The co-creation of value at the bottom of the pyramid: a case study on Bangladeshi farmers’ appropriation of mobile telephony

Introduction
Researchers and practitioners should pay more attention to mobile telephone use in developing countries, which have been experiencing a rapid diffusion of cellular phones. A vast majority of the people living in these countries are categorised as the Bottom of the Pyramid (BoP) customers who earn less than two dollars a day and constitute almost two-thirds of the world’s population (Rashid & Elder, 2009; Prahalad, 2004). One such country is Bangladesh, and this country has been repetitively used for the study of ICT (information and communication technology) adoption at the BoP (Chowdhury, 2002; Bayes, 2001). The country’s phenomenal growth in mobile telephone use is not only confined to its urban regions, but has also reached rural communities that are constrained by limited resources, a lack of technical expertise and illiteracy. Despite these limitations, it has been noted that disadvantaged users make use of mobile telephony and appropriate the same in their day-to-day lives (Dey, Newman & Prendergast 2011; Donner, 2006). Existing scholarly works, however, present limited understanding of how they use mobile telephones and extract value, which would benefit new product development and future endeavours to serve people at the bottom of the pyramid profitably. The current paper aims to analyse the co-creation of value by BoP customers such as Bangladeshi farmers. It reports on fieldwork conducted in two remote regions in Bangladesh.

It is argued that users make more effective and efficient use of a technological application by integrating it into their day-to-day lives. The entire process is termed technology appropriation, and is widely discussed in information systems literature (DeSanctis & Poole, 1994; Bar, Pisani & Weber, 2007; Isaac, Leclercq & Des Horts, 2006; Carroll, Howard, Peck & Murphy, 2003). The concept of technology appropriation also denotes how users can enjoy the value in use. It is argued that the actual value of a product is realised during the consumption experience as consumers play an active role in the value creation process. While this concept is one of the fundamental premises of recently emerged S-D logic notion (Vargo & Lusch, 2004), it has not yet been empirically examined for various products and consumer markets. Previous studies on the co-creation of value have highlighted consumer/customers’ contribution to new product development (Sawhney, Verona & Prandelli 2005; Kristensson, Matthing & Johanson, 2007), improved producer-customer relationships (Moller, 2005) and service encounters and customer experiences (Sandstrom, Edvardsson, Kristensson & Magnusson 2008). However, these studies mostly assume producer-centric perspectives and offer limited understanding of how users can generate value through innovativeness, network support and/or adaptation.

Literature review
Human consumption goes beyond adoption (Denzin, 2001). Although the technology acceptance model (Davis, 1989; Venkatesh & Bala, 2008) and innovation diffusion theory (Rogers, 1995) provide useful understanding of adoption decisions, they do not clearly articulate users’ interactions with various technologies. Appropriation literature (Dey, Newman & Prendergast, 2011) instead offers much insight into how users make use of technologies.
Appropriation is an active process involving the development of individuals’ capacities which occurs during the use of the tool/artefact/application to support a person’s activities and subsequent development (DeSanctis & Poole, 1994). Technology modifies or shapes human activities by creating new opportunities and constraints. Furthermore, technology may also be modified and used in ways and for purposes not envisaged by its original designers. However, the nature of this interaction (between a human actor and a technology) may not
remain the same for all individuals, as people have different ways of perceiving and realising technologies. The appropriation of a technology and its subsequent integration into daily lives can generate benefits and/or reduce costs and difficulties and thereby enhance its value. Identification, creation, communication, delivery and monitoring of customer value are argued to be the major objectives of marketing activities. Customer value is defined as the difference between the total utilities customers obtain from a product and the total costs they pay (Peter & Olson, 1993; Ravald & Gronroos, 1996). Two forms of value have been identified and defined in the economics and marketing literature: value-in-exchange and value-in-use. It is important to understand the difference between the two for a better comprehension of co-creation activities (Humphreys & Grayson, 2008). Value-in-exchange is realised during the point of sale, while value-in-use denotes the extent to which users satisfy their needs/wants. Value-in-use is hence not independent of consumers’ perceptions, abilities, skills and knowledge and is perceived by customers in their internal processes, through their interaction with the suppliers/service providers and/or while consuming the product (Gronroos, 2000; Vargo, Maglio & Akaka 2008).

Traditional transaction-oriented marketing considers value as the function of producers’ endeavour and it does not clearly spell out customers’ involvement in the value creation process (Prahalad and Ramaswamy, 2004). Recent scholarly works expand on this concept with a pursuit of a more holistic understanding of value creation and co-creation (Ravald & Gronroos 1996; Ramaswamy; 2008; Ballantyne & Varey, 2008). There is a shift in paradigm in the marketing literature and this has been clearly observed in the last two decades where the importance of customers’ involvement and their relationship with producers has been highlighted (Gronroos, 1994; Sandstrom, et al., 2008). Hence, marketing has gained credence as a facilitator of the mutual creation and enjoyment of value. Recent developments in relationship marketing (Gronroos, 1994; Christopher et al., 1991) and service dominant logic (Vargo & Lusch, 2004) conceive that customers do not play a passive role in the value creation process; rather they remain as active partners. Ramaswamy (2009) argues that co-creation can be employee/internal co-creation, customer/community co-creation and partner/network co-creation. Starbuck’s business model (Lusch, Vargo & Malter, 2006), IBM’s collaborative innovation plans (Blazevic and Lievens, 2008), IKEA’s product offerings (Wikstrom, 1996) and Procter and Gamble’s web-based strategies (Ramaswamy, 2008) can be cited to highlight the application of the co-creation concept in the business world. Consequently the firms are regarded as value facilitators, while customers are termed as value creators (Gronroos & Ravald, 2009). The existing models of the co-creation of value (Prahalad & Ramaswamy, 244; Chen & Nath, 2004; Anderson & Rosenqvist, 2007) offer limited understanding of how users apply their skills and knowledge in conjunction with macro-environmental factors to make use of technological products such as mobile telephony. The current paper addresses this issue.

**Methodology**

This paper presents a case study developed through ethnographic research undertaken to observe farmers’ use of mobile telephony in the rural settings of Bangladesh. The fieldwork, which was conducted over a four-month period, aimed to find out how farmers make use of mobile telephones and aim to make effective use of this technology. Five groups were formed in two regions and each group had five members. Eight focus group discussions were conducted initially to investigate socio-economic contexts in rural Bangladesh and group members’ perceptions of mobile telephones. Later on, each group was given a mobile telephone set with connectivity. Group use of mobile telephones was arranged for two reasons: to make the intervention cost effective and also to observe how the group members interacted among themselves to learn how to make effective use of the technology. The sets rotated among the group members so that each farmer had two consecutive weeks of hands-on use of
a phone. The farmers’ use of mobile telephones was monitored and they were interviewed on the benefits they received, the problems they encountered and how they overcame the difficulties. All ten groups used the sets simultaneously. Hence, the entire process took ten weeks altogether. In-depth interviews with individual farmers revealed the purposes of their mobile ‘phone use, the kinds of problems they came across and how they overcame these problems. The investigator (the first author) stayed in the localities and observed the rural settings, including the physical environment, culture, practices and lifestyle. Video recordings and diary notes were used to capture these observations. He met the farmers’ groups every two weeks (he visited each region on alternate weeks) and had informal discussions with them. He also interviewed the particular group members who had used the mobile ‘phones during the two-week period. All recordings were digitised, then translated from Bengali and transcribed using Transana. The transcripts were then coded in NVivo\(^1\). Thematic coding was used to analyse the data. Data analysis involved both bottom-up and top-down approaches.

**Findings**

The farmers in this research had a number of difficulties in using mobile phones that restricted the extent to which they could use them. Through observation and interviews, it was noticed that the farmers were able to master various functions, such as switching a mobile phone on and off, charging the handset, receiving calls, making calls and miscall operation. Once they had gathered confidence in using the aforementioned functions, they gradually learnt about tariffs and finding cheaper call rates, and how to save and retrieve numbers. Language was a major impediment to farmers’ use of the mobile telephony. Most handsets sold in Bangladesh only support English. The majority of the farmers have education up to secondary school level and are not proficient in English. The farmers were not familiar with the terms used in the mobile industry, like ‘messaging’, ‘hash’, ‘network coverage’, ‘user busy’. A lack of understanding of technical terms is related to an underlying “mobile computer illiteracy”. Despite these difficulties, most of the farmers persisted in using the phones because they valued the outcomes. These outcomes were both economic and non-economic (social and emotional). Interestingly, three farmers who initially had negative perceptions registered positive opinions after the use.

A number of factors (both macro and individual) enabled the farmers to overcome their difficulties. For instance, they received support from their friends, neighbours and family members. In addition, they adapted the phones to suit their lifestyles. For example, they altered the hardware and nature of use to fit their lifestyles. However, they did not like to carry the mobile telephone sets when they were working in the fields. Bangladeshi rural people do not wear trousers or shirts. They wear a special dress known as lungi which is similar to a female skirt that needs to be wrapped around the waist. These lungis do not have any pockets. Hence, carrying mobile ‘phones is not convenient, although one group used a string to hang the set around their necks. In most cases, the farmers were also worried about dropping or losing phone sets in the field and so preferred to leave them at home. Effectively, the mobile telephone was used as a fixed device, thereby changing its original nature of use. It is also found that in rural societies, shared use of mobile telephony is popular. One mobile telephone set is shared by all family members and sometimes by the neighbours as well. Where the farmers had difficulty in utilising certain features of mobile telephony, they sometimes found means to overcome these problems by continuing to use old-fashioned procedures. Thus, instead of saving and retrieving contact numbers using the set, some of them recorded these numbers in diaries and retrieved them as necessary.

Like other price sensitive users in developing countries, the farmers in this research made considerable use of the miscall. This involves dialling a number and hanging up before the

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\(^1\) NVivo codes are attached in the appendix
call is answered. The ‘missed call’ message will let the recipient know that a call has been made and by whom. In particular contexts, this allows the person who made the call to communicate information to the recipient without paying the usual tariff. There appear to be two reasons behind the popularity of miscall: one is financial constraints and the other a lack of the necessary expertise to send and/or receive text messages. The infrastructural facilities and local businesses also respond to the gradual increase in mobile ‘phone use. Thus rural tea-shops have added mobile top-ups to the services they provide. The shops are not the authorized dealers of any mobile telephone company but they send the top-up requests to the nearby authorized dealer through text or voice messages. They apply a surcharge to cover their messaging cost and a service fee in addition to the top-up amount. Without the provision of this service, topping up mobile phone credit in remote village areas would be extremely difficult.

**Discussion & conclusion:**
Research findings lead us into conceptualising a dynamic process of mobile telephone use and value creation at the bottom of the pyramid. The model presented in Figure 1 represents this process. It entails two major phases: adoption and subsequent integration into daily lives through continued use. The initial adoption introduced the farmers to both benefits and costs/difficulties. Any rational human being would adopt a product if the perceived benefits of using the product outweigh the perceived costs/difficulties. The farmers in this research were no exception. The majority of the farmers were motivated by the benefits (e.g. social, economic and occupational) and continued their use, whereas a small group decided not to use the phones, due to various types of costs. The second phase involves the appropriation process. The continued use of mobile telephones had reciprocal relationships with the social practices and institutions and an individual’s own expertise, knowledge, experience and capacity building. The use of a mobile telephone is not always an individual’s volitional behaviour. Rather, the findings indicate the profound impact of social influence and subjective norms on the farmers’ use of mobile telephones. The support and cooperation received from the friends and family members could be identified as a major facilitator for the continued and unhindered use of mobile telephones and become partial co-creators of this service (Kuppelwieser and Finsterwalder, 2011). Concurring with some current literature, the findings show that social network and support are instrumental in technology adoption. The use of mobile telephones can be influenced by individuals’ knowledge, expertise and overall capacity building. While all these factors have been identified in the past literature as determinants for technology adoption, it can also be argued that there is an iterative relationship between the continued use of a technology and the individual’s skills, knowledge and ability. The use of miscall and putting numbers in diaries are some exciting examples of users’ situated creativity, triggered and supported by their situated knowledge. Farmers’ innovative and creative means for making use of mobile telephony also enabled them to overcome the difficulties. They wanted to personalise the sets and integrate them into their daily lives. Hence, users are more than mere customers. Appropriation is the process that integrates a technology into day-to-day lives and enables a user to harness more benefits. People invent various means for overcoming the difficulties and/or avoiding high costs (for example: miscall). It is understandable that the users at the bottom of the economic pyramid are more likely to face difficulties while using Western-born mobile technologies. This research has identified the user-end innovation and adaptation that Bangladeshi farmers applied to circumvent those difficulties. This involved users’ skills and knowledge, as discussed in the literature review. However, the findings also show that community support (consumer-to-consumer interaction) and inventive measures can be instrumental to obtain value. The co-creation of value has a symbiotic relationship with the appropriation concept. The model below exhibits how appropriation relates to the value creation. This suggests that
co-creation of value is created with and determined by the user in a consumption process or through use of the product (Vargo and Lusch 2006; 2008a). Furthermore, this suggests that the consumer is endogenous to the value creation (Vargo and Lusch, 2006) and appropriation process. The empirical evidence clearly shows that technology appropriation generated more value for the farmers. Simultaneously, the pursuit of greater benefits motivated them to appropriate the technology in their lives. The farmers’ inventive means (miscalls, recording numbers in diaries), community support (help from friends and family members), institutional changes (setting up tea stalls) enhance value for them by generating maximum benefits in exchange for the least cost/difficulties. However, value can also be diminished because of illiteracy, lack of interest, complex and poor translation and high costs. It is also important to remember that the same attributes may not cause difficulties to affluent and educated urban users.

This paper indicates that BoP customers hold business potential for mobile telephones and despite financial and technical difficulties they obtain value-in-use. From a managerial standpoint, it is important for the organization to put in place tools and practises to interact, learn and create a two-way communication with these consumers. This would contribute to the consumer's own value creation (Vargo and Lusch, 2006). Marketers should view consumers as active contributors with knowledge, skills and a wealth of information (Witell et al., 2011). This would create an environment wherein consumers would be active and engaged with the organization. These consumers might be able to share knowledge and information in areas in which consumption and purchase take place (Witell et al., 2011). With this information and knowledge, the development of products or services with unique benefits and enhanced value propositions to the end users are possible (Alam, 2002). While the findings clearly exhibit that contextual factors determine user-end value creation processes, future studies can apply our methodology and concepts to assess and analyse the dynamics of technology use in other situations. Furthermore, this paper offers exploratory findings that can be examined for wider sample sizes through quantitative tools.
References:


## Appendix-1. Some excerpts from focus group discussions:

### Table: List of codes and themes.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Codes (bottom up/inductive)</th>
<th>Codes (top-down/deductive)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile telephone use by the farmers</td>
<td>Can do more than sending and receiving calls, mobile phone functions, only send and receive calls, weekly expense, terminologies.</td>
<td>Ease of use, exploring the benefits and self-efficacy, motivation behind learning functions, not everyone has same level of self-efficacy (from adoption literature), help from others – facilitating conditions.</td>
</tr>
<tr>
<td>Difficulties faced by the farmers.</td>
<td>Difficulty with language, lack of time to explore functions, self-learning, literacy.</td>
<td></td>
</tr>
<tr>
<td>Overcoming the difficulties Appropriation</td>
<td>Innovative use of mobile phones, keeping mobile phones, life without mobile phones, making sense of applications, miscall is not always appreciated, saving numbers in diaries, terminologies, willing to purchase a set of his own, younger users are more comfortable.</td>
<td>Reference groups’ influence, miscall a practice.</td>
</tr>
<tr>
<td>Benefits generated by the use of mobile telephony</td>
<td>----</td>
<td>Emotion and satisfaction, exploring the benefits and self-efficacy, mobile telephony hedonistic use, mobile telephony use for non-farming activities, mobile telephone use to get fertilisers, mobile telephone use to contact extension workers, social appreciation, social use of mobile telephones, willing to purchase a set of his own.</td>
</tr>
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</table>

Source: The categorisation of codes conducted by using NVivo