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Md. Mazharul Islam

Essam M. Habes

Md. Mahmudul Alam

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**Md. Mazharul Islam**

Department of Finance, College of Business  
King Abdulaziz University, Saudi Arabia  
Email: [malislam@kau.edu.sa](mailto:malislam@kau.edu.sa)

**Essam M. Habes**

Department of Economics, Faculty of Economics and Administration  
King Abdulaziz University, Saudi Arabia

**Md. Mahmudul Alam**

School of Economics, Finance & Banking  
Universiti Utara, Malaysia, Malaysia  
Email: [rony000@gmail.com](mailto:rony000@gmail.com)

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# **The Usage and Social Capital of Mobile Phones and their Effect on the Performance of Microenterprise: An Empirical Study**

## **Abstract:**

The purpose of this study is to uncover the impacts of mobile phone use on the performance of micro-enterprises (MEs) in Bangladesh, a developing country where the total number of mobile subscriptions reached around 131.38 million by the end of June in 2016 with penetration rate of 81 percent. Data were collected from owners of MEs through face to face interview. A multivariate analysis and SPSS macro developed by Preacher and Hayes were used as statistical techniques to assess the effects of mobile phone use. Results of the study indicate that micro-enterprises which owners were using mobile phone were having significantly greater benefits and financial performance compared to counterparts. A significant direct relationship between mobile phone use, and social capital and ME's financial and non-financial performances was found. A further investigation revealed that financial performance is also indirectly related to social capital and quality and enterprise processes, which are significantly influenced by mobile phone usage. Therefore social capital and non-financial business performances are involved in the mediational process between the financial performance of MEs and use of mobile phone. The novelty of this research lies in the establishment of, for the first time, high level statistical relationship between the use of mobile phone, its mediating factors and financial performance of MEs. The findings will assist micro-entrepreneurs and policy makers in taking right courses of action that make the implementation of this device more effective.

**Keywords:** *Mobile phone use, Social capital, Business performance, Microenterprises, Bangladesh*

## **1 INTRODUCTION**

The mobile cellular subscriptions dramatically increased worldwide by the end of 2015. Due to technological progress, infrastructure deployment, and falling prices, more than 97% of the world's population lives within range of a mobile/cellular network (ITU, 2016). This growth mobile phone use will play an even more significant role in the post 2015 development agenda and in achieving future sustainable development goals as the world moves faster and faster towards a digital society. The mobile phone has become a symbol of the use of new information and communication technologies in the developing world. Mobile phones are used for a variety of purposes, including keeping in touch with family members, conducting

business, and having access to a telephone in the event of an emergency. Some people carry more than one cell phone for different purposes, such as for business, social, and personal use. The use of mobile phones, in the interplay with other factors, can increase productivity; enhance access to services; widen markets; simplify transactions; substitute for physical transport; prevent crime; improve governance, and create new socio-economic opportunities, among many other benefits (Sife et al., 2010).

Jonathan Lynn (2013) reported that there are few technologies in the world have created as immediate and widespread an impact as mobile phones. Mobile phones can improve the livelihood of the poorest people in developing countries by invoking both the change in social and business networks and productivity frames, and providing access to information in places where landlines or the Internet are not available (Jonathan Lynn, 2013; Donner, 2007). Moreover, one of the key factors for business growth is the building and utilization of appropriate forms of social capital (Audretsch et al., 2006) and specifically for the Microenterprises (MEs) (Dah and Zolnik, 2011). So it is clear that the existing literatures have demonstrated that mobile telecommunications is a substantial driver of economic growth. As a results, many governments from developing countries and development agencies are focusing on extending mobile phone services not into urban areas but remote areas as well, as they seek to encourage MEs for economic and social growth which will led to alleviate poverty.

Although existing literatures have demonstrated, telephone telecommunications is a substantial driver of economic growth, the role of mobile phone usage in enterprise business performance is little discussed in the literature. There are a tiny fraction of the total literature on mobile use in the developing world (Donner, 2008). So, despite this increasing interest, evidence of the MEs performance of using mobile phones is still lacking. The lack of empirical evidences on the role of mobile usage are limits our understanding of the usage of mobile phones in enterprises as a whole, and MEs in particular. Specifically, the precise ways and extent to which mobile phones use contribute to the smallest and most numerous businesses, called MEs performance in developing are still debatable. For example, there are very few in- depth studies which have been carried out to document how MEs benefit (by strengthening financial and nonfinancial assets, and by promoting social and economic empowerment) from mobile phone services, what impact it is having on their business growths and performances, and social networks, and how social capital mediates the relationship between mobile phone use and MEs performance. . Drawing from Helles' (2013) recommendation that an "in-depth analysis" will be useful in providing a more systematic

explanation of the consequences of mobile phone use, it is very important to understand the usage of mobile phones in MEs as indicators of their capacity to shape business performance.

Keeping this fact in mind, the current study attempts to redress the balance, by examining how mobile phone use is associated with changes in the social networks and business performance of MEs in Bangladesh. In particular, the focus of this study will be to examine the direct and indirect link between mobile phones usage, MEs performance, and social capital in Bangladesh. The mobile users' rates in Bangladesh is not far behind than the developed countries. Though Bangladesh is a developing country, the total number of mobile subscriptions reached around 131.38 million by the end of June in 2016 with penetration rate of 81% (BTRC, 2016). With such an enormous usage of mobile phones, Bangladesh provides an ideal context in which to conduct a study of this nature.

## **2 LITERATURE REVIEW**

### **2.1 *Microenterprises (MEs):***

There is no common working definition of MEs but it defers across the countries and researchers. These different categories, based on the number of a company's employees and its turnover. For example: a business with a single owner-operator and having up to 20 employees is considered as a MEs in Australia (Boston Consulting Group, 2006), a business with fewer than 10 employees and annual 2 million euros turnover or less is considered MEs in Europe (European commission, 2003), a businesses with less than 10 employees and annual \$100,000 or less turnover is called MEs in USA (World Bank, 2006). MEs are located in both rural and urban areas while some MEs are home based and have no fixed location. The majority are simply self-employed and often struggling to get by and will never grow their businesses into larger enterprises (Mead and Leidholm, 1998), while some are growing with skilled owners and productive business models (la Porta and Shleifer, 2008). Moreover, MEs of different categories have different capabilities and challenges in the implementation of mobile phones. As a results, the performance, productivity, and formality varies considerably between MEs, though MEs share a basic similarity such as each combines investments in capital with some labor.

According to Bangladesh Bank, in manufacturing, micro industry/enterprise would be those with assets worth Tk 500,000 to 5 million (defined as above) and/or 10 to 24 workers or less. In service industry and in business, micro enterprises will be those which employ 10 or less people and have assets (defined as above) worth Tk 500,000 or less (Bangladesh Bank, 2011). Very small businesses and household based enterprises are considered as

microenterprise in Bangladesh. It creates employment for family members and other poor people. There is a common agreement that SME sector is one of the principal driving forces in the development of the economy of Bangladesh. In 2003, total number of enterprises was 3.71 million of which 3.62 million of all industrial units were micro-enterprises and contributed over 97 per cent (Economic Census 2003). The structure and composition of enterprises were remained almost the same in 2013- out of 4.5 million enterprises, 3.73 million were micro (83 per cent) enterprises (Economic Census 2013). In spite of this immense contribution of micro enterprises in the development of the economy of Bangladesh, to date no research has investigated impact of mobile phone use on micro enterprises performance in Bangladesh. By addressing this vacuum, the significance of this study is clearly justified.

## ***2.2 The use of mobile phones and enterprises performance:***

Though landline has long been recognized as communication media for enterprises but in 19<sup>th</sup> centuries, the rapid diffusion of mobile phones has led to significantly higher levels of communications access and use. As a result, in recent years, academics and practitioners have become increasingly interested in examining how use of mobile phones impact the performance of enterprises. For example, Duncombe and Heeks (2002) stated that mobile phone has the potential to reduce the transaction costs associated with the exchange of information relevant to ME activity. Particularly mobile phone can reduce the time (and hence costs) associated with receiving market information (such as prices) and the costs of conducting and agreeing to transactions. Kenny (2002) also reported that mobile phone has done the most to reduce costs, increase income and reduce uncertainty and risk which have been considered as a measure of enterprises performance. Samuel, Shah, and Hadingham (2005) have done a study on the importance of mobiles to MEs in South Africa, Tanzania, and Egypt and they reported that the mobile phone had increased the profitability of the business. While, Rwanda (Donner 2005) reported a mix impact of using mobile phones to improve MEs productivity. Some enterprises reported that using the phone has improved enterprise productivity (Bertolini, 2002; Saunders et al., 1994; Blattman et al., 2003; Richardson et al., 2000; Gamos, 2000; Wellman, 2002, Souter et al., 2005).

There have been some recent empirical studies to confirm the benefits associated with mobile phones and these studies have identified mobile phones as one of the key tools to support the success of a business. These studies reported that there is indeed an effect of the mobile phone use on enterprise performance by increasing innovations, bringing more

customers, reducing business transportation and transaction times, reducing costs, and reducing storage losses which leads more business revenues and profits (Njau and Njuga, 2015; Makee et al., 2014; Ogalo et al., 2011; Boadi et al., 2008; Aker and Mbiti, 2010; Jagun et al., 2008; NOKIA, 2006). For example, Njau and Njuga (2015), in a study that focused on mobile usage among MEs in Tanzania, showed that, the more the use of mobile phone services by MEs the more the business successes. They also stated that about 87% respondents reported that mobile phone services contribute positively to MEs performance. The mobile phone usage increase the revenues and profits of enterprises through the increase in sales and market share and the reduce in costs (Makee et al., 2014). Thus, it is more likely that the more use of mobile phones by MEs, the more likely they will be benefitted by this technology. Therefore, we hypothesize the following:

*H<sub>1</sub>: Usage of mobile phone is positively associated with MEs financial performance.*

*H<sub>2</sub>: Usage of mobile phone is positively associated with MEs non-financial performance.*

### **2.3 The use of mobile phones and social capital:**

The earlier literatures showed that with the development of Information and Communications Technology (ICT), the interaction between ICT and social capital in organizations or society at large have caught both researchers' and policymakers' attention. A number of articles discussing some aspect of ICT particularly mobile phone technology and social capital, there appears to be a strong interest in understanding the relationship of ICT and social capital. It is commonly agreed that social capital at both individual and collective level is strongly positively related to the development, adoption and use of mobile phones. For example: Goodman (2005) has carried out a study on South Africa and Tanzania, and reported that the use of mobile phone facilitated three types of social capital: as an amenity & shared commodity; to mediate strong links (with family and friends and other community members) and to mediate weak links (with businessmen, government officials, tradesmen, etc.). Souter et al. (2005) stated that mobile phones are extensively used to maintain social networks. Zainudeen, Samarajiva and Abey Suriya (2005) also conducted a study among financially constrained users in several localities in India and Sri Lanka found that the large majority of phone use was for 'keeping in touch' with family and friends rather than instrumental uses such as business and financial transactions. Kakihara and Sorensen (2002) argue that mobile technology is continuously reshaping social interactions for constructing social networks and creating trustworthiness and norms of reciprocity. Therefore, social interaction is central to

gluing social capital (Urry, 2002). Srivastava (2005) has argued that social interaction in our society have changed because of the heavy use of mobile phones and these changes have generated social capital which has been supported by Yang et al (2007). While Miata and Kobayashi (2008) stated that there is no significant evidence to prove that the use of mobile phone increases supportive social ties.

However, studies in this area are still very limited and do not produce consistent results. As a results, presently, great efforts are being made to discover the effect of mobile phones on social capital. Campbell and Kwak (2010) have done a survey on US adults and found that mobile phones user was being active in organized groups and clubs. In addition, use of the mobile phones was positively associated with active membership in organizations and related to social leisure activities, such as eating meals with others, meeting friends and playing team sports. These are examples of “bonding and bridging social capital”, which is characterized by close-knit, emotionally important relationships with like-minded others, typically family and close friends. This findings are supported by other recent studies (Wanda 2014; Haider et al., 2014; Ashiq et al., 2013; Hampton and Lee, 2011; Aminuzzan et al., 2011; Rowan, 2011; Jin and Pena, 2010). For example, Haider et al. (2014) reported that the use of mobile phones increased the extra social activities of Pakistani college going teenagers. Hampton and Lee (2011) found that using mobile phone is strongly positively related to an individual’s social capital development. Thus, it is more likely that the more use of mobile phones, the higher the social capital. Therefore, we hypothesize the following:

*H<sub>3</sub>: Usage of mobile phone is positively associated with social capital.*

## **2.4 Social Capital and enterprises performance**

Building and utilization of appropriate forms of social capital is one of the key factors for business growth (Audretsch et al., 2006) and specifically for the MEs (Dah and Zolnik, 2011). The physical, human and financial capital are not the only resources needed for MEs business growth but social capital is essential as micro enterprising is a multidimensional process that requires different inputs and a holistic approach in its support. The performance of MEs cannot be recognized entirely to the effects of physical, human and financial capital but also to the role of social capital. Three types of social capital namely bonding, bridging, and linking social capital have been identified in literature. However, the development of the quality and effective forms of bridging social capital and linking social capital depends on the strength and quality of the bonding social capital (Warren, Thompson & Saegert, 2001). Literature shows that social capital played an important role in socio-economic development



at the individual/ household, enterprise and national levels (Davidsson and Honig, 2003). Because of its roles and functions, social capital has been regarded as one of the important drivers of entrepreneurship performance (Dah and Zolnik, 2011).

Empirical evidence on the effect of social capital on business performance has established that there is a positive relationship between utilizing appropriate forms of social capital and the rates of business formation, survival, and growth (Muniady et al., 2015; Percoco, 2012; Turner, 2011; Carey et al., 2011; Basargekar, 2010; Liao and Welsch, 2005; Davidsson and Honig, 2003; Landry *et al.*, 2002; Maskell, 2001; Sanders and Nee, 1996). For example, some of them reported that social capital through social relations is capable of providing individual entrepreneurs with financial and physical support, useful information (Landry *et al.*, 2002), psychological and moral or emotional support (Sanders and Nee, 1996), and accumulating other kind of resources which is turn to the performance of MEs (Sanders & Nee, 1996). In particular, social capital supports enterprise for better performance by promoting efficiency and transparency (Davidsson and Honig, 2003); strengthening supplier relations and inter-firm learning (Murphy, 2002); lowering their transaction costs (Murphy, 2002); acquiring organizational legitimacy and reputation (Liao and Welsch (2005); providing access to latest technological innovations (Davidsson and Honig, 2003); providing competitive advantages, increasing ability to identify and exploit new business opportunities (Maskell, 2001); overcoming entrepreneurs lack of collateral and thus to access credit and other forms of capital with less difficulties (Basargekar, 2010). In addition, Turner (2011) stated that firms were able to use social capital to generate innovation, cost improvements and increase overall profitability. He provided the evidence that links the dimensions of social capital with firm's performance. Muniady et al. (2015) reported that social capital provided entrepreneurs with resources and knowledge that were not available in the first place which played as a key tools for MEs performance. While Percoco (2012) found a strong correlation between social capital and enterprise performance. Therefore, we hypothesize the following:

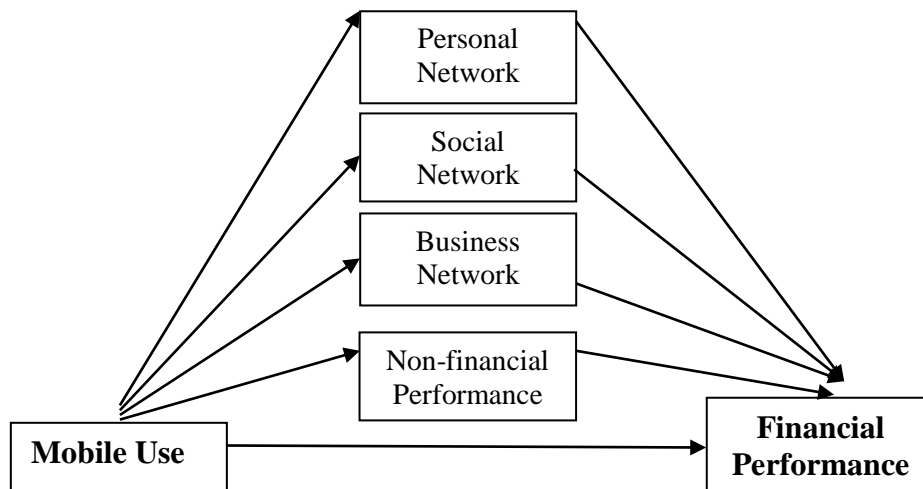
*H<sub>4</sub>: The impact of social capital on ME's business performance (in both financially and non-financially) is positive and significant.*

Based on the overall literature discussed above, the following hypothesis was developed:

*H<sub>5</sub>: Relationship between mobile phone usage and financial performance is mediated by social capital and non-financial performance.*

## 2.5 Conceptual Framework

Based on the literature study, we derived the following conceptual framework (Figure 1) that illustrates the expected relationships and major hypotheses.



**Figure 1:** The hypothesized relationship between mobile phone use, social capital and microenterprise Performance.

## 3 METHODOLOGY

### 3.1 Sample design and selection

Two trained research assistants have conducted face to face interviews to randomly selected 217 ME owners in different locations of Bangladesh. Initially the samples were clustered based on location and then select sample randomly. Finally, seventeen out of 217 survey questionnaires were excluded for somehow missing information. So the final sample of this study was 200. The number of employees is used as the proxy of indicator of enterprise size in this study (Islam, Karim 2011) as they are not willing to provide their yearly turnover. In Bangladesh, the Bangladesh Bank defined micro enterprise as an enterprise with 10 or less full time employees (Bangladesh Bank, 2011).

Although there are no absolute standards in the literature about the sample size requirements, Kline (2005) classified sample sizes in empirical studies as small ( $N < 100$ ), medium ( $100 < N < 200$ ) and large ( $N > 200$ ). Sample size of this study is considered large and therefore suitable for any analysis.

### 3.2 Questionnaire design

Flynn's (1990) systematic approach of empirical research was used in this study that means the research problems were first formulated from the literature and then a questionnaire survey was conducted to test the hypotheses. At the initial stage of the study, a pilot questionnaire survey was conducted. Face to face interviews were held at the participating MEs, which comprised of two pharmacies, four departmental stores, two book shops, and two audio & video shops in Bangladesh. Objectives of the pre-testing were to check whether the questionnaire measures what it is supposed to measure and how easy the questionnaire is to complete and which concepts are unclear or out of the respondents' range of knowledge and responsibilities. Based on the pre-testing, some modifications were done to ensure the clarity of all the items in the questionnaire. Based on their recommendations, the questionnaire was further improved in order to make it more comprehensive. To reduce the respondents' inclination to describe themselves in a social desirable way, this study has taken into consideration social desirability response bias by including few "experimental/indirect" questions in the survey questionnaire (Belli et al. 2006). Finally, the questionnaire was finalized based on the ethical clearance from the Deanship of Scientific Research at King Abdulaziz University.

### **3.3 Model and Analysis**

This quantitative study utilized a postal questionnaire survey to collect primary data to test the above mentioned hypotheses which were developed from the extensive literature review and analysis. A multivariate analysis was conducted on the statistical data providing a useful complement to the descriptive snapshot. The Statistical Package for Social Science (SPSS) is used for computing descriptive statistics, correlations, internal consistency rating, independent-samples *t*-tests, and for conducting regression analyses, and regression-based path analysis. For investigating mediation, it is important to make a distinction between various effects and their corresponding weights. The *total effect* (weight  $c$ ) of an independent variable (IV) on a dependent variable (DV) is composed of a *direct effect* (weight  $c'$ ) of the IV on the DV and an *indirect effect* (weight  $a*b$ ) of the IV on the DV through a proposed mediator (M). Weight  $a$  represents the effects of the IV on M, whereas weight  $b$  is the effect of the M on DV, partially out the effect of the IV. More specifically, an indirect effect is the multiplication of the unstandardized regression weight of the IV on the M and the weight of the M on the DV. In the case of multiple mediators, it is possible to estimate total indirect effects (i. e., sum of all  $a*b$  weights) as well as specific indirect effects (e.g. effects for each individual mediator).

The study employed a bootstrapping method (with  $n = 5000$  bootstrap resample) and used a SPSS macro developed by Preacher and Hayes (2008b) to assess the indirect effects (Sobel Tests). As a rigorous test of our hypotheses, we consider point estimates of indirect effects significant in the case zero is not contained in all confidence intervals. Only specific indirect effects are reported in this study, which allow for a direct comparison of the contribution of the different components of non-financial performance and social capital in the mediational process. The analysis was repeated with financial performance as the dependent variable.

### ***3.4 Measure of the Variables***

The past literature reveals a partial list of performance indicators such as cost efficiency, degree of innovation, delivery performance, flexibility, labor productivity, JIT performance, satisfaction, product quality, service quality, speed to market, customer loyalty, business sustainability, return on assets, market share, marketing competency, and many others. We identified an initial list of items from the past literature to represent those aspects of non-financial and financial benefits that eliminate or minimize different aspects of variability. Although several studies addressed instruments for non-financial and financial performance measurements from various aspects but there are no common items for these performance measurements. We have selected items which are relevant to our sample population. The items were examined through two steps to assure high research design quality. These included a structured interview with 10 practitioners to assess face and content validity of the scale items followed by a pretest of the scale items with two academics. In order to test whether the items used in the survey to measure the non-financial and financial performance constructs are able to truly measure the constructs, an exploratory factor analysis (varimax rotation method) is carried out and the results are presented in Table 1.

Social capital is defined in numerous ways and this makes it hard to measure. Based on previous studies, social capital is composed of the following dimensions for this study: personal network, social (community) network, and business network. We identified an initial list of items from the past literature to represent those aspects of social capital and then we have selected items which are relevant to our sample population. In order to test whether the items used in the survey to measure the social capital construct, an exploratory factor analysis (varimax rotation method) is carried out and the results are presented in Table 1.

Respondents were asked to report whether they use mobile phones to make calls, text messages, and send emails and received with their mobile phones. Respondents indicated the

frequency (from 1 = never to 5 = more than 15 times a day) in which they use their mobile phones for all purposes ( $M = 3.57$ ,  $SD = 1.12$ ).

## **4 RESULTS AND ANALYSIS**

### **4.1 *Demographic Profile of the Sample***

Demographic representation was taken into consideration as the survey attempted to cover whole Bangladesh. According to Bangladesh Bureau of Statistics (2013), proportion of micro enterprises to rural and urban areas are 69.4% and 30.6% and to Dhaka, Chittagong, Rajshahi, Khulna, Sylhet, and Barishal are 31.1%, 18.0%, 25.1%, 15.1%, 5.1%, and 5.6% respectively. The distribution of MEs in terms of ratios of MEs is presented in Table 2. In the sample selection, same proportion of micro enterprises was maintained in order to achieve demographic representation. Owners of micro enterprises were the target respondents of this study. A minimum of 5 percent of completed surveys were independently monitored and validated in real time by the project leader. This study sought to understand the ownership of mobile phones among the sample, it was found that 96.5% of respondents owned mobile telephones, with only 3.5% who did not have. Most MEs were having two employees (49%) followed by one employee (41.5%) and three employees (9.5%) respectively. Majority of respondents were mainly from four types of ME such as departmental store (21.5%) electronics (13%), book shop (12%) and pharmacy (10%) followed by other MEs.

### **4.2 *Statistical Analysis***

This study needs to understand the purpose of use of mobile phone by micro entrepreneurs. Respondents were asked to rank the purposes of mobile phone use and the survey confirmed that mobile phones are used the most for business purposes; i.e. to get in touch with customers and suppliers, followed by personal and social network development (Table 3). In an open question, most respondents of the study reported that the phone is a vital tool for their businesses and they missed various business opportunities earlier due lack of connectivity with customers and suppliers.

Correlations analysis was performed among the social capital, financial performance, and non-financial performance scales and mobile phone use in order to test our study's hypotheses  $H_1$ ,  $H_2$ ,  $H_3$ , and  $H_4$ . One-tailed significance tests were performed due to the expected positive correlations and the results are summarized in Table 4. The social capital components except personal network and non-financial performance of MEs exhibited a significant positive relationship with mobile phone use. The correlation coefficients are statistically significant at 0.01 level. The use of mobile phone was strongly and significantly

(at 0.01 level) associated with financial performance of MEs. The results also shows that all components of social capital and non-financial performance were significantly related to financial performance of MEs with the strongest relationship between ‘business network’ and financial performance. Moreover, the results stated that all social capital components were significantly and moderately associated with non-financial performance except for personal network with the strongest relationship between ‘business network’ and non-financial performance. Overall, this result provided acceptable evidence that the use of mobile phone impacted on social capital, non-financial performance as well as financial performance of MEs, with all correlations being in the predicted direction.

To further analyze H<sub>1</sub> and H<sub>4</sub>, multiple regression analyses were conducted. Multiple regression analysis (Table 5) found that controlling for age, gender, education, and location of the enterprise in the model, two of the three social capital components were significantly and positively related to ME’s financial performance. The social capital component “business network” was the most strongly related to financial performance of ME ( $\beta = 0.16, p = 0.01$ ) which indicates that the more is the micro entrepreneurs using mobile phone for business purposes, the higher is the financial performance, where the other variables were being treated as control variables. The mobile phone use as a determinant also has proven to be statistically significant at 0.01 level and positively related to the financial performance of ME. This finding indicates that micro entrepreneurs who were using mobile phones were performed well financially i.e. the more is the micro entrepreneurs using mobile phone, the higher is the financial performance, where the other variables were being treated as control variables. The regression coefficient of this variable 8.564 means that holding other variables constant, financial performance of MEs on average decreased or increased by about 8.564 percent for every one unit increase or decrease of entrepreneur who was using mobile phone.

In order to test H<sub>5</sub>: “The relationship between mobile phone use and ME’s performance is mediated by social capital,” we carried out a set of hierarchical regressions along the lines described by Baron and Kenny (1986) as appropriate for such cases. For the first hierarchical regression, we entered mobile phone use into the regression equation. As can be seen in the upper part of Table 6, the mobile phone use accounted for 25.3 percent of variability in ME’s performance. We then entered social capital, which found that this model was significant and fit [ $F(2, 197) = 50.365, p < .01$ ]. However, when mobile phone use was controlled for, the social capital still accounted for a 11 percent ( $p < .01$ ) of the variance in the performance of ME. The results in Table 6 reveal that the effect of mobile phone use on ME performance diminishes when the social capital is controlled.

The results of the mediation analyses (Table 7) show that the mobile phone use by micro entrepreneurs had a significant direct effect ( $c' = 1.36$ ,  $p < 0.01$ ) on ME performance. The results also show that the use of mobile phone was positively and significantly ( $p < 0.01$ ) associated with all components of social capital as well as non-financial performance (a weight). With respect to the effects of the mediator on financial performance (b weights), the results uncovered that 'business network' and 'social network' components of social capital and the non-financial performance are positively and significantly ( $p < 0.01$ ) connected to financial performance. The remaining 'personal network' component is associated positively but not significantly with the financial performance.

As shown in Table 7, 'business network' and 'social network' components of social capital and non-financial performance were the significant mediator of the relationship between mobile phone use and financial performance, as indicated by indirect effects ( $a*b$  weights). However, no statistical evidence was found from remaining component of social capital to strongly support  $H_5$ . As can be seen in Table 7, the total and direct effects of mobile phone use on ME's financial performance are 1.84 ( $p < 0.01$ ), and 1.36 ( $p < 0.01$ ) respectively. The difference between the total and direct effects is the total indirect effect through all the mediators with the point estimate of 0.478. Based on this result, we can claim that the difference between the total and the direct effect of mobile phone use on financial performance is difference from zero. Thus, of the potential mediators examined, we can conclude that 'business network' and 'social network' components of social capital and non-financial performance are likely the important and significant ( $p < 0.01$ ) mediators.

#### ***4.3 Data Validity and Model Efficiency Test***

Results of a principal component factor analysis with varimax rotation showed that only four non-financial performance related items have factor loading above 0.50 and grouped as one factor which was used to measure 'non-financial performance' construct. This was justified statistically by the large correlation between four items of 'non-financial performance' ( $r = 0.29$  to  $r = 0.65$ ). The validity of the 'non-financial performance' construct is confirmed by convergent validity (factor loadings of respective measured items  $> 0.50$ ) and discriminant validity [ $AVE (0.618) > r^2 (0.178)$ ]. Cronbach's ' $\alpha$ ' value of 0.798 for composite 'non-financial performance' has confirmed the reliability of the construct which indicate that the items studied are internally consistent and each of the items is unique and not a repetition.

As shown in Table 1, the factor analysis identified four items having factor loading above 0.50 and grouped into one factor, which indicates that these items together are

adequate to measure 'financial performance'. The large correlation between four items of financial performance ( $r = 0.32$  to  $r = 0.55$ ), discriminant validity [ $AVE (0.509) > r^2 (0.355)$ ], and Cronbach's coefficient alpha of 0.701 have demonstrated the validity and reliability of this construct.

Results of a principal component analysis show that the four activities were grouped in a single factor but only two items were having factor loading above 0.50, suggesting that they measured a single underlying concept 'personal network'. It indicates that these two items together are adequate to measure 'personal network'. The large correlation between two items of personal network ( $r=0.35$ ), discriminant validity [ $AVE (0.719) > r^2 (0.116)$ ], and Cronbach's coefficient alpha of 0.709 have demonstrated the validity and reliability of this construct.

As shown in Table 1, the factor analysis identified four items having factor loading above 0.50 and grouped into one factor, which indicates that these items together are adequate to measure 'social network'. The large correlation between four items of social network ( $r = 0.22$  to  $r = 0.54$ ), discriminant validity [ $AVE (0.504) > r^2 (0.055)$ ], and Cronbach's coefficient alpha of 0.706 have demonstrated the validity and reliability of this construct. Table 1 also shown that the factor analysis identified two items having factor loading above 0.50 and grouped into one factor, which indicates that these items together are adequate to measure 'business network'. The large correlation between two items of business network ( $r = 0.41$  to  $r = 0.59$ ), discriminant validity [ $AVE (0.566) > r^2 (0.117)$ ], and Cronbach's coefficient alpha of 0.702 have demonstrated the validity and reliability of this construct.

## **5. DISCUSSION**

In this digital era, mobile phone has become an increasing popular platform for daily communication because mobile phone generally connect people to people regardless of time, location and situation. Consequently, in this study, a theoretical model of the relationships among mobile phone use, social capital, and enterprise performances was developed and tested. Our purpose was to examine the relationship between mobile phone use and financial performance of enterprises, and the extent to which social capital and non-financial performance mediates this relationship. The findings of this study contribute to our understanding of the linkages among these theoretical constructs in micro-enterprises. The results show that there is significant improvement in social capital and business performances



(i.e., personal network, social network, business network, financial and non-financial) of MEs which owners used mobile phone compared to counterpart.

When respondents were asked to comment on whether mobile phones contribute to business performance non-financially, the majority were agreed. Correlations, hierarchical regression and the mediation analysis method proposed by Preacher and Hayes (2008a) supports and validates the second (which predicted relationships between mobile phone usage and non-financial performance of MEs) in this study. This finding is consistent with the findings of other earlier studies (Inmyxai and Takahashi, 2010; Esselaar et al., 2007; Zainuddin, 2007; Jonathan Lynn, 2013; Ilahiane and Sherry, 2010; Njau and Njuga, 2015; Ogalo et al., 2011; Aker and Mbiti, 2010; Sife et al., 2010). The probable reasons could be that due to using mobile phone more often for communicating, retaining, and maintaining customer relations, customer service quality is increased which led to higher customer satisfaction. In addition, mobile phone usage had enabled MEs to simultaneously handle several business activities efficiently by helping MEs to find better market and price information, making advance arrangements with suppliers and customers. Furthermore, the use of mobile phone allowing them to access to financial, technical, and management support from family, friends, and relatives and beyond their inner circle, which had led to increase business efficiency.

The third hypothesis predicted that the use of mobile phone would have a positive effect on social capital is supported and validated by correlation, regression, and the mediation analysis method proposed by Preacher and Hayes (2008a). This findings are consistent with the findings of other earlier studies (Chan, 2015; Wanda, 2014; Campbell, 2010; Haider et al., 2014; Ashiq et al., 2013; Hampton and Lee, 2011; Aminuzzan et al., 2011; Rowan, 2011; Jin and Pena, 2010), which found that mobile phone adoption leads to greater social cohesion, decrease the feeling of isolation, and improve social relationships. The potential reasons could be that mobile phones had improved or greatly improved their group involvement and personal trust and also improved the relationships and contacts with family members, friends, relatives, customers, and suppliers. All micro-entrepreneurs who were using mobile phone indicated that the most important benefits of using mobile phone was expanding and strengthening social capital (personal, social and business network).

The results show that there is significant improvement in internal quality and enterprise processes (business and social networks, customer service quality and satisfaction, operation and management performance) in micro-enterprises which owners used mobile phones compared to counterpart. The above findings therefore suggests that usage of mobile

phone does play an important role in enabling MEs in Bangladesh to survive in today's highly competitive business environment by significantly improving communication between MEs and their customers, which enable them to manage their supply chains more effectively, streamline their production processes and engage in new activities.

The results of our correlations, hierarchical regression and the mediation analysis method proposed by Preacher and Hayes (2008a), provide empirical support for H<sub>1</sub>, which predicted relationships between mobile phone usage and the financial performance of MEs. Correlations analysis shows that the financial performance of MEs exhibited significant positive relationship with mobile phone use. The regression analysis showed that the use of mobile phone is an important and significant predictor of MEs financial performance. One possible explanation for this findings could be that the use of mobile cut down the need to travel or simplify travelling and transport arrangements, thereby cut down travel costs; minimize physical risks, save time, and speed transaction processes. The another reason could be that communications is increased between buyers and sellers by using mobile which led higher number of customers of their business. Overall, nearly 91% of the respondents admitted that the use of mobile phones increased their sales and extended market share. This findings suggest that the use of mobile phone is increased the revenues and profits of MEs through the increase in sales, market share and indirect income (time savings and cost reduction). This result is in line with the findings of other existing studies (Kenny, 2002; Njau and Njuga, 2015; Makee et al., 2014; Ogalo et al., 2011; Boadi et al., 2008; Aker and Mbiti, 2010; Jagun et al., 2008; NOKIA, 2006). We can clearly make inference that there are significant positive correlations between usage of mobile phone with ME's financial performance. Our study confirmed that the more the use of mobile phone services by MEs the more the business financial performance.

Hypothesis H<sub>4</sub> predicting that social capital would has a direct positive impact on business performance of MEs (in both financially and non-financially) is supported by correlation, regression, and the mediation analysis method proposed by Preacher and Hayes (2008a). These statistical analysis of this study showed that social capital is an important and significant predictor of business performance of MEs. The discoveries of this study is in line with existing social capital and enterprise performance studies which identified social capital as change means of the rates of business formation, survival, and growth (Muniady et al., 2015; Percoco, 2012; Turner, 2011; Carey et al., 2011; Dah and Zolnik, 2011; Basargekar, 2010; Audretsch et al., 2006; Liao and Welsch, 2005; Davidsson and Honig, 2003; Landry et al., 2002; Maskell, 2001; Sanders and Nee, 1996). The increased the capability of

entrepreneurs with physical, psychological, emotional, moral, and financial support through expanding and strengthening social networks could be a possible reasons for this results. Moreover, the ability of social capital to identify and exploit new business opportunities, to get access to credit and other forms of capital with less difficulties, to accumulate other kinds of resources could be the another potential explanation of the strong positive relations between social capital and ME's business performance. This findings thus witness that social capital has been observed as one of the important drivers of business performance of MEs in Bangladesh.

The fifth hypothesis predicting that the use of mobile phone would have an indirect (i.e. mediated) effect on ME's financial performance via non-financial performance and social capital is supported by mediation analyses (Preacher and Hayes, 2008a). The fifth hypothesis predicting that the use of mobile phone would have an indirect (i.e. mediated) effect on ME's financial performance via non-financial performance and social capital is supported by mediation analyses (Preacher and Hayes, 2008a). As the mediating variables (social capital, non-financial performance) and independent variable (mobile phone use) are significantly correlated and conversely the mediating variables are positively and significantly correlated with dependent variable (financial performance), it means that mobile phone usage will definitely help MEs to achieve better financial benefits through improvement in social capital and non-financial performance. These results indicate that the indirect influence of mobile phone use via social capital and non-financial performance was relatively small and statistically significant on ME's financial performance. Based on these results, it is most likely that increasing and strengthening social capital and non-financial performance are the specific causal mechanism driving performances by which usage of mobile phone has an effect on ME's financial performance. Literature reported direct relationship of mobile phone usage with enterprises financial performance without any concrete evidence. Therefore, this study has conducted a mediational analysis to discover the indirect effects of the use of mobile phone on ME's financial performance. With respect to the mediational analyses, the study shows that two aspects of social capital (business network and social network) and many aspects of non-financial performance, are involved in the mediational process. The finding of partial mediation suggests that other variables might also be involved in the mediational process. So it is clear that MEs' financial performance is directly and indirectly influenced by the use of mobile phone. It means the proper implementation and the method of implementing of mobile phone is the key for the success of business. Overall, the results indicates that the social capital components, non-financial

and financial performances of MEs exhibited a significant positive relationship with the use of mobile phone.

## **6. CONCLUSIONS**

Impact and benefits of having and using of mobile phone by micro-enterprises has been an important research agenda since The mobile phone has become a symbol of the use of new information and communication technologies in the world. The literature abounds with studies with conflicting outcomes, with majority reporting a positive relationship between usage of mobile phone and enterprise performance. However, most studies are descriptive in nature and therefore statistically strong and reliable relationship cannot be established. Based on the statistical analysis, we can conclude that micro-enterprises which owners were using mobile phone were having significantly greater benefits and financial performance compared to counterpart and significant direct and indirect relationship between usage of mobile phone and ME's financial performance was found. Possible reason could be that MEs were enabled to simultaneously operate several business activities efficiently by using mobile phone which helps MEs to find better market and price information, making advance arrangements with suppliers and customers. Additionally, the use of mobile phone opened various new doors for them due to fast and easy modes of communication, thereby increasing their ability to access to all kinds of business related supports from family, friends, and relatives and beyond their inner circle, which has led to a considerable increase in market share, and to an upward sales trend. The major point that differentiates this study from similar studies is the fact that the social capital and non-financial business performances are involved in the mediational process which indicates that MEs' financial performance is directly and indirectly influenced by the use of mobile phone. The relationships are statistically very significant and should act as an impetus for more micro-enterprises to focus on creating, improving, and strengthening social capital rather than just obtaining the mobile phone and reducing overall business costs.

Based on the findings, this study recommends that those micro-enterprises that don't use mobile phone as a business and social communication device should adopt this service to enable them improve their business performance. Additionally, the study recommends that there is a need to have an awareness campaign from the government on the role played by mobile phones in micro-enterprise performance. Likewise, network providers should make an improvement on network services in order to minimize several network failure occasions. Also, there is a need to reduce the mobile transactional charges so as to enhance micro entrepreneurs having a consistent and affordable mobile phone services.

This study identifies some limitations and possibilities of future research. The findings in this study which is based on relatively small sample size may not be generalizable across all developing countries. A more detailed and international study is recommended to remedy this limitation. Future research should also expand this study to compare both developed and developing economies in order to fully ascertain the impact of mobile phone use for MEs performance. A second limitation is that the data was collected by postal questionnaire with open and closed questions instead of face to face interviews which could have yielded more in-depth data. A third limitation is that the analysis is cross sectional and therefore provides only a snapshot of benefits of mobile phone usage in the microenterprises and country, at one point in time. Future research may like to consider examining whether our results may be generalized to the SMEs and Large Scale enterprises.

**Table 1: Rotated Factor Matrix, Reliability, and Validity Statistics**

<b>Factors</b>	<b>Factor Loadings</b>	<b>Cronbach's 'α'</b>	<b>AVE<sup>1</sup></b>	<b>(r)<sup>2</sup></b>
<b><i>F<sub>1</sub> = Personal Network</i></b>		<b><i>0.709</i></b>	<b><i>0.719</i></b>	<b><i>0.116</i></b>
Increased the frequency of contact with family members	0.853			
Increased the frequency of contact with friends and relatives	0.843			
<b><i>F<sub>2</sub> = Social (Community) Network</i></b>		<b><i>0.706</i></b>	<b><i>0.504</i></b>	<b><i>0.055</i></b>
Increased trustworthy peoples outside of the house	0.724			
Became member of new groups	0.716			
Membership in different groups	0.704			
Higher intensity of involvement with social groups	0.695			
<b><i>F<sub>3</sub> = Business Network</i></b>		<b><i>0.702</i></b>	<b><i>0.566</i></b>	<b><i>0.117</i></b>
Increased connectivity with other organization, agencies, politician, and government authorities	0.762			
Increased communication with customers and suppliers	0.743			
<b><i>F<sub>4</sub> = Non-financial Performance</i></b>		<b><i>0.798</i></b>	<b><i>0.618</i></b>	<b><i>0.178</i></b>
Increased customer satisfaction	0.933			
Increased customer service quality	0.830			
Increased daily business activities, efficiencies, concentration and access to financial, technical, and management support from family friends and relatives	0.704			
Business communication has become fast and easy	0.646			
<b><i>F<sub>5</sub> = Financial Performance</i></b>		<b><i>0.701</i></b>	<b><i>0.509</i></b>	<b><i>0.355</i></b>
Increase number of customer	0.756			

<sup>1</sup> AVE =  $\sum X_i^2 / n$  (number of items  $i = 1, \dots, n$ ;  $X_i$  factor loading)

<sup>2</sup>  $r^2$ , the highest squared correlation between the factor of interest and the remaining factors

Factors	Factor Loadings	Cronbach's 'α'	AVE <sup>1</sup>	(r) <sup>2</sup>
Extended the business size	0.742			
Reduced overall costs	0.680			
Increase sales	0.672			

**Table 2: Demographic Profile of the Respondents**

Questions	Elements	Number & (%)
Sample size by residential area	Urban	60 (30%)
	Rural	140 (70%)
Sample size by region	Dhaka division	60 (30%)
	Chittagong division	38 (19%)
	Rajshahi division	49 (24.5%)
	Sylhet division	10 (5%)
	Khulna division	30 (15%)
	Barishal division	13 (6.5%)
Type of MEs	Audio & video	6 (3.0)
	Book shop	24 (12.0)
	Departmental store	43 (21.5)
	Electronics	26 (13.0)
	Firming	6 (3.0)
	Laundry	10 (5.0)
	Mobile service center	10 (5.0)
	Pesticide and fertilizer	9 (4.5)
	Pharmacy	20 (10.0)
	Small garment	12 (6.0)
	Spare parts	6 (3.0)
	Sweet shop	3 (1.5)
	Tailoring	6 (3.0)
	Tea and coffee stall	13(6.5)
	Watch shop	6 (3.0)
Number of Employees	1	83 (41.5)
	2	98 (49.0)
	3 and more	19 (9.5)

**Table 3: Main purpose for using mobile phone**

Purpose	Number (%)	Rating
Personal network	90 (45.0)	1
Social network	27 (13.5)	3
Business network	83 (41.5)	2

**Table 4: Inter-correlation between variables included in this study**

Variables	Mobile phone use	Personal network	Social network	Business network	Non-financial performance	Financial Performance
Mobile phone use	1.000					
Personal network	0.341**	1.000				
Social network	0.134*	0.113	1.000			
Business network	0.342**	0.102	0.285**	1.000		
Non-financial performance	0.238**	0.053	0.149*	0.422**	1.000	
Financial Performance	0.596**	0.285**	0.290**	0.441**	0.340**	1.000

\*Correlation is significant at the 0.05 level (1-tailed)

\*\*Correlation is significant at the 0.01 level (1-tailed)

**Table 5: Regression Analysis for ME's Financial Performance**

Variable	Estimated Coefficient <sup>A</sup> (B)	Std. Err.
Constant	1.972 (6.571)**	0.300
Mobile phone use (X1)	1.274 (8.564)**	0.149
Personal network (X2)	0.053 (1.132) <sup>NS</sup>	0.046
Social network (X3)	0.055 (2.023)*	0.030
Business network (X4)	0.158 (3.843)**	0.041
Non-financial performance (X11)	0.109 (2.251)**	0.049
Number of observation	200	
d.f	5	
R <sup>2</sup>	0.524	
F	28.719**	

<sup>A</sup> Results are based on 5000 bootstrap samples; Figures in parentheses denote the t-values of the regression coefficients; \*\* indicate significant at 0.01 level; \* indicate significant at 0.05 level; <sup>NS</sup> indicate not significant

**Table 6: Hierarchical Multiple Regression Analyses of Social Capital Measures on ME's Performance**

Model		R <sup>2</sup>	SE	Beta
Model 1	(Constant)	0.253	0.158	
	Mobile Usage		0.161	0.503**

<i>Model 2</i>	(Constant)	0.361	0.206	
	Mobile usage		0.168	0.364**
	Social Capital		0.054	0.324**

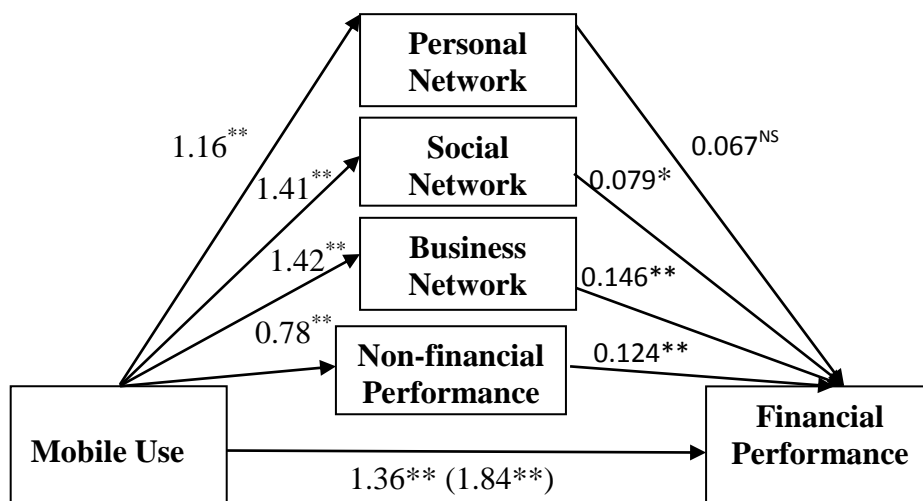
Notes: Dependent variable: MEs performance.  $\Delta R^2 = 0.108$ ; \*\*p = 0.01; \*p = 0.05.

F (2, 190) = 50.365, p < .01

**Table 7: Mediation of the Effects of Mobile usage on Financial Performance through Social Capital and Non-financial Performance**

IV	M	DV	Effect of IV on M (a)	Effect of M on DV (b)	Direct effects (c')	Indirect effect (Point Estimate) (a*b)	Total indirect effect	Total effects (c)
MoU	PNet	FP	1.163** (0.356)	0.067 (0.084)	1.36** (0.101)	0.078 <sup>NS</sup> (0.105)	0.478** (0.081)	1.84** (0.214)
MoU	SNet	FP	1.018** (0.310)	0.079* (0.031)		0.080* (0.044)		
MoU	BNet	FP	1.416** (0.426)	0.146** (0.049)		0.207* (0.104)		
MoU	NFP	FP	0.985** (0.241)	0.124** (0.047)		0.122* (0.047)		

Note: MoU = Using mobile phone, PNet = Personal network, SNet = Social network, BNet = Business network, NFP = Non-financial performance, FP = Financial performance, IV = Independent variable, M = Mediator, DV = Dependent variable, \*p < 0.05, \*\*p < 0.01; Standard Errors In Parentheses; 5000 Bootstrap Samples



**Figure 2: Direct and Indirect Effects of Mobile Phone use on Microenterprise's Financial Performance**