Please look at this card and tell me for what purposes you use your mobile phone? [MC]

Taking phone calls	01
Receiving phone calls	02
Sending/receiving 'missed calls'	03
Sending/receiving SMS (text messages)	04
Sending/receiving MMS (picture messages)	05
Sending/receiving emails	06
Browsing the Internet / Web (visit websites, search etc)	07
Taking photos /video clips	08
To play games	09
To listen to the radio	10
To listen to music files (not radio)	11
To share content that you have created (E.g. ringtones, wallpapers, pictures, games and video clips)	12
To send or receive or download or upload other content (E.g., ringtones, wallpapers, pictures, games and video clips)	13
As an organizer (keep appointments, reminders, alarm, calculator)	14
To check my bill / credit balance	15
Sending/receiving talk-time/load	16
To access Facebook	17
To access other social-networking or blog applications (Orkut, MySpace, LinkedIn, Twitter, GupShup [India] etc.)	18

Q26. SHOWCARD Which of the following services have you used on your mobile phones? [MC]

Voice calls	1	
SMS to communicate with people	2	
SMS to access Banking and Payment services (i.e. sending/receive money/credit to pay a payment or use banking services)	3	
SMS to access Information services (i.e. Subscribed to information delivery of news, weather, health, government information)	4	
In-built application or mobile Internet to use banking or information services	5	
I never used a mobile phone	9	63 [Go to (30)]

ASK THOSE WHO ANSWERED '1', '2', '3', '4' OR '5' IN Q26.

[IF RESPONDENT TICKED RESPONSE '1' (VOICE CALL) ONLY, REPLACE "THE

BLANK” WITH “VOICE CALLS.”

IF RESPONDENT TICKED RESPONSE ‘1’ AND ‘2’ (VOICE CALL AND SMS) ONLY, REPLACE “THE BLANK” WITH “SMS.”

IF RESPONDENT TICKED ANY OF THE RESPONSES ‘3’ OR ‘4’ OR ‘5’

(PAYMENT/BANKING AND INFORMATION SERVICES), ASK THEM TO THINK OF THE SERVICE S/HE HAS USED THE MOST AND REPLACE THE BLANK WITH ‘THE SERVICE’

Q27. SHOWCARD Thinking of _____ **(INT: INSERT APPROPRIATE WORD)** which you said you use, please tell me, how much do you agree or disagree with the following statements? [SC]

		Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree	N/A
		1	2	3	4	5	9
01	I find _____ to be useful in my life	1	2	3	4	5	9
02	Using _____ increases my chances of achieving things that are important to me	1	2	3	4	5	9
03	Using _____ helps me accomplish things more quickly	1	2	3	4	5	9
04	I find _____ gives me useful information	1	2	3	4	5	9
05	I find _____ to be easy to use	1	2	3	4	5	9
06	I think learning how to use _____ is easy to me	1	2	3	4	5	9
07	My interaction with _____ is clear and understandable	1	2	3	4	5	9
08	People who are close to me think that I should use _____	1	2	3	4	5	9
09	People who influence my behaviors think I should use _____	1	2	3	4	5	9
10	I use _____ because I want to use the same service people around me use	1	2	3	4	5	9
11	I use _____ because it is common to use it in my community	1	2	3	4	5	9
12	I have the resources necessary to use _____ (i.e. money, time)	1	2	3	4	5	9
13	I have the knowledge and ability necessary to use _____	1	2	3	4	5	9
14	Using _____ is entirely within my control	1	2	3	4	5	9
15	When I have problems in using _____ .I can get help from my friends/family members	1	2	3	4	5	9
16	When I have problems in using _____ .I can get help from the service providers or experts	1	2	3	4	5	9

17	I think _____ is reasonably priced	1	2	3	4	5	9
18	I think _____ offers values for money	1	2	3	4	5	9
19	I am confident of using _____ i f there was no one show me how to do it	1	2	3	4	5	9
20	I am confident of using _____ if someone showed me how to do it first	1	2	3	4	5	9
21	I am confident of using _____ if I could ask someone for help if I got stuck	1	2	3	4	5	9
22	I am confident of using _____ if I had a lot of time to try and use “the service”	1	2	3	4	5	9
23	Based on my experience with _____, I know it provides good service	1	2	3	4	5	9
24	Based on my experience with _____, I know it is trustworthy	1	2	3	4	5	9
25	Using _____ is a good idea	1	2	3	4	5	9
26	Using _____ is a wise idea	1	2	3	4	5	9
27	I like the idea of using _____	1	2	3	4	5	9
28	Using _____ is fun	1	2	3	4	5	9
29	I intend to use _____ in future	1	2	3	4	5	9
30	I expect that I would use _____ frequently in future	1	2	3	4	5	9

ASK THOSE WHO ANSWERED “ONLY VOICE CALLS” I.E., CODED ONLY ‘1’ IN Q26, ELSE GO TO Q29

Q28. What were the reasons for not using SMS? [MC]

I don't know what it is	01
Using SMS is too confusing to me	02
It is too difficult for me to go through menu and open it	03
It is too difficult for me to type	04
It is too expensive for me	05
It takes too much time to do it	06
I cannot read or write (my language)	07
SMS is not available in my own language	08
I don't see any benefits of using it	09
SMS does not fit into my lifestyle	10
I don't trust SMS in delivering what I want to say	11
I'm afraid if it fails to deliver my message	12
No one has sent me an SMS before	13
I don't know anyone I can send SMS to	14
People in my community don't like SMS	15
Others (please specify _____)	

ASK THOSE WHO ANSWERED “SMS” (CODE 4 IN Q25)

Q29. You said that you use SMS; please tell me how often do you send/receive a SMS in a typical week? [SC]

Several times a day	1
Once or twice a day	2
Several times a week	3
Once or twice a week	4
Less frequently than once a week	5

THIS SECTION (Q30-Q39) TO BE ASKED FROM ALL RESPONDENTS

Q30. Now, I am going to read a list of services, please tell me whether, to the best of your knowledge, you are aware that each of these services can be accessed in this country through either telephones or computers? [MC]. [INT: EXPLAIN EACH SERVICE WITH EXAMPLES]

Banking and financial services (e.g. checking balance status in a bank account, Mini-statements and checking of account history, monitoring term deposits, access to loan statements, ordering check books etc.)	1
Making or receiving a payment (e.g. paying utility bills such as electricity/water bill, telephone bill, paying insurance premium, reloading mobile phone etc.) or sending or receiving money / talk time to/ from someone	2
Governmental services (e.g. Payment of property tax for residential & commercial property, applying for water/electricity/telephone connections, registration for birth and death certificates, filing of passport forms, filing tax returns etc.)	3
Health services (e.g. Telemedicine consultations, wellness clinic programs, health check packages, channelling a doctor, etc.)	4
Competition polls or participation in other live programs on TV or radio	5
Entertainment related information services (e.g. sports updates, horoscopes, TV and movie updates, etc)	6
Livelihood related information (e.g. price alerts, market information, stock updates, business information, etc.)	7
Other general information services (e.g. news, weather, etc.)	8

ASK Q31-40 ONLY IF THE RESPONDENT IS AWARE OF THE SERVICES I.E. CODED THOSE SERVICES IN Q30 ELSE GO TO Q41.

Q31. How frequently do you use _____ (INT: READ SERVICE CODED IN Q30 ONE BY ONE) services? Please answer with the help of the scale given below? [SC]

Regularly	1
Not regularly	2
Don't use at all	3

ASK Q32 ONLY FOR SERVICES RESPONDENT IS USING ('1' OR '2' CODED IN Q31). ELSE GO TO Q33

Q32. Please tell me through which of these modes do you use these services? [MC]

1. Through Computer
2. Through Mobile phone (Voice)
3. Through Mobile phone (using SMS facility)
4. Through Mobile phone (using Internet facility)
5. Through fixed line phones

	Q30	Q31 (SC)			Q32 (MC)					col
	Aware	Regularly	Not regularly	Don't use	Computer	Mobile phone (Voice)	Mobile phone (SMS)	Mobile phone (Internet)	Fixed phone	
Banking and financial services (e.g. checking balance status in a bank account, Mini-statements and checking of account history, monitoring term deposits, access to loan statements, ordering check books etc.)	1	1	2	3	1	2	3	4	5	
Making or receiving a payment (e.g. paying utility bills such as electricity/water bill, telephone bill, paying insurance premium, reloading mobile phone etc.) or sending or receiving money / talk time to/ from someone	2	1	2	3	1	2	3	4	5	
Governmental services (Local, state or central) (e.g. Payment of property tax for residential & commercial property, applying for water/electricity/telephone connections, registration for birth and death certificates, filing of passport forms, filing tax returns etc.)	3	1	2	3	1	2	3	4	5	

Health services (e.g. Telemedicine consultations, wellness clinic programs, health check packages, channelling a doctor etc.)	4	1	2	3	1	2	3	4	5	
Competition polls or participation in other live programs on TV or radio	5	1	2	3	1	2	3	4	5	
Entertainment related information services (e.g. sports updates, horoscopes, TV and movie updates, etc)	6	1	2	3	1	2	3	4	5	
Livelihood related information (e.g. price alerts, market information, stock updates, business information, etc.)	7	1	2	3	1	2	3	4	5	
Other general information services (e.g. news, weather, etc.)	8	1	2	3	1	2	3	4	5	

ASK Q33-36 ONLY IF RESPONDENT IS USING PAYMENT SERVICES “Making or receiving a payment or sending or receiving money I.E. CODED ‘1’ OR ‘2’ FOR PAYMENT SERVICES IN Q31. ELSE GO TO Q37

Q33. You mentioned that you are using payment services such as “Making or receiving a payment or sending or receiving money / talk time to/ from someone” through a phone or computer. Please tell me, specifically which of these services do you use? [MC]

	Q33
	Service used
Making a payment (including bill payments, insurance premium payment etc.)	1
Sending or receiving money to/from someone	2
Sending or receiving money credit to/from someone residing near where I live	3
Sending or receiving money credit to/from someone residing far from where I live (but in the same country)	4
Sending/receiving money credit to/from someone residing abroad	5
Sending/receiving money transfer information (e.g., transaction number, codes, etc) (by call or SMS) so that the money can be retrieved	6

Q34. How did you usually send/receive money before you use the service through phones or computers?

I would go to the bank and send the payment	1
I would make the payment at a post office	2
I would send the money through someone who I know and	3

trust	
I would hand over the money directly to the person concerned	4
Other	5

Q35. How long did it normally take to send/receive money before you used the service through phones or computers? **[RESPONSE TO BE RECORDED IN NUMBER OF HOURS OR DAYS, WHICHEVER IS APPLICABLE]**

		Hours
		Day

Q36. Could you please tell me the value of last transactions that you have made using payment services on through a phone or computer? It could be the money that you have sent or received. **[INT: RECORD VERBATIM IN LOCAL CURRENCY. IF RESPONDENT IS NOT AWARE THEN CODE ‘9’ IN EACH CELL. IF RESPONDENT REFUSES TO DISCLOSE THEN CODE ‘0’ IN EACH CELL]**

Last Transaction- (in local currency)							
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ASK Q37-Q38 ONLY IF RESPONDENTS IS USING INFORMATION SERVICES “Entertainment related information services (e.g. sports updates, horoscopes, TV and movie updates. etc) OR Livelihood related information (e.g. price alerts, stock updates, business information, etc.) OR Other general information services (e.g. news, weather, etc.)” I.E. IF CODED 1’ OR ‘2’ FOR THESE SERVICES IN Q 31. ELSE GO TO INSTRUCTION BEFORE Q39

Q37. You mentioned that you are using _____ **(INT: ONE BY ONE MENTION INFORMATION SERVICE USED IN Q31)**. In relation to this service, please tell me do you subscribe to the information regularly, or do you seek out (request) the information only at the times when needed? **[SC]**

	Subscribe regularly	Seek information when needed
Entertainment related information services (e.g. sports updates, horoscopes, TV and movie updates, etc)	1	2
Livelihood related information (e.g. price alerts, market information, stock updates, business information, etc.)	1	2
Other general information services (e.g. news, weather, etc.)	1	2

Q38. **SHOWCARD** To what extent have the following aspects of your life improved since you started using _____ **(INT: ONE BY ONE MENTION INFORMATION SERVICE USED IN Q30)?**
Please give the answer with the help of this scale. **INTERVIEWER TO READ OUT EACH ASPECT**

No change 1	2	3	4	Improved greatly 5	N/A 8	DK/CS 9
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	Entertainment related information services (e.g. sports updates, horoscopes, TV and movie updates, etc)	Livelihood related information (e.g. price alerts, market information, stock updates, business information, etc.)	Other general information services (e.g. news, weather, etc.)
Your economic/financial status or well being			
Your level of knowledge and skills			
Your social and familial relations and relationships			
Your emotional well-being and happiness			

INTERVIEWER TO READ OUT

Explanation A- Normal or non-phone/non-computer-based method of accessing these services, such as:

- **For Banking and financial related service you would go to the bank personally and make or receive the payment through cash/cheque/draft etc.**
- **For paying utility bills you would be traveling the premises and making the payment by cash/cheque etc.**
- **For recharging/reloading/refilling your mobile phone you would travel to a nearest destination and pay by cash**
- **For government or state services you would be visiting government or state offices, government or state bodies and meeting officials. You also might be subscribing to government or state journals/magazines etc**
- **For Health services you would be travelling to the Hospital/Clinic**
- **For livelihood related information such as price alerts, stock updates, and other business related information, you might need to visit markets or visit Trade association offices, etc.**

Q39. SHOWCARD What do you think of the functionality provided by the service you used compared to normal ways of using the similar services? By non-phone and non-computer methods, I mean the methods which I just explained to you.

Worse	1
Somewhat worse	2
Same	3
Somewhat better	4

Much better	5
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ASK ONLY FROM THOSE WHO ARE AWARE I.E CODED THESE SERVICES IN Q30 BUT NOT USING THEM THROUGH A TELEPHONE OR COMPUTER I.E. CODED IN Q30 AND '3' IN Q31 ELSE GO TO Q41

- 1. Payments services (making or receiving a payment OR sending or receiving money to/ from someone)**
- 2. Governmental services**
- 3. Livelihood-related information services**

Q40. Please tell me what are the reasons for you to NOT use these services through a telephone or computer?

(INT: ASK FOR EACH SERVICE ONE BY ONE)

1. Payments services (making or receiving a payment OR sending or receiving money to/ from someone) **(CODED 2 in Q30)**
2. Government or state services **(CODED 3 in Q30)**
3. Livelihood-related information services [MC] **(CODED 7 in Q30)**

	Q40		
	Payment services (CODED 2 in Q30)	Governmental services (CODED 3 in Q30)	Livelihood-related (CODED 7 in Q30)
I do not own a telephone or computer	01	01	01
My telephone (handset) does not have that capability	02	02	02
My telecom operator (service provider) does not offer that service	03	03	03
I cannot access these services in my language	04	04	04
It is too expensive	05	05	05
These are not reliable / trustworthy	06	06	06
A bank account/credit card is needed to use these services	07	07	07
I am satisfied with my present mode of obtaining such services	08	08	08
I don't know how to use it	09	09	09
It is not applicable to me	10	10	10
I don't keep enough credit/balance on my phone to use these services	11	11	11
Other (Specify)_____			

ASK ALL

Q41. SHOWCARD You mentioned that you used a _____ **[READ RESPONSE CODED IN Q4C AND 4D]** phone most frequently; please answer the following question in relation to your use of that particular phone. Now I have some benefits which users such as yourself has experienced through using a phone. As I read out each benefit please tell me to what extent has the access to that phone improved the following, if at all? Please give answer with the help of this scale. [SC]

No change 1	2	3	4	Improved greatly 5
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Benefits	No change 1	2	3	4	Improved greatly 5	N/A	DK/CS
	1	2	3	4	5	8	9
Your ability to make more money (Should not be directly selling calls to earn money)	1	2	3	4	5	8	9
Your ability to find out about employment/work opportunities	1	2	3	4	5	8	9
Your ability to save money	1	2	3	4	5	8	9
Your ability to reduce travel	1	2	3	4	5	8	9
Your ability to act or contact others in an emergency	1	2	3	4	5	8	9
Efficiency of your day to day work	1	2	3	4	5	8	9
Your relationships with family and friends	1	2	3	4	5	8	9
Your ability to contact people related to your work or job	1	2				8	9
Your social status/ recognition in the community	1	2	3	4	5	8	9
Your access to information you need in your job	1	2	3	4	5	8	9
Your access to finance	1	2	3	4	5	8	9
Your ability to plan and make decisions relating to your livelihood	1	2	3	4	5	8	9

ASK Q42-43 TO THOSE WHO OWN A PHONE. (Q4a = '01' OR '02')

Q42. How often do you use your household phone or your own mobile phone for financial, business or work related communications? [SC]

Everyday	1
Two times a week	2
Once a week	3
Two to three times a month	4
Once a month	5
Less than once a month	6

I do not use for these purposes	7
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ASK Q43 ONLY IF RESPONDENT USES PHONE FOR FINANCIAL, BUSINESS OR WORK RELATED COMMUNICATIONS (Q42= 1, 2, 3, 4, 5 or 6).

Q43. Which of these types of phones do you use the most for your financial, business or work related communications? [SC]

Mobile phone	1
Household phone	2

ASK Q44 ONLY TO SHOP OWNERS/BUSINESS-MEN/SELF EMPLOYED I.E. CODED '04' OR '05' OR '06' OR '07' OR '08' IN Q1E

Q44. **SHOWCARD** You mentioned that you used a _____ [READ RESPONSE CODED IN Q4C AND 4D] phone most frequently; please answer the following question in relation to your use of that particular phone. Now I have some benefits which users such as yourself has experienced through using a phone. As I read out each benefit please tell me to what extent has the access to that phone improved the following, if at all. Rate according to a 5 point scale where 1 = no change and 5 = Improved greatly. [SC]

No change 1	2	3	4	Improved greatly 5
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Benefits	No change 1	2	3	4	Improv ed greatly 5	N/A	DK/C S
Your access to accurate and timely market price information that you use to improve the price you can get for your goods that you sell	1	2	3	4	5	8	9
Your access to information on sources and costs of inputs (crops/vegetables/fruits/tea coffee etc.)	1	2	3	4	5	8	9
Your access to finance sources for your business	1	2	3	4	5	8	9
Your access to government services/schemes that aid your business	1	2	3	4	5	8	9
Your ability to protect yourself from price volatilities in inputs	1	2	3	4	5	8	9
Your ability to protect yourself from price volatilities in outputs	1	2	3	4	5	8	9
Your ability to maintain/improve relationships with traders/agents/suppliers of inputs	1	2	3	4	5	8	9

Your ability to improve your knowledge and skills related to running a business	1	2	3	4	5	8	9
Your ability to improved trust in relationships with people you have to interact with for your business	1	2	3	4	5	8	9
Your ability to coordinate with people you have to interact with for your business	1	2	3	4	5	8	9
Your ability to access a wider set of people/ businesses of relevance to my business	1	2	3	4	5	8	9

ASK Q45 ONLY TO FARMERS I.E. CODED '13' OR '14' IN Q1E

Q45. SHOWCARD You mentioned that you used a _____ [**READ RESPONSE CODED IN Q4C AND 4D**] phone most frequently; please answer the following question in relation to your use of that particular phone. Now I have some benefits which users such as yourself has experienced through using a phone. As I read out each benefit please tell me to what extent has the access to that phone improved the following, if at all. Rate according to a 5 point scale where 1 = no change and 5 = Improved greatly. [SC]

No change 1	2	3	4	Improved greatly 5
----------------	---	---	---	-----------------------

	No change 1	2	3	4	Improv ed greatly 5	N/A	DK/C S
Your access to accurate and timely market price information that you use to improve the price you can get for your crops	1	2	3	4	5	8	9
Your access to crop advisory services (best practices, agriculture extension, etc., crop diseases and solutions) that allow you to produce higher quality crops and/or reduces loss due to disease	1	2	3	4	5	8	9
Your access to information on sources and costs of inputs (seeds, fertilizers, etc.)	1	2	3	4	5	8	9
Your access to finance sources for your farming activities	1	2	3	4	5	8	9
Your access to government services that aid your farming activities	1	2	3	4	5	8	9
Your access to crop insurance	1	2	3	4	5	8	9
Your ability to protect yourself from price volatilities in inputs	1	2	3	4	5	8	9
Your ability to protect yourself from price volatilities in	1	2	3	4	5	8	9

outputs							
Your ability to maintain/improve relationships with traders/agents/suppliers of inputs	1	2	3	4	5	8	9
Your ability to improve your knowledge and skills related to crops/seeds/fertilizers/crop diseases, market price fluctuations, etc..	1	2	3	4	5	8	9
Your ability to improved trust in relationships with people you have to interact with for your farming activities	1	2	3	4	5	8	9
Your ability to coordinate with people you have to interact with for your farming activities	1	2	3	4	5	8	9
Your ability to access a wider set of people/ businesses of relevance to your farming activities	1	2	3	4	5	8	9

**ASK (Q46-Q54) FOR ONLY THOSE WHO DO NOT HAVE A PHONE. (NOT CODED '01' OR '02' IN Q4a).
ELSE GO TO INSTRUCTION BEFORE Q55.**

Q46. SHOWCARD What is the main reason for you to not have a phone of your own? [SC]

It is too expensive for me to afford	01
I don't see a need to have my own phone	02
Unavailability of handsets (the device which is used to take or receive calls) in the area I live	03
Cannot get a connection where I live (service not available)	04
I am restricted from purchasing a phone by a particular person (i.e. I cannot make decisions on my own; someone doesn't like me having a phone)	05
Other (Specify)_____	

Q47. SHOWCARD If you go specifically to take or receive a call, how long does it take for you to reach to the nearest accessible phone? [SC]

Less than 2 minutes	1
Between 3 - 5 minutes	2
Between 6 - 10 minutes	3
Between 11 - 15 minutes	4
Between 16 - 30 minutes	5
Between 31 - 45 minutes	6
Between 46 - 60 minutes	7
More than an hour	8

Q48. If you were to buy a new phone, how much would you expect it to cost you? This is inclusive of the handset and the connection. **(INT: ASK IN LOCAL CURRENCY)**

Cost of phone (in local currency)							
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Q49. If you were to buy a new phone, how much would you expect the total monthly expenditure to be for your monthly usage? **(INT: ASK IN LOCAL CURRENCY)**

Expected Monthly expenditure (in local currency)							
--	--	--	--	--	--	--	--

Q50. What is the initial cost that you think you can afford? By this I mean the handset and the connection.
(INT: ASK IN LOCAL CURRENCY)

Initial cost (in local currency)							
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Q51. What is the monthly expenditure that you think you can afford for your phone usage? (Usage means call costs, rental, etc) **(INT: ASK IN LOCAL CURRENCY)**

Expected monthly expenditure (in local currency)							
--	--	--	--	--	--	--	--

Q52. Do you plan to buy a phone for your own use within the next one year? [SC]

Yes	1
No	2
Not decided	3

ASK Q53 FROM THOSE WHO PLAN TO PURCHASE A PHONE (CODED '1' IN Q52). ELSE GO TO Q55.

Q53. **SHOWCARD** You said that you plan to buy your own phone, would it be a fixed line phone or a mobile phone? [SC]

PROBE: IF FIXED PHONE ASK IF IT'S A WIRED OR/ WIRELESS

A wired fixed line phone	1
A wireless fixed line phone	2
A Fixed line but not decided if it would be wired or wireless	3
A mobile phone	4
Not yet decide on any phone	5

ASK Q54 ONLY IF RESPONDENT PLANS TO PURCHASE A MOBILE PHONE.(CODED '4' IN Q53). ELSE GO TO NEXT SECTION

Q54. **SHOWCARD** What are the features you would like to have on your phone that you plan

to purchase? [MC]

Color Screen	01
Touch Screen	02
SMS (text message)	03
MMS (picture message or color SMS)	04
Web/WAP Internet browser	05
Camera (for photos/pictures)	06
Video recorder and player	07
Music player	08
FM Radio	09
Games	10
Alarm clock	11
Calendar	12
Calculator	13
Converter (for measurements, currency, etc)	14
Bluetooth / USB	15
Infa-red	16
Torch	17
Other 1 (Specify)	
Other 2 (Specify)	
Other 3 (Specify)	

INTERNET AND COMPUTER USAGE (Q55 – Q64).

Q55 TO BE ASKED FROM ALL RESPONDENTS.

Q55. Have you used a computer from any location in the last 12 months? [SC]

Yes	1
No	2
Can't remember when, but I have used one before	3
Don't know what a computer is	4

Q56. Have you used the Internet from any location in the last 12 months? [SC]

Yes	1
No	2
Can't remember when, but i have used it before	3
I haven't heard of the internet	4

ASK Q57 TO Q64 ONLY IF RESPONDENT IS USING THE INTERNET I.E. CODED '1' OR '3' IN Q56. ELSE GO TO NEXT SECTION

Q57. **SHOWCARD AND READ OUT**

You mentioned that you have used the internet. Which one of these statements best

describes your internet usage? [SC]

At least once a day	1
At least two times a week	2
At least once a week	3
At least two to three times a month	4
At least once a month	5
Less than once a month	6

Q58. **SHOWCARD** Please tell me where you have used the Internet in the last twelve months. [MC]

Home	1
Work	2
Place of education	3
Another person's home	4
Community Internet access facility	5
Commercial Internet access facility	6
Any place via a mobile cellular telephone	7
Any place via other mobile access devices (laptop, etc)	8

Q59. **SHOWCARD** Please tell me about the type of connection that you used to connect to the internet? [MC]

Through a mobile phone (GPRS, WAP, EDGE, 3G-enabled)	1
Through a computer with a dial-up or ISDN connection	2
Through a computer with a mobile dongle (USB modem)	3
Through a computer with any other kind of broadband connection (ADSL, SDSL, VDSL, Cable modem)	4
Through a computer but don't know what kind of connection it was	5

Q60. **SHOWCARD AND READ OUT** Are any of these present in your household? [SC]

Q60a **SHOWCARD** Which methods do you use? [MC]

Q61. **SHOWCARD** Which method of connecting to internet do you use most frequently? [SC]

Q62. **SHOWCARD** Through which method did you first get connected to the internet? [SC]

	Q60	Q60a	Q61	Q62
	Present in household [SC]	Methods used [MC]	Most frequently [SC]	First access to the internet [SC]

Mobile phone (GPRS/WAP/3G-enabled)	1	1	1	1
Computer with a dial-up or ISDN connection	2	2	2	2
Computer with a mobile dongle (USB modem)	3	3	3	3
Computer with any other kind of broadband connection (ADSL, SDSL, VDSL, Cable modem)	4	4	4	4
Computer but don't know what kind of connection it was	5	5	5	5

ASK Q63 FROM RESPONDENTS WHO USE THE MOBILE TO ACCESS THE INTERNET. (CODED '1' IN Q60a). ELSE GO TO INSTRUCTION BEFORE Q64

Q63. **SHOWCARD** Why do you use the internet through a mobile phone? [MC]

I don't own a computer	01
I only use it when don't have access to any computer	02
It gives me more privacy	03
It is cheaper than using a computer	04
My computer does not have an internet connection	05
Others (Specify)	

ASK Q64 TO ALL INTERNET USERS (CODED '1' OR '3' IN Q56). ELSE GO TO NEXT SECTION

Q64. **SHOW CARD & READ OUT RESPONSES.**

Now I will be reading some reasons that people usually use the internet for. I would like you to tell me for which of these do you usually use the internet for? [MC]

To gather information about goods or services	01
To gather information related to health or health services	02
To gather information from governmental (local, state or central) organizations (Web sites, email)	03
To gather other information or general Web browsing (Eg: news)	04
For communicating (voice or chat)	05
For purchasing or ordering goods or services	06
For Internet banking	07
For education or learning activities	08
For dealing (interacting) with governmental (local, state or central) organizations	09
For playing or downloading video games or computer games	10
For downloading or watching movies, TV programs, music or software	11
For reading or downloading electronic books, newspapers, magazines	12
For other leisure activities	13

Other 1 (Specify)_____	
Other 2 (Specify)_____	
Other 3 (Specify)_____	

GENERAL INFORMATION

THIS SECTION (QG1-QG7) TO BE ASKED TO ALL RESPONDENTS.

- QG1. What is your mother tongue? By mother tongue, I mean the language in which you used to communicate with your mother during childhood. [SC].
- QG2. Please tell me what all languages that you can understand? [MC]
- QG3. **SHOWCARD** You mentioned that you can speak or read or understand _____ [INT: **READ EACH LANGUAGE CODED IN QG2 ONE BY ONE**]. Please look at this card and tell me which option on this card best describes your proficiency of each language? [SC]

Speak but can't read or write	Speak and read, but can't write	Speak, read and write
1	2	3

		QG1-MOTHER TONGUE [SC]	QG2-LANGUAGES UNDERSTAND [MC]	QG3-LEVEL OF PROFICIENCY		
Assamese	01	1	2	1	2	3
Bengali	02	1	2	1	2	3
Bhojpuri	03	1	2	1	2	3
English	04	1	2	1	2	3
Gujrati	05	1	2	1	2	3
Hindi	06	1	2	1	2	3
Kannada	07	1	2	1	2	3
Malayalam	08	1	2	1	2	3
Marwari	09	1	2	1	2	3
Marathi	10	1	2	1	2	3
Oriya	11	1	2	1	2	3
Punjabi	12	1	2	1	2	3
Tamil	13	1	2	1	2	3
Telugu	14	1	2	1	2	3
Tripuri	15	1	2	1	2	3
Urdu	16	1	2	1	2	3
Sinhala	17	1	2	1	2	3
Thai	18	1	2	1	2	3

QG4. **ASK ALL**

Does any member of your household (including you) own (or have access to) a bank account? [SC]

Yes	1
No	2

QG5. **ASK ALL**

Does any member of your household (including you) own (or have access to) a credit card/cash card? [SC]

Yes	1
No	2

QG6. **ASK ALL**

Do you have access to the following in your household? [SC]

	Yes	No
Electricity	1	2
Motorbike / Three wheeler (trishaw) / Scooter	1	2
Bicycle	1	2
Tractor (used for farming)	1	2
Television	1	2
Radio	1	2
Computer	1	2

QG7. **ASK ALL**

How far are the following places from your residence in terms of walking time?
(RECORD IN MINUTES. IF RESPONDENT STATES IN HOURS CONVERT INTO MINUTES AND CODE)
CODE "098" IF NOT APPLICABLE.?

(R1)	Nearest bus-stop/train station			
(R2)	Nearest main road			
(R3)	Nearest town			
(R4)	Nearest market-place (if working in agriculture or fishery sector)			

DEMOGRAPHICS

THIS SECTION QD1-QD13) TO BE ASKED FROM ALL RESPONDENTS; QD14-15 TO BE RECORDED FOR ALL RESPONDENTS ALSO.

ASK ALL

QD1. Do you have a regular monthly personal income or an irregular personal income or both, or none at all? By regular income, I mean a fixed income that you might be earning monthly from your salary, rental income etc. By irregular income, I mean an income which is not a fixed income such as income from sale of crops.[MC]

Regular personal income	1	
Irregular personal income	2	
No personal income	3	GO TO QD6

ASK QD3 TO THOSE WHO HAVE REGULAR AND IRREGULAR INCOME (CODED '1' AND '2' IN QD1). ELSE GO TO INSTRUCTION BEFORE QD3.

QD2. You said that you have a regular as well as irregular personal income. Could you please tell, in a year, how much you earn as regular income and how much you earn as irregular personal income? (INT: ASK IN LOCAL CURRENCY AND CODE)

IF RESPONDENT REFUSES THEN CODE "8" IN EACH CELL.

IF RESPONDENT DOES NOT HAVE PERSONAL INCOME THEN CODE "7" IN EACH CELL

Regular personal income							
Irregular personal income							

ASK QD3 TO ALL WHO EARN A REGULAR INCOME (CODED '1' IN QD1). ELSE GO TO QD5

QD3. Can you please tell me your average monthly personal income? (INT: ASK IN LOCAL CURRENCY AND CODE)

IF RESPONDENT REFUSES THEN CODE "8" IN EACH CELL.

Average Monthly Personal Income							
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QD4. ASK ONLY IF RESPONDENT HAS REFUSED TO ANSWER QD3. IF RESPONDENT HAS STATED EXACT MONTHLY PERSONAL INCOME THEN DO NOT ASK THIS QUESTION. INTERVIEWER SHOULD MARK APPROPRIATE CODE.

SHOW CARD IN LOCAL CURRENCY.

Please look at this card and tell me to which category does your average monthly personal income belong to? [SC]

Less than Rs.	495	01	Between Rs.	13951 - 14400	32
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R3	Monthly								9
R4	Quarterly								9
R5	Half yearly								9
R6	Annually								9

QD6. **ASK ALL.** Can you please tell me your average monthly household income?
By monthly household I mean the total income of your family. This includes the income of all your family members, other income earned through farming, gardening, cattle, rental, remittances received from others, etc...

IF RESPONDENT REFUSES THEN CODE "8" IN EACH CELL. IF RESPONDENT DOESN'T KNOW CODE "9" IN EACH CELL.

Average Monthly Household Income								
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QD7. **ASK ONLY IF RESPONDENT HAS REFUSED TO ANSWER QD6. IF RESPONDENT HAS STATED EXACT MONTHLY HOUSEHOLD INCOME THEN DO NOT ASK THIS QUESTION. INTERVIEWER SHOULD MARK APPROPRIATE CODE.**
SHOW CARD IN LOCAL CURRENCY.

Please look at this card and tell me to which category does your monthly household income belong to?

By monthly household I mean the total income of your family. This includes the income of all your family members, other income earned through farming, gardening, cattle, rental, remittances, etc) [SC]

Less than Rs.	495	01	Between Rs.	13951 - 14400	32
Between Rs.	496 - 900	02	Between Rs.	14401 - 14850	33
Between Rs.	901 - 1350	03	Between Rs.	14851 - 15300	34
Between Rs.	1351 - 1800	04	Between Rs.	15301 - 15750	35
Between Rs.	1801 - 2250	05	Between Rs.	15751 - 16200	36
Between Rs.	2251 - 2700	06	Between Rs.	16201 - 16650	37
Between Rs.	2701 - 3150	07	Between Rs.	16651 - 17100	38
Between Rs.	3151 - 3600	08	Between Rs.	17101 - 17550	39
Between Rs.	3601 - 4050	09	Between Rs.	17551 - 18000	40
Between Rs.	4051 - 4500	10	Between Rs.	18001 - 18450	41
Between Rs.	4501 - 4950	11	Between Rs.	18451 - 18900	42
Between Rs.	4951 - 5400	12	Between Rs.	18901 - 19350	43
Between Rs.	5401 - 5850	13	Between Rs.	19351 - 19800	44
Between Rs.	5851 - 6300	14	Between Rs.	19801 - 20250	45
Between Rs.	6301 - 6750	15	Between Rs.	20251 - 20700	46

Between Rs. 6751 - 7200	16	Between Rs. 20701 - 21150	47
Between Rs. 7201 - 7650	17	Between Rs. 21151 - 21600	48
Between Rs. 7651 - 8100	18	Between Rs. 21601 - 22050	49
Between Rs. 8101 - 8550	19	Between Rs. 22051 - 22500	50
Between Rs. 8551 - 9000	20	Between Rs. 22501 - 22950	51
Between Rs. 9001 - 9450	21	Between Rs. 22951 - 23400	52
Between Rs. 9451 - 9900	22	Between Rs. 23401 - 23850	53
Between Rs. 9901 - 10350	23	Between Rs. 23851 - 24300	54
Between Rs. 10351 - 10800	24	Between Rs. 24301 - 24750	55
Between Rs. 10801 - 11250	25	Between Rs. 24751 - 25200	56
Between Rs. 11251 - 11700	26	Between Rs. 25201 - 25650	57
Between Rs. 11701 - 12150	27	Between Rs. 25651 - 26100	58
Between Rs. 12151 - 12600	28	Between Rs. 26101 - 26550	59
Between Rs. 12601 - 13050	29	Between Rs. 26551 - 27000	60
Between Rs. 13051 - 13500	30	Above Rs 27000 -	61
Between Rs. 13501 - 13950	31	Refused to answer	62
		Don't have a personal income	63

QD8. **ASK ALL**

Can you please tell me, what is the highest educational qualification of yours?
(Country specific codes need to be included) [SC]

Primary Education	1
Secondary Education (Up to GCE Ordinary Level)	2
GCE Advanced Level	3
Diploma Level	4
Graduate	5
Post Graduate	6
No formal education	7

QD9. **SHOWCARD ASK ALL**

Can you please tell me to which ethnic group do you belong to?
(Country specific codes need to be included) [SC]

QD10. **ASK ALL**

How many members are there in your household? Please exclude servants, tenants, temporary guests etc. **RECORD NUMBER**

Number of members in household		
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QD11. ASK ALL

How many working mobile phone connections are there in your household? **RECORD NUMBER**

Number of mobile phones in household		
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QD13. ASK ALL

Are you the chief wage earner of your household? [SC] **By Chief Wage Earner, I mean the person in the house who makes the highest contribution towards household expenses.**

Yes	1
No	2

QD13a. ASK ALL SHOWCARD

Could you please look at this card and tell me your marital status?

Married	1	Married - Divorced	3
Single – Unmarried	2	Married - Widowed	4

QD14. DO NOT ASK. INT TO OBSERVE AND RECORD GENDER

Male	1
Female	2

QD14. Could you please tell me your age in completed no. of years?

		YEARS
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QD15. DO NOT ASK. INT TO MARK

Urban	1
Rural	2