

Research Article

CellBazaar: Enabling M-Commerce in Bangladesh

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Abstract

E-commerce has been seen as a way to reduce friction in the marketplace. It allows larger volumes of transactions to take place than would otherwise be possible in the conventional marketplace, and it effectively expands markets while opening up opportunities for new ones. However, it is heavily dependent on physical infrastructure and other support services; these are often unavailable or inaccessible at the bottom of the pyramid (BoP) in developing markets. The rapid proliferation of mobile phones throughout these markets, along with increasingly affordable services, creates opportunity to take the benefits of such applications to the BoP segment in these markets. This article examines the case of CellBazaar, a mobile-based electronic marketplace (e-marketplace) in Bangladesh, perhaps the first of its kind to reach the BoP in a developing market. It is a real-time collection of classified advertisements accessible even through the most basic mobile phone. Taking CellBazaar as a starting point, this article explores the potential for providing a wider range of e-marketplace services, including secure payment and delivery of the goods/services traded in a country with a significant BoP population such as Bangladesh; it looks at some of the obstacles that may arise in such a setting and discusses possible solutions.

1. Introduction

In developing economies, access to accurate market information can be limited by poor, underdeveloped, or even absent infrastructure. Countries are poor, partly because markets do not work well, and partly because of information problems. Isolated and poorly informed farmers, traders, and businesspeople cannot participate in commercial exchanges, and even when they do, they tend to have limited bargaining power. Telecommunication service use can ease such limitations (Jensen, 2007). However, infrastructural bottlenecks of other kinds can constrain physical access to markets; transportation challenges, frequent electricity outages, and urban congestion tend to compound such problems. This is so not only for agricultural markets, but also for the market for goods and services, both second-hand and otherwise.

Electronic commerce (e-commerce) is the conduct of commercial transactions over electronic networks (OECD, 2002). It has been seen as a way to reduce friction in the marketplace, allow larger volumes of transactions to take place and effectively expand markets. It also offers a way to open up entirely new markets (Mann, Eckert, & Knight, 2000; Steinfield & Klein, 1999), allowing smaller and larger marketers to exploit the “long tail” of demand for goods or services (Anderson, 2006). Although e-commerce does take the form of commercial transactions facilitated

over the Internet in developed economies, e-commerce is now being conducted in developing economies using mobile networks because of their growing ubiquity. In developing economies, low levels of Internet penetration and the lack of secure payment mechanisms, inter alia, have slowed the growth of e-commerce as compared to its take-off in wealthier countries. Meso, Musa, and Mbarika (2005) note that there is little empirical evidence of the success of mobile-commerce in developing markets; that, at the time of their research, most of the evidence was anecdotal. Even by broader definitions of e-commerce, when m-payments and m-banking are included, widespread uptake by the poor (and evidence of positive impacts) is yet to be seen (Ivatury & Mas, 2008).

As this article shows, e-commerce is developing based on mobile networks, although the forms of e-commerce differ from those being introduced in the developed economies. The phenomenal proliferation of mobile networks in developing economies and the falling profitability of the provision of pure voice services are pushing mobile service providers to explore the potential of the mobile phone to support more-than-voice applications and services. Mobile telecommunication offers the possibility of transforming developing economy markets into more competitive and efficient ones by providing new e-commerce services that can reduce transaction costs and increase revenues for traders in the way that initial expectations for e-commerce suggested.

This article takes CellBazaar, a mobile-based e-marketplace operating in Bangladesh since 2006, as a case study. The service allows buyers and sellers to exchange information on products and services for sale in the e-marketplace by using their mobile phones. It is perhaps the first e-marketplace, albeit one in a basic form, that has been made accessible to those at the bottom of the economic pyramid (BoP). Unlike more sophisticated e-marketplaces, CellBazaar only facilitates buyer/seller search; payments and delivery, among other functions usually offered by such e-marketplaces, are not offered currently.

This article examines the factors that have contributed to the emergence of the CellBazaar service in Bangladesh and enabled it to reach a wider market than conventional Internet-based e-marketplaces in developing markets. The article also considers the scope for extending this kind of a service to include

the payment and delivery functions that would enable it to support more components of the commercial transaction process in a developing country such as Bangladesh.

Section 2 of this article examines the potential benefits of e-marketplaces in expanding markets; the third section provides a brief overview of the CellBazaar application; the fourth examines the factors that can enable it to reach a wider market than conventional Internet-based e-marketplaces would; the fifth considers the potential for completing commercial transactions on a mobile-based platform such as CellBazaar; and the sixth section concludes the article.

2. Potential of e-Marketplaces to Expand Markets

Transaction costs can be defined as those costs incurred in making an economic exchange (Singh, 2008). These can include tangible costs, such as the cost of transportation incurred in searching for a product, as well as intangible costs, such as the time and energy used to make an exchange. Hobbs (1997) categorizes transaction costs as comprising: 1) information costs or those costs incurred in determining the availability, attributes, and price of good or service, also known as search costs; 2) negotiation or bargaining costs or costs incurred in coming to an acceptable agreement with a trading party; and 3) the monitoring or enforcement costs incurred in ensuring the terms of the transaction are respected and providing recourse to appropriate action when they are not.

With the spread of the Internet in developed markets, it was suggested that e-commerce based on the Internet would change the way that companies in developing countries—big and small—transact business, by connecting them through the Web to international markets through specialized networks. Transaction costs would be reduced, and competitiveness would be improved, propelling growth and development. However, this expectation was based on the premise that all companies would have access to information and communication technologies (ICTs), including a cost-effective and reliable telecommunication infrastructure. This expectation was largely unfounded. Humphrey, Mansell, Paré, and Schmitz (2003) found that businesses in developing countries did not make much use of e-marketplaces, relying mainly on conven-

tional methods to complete their transactions (although some exceptions may have existed).

Thus, the benefits of e-marketplaces, and more generally, of e-commerce, have been limited in developing markets, largely due to limitations in Internet access. However, the widespread proliferation of mobile phones compared to computers in these markets, especially among those at the BoP (e.g., LIRNEasia, 2009a), may mean that the potential benefits of e-commerce can now be extended to low-income earners.

E-marketplaces can provide a wide variety of services. They vary in the types of products and services offered (e.g., homogeneous vs. heterogeneous; commodity vs. noncommodity), the extent of services provided (i.e., the components of the transactions that are supported electronically), and the target audiences (offering business-to-business [B2B], business-to-consumer [B2C], or consumer-to-consumer [C2C] services). In this article, we use the term e-marketplace to denote any application that electronically supports the bringing together of buyers and sellers for the purpose of engaging in commercial transactions. We consider e-marketplaces that offer mostly C2C services (though, some may offer B2C and even B2B services), facilitating the buying and selling of consumer goods and services, similar to Amazon Marketplace and eBay. While acknowledging that the commercial transaction may include stages prior to search (e.g., marketing, input supply, finance, R&D, insurance, production, etc.), in this article, we consider the "commercial transaction" from the point of search. This usually includes any one or more of the following aspects, which the kinds of e-marketplaces that we consider usually facilitate: The search for goods or services, possibly disaggregated by type of good or service, condition (new or old, if applicable), price, and geographical availability; the negotiation between buyer and seller; the placement of an order with the seller; the facilitation of payment for the good or service; the facilitation of the delivery of the good or service; and a mechanism to provide feedback (written

statements or numerical ratings) on the quality of service provided by the seller or even on the buyer's behavior after goods/services and payment have been exchanged; dispute resolution to settle disputes that arise in settling payments and the delivery of goods or services (in various forms, ranging from money settlements to cancellation of account of negative feedback recipient). E-marketplace providers such as Amazon Marketplace or eBay provide all of these, while the Bangladeshi mobile-based e-marketplace that is the focus of this article, CellBazaar, currently only provides the search functionality and a limited kind of feedback mechanism.

E-marketplaces can offer several benefits to buyers and sellers, leading to market widening and improved market clearing. For buyers, such applications can reduce search costs;¹ with the simple click of a button, information on a variety of sellers and goods and services is available. This can lead to an increase in demand for goods and services and an outward shift in the demand curve.

For sellers, e-marketplaces can contribute to a reduction in seller costs by allowing sellers, particularly microbusinesses lacking the necessary resources to run brick-and-mortar shops (rent, employee salaries, etc.), to market their wares using their mobile or a computer; this benefit is especially relevant for low-income users in developing markets. Such marketplaces also open up markets for the sale of less popular or long-tail products, because the cost of selling them is considerably reduced (Anderson, 2006). However, exploitation of the long tail of a market also requires sophisticated information processing and logistical capabilities that small and medium-sized enterprises may not have. Nevertheless, an increase in the supply of goods and services associated with an outward shift of the supply curve, together with the outward movement of the demand curve, can lead to a fall in prices and an expansion of the market (though, theoretically, prices can actually increase due to the shifts in demand and supply, where supply is more elastic² relative to demand³). Jensen's (2007) study showed

1. Ghose and Gu (2006) categorize search costs into two components: external and cognitive. They argue that, while e-marketplaces can reduce "external" costs, such as transportation costs incurred in searching for a product, cognitive costs can increase; nevertheless, overall, there should be a reduction.

2. Price elasticity measures the responsiveness of the quantity of a good or service demanded (or supplied) to a change in market price for that particular good or service; more elastic demand (or supply) means that the change in demand (or supply) due to a price change will be greater than in the case of less elastic demand (or supply).

3. Freebairn (2001) explains that, where industry supply is perfectly elastic (i.e., in a constant cost industry), all cost savings are passed on to consumers, whereas if industry supply is more inelastic, some of the savings are retained by in-

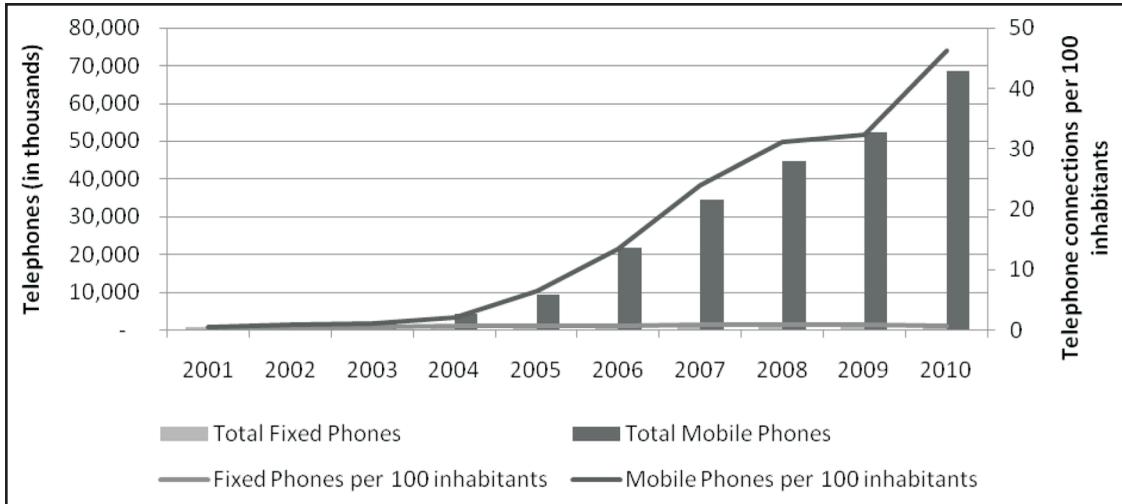


Figure 1. Mobile and Fixed Telephone Subscribers and Penetration in Bangladesh. Source: Khaled (2008), BTRC (n.d.a), and ITU (2011a).

that both buyers and sellers benefited from the creation of a single large market out of 35 separate markets as a result of the use of mobiles; in this case, seller earnings increased, buyer prices decreased, and the market cleared.

It has been suggested that “negative” impacts of middlemen or intermediaries can be reduced through the use of e-marketplaces (Picot, Bortenlanger, & Rohrl, 1997; Wigand & Benjamin, 1995); better informed sellers can gain (more) direct access to markets as a result of a disintermediation process (Picot et al., 1997).⁴ It has also been argued that the lack of reliable information in developing markets gives rise to opportunities for intermediaries to reap monopoly profits from a seller, and to charge buyers exorbitant prices.⁵ However, criticisms of the role of intermediaries often fail to take into account the services they provide, such as transportation or the aggregation of goods into larger lots. In addition, even when information flows improve, intermediaries do not always disappear. Instead, research suggests that the functions they perform

often change (Hawkins, Mansell, & Steinmueller, 1999; Sarkar, Butler, & Steinfield, 1995).

3. CellBazaar: A Mobile-Based e-Marketplace for Bangladesh

With three-quarters of the population living in rural areas (Bangladesh Bureau of Statistics, 2009), it is estimated that about 78% of the 15–60 age group of the population of Bangladesh lives on less than US\$2 per day. Despite this poor economic performance, the telecommunication industry in Bangladesh has flourished in recent years. The mobile sector has grown dramatically since 2004 (Figure 1), owing to intense competition (Khaled, 2008). The affordability of mobile services, as well as their rapid diffusion into rural parts of the country (Knight-John, Zainudeen, & Khan, 2005), has resulted in mobile telecommunication reaching many of the lowest-income earners, or the BoP, within the country. Though the number of mobile SIM cards per 100 inhabitants in Bangladesh was 46 by the end of 2010 (ITU, 2011a), LIRNEasia’s Teleuse@BOP3 survey

industry-fixed factors as higher quasi-rents. Factors that determine the ultimate outcome are the number of suppliers in an industry, the degree of homogeneity of the product, and the ease of entry into an industry; less of the benefit of reduced costs will be passed on to the consumer through reduced prices where there are fewer suppliers in the industry, product homogeneity is lower, and industry barriers to entry are high.

4. Picot et al. (1997) distinguish between “execution-driven” transactions and “consulting-driven” transactions, arguing that the former can often be disintermediated with the use of ICTs, while the latter may not always be, even with ICTs, as they rely on some tacit knowledge that only the intermediary possesses.

5. Islam and Alawadhi (2008) trace the price of beans in Bangladesh through the supply chain, concluding that the price per unit more than doubles by the time it reaches the urban retailer.

of telecom users⁶ at the BoP⁷ showed that, by late 2008, as many as 41% of those aged 15–60 owned their own mobile phone (LIRNEasia, 2009a), with little difference between urban and rural Bangladesh.

CellBazaar is a mobile application provided by Grameenphone, Bangladesh's largest mobile operator. It provides a real-time collection of classified advertisements that is accessible through a mobile phone. It allows sellers and buyers to publish and retrieve (respectively) information on goods or services. Advertisements can be posted into the system and browsed on a mobile phone connected to Grameenphone's network using SMS, WAP, or IVR, or through a computer via the CellBazaar website (available globally, but a Grameenphone mobile connection is required to post). Except for the IVR option, where a limited number of advertisements can be listened to in Bangla, advertisements are provided in English.⁸ Advertisements are tagged under general categories (e.g., used, new, jobs, agri-retail, agri-wholesale, etc.), subcategories (e.g., mobile, televisions, rice, fish, etc.), as well as location. They usually contain information on the listed item, the date of posting, a contact number for the seller, and a price (though this is optional).

The most popular method of posting advertisements is via the mobile phone; initially, SMS was reported to be the most popular access method (*The Wall Street Journal*, 2008), though recently WAP access has become more significant.⁹

When a buyer finds a product that matches his requirements and price range, the buyer can call the seller directly to obtain more information, settle on a price, and exchange goods/service and payment if

an agreement is reached. It is important to note that money and goods/services are exchanged outside the CellBazaar system, as these functions are not currently supported by the company.¹⁰

Payment of the mobile charges is "pay as you go" through standard SMS, WAP, or voice charges. Typically, to post an item by SMS, a seller needs to send approximately five SMS (charged at the standard rate), which costs BDT5.75 (approximately US\$0.08), including taxes. To search, a buyer needs to send a minimum of five SMS, with the number depending on the number of advertisements viewed. WAP and voice charges at the time of research were BDT0.02 (approximately US\$0.0003) per kilobyte and BDT3 (approximately US\$0.04) per minute, respectively.

Various goods and services can be posted according to predefined categories ranging from electrical appliances to automobiles, mobile phones, tutoring, rice, or cattle. It is interesting to note that communication devices (mobiles, computer parts, laptops, TVs, [desktop] computers) constitute five of the top 15 post categories (Figure 2). As Figure 3 shows, CellBazaar is more popular for selling second-hand items.

By the end of 2009, CellBazaar reportedly had 3.5 million users and 84,000 registered sellers (Quadir & Mohaiemen, 2009); by the end of 2010, the number of users had reached 5 million.¹¹ On average, CellBazaar reportedly received an average of 90,000 hits per day (ibid.) and over 1,000 new posts per day, with 15% monthly growth in 2009.¹²

While initially popular in urban areas, CellBazaar claims that the application has since become popu-

6. Defined as those who had used any phone (owned by themselves or someone else) in the previous three months; see de Silva et al. (the lead article in this issue) for survey details.

7. Defined as socioeconomic groups D and E, more or less corresponding to households with incomes less than US\$2 per day, except in the Philippines; see de Silva et al. (the lead article in this issue) for survey details.

8. The CellBazaar system was implemented in English only for two key reasons (Quadir & Mohaiemen, 2009): First, at the time of launching the service, the majority of mobile handsets in the country did not have a consistent Bangla (local language) option, especially among BoP users. Second, Bangla posts (even if typed using English letters) were not searchable by the underlying software; the spelling of Bangla words using English letters is not standardized in the country's common usage. Furthermore, CellBazaar did not anticipate this to be a very significant barrier, as to navigate the system, minimal English proficiency would be required; the user would need to know a few words to get what he or she wants from the system ("buy," "sell," "TV," "Sony," etc.). Alternatively, he or she could have someone else process the post or search for them—a revenue-earning opportunity for some entrepreneurs in Bangladesh, according to Quadir (2008).

9. Kamal Quadir, personal communication, August 2009.

10. As detailed in later sections, policy guidelines for mobile operators to provide mobile payment services had not been finalized at time of writing; thus, operators cannot provide mobile payments services, which would facilitate payments over the CellBazaar system.

11. Kamal Quadir, personal communication, January 2011.

12. Kamal Quadir, personal communication, August 2009.

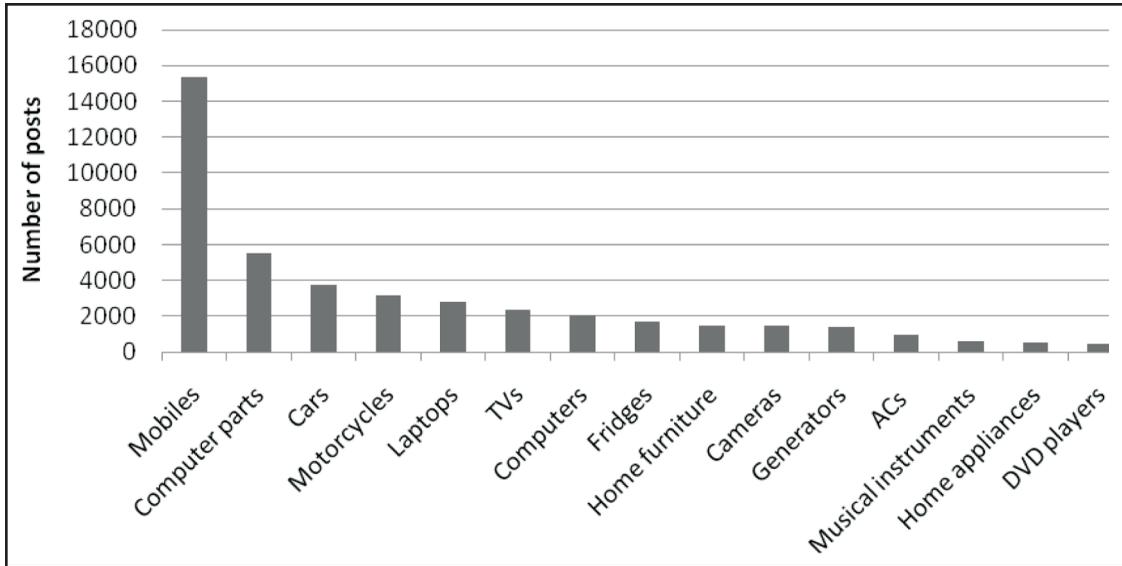


Figure 2. Top 15 CellBazaar Post Categories, as of June 1, 2011.
 Source: www.cellbazaar.com.

lar in rural areas, too. By 2008, 51% of posts were from rural areas, according to CellBazaar officials.¹³

The application has been the recipient of several awards, including the MIT IDEAS 2005 competition, the Manthan Award, Telecom Asia, and Tech Museum. In addition, the application won an award at the 2008 GSM World Congress for the best use of mobiles for development. Quadir claims that CellBazaar is making an operational profit.¹⁴ That could be interpreted as evidence of success.

Since exchange of goods and services and payment occur outside the system, it is not possible to directly track the number of transactions resulting from advertisements on the e-marketplace. According to a survey reported by Quadir in Nokia’s *Expanding Horizons* magazine (2008, p. 13), “two out of ten sellers surveyed were able to sell their items within ten days of posting,” though no information is provided on how the survey respondents were selected.

4. What Makes CellBazaar Work?

In light of the foregoing discussion, this section examines several success factors for CellBazaar in

Bangladesh, where it operates as a marketplace for conducting electronic transactions using simple technologies such as SMS, a feature that sets it apart from many other e-marketplaces that are available.

The first factor is Bangladesh’s high mobile penetration coupled with low Internet penetration. The introduction of an e-marketplace that is accessible using SMS (as well as IVR) platforms has the potential to revolutionize the way in which markets can be accessed (though the WAP platform has recently become more popular). Bangladesh’s mobile sector has performed well in terms of connectivity and price since 2004 (Khaled, 2008). Mobile penetration has grown substantially between 2004 and 2010 (Figure 1); even at the BoP, as many as 41% of Bangladeshis (aged 15–60) owned their own mobile phone by late 2008 (LIRNEasia, 2009a). The millions of users with access to mobile phones with minimum capabilities can achieve instant access to the service. Such platforms expand the number of potential buyers and sellers in the market, though the benefits will differ depending on the specific circumstances in which e-marketplace trading is conducted (Mansell & Jenkins, 1992).

13. Kamal Quadir and Naeem Mohaiemen interview, Dhaka, February 2009. An analysis of seller locations from www.cellbazaar.com on April 17, 2009 also shows that 54% of posts came from outside Dhaka, while 46% came from within Dhaka.

14. Kamal Quadir, personal communication, February 2008.

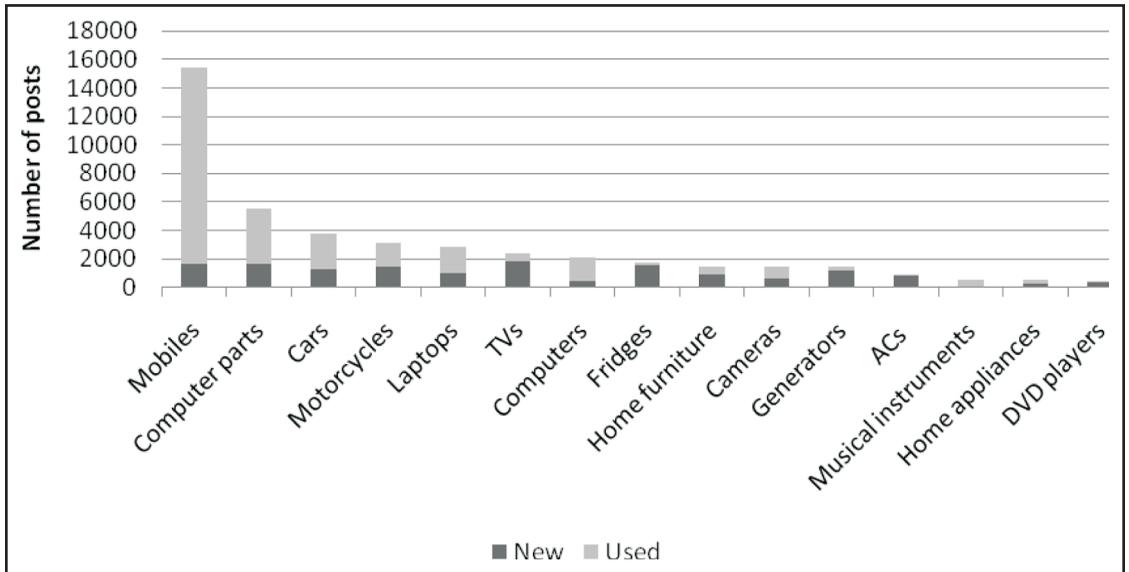


Figure 3. Top 15 New vs. Used Items Posted on CellBazaar, as of June 1, 2011.

Source: www.cellbazaar.com

In contrast, Internet penetration rates in Bangladesh are very low. At the country level, computer-based Internet penetration was 0.138% at the end of 2009 (ITU, 2011b). According to the Teleuse@BOP3 survey, only 0.6% of the BoP (aged 15–16) had ever used the Internet, while 56% had not even heard of the Internet (LIRNEasia, 2009a). The weakness of conventional Internet access in the country strengthens the business case for a mobile-based e-marketplace model. Given the low level of access to the Internet, a situation common to many developing countries, conventional Web-based e-marketplaces are not accessible to the majority of the population, much less the BoP. Even if mobile Web platforms are available, their use is limited to those with WAP/GRPS-enabled handsets. In this regard, the case for access to the Internet (as well as to financial services and other e-commerce services) via mobile phones is very strong. The full *experience* of these services (as normally experienced) may not be achieved via a mobile; however, the important elements, or *functionality* (communication, informa-

tion retrieval, remote computing, etc.) can be (Samarajiva, 2009).

The second factor is affordability of access. Bangladesh is among the cheapest countries in the world for mobile service (LIRNEasia, 2009b; Nokia, 2009, p. 12), with the monthly total cost of ownership¹⁵ for a low-level user being less than US\$5¹⁶ (Nokia, 2009, p. 12). Low SMS charges (Table 1) mean that the cost of searching for or posting an item for sale using SMS is also low. Furthermore, according to Teleuse@BOP3 survey data, BoP Bangladeshi mobile owners were able to purchase handsets for as little as US\$25 in late 2008.¹⁷

The third factor is CellBazaar's association with Grameenphone, the country's largest mobile operator. Unlike many e-marketplaces that are operated independently and are not functionally associated with any other business, CellBazaar partners with Grameenphone to deliver the SMS/WAP/GRPS-based service.¹⁸ This exclusivity with one operator prevents mobile subscribers of other operators from posting items for sale, but not necessarily from viewing posts. CellBazaar's decision to offer its ser-

15. Includes depreciated handset cost, service charges, and tax.

16. The average for the 80 countries studied was US\$13.16.

17. Second-hand handsets among the 25th percentile were purchased for less than US\$24.46.

18. At the time of research (2009), CellBazaar was an independent company, providing services exclusively to Grameenphone subscribers in Bangladesh. In late 2010, the owners sold the company to Telenor, the Norwegian parent company of Grameenphone.

Table 1. South Asian Prepaid SMS Charges,^a in U.S. Dollars, February 2010.

	Afghanistan	Nepal	Bangladesh	Pakistan	India ^b	Bhutan	Sri Lanka	Maldives
On-net	0.052	0.013	0.014	0.012	0.022	0.022	0.009	0.015
Off-net	0.052	0.017	0.014	0.012	0.022	0.022	0.009	0.09

Notes: a. Prepaid, per-minute charges of the cheapest prepaid package (based on initial connection charges) of the largest operator (based on market share) in each country; b. Refers to local tariffs only; the national rate is US\$0.033.

Source: LIRNEasia, 2009b.

vice exclusively to Grameenphone subscribers enables it to benefit from the largest mobile service provider subscriber base in Bangladesh (30 million by the end of 2010; BTRC, n.d.b), as well as from synergies arising from Grameenphone's strong commitment to economic and social development. Grameenphone is also partly owned by Grameen Telecom, a sister concern of Grameen Bank. Grameen Bank is the world-renowned pioneer in the provision of microfinance, effectively operating since 1976. It has the largest microfinance network in the country, extending over 81,000 villages and more than 2,500 branches to date, through which it has been able to assist many rural and poor Bangladeshis in accessing affordable services ranging from telecom to banking or education (through sister concerns), and also in developing livelihoods (Grameen Bank, 2011).¹⁹

The deep grassroots-level infrastructure (social and other, developed over the years as a result of the nature of the microfinance operation where borrowers are visited on a weekly basis by local bank representatives) of the Grameen network, as well as the association with the "Grameen" brand, which is recognized and trusted even in rural areas as a result of its association with Grameen Bank, may enhance the users' trust in CellBazaar, possibly encouraging uptake. The recent (2010) purchase of the company by the parent company of Grameenphone is likely to strengthen this factor, and also enable the company to further enhance and expand services affordably.

The final factor is the entrepreneurial culture among the Bangladeshi BoP. Research suggests that

culture plays a role in the adoption of e-marketplace services such as CellBazaar (Harris, Retie, & Kwan, 2005).²⁰ The Teleuse@BOP3 survey findings indicate that as many as 72% of BoP mobile owners in Bangladesh use their mobiles on a daily basis for "financial, business or work-related" communication (Figure 4). This result is considerably higher than any of the other countries in the study. Interviews indicate that there is keen interest among Bangladeshi BoP teleusers in ways to "make more money" (CKS Consulting, 2009). For example, one young rural Bangladeshi shop owner (21 years old, with only a primary education) who was interviewed has found ways to use his mobile phone to double the size of his shop within a short period and start a second business, and at the time of the research, he was exploring the possibilities of adding another business to his portfolio (ibid.). The mobile is seen not only as a "social" utility, but also as a tool for making money, and it is very likely that CellBazaar's uptake benefits from this entrepreneurial culture and need.

5. Potential for Full-Fledged e-Marketplaces in Developing Markets

The previous sections showed that CellBazaar is an example of a working form of e-commerce (basic though it may be) for developing markets with low Internet penetration. CellBazaar's e-marketplace only facilitates the "search" component of a transaction, although the mobile phone is also used in the negotiation component (to make first contact, and then to discuss the product and price in detail).

19. Through Grameen Telecom, the institution partnered to establish the Grameenphone mobile village payphone (Village Phone) program in 1997. The Village Phone program was instrumental in providing rapid and affordable access to telecom services to large parts of rural Bangladesh through loans to village women for the purchase of mobile handsets and connections, which they could then operate as mobile payphones (Knight-John et al., 2005).

20. Though, as the authors point out, pricing differences between markets were not accounted for.

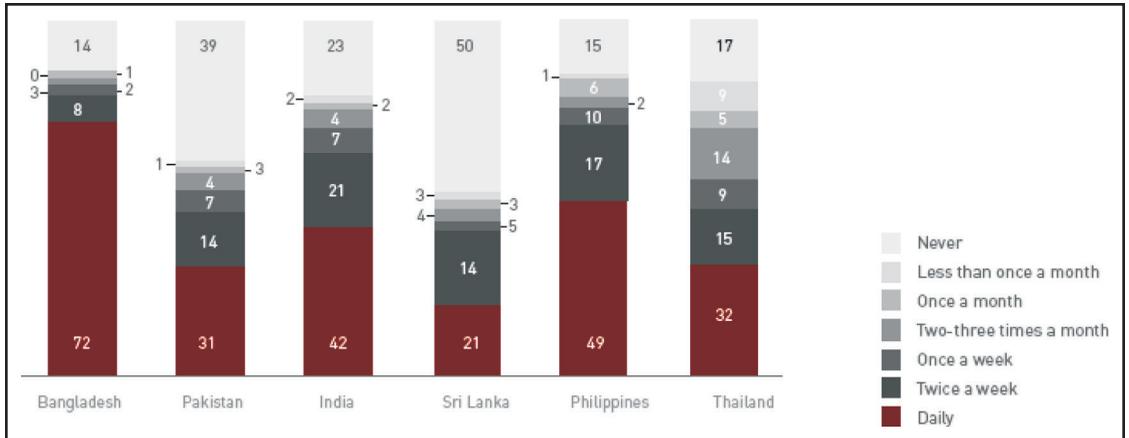


Figure 4. Use of the Phone for Financial, Business, or Work-Related Purposes (% of BoP Mobile Owners).

Source: LIRNEasia, 2009a.

CellBazaar is not involved in the remaining stages of the e-marketplace transaction, where goods/services and payment are exchanged, as well as where monitoring services (feedback, dispute resolution) are provided.

In the case of goods, additional stages in the e-marketplace transaction would involve payment, arrangements for delivery, and monitoring, whereas in the case of services, this would involve only payment and monitoring, as physical presence would still be required for delivery (except in the case of e-services). In the more complex case of goods, where the buyer and seller need not necessarily meet, all stages of the e-marketplace transaction, except actual delivery, could be completed using electronic networks. The possibility of extending an application such as CellBazaar to include both the secure exchange of goods/services and payment and monitoring functions through the mobile platform in a way that might be similar to the services offered by e-marketplaces such as eBay and Amazon Marketplace is considered in this section. Such an extension would be expected to improve the efficiency of a greater number of stages of an e-marketplace transaction. The associated transaction costs would be lowered, allowing the market to expand, both in terms of the number of transactions and in geographical scope. For example, it could allow a person in Dhaka to sell a used television to a person living in some distant part of the country, without the two parties having to travel or meet. In the cur-

rent situation, travel would be required for the buyer to inspect, pay for, and collect the television. In a country like Bangladesh, for a BoP individual, this can pose a significant cost in terms of time and money; thus, such transactions are not likely to take place between distant parties.

To understand what would be required to transform a service such as CellBazaar into a more complete e-marketplace that could offer customers a secure and reliable one-stop shop, it is useful to understand some of the problems that arise from shopping in e-marketplaces.

Shopping in an e-marketplace is affected by two problems due to the asymmetric information that exists between sellers and buyers. The former have superior information on the goods that are on offer than the latter. Sellers have incentive to falsely represent a good; that is, adverse selection creates an incentive to suggest that it is of higher quality than it truly is, or that it is in better condition than it truly is, all in order to secure a higher price. Sellers may also have incentives to act badly after the buyer has made a payment by delaying delivery, not responding to customer complaints, etc., as a form of moral hazard (Resnick, Zeckhauser, Swanson, & Lockhead, 2002). These potential problems mean that potential online shoppers may refrain from engaging in online transactions (Teo, 2006). Although, in the case of new and standardized (branded) goods, adverse selection incentives may be less pronounced (Resnick et al., 2002; Teo, 2006), this still remains a problem

in a marketplace like CellBazaar's, where many of the goods on offer are both second-hand and less standardized.

These problems underscore the importance of trust in facilitating commercial transactions. Trust can be loosely defined as confidence in the reliability of a person or system (Giddens, 1990, p. 30). The need for trust arises from a lack of information on and understanding of the characteristics of an individual or the workings of a system (Giddens, 1990, pp. 33–36), and trust has been shown to be a key factor in facilitating commercial transactions (Liu, 1996). In the case of e-commerce, where transacting parties may not know each other, may have never met or spoken, trust becomes even more important. As Liu notes, the move from face-to-face transactions to technology-mediated transactions implies that higher levels of trust are needed (1996, p. 34). Siau, Sheng, and Nah (2003) have shown, with respect to computer as well as mobile-based e-commerce, that there are several dimensions of trust that are needed for e-commerce transactions: trust in the seller, trust in the buyer, trust in the electronic network, trust in the e-marketplace, etc.

When e-marketplaces support all stages of a transaction, the buyer and seller should not have to meet or speak. Despite the fact that transactions are between distant strangers, thousands of transactions take place using e-marketplaces such as eBay every day among parties who do not know each other. This suggests there is sufficient trust between the parties for transactions to occur, and that the e-marketplace provider can play an important role in building trust.

Feedback Mechanism

Resnick and Zeckhauser (2001) suggest that "trust among strangers" is generated by a system of reputation-building based on feedback mechanisms that allow the process of transacting to establish a "reputation" based on previous buyer and seller experiences, which is then made visible to other potential transacting parties, who may be few and dispersed. Resnick et al. (2001) argue that, as long as users *perceive* the reputation system to work, bad behavior will be deterred, and bad sellers will be discouraged from joining the market. The threat of negative feedback for bad behavior has the effect of

regulating the sellers' behavior. Where the seller has to incur an initial cost to start selling and establish a reputation, the mechanism is that much more effective; where fresh profiles can be created with little cost, the mechanism becomes weak. For a CellBazaar user to start a fresh profile, a new mobile connection would be needed. Based on studies of eBay transactions, Resnick et al. (2002) show that that reputation matters more for "riskier" goods, that is, higher value, less standardized used items. The current feedback mechanism employed by CellBazaar does not serve the purpose of generating trust, since feedback cannot be linked to transactions, as goods/services and payment are exchanged outside of the system and cannot be traced. The key requirement for the feedback information to be credible is that buyer/seller feedback can only be entered into the system where two parties have actually transacted (i.e., preventing fake feedback). If the system were capable of facilitating, and therefore tracing, actual transactions that have taken place, a feedback mechanism would be relatively simple to implement, but crucial to its success. However, the success of this would rest on convincing users (particularly one-time users) of the importance of actually providing feedback.

Secure Payment Method

Trust concerns with respect to completing payments on the e-marketplace system involve both technical and policy aspects. The seller has to be able to trust that the buyer will make the payment when the good is delivered, and the seller has to trust the mode of payment (e.g., a check may bounce after delivery). The buyer has to be able to trust that the seller will deliver the good if a payment is made. This suggests that neither party will want to be a first mover, given the risk of noncompletion of a transaction.

Some e-marketplace operators have overcome this issue by introducing a (trusted) third party guarantor to reassure both parties. The buyer issues the payment to the third party guarantor; the seller then is able to deliver the good. Once the buyer confirms that the good has been received or otherwise accepts the responsibility, the third party guarantor then releases the payment to the seller.²¹ The third party guarantor may be a credit card company, a

21. In fact, this is the case in all money transactions that take place in an economy. As Giddens points out, in economic transactions, by exchanging money tokens (guaranteed by the state) instead of engaging in barter exchanges,

money broker (e.g., Propay, Paymate on eBay), or the e-marketplace operator itself. Buyers and sellers may also want to track payments, assure themselves about the security of credit card details, purchase protection against risk (or insurance), and ensure prompt payment.

In most developing countries and, in particular, for the BoP, access to bank accounts and/or credit cards is poor. At the BoP in Bangladesh, 29% of respondents of the Teleuse@BOP3 survey had access to a bank account (broadly defined as some kind of bank account within the household and not differentiating between current and savings accounts), and 3% had access (similarly defined as held by someone in the household) to a credit card. On the other hand, 41% owned their own mobile, and an additional 19% had access to a mobile within their household. These kinds of numbers improve the business case for mobile payment and banking applications in the developing world and imply that a logical way of facilitating payments on the CellBazaar e-marketplace would be through a mobile payment system.

Secure mobile payment systems have been implemented in several Asian countries, most notably in the Philippines (Alampay & Bala, 2010). Mobile users (who subscribe to the networks that provide payment systems) can send money from one mobile to another and make other payments through a simple SMS for a small fee.²² Money can be put into or taken out of the system through local agents.

Although the technology for these systems does exist and can be tweaked to suit a country or operator's requirements, the two major barriers to successful implementation are the lack of a clear policy framework and uptake.

Mobile payment systems blur the lines of responsibility between mobile operators and banks, as well

as between the authority of telecommunication and financial service regulations. Clear guidelines are required as to the functions which a mobile operator can and cannot perform (e.g., whether they can accept deposits like conventional banks that may be authorized to facilitate customers drawing cash out of the system, etc.). To date, the lack of formal policy guidelines on mobile payments²³ in Bangladesh has prevented operators from providing such services freely (Sultana, 2009).²⁴ While banks have been granted permission by the Bangladesh Bank to provide various kinds of electronic payment systems, which include some mobile-based options (Hasan, 2009),²⁵ mobile operators have not been able to lead any such service offerings. Finalization of the guidelines and necessary regulations will enable them to front such services, but this does not seem likely to happen very soon.

On uptake, even in the Philippines, mobile payment usage appears to be very low among those at the BoP. Only 12% of BoP teleusers in the Philippines who were aware of mobile payments (just over 40% of all teleusers surveyed) had used a mobile payment system, of which just one-third used it regularly (LIRNEasia, 2009a). Although there is widespread familiarity with mobiles, SMS, and electronic reloading in the Philippines, awareness of mobile payments at the BoP was poor. The uptake of mobile payments in Bangladesh might similarly be low as a result of this lack of familiarity. Nevertheless, the experience so far with mobile-financial services (among other innovations) in markets such as Kenya, Brazil, South Africa, the Philippines, inter alia, indicates that, often, early adopters tend to be from non-BoP markets, and the BoP eventually follows (Ivatury & Mas, 2008). Ivatury and Mas predict that the ultimate users of these kinds of mobile financial services will, however, be the poor.

the requirement for trust in the other party is replaced with trust in an "abstract system," guaranteed by a third party (1990).

22. For example, a G-Cash user is charged 1% of the transaction value for sending money (<http://gcash.globe.com.ph/subsectionpagearticle.aspx?secid=25&ssid=43&id=86>).

23. Though the Bangladesh Bank issued draft guidelines in 2008, progress has been slow; at the time of writing, the guidelines are still not finalized, though the government has been consulting with relevant stakeholders toward this goal.

24. Research has shown, though, that users do informally make small transfers through the electronic reload facilities (CKS, 2009).

25. For example, Dhaka bank launched an electronic prepaid card system in October 2009 with a "mobile payment option" (Hasan, 2009); Banglalink (the second-largest mobile operator) reportedly entered into collaboration with Dhaka Bank to facilitate inward remittances (The New Nation, 2009). Similarly, the Dutch-Bangla Bank, in collaboration with two mobile operators, launched an online banking system in April 2011 that includes some mobile-based services (cash deposits and withdrawals, utility payments, salary disbursements, and foreign remittances; Yahoo Finance India, 2011).

Furthermore, the use of m-payments for e-commerce will depend on users actually using them for e-commerce purposes, rather than others (remittances, bill payments, small savings, etc.), as well as on factors such as the suitability of the service design for e-commerce purposes (e.g., allowing users to cash in and store sufficient amounts on their mobiles to purchase goods). Until the services are implemented and tried out by users, it will be hard to say whether they will be taken up and used for e-marketplace transactions.

Secure, Reliable Delivery

Infrastructure limitations are also important factors in a country like Bangladesh. For successful e-commerce, a reliable, secure, and cost-effective delivery mechanism is required with tracking options.²⁶ Bangladesh has private courier services, but these mainly serve corporate users, and they are not well-targeted toward BoP customers in terms of price. However, if there is enough financial gain, these services could, indeed, focus on the BoP, especially in dense, small-footprint cities like Dhaka (traffic congestion would be the key barrier). Private courier companies are now widely used in some parts of China due to growing e-commerce in recent years (Aixiong, 2010).

The national postal service is another option for delivery of goods, with its nationwide coverage. The revival of the postal services in the United States²⁷ and China (ibid.) in the age of the Internet and e-mail, as well as China's postal and courier system suggest a similar opportunity for the Bangladeshi postal service to embrace the change, modernize, and innovate. The Bangladesh Postal Service currently has a "value pay post" (VPP) facility (cash on delivery) used by a few companies that allows the buyer to pay for the good on delivery and the postal service to pay the seller thereafter. The VPP facility, if redesigned, could be a starting point for the national postal service to support nationwide

e-commerce transactions, and it could provide an alternative for secure payment in light of the slow movement on m-payments in Bangladesh. A similar cash-on-delivery facility has worked well for Chinese e-commerce users who lack credit cards or do not wish to make payments using their credit cards (ibid.). China has also had success in involving local post offices in Hong Kong in e-commerce through collaborations with a successful mail-order company offering an e-commerce platform, Mecox Lane, in the order, payment, and pick-up of purchases (Martinsons, 2002).

6. Conclusions

There is substantial potential for mobiles to transform e-commerce in developing markets by reducing transaction costs associated with all stages in a transaction. This could give rise to many efficiency benefits. Thus far, the limitations in Internet access and the absence of secure payment mechanisms, inter alia, have precluded the widespread adoption of e-commerce applications in the payments and exchange stages of these e-marketplaces.

The case of CellBazaar demonstrates a working form of e-commerce that is well suited to developing markets, linking buyers and sellers of many kinds of goods and services in all parts of Bangladesh. The simple mobile application may be a rudimentary and partial solution, but it has been taken up by at least 5 million Bangladeshi mobile users by the end of 2010, including the rural poor.

The factors contributing to its success include the high level of mobile access in the country (even among the rural poor) when the service was launched, the low cost of using the service (for buyers as well as sellers), the exclusive partnership with the largest mobile operator, and the entrepreneurial culture in the country.

While CellBazaar is not the only e-marketplace in Bangladesh, it is perhaps one of few, if not the only

26. However, whatever the delivery services employed, there may be limitations on size and content; given the nature of some of the basic goods traded through CellBazaar (e.g., livestock), face-to-face delivery options may be required in any case.

27. In the early days, the Internet was seen as a threat to the U.S. Postal Service (USPS) (Childs, 1998). By 2005, the picture had changed altogether, with growth in e-commerce making a significant positive contribution to the volume of mail going through the postal service, specifically from Amazon, eBay, and Netflix (Fallows, 2005). The USPS was led to innovate, installing barcode tracking mechanisms, flat-rate boxes, providing printable postage labels, as well as a range of services for shippers (in fact, specifically targeted for the likes of the millions of eBay sellers) on its website. USPS now even partners with other courier services, such as FedEx and UPS, to provide the "last mile" of the delivery service (Hafner, 2006).

one, that is well suited for access by the BoP. In this regard, perhaps the most important success factor is its exclusive relationship with the largest mobile service provider in the country and, tied to that, its association with one of the most widely recognized brands in the country. The Grameen brand has been strong enough to propel the "Grameenphone CellBazaar" brand into rural markets without major advertising campaigns, although the company has used "grassroots street marketing" to push the service out to rural users (Quadir & Mohaiemen, 2009, p. 69). Bangladesh Brand Forum has identified "word of mouth" as a crucial factor in its spread (Bangladesh Brand Forum, 2010).

To expand a service such as CellBazaar to provide a wider range of e-marketplace services, problems associated with e-marketplaces still need to be overcome, and with solutions relevant not only for developing markets, but the BoP within them. While the technology issues are relatively tractable, the policy and infrastructure challenges remain. M-payments could offer an ideal solution to enable payments to be made within this e-marketplace, both policy and uptake barriers exist. Despite such policy barriers, as with much of the Bangladeshi mobile sector development, CellBazaar represents a "workaround" solution; since mobile payments (the natural route) are effectively not permitted, the service doesn't attempt to get into the payment process.

The biggest challenge, however, to expanding CellBazaar in a country like Bangladesh is ensuring secure delivery. Without a reliable, secure, and cost-effective delivery system, transactions will be geographically limited, and more so in the case of goods. Nevertheless, access to geographically unlimited market information can still contribute to improved market efficiency, which is a positive step toward the goal of providing full-fledged e-marketplace services. ■

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