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Mobile Financial Services in Bangladesh: Understanding the Affordances*

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Abstract

Mobile Financial Services (MFS) have the potential to impact developing countries by making financial services more accessible. To realize this potential, it is imperative to illuminate why and how people use these new platforms to accomplish their goals. Using affordance theory as a guiding tool, this study aims to uncover the underlying goal directed affordances and actualization techniques used by MFS users in Bangladesh. The data are collected through in-depth interviews with MFS users and analyzed using thematic analysis to uncover affordances along with actualization techniques that are embedded in everyday social contexts of the users. The study finds that users in their attempts to accomplish specific goals uncover various latent affordances of MFS platforms such as financial services accessibility, self-controlling ability, spatial and temporal mobility, disintermediation ability, self-sustainability, secrecy maintainability, and networkability, and employ several techniques to actualize those affordances. These results have implications for utilizing MFS platforms to promote ICT4D goals.

Keywords: Mobile Financial Services, Affordances, ICT4D

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1.0 Introduction

Proliferation of Mobile Financial Services (MFS) has been argued to have potential for altering the contours of existing economic and social fabric of developing countries. This claim has drawn investments and international attention to Bangladesh such as the joining of International Finance Corporation (IFC) and the Bill & Melinda Gates Foundation as minority investors with bKash Bangladesh (Chen & Rasmussen, 2014). According to the Asian Development Bank, Bangladesh had the highest economic growth rates in 2018 and 2019 and is expected to have the highest growth rate in 2020 among the South Asian countries.¹ This expected growth largely depends on how diverse sections of population get access to financial and social resources. One of the major financial platforms that has enormous potential to create meaningful and impactful contribution in this regard is mobile financial services (Kanobe, Alexander, & Bwalya, 2017). According to Bangladesh Telecommunication Regulatory Commission (BTRC), mobile phone subscription in the country has increased by about 67% from 2012 to August 2019. During the same period, mobile internet use increased by about 220%. This suggests that any Information and Communication Technology for Development (ICT4D) goal adopted by Bangladesh must be strongly grounded in mobile technology-based policies.

At present, 16 banks approved by Bangladesh Bank offer MFS services in the country. The notable MFS providers are bKash, Rocket, UCash, and Nagad with bKash holding the largest market share (Islam, 2019). According to Bangladesh Bank², from 2015 to 2019, the number of agents grew by about 70% and the number of registered clients increased by about 143%. There is about 100% growth in number of total transactions and about 135% growth in the value of the transactions over the same period. Small amounts of growth can be observed in all types of transaction using MFS such as inward remittance, cash-in/ cash-out transactions, P2P transactions, salary disbursement, utility bill payment, merchant payment etc., whereas a large magnitude of growth has been achieved in government payments. Despite significant improvements over the last few years in Bangladesh, doubts abound regarding the impact of MFS, mainly in its capabilities to influence the lives of the poor people (Islam, 2019). One of the major potential reasons for this reservation is a lack of in-depth research on how MFS influences everyday financial decisions of the people in Bangladesh. In order to understand these influences and fully realize the potential of MFS as a critical alternative platform for supporting financial transactions, it is imperative to conduct detail research on the affordances of MFS that are currently being actualized by the users and this research aims to illuminate those.

In developing countries, several MFS platforms have emerged over time. M-Pesa in Kenya and bKash in Bangladesh are two prime examples of how MFS platforms can penetrate the market for alternative financial platforms. Inspired by the emergence and development of MFS, there has been a thrust in both academic and practitioner research that mainly focus on the adoption of these services. One emerging stream of ICT4D research focuses on how MFS is developed and diffused in developing countries. In the early stages, researchers point to the gap in the conceptual understanding regarding m-finance adoption process and call for including the contextual issues such as social embeddedness, existing social structures, and cultures that influence adoption in developing countries (Bankole, Bankole, & Brown, 2011; Donner &

¹ <https://www.adb.org/countries/bangladesh/economy>

² <https://www.bb.org.bd/finansys/paymentsys/mfsdata.php>

Tellez, 2008; Duncombe, 2012; Duncombe & Boateng, 2009). Some researchers argue that more focus has been given on design issues of MFS due to high level of practitioner involvement in the early stages of research and therefore, we see a lack of in-depth studies on the overall adoption process as well as impact analysis of these systems (Duncombe & Boateng, 2009). Some studies, however, are available in different scholarly areas that focus on the design, diffusion, contextual factors, usage dimensions and impacts of M-PESA in Kenya (Jack & Suri, 2014; Kendall, Maurer, Machoka, & Veniard, 2012; Mas & Morawczynski, 2009; Mbogo, 2010; Ngugi, Pelowski, & Ogembo, 2010; Wamuyu, 2014). There are also studies focusing on other developing countries. Thakur and Srivastava (2014), e.g., study adoption readiness, personal innovativeness, perceived risk and usage intention across customer groups for mobile payment services in India and find significant differences among users and non-users. Jaradat and Faqih (2014) find that while self-efficacy has some moderating influences, gender has little moderating effect on mobile payment adoption in Jordan. Adaba and Ayoung (2017) use actor-network theory to understand diffusion of mobile payment systems in Ghana and find that even though the adoption level is still low, a promising network of stakeholders is currently emerging. Malinga and Maiga (2020) use an extended UTAUT model to understand adoption intentions of mobile money services by traders in Uganda and find that sensitization, social influences, and performance expectancy are the significant determinants of usage intentions. Kim, Zoo, Lee, and Kang (2018) conduct a systematic literature review on MFS, financial inclusion and development and suggest that future research endeavors need to put more emphasis on the actual needs and usage patterns of current and potential MFS customers.

Since most of the studies emphasize on MFS usage intentions and primarily use theoretical lenses developed in completely different contexts, there is a lack of deep understanding about the process through which actual users achieve their everyday goals using MFS platforms. This study, therefore, aims to contribute to the general understanding of the mechanisms through which MFS technologies help goal-oriented actors. We use affordance theory as the guiding tool for our purpose since understanding affordances can be a concrete starting point in a context where the researcher is interested in the relation between an IT artefact and a goal-oriented actor. An affordance can act as an “analytical bridge” to identify the “possible interaction between human/ social entities and technology” (Bygstad, Munkvold, & Volkoff, 2016, p. 11) and therefore, affordance theory is a suitable analytical tool for our purpose. Two particular research questions guide our analysis –

‘What are the MFS affordances that help users to achieve their goals? What techniques do users employ to realize those affordances?’

There is a dearth of research in the context of developing countries and very few studies focus on Bangladesh, which is on track for graduating from the UN’s list of least developed countries and joining the middle-income countries by 2024 (World Bank, 2019). Given the impressive and significant diffusion of bKash and similar mobile financial services, the knowledge derived from the MFS affordance and actualization in Bangladesh can be utilized as a benchmark for other developing countries and this research is an attempt to contribute to that knowledge.

The rest of the paper is organized as follows. Section 2 provides a review of the literature on affordance theory and clarifies our stance. Section 3 discusses data collection and analysis

methods. Section 4 and section 5, respectively, presents and discusses the findings. Section 6 makes concluding remarks identifying the implications and limitations of the study and proposing future research directions.

2.0 Theoretical background

Gibson (1979) introduces the concept of affordances in ecological psychology by connecting what the environment offers an animal to operate in it with the features and capabilities of that animal. The essence of affordance as conceptualized by Gibson (1979) is “the complementarity of the animal and the environment” (p.127). For example, the size of the animal and the size of a cave mouth together build an affordance which may not be available to a larger animal. This ‘complementarity’ makes the concept of affordance an appealing lens to understand how humans interact with technology.

Norman (1988) brings affordance perspective into Human-Computer Interaction (HCI) field but initially does not distinguish between real and perceived affordances. The agency of the associated actor is also not acknowledged. Therefore, for some period, understanding in HCI community deviated from the conceptualization in ecological psychology that differentiates between object’s real affordances that exist independent of the actor’s perception and use alternatives perceived by the actor. Other researchers argue that sometimes actors find innovative ways to use an object that designers never intended (Majchrzak & Markus, 2012) and thus the perception and use deviate from the designed, built-in affordance. For example, the intended use of a hammer is to put nails into a wall, but it can be used as a weapon to hit somebody. The point of dispute is that even though these perceived affordances have not been infused in the object intentionally, whether these possibilities have always been there to be perceived (Gaver, 1991). Volkoff and Strong (2017) provide a summary of the debates in the fields of ecological psychology and HCI regarding what affordance actually means.

This is the backdrop that researchers face when they choose to study affordances provided by objects. Confusions exist till date about the meaning of affordance and when and how affordances occur. Lanamäki, Thapa, and Stendal (2016) attempt to shed light on this ambiguity and formulate four different stances – canonical affordance, designed affordance, potential affordance and affordances as completed actions. Canonical affordance is normative and emphasizes on the well-established meanings about an entity and action. For example, the paper is for writing. From canonical stance, the affordances are universal and understood by the users. Next, Lanamäki et al. (2016) trace the introduction of affordance theory into HCI field which proclaims that affordances are designed by the designers and are independent of any individual user. Designed affordances are already in existence prior to any action by the actual user because designers have implanted these in the artifact. The third stance, potential affordances, emphasizes on the agency of the goal-oriented actor for actualizing the affordance (Volkoff & Strong, 2013) that arise out of the interconnection of an object and abilities of the goal-oriented actors. This stance conceptualizes affordances as potentials that remain dormant until the goal-oriented actor or actors perceive and actualize those. The perceived affordances, under this stance, can vary from what the designers have intended and are actualized within the social and cultural contexts of the goal-oriented actor. The fourth stance sees affordances as completed actions meaning that affordances are the end-results of the co-construction between the object and the user. This stance assumes no pre-existence of affordances, but rather focuses

on the negotiation between the object and the user within a social practice (Lanamäki et al., 2016).

The common ground where most Information Systems (IS) studies are recently converging is that affordances are ‘action-potentials’ (the third stance) that emerge from a co-creation by the environment, object and actors (Bygstad et al., 2016; Lanamäki et al., 2016; Volkoff & Strong, 2017). Additionally, one realization emerging in IS field is that action-potentials alone do not provide the complete picture of technology use by goal-oriented actors. The actualizations of those potentials also matter immensely to bring about any meaningful change (Volkoff & Strong, 2017). Bernhard, Recker, and Burton-Jones (2013) focus on affordance actualization by emphasizing on bridging the gap between affordance existence and perception. They argue that properties of the object and the user are the pre-conditions for affordance existence, information about affordance is required for affordance perception and perceived ease of use is the required condition for affordance actualization. Leonardi (2011) emphasizes on past ‘imbrications’ about routines that keep humans and materials in a continuous loop of agency and allow people to perceive new affordances or constraints offered by a technology to change their routines. In a later work, Leonardi (2013) suggests categorizing affordances in three groups – individualized, collective, and shared to better understand different levels of affordances that affect the outcome of network change in organizations. Strong et al. (2014) offer a ‘mid-range’ affordance-actualization theory after investigating the implementation of an electronic health record system.

Recently, based on the work of early writers, affordance theory has become a tool for understanding technology use in many different contexts. Seidel, Recker, and vom Brocke (2013), through a case study on a global ‘operations software solutions’ provider, identify four functional affordances which are provided by an information system and are required for sustainable organizational management and work practices. Mao (2014) investigates the affordances of and constraints imposed by social media on students’ learning and finds that even though students use social media in everyday lives, the specific use for learning is sporadic and informal. Piccoli (2016) investigates how technology affordance impacts the characteristics and outcomes of opinions in online review systems. Mettler, Sprenger, and Winter (2017) study use of service robots in hospitals and find five separate potential niche end-user groups whose perceptions about the affordances provided and constraints imposed by robots vary widely. Sæbø, Federici, and Braccini (2020) analyze how social media tools, through affordances, support collective actions in an Italian political movement and they offer a typology of such affordances.

Affordance theory has also been taken up as a lens by researchers studying the use of IS tools in developing countries. Wyche, Simiyu, and Othieno (2018) use affordance categories by Hartson (2003) to investigate women’s use of mobile phones in rural Kenya and identify the enablers and constraints in the device design as well as the usage contexts. Wyche and Steinfield (2016) look at why Kenyan farmers do not use mobile phones to access crop price information and find a mismatch between design of the SMS-based market information systems and farmers’ perception of mobile phones’ capabilities. Tim, Pan, Bahri, and Fauzi (2018) use affordances to look into the enabling powers and unintended consequences of social media use in community driven environmental sustainability efforts in rural Malaysia. Thapa and Sein (2018) analyze the use of telemedicine in Nepal by looking into the process of affordance actualization and find that

affordance actualization travels through multiple trajectories and as a result, may result in new affordances. Dini, Sæbo, and Wahid (2018) investigate a government-initiated social media project within a youth group in Indonesia to understand the action potentials and constraining factors of the system.

The above discussion suggests that IS researchers have been using affordance theory to analyze multitude of problems in different contexts. In this paper, our aim is to identify the affordances that MFS users in Bangladesh perceive and actualize in order to carry out their everyday goals. Affordance theory, as an analytical tool, is specifically suitable in our research context because as pointed out by Bygstad et al. (2016), affordances can help in understanding the mechanisms that emerge from the relation between a technology and goal-oriented actors since it has the capacity to simultaneously examine both while keeping their identities intact. We take the third stance formulated by Lanamäki et al. (2016) and conceptualize affordances as action potentials. We take the position that affordances are relational, that they emerge from the interconnection between the object and the goal-oriented actors (Bygstad et al., 2016; Stendal, Thapa, & Lanamäki, 2016; Volkoff & Strong, 2013). There can be designed features in an object but the ways those will be perceived and actualized are heavily dependent upon the goal-oriented actors. We take the position that users form different relationships with the object and in-built features based on their social and cultural contexts. The perception and action can be guided by the in-built technology capabilities; affordances can be latent in the object and come into existence when goal-oriented actors attempt to actualize those within their social contexts, competence and knowledge (Bygstad et al., 2016).

3.0 Research Methods

3.1 Data collection

This research starts with an idea to explore what affordances are perceived by MFS users and how they actualize those affordances to achieve their goals. First, a preliminary interview guide is prepared by the researchers and is used as part of a course project in one MBA class. The students interview MFS users for their course projects using the guide and submit the transcripts and present their findings. The objective of this pilot interview is to ascertain whether we really can uncover affordances from the experiences shared by the interviewees.

Based on the learning from the first stage, the interview guide is then refined and one researcher along with a trained research assistant conduct the final interviews. Interview as a data collection process is appropriate for this research since our purpose is to reveal MFS specific affordances and actualization techniques that are embedded in the social contexts of the users (Scheepers, Scheepers, & Ngwenyama, 2006). We use purposive sampling to select interviewees who have used MFS before. We aim to understand the personal experiences and stories around the use of MFS from both genders of different ages and occupations and therefore do not interview non-users. Qualitative research method, specifically, interpretive epistemology is an appropriate choice for our research as it has the potential to reveal rich, intertwined but nuanced nature of social embeddedness of a phenomenon (Castro, Kellison, Boyd, & Kopak, 2010). Most of the interviews have been recorded and transcribed. However, few respondents became uncomfortable when we started recording because they thought that if they complain about the MFS service, the service provider would get angry and create problems with their MFS accounts.

In such scenarios, we took detailed notes. All the respondents have spoken with us in Bangla (the native language) and we have been very careful during the English translation to remain as close as possible to the actual meanings conveyed by the interviewees.

We take the stance put forward by Braun and Clarke (2016, 2019b) that determining sample size in a qualitative research is a live and critically reflexive process. We do not determine our sample size ahead of time since that is philosophically inconsistent with our interpretive stance. Our data collection and analysis overlapped, so when we understood that we are listening to similar goals and patterns of use, we stopped recruiting new interviewees. We interviewed 55 respondents (30 males and 25 females). The age of the male respondents ranges from 23 to 40 years while for females the age range is from 17 to 50 years. All respondents live in Dhaka, the capital city of Bangladesh, though most of them still have strong ties with their villages and family members living there. Occupations of the respondents vary widely, e.g., there are migrant workers (household helps), homemakers, students, rickshaw pullers, car drivers, security guards, garments workers, members of Bangladesh Ansar (a paramilitary auxiliary force), and SME owners (fish hatchery, small shop, part-time online business, IT outsourcing, suppliers to Government agencies). The education level of the respondents also varies from no education to post graduate level. Most of the respondents use bKash while few use Rocket and Nagad. Only three respondents have personal accounts in all three abovementioned MFS platforms. Overall, the respondents are from different age groups and socio-economic backgrounds, and have varying levels of education.

3.2 Data analysis

We employ thematic analysis (Braun & Clarke, 2006, 2012) to analyze the data and we acknowledge an interpretive perspective in our choice. The purpose of the study is to identify the affordances provided by the relation between the MFS and goal-oriented users and to understand how users actualize those affordances. Thematic analysis is an appropriate method for our purpose since it can extract meanings that emerge from the data and is suitable to conceptualize affordances in a specific context (Thapa & Sein, 2018). In the first phase of the analysis, we read all the transcriptions and field notes to make ourselves familiar with the data. This detail reading, though time consuming, is very important in thematic analysis and we support the readings with rigorous note taking. In the second phase, we identify the goals MFS users want to accomplish. At the end of this phase, we generate a list of goals such as, ‘want to send money to family members’, ‘want to save money’, ‘want to save and send money secretly’ etc. Identifying the goals is an appropriate analytical strategy that is in line with our realist ontology which allows the researcher to identify actual outcomes and then retroduce to uncover how those outcomes are produced (Bygstad et al., 2016). In the third phase, we start collating similar goals together and start identifying the MFS affordances that help users to accomplish those goals. In qualitative research, the researchers take an “active role” (Braun & Clarke, 2006, p. 80) in the abstraction process. During the abstraction process, we constantly remind ourselves that our participants do not explicitly mention about the MFS affordances, instead they are trying to fulfil their everyday goals. By this, we do not mean that users cannot perceive MFS capabilities. On the contrary, we take the stance that affordances provided by a technology is in a relation with the goal accomplishment intentions of the users. Therefore, while we re-read and group those goals, we constantly force ourselves to answer the following questions – ‘What is the actual role of MFS in this goal accomplishment? What is the underlying socially embedded potential that MFS is

helping to unlock which other modes of goal accomplishment are not currently doing adequately?’ This is an active abstraction process that we carry out to identify the MFS affordances. Thematic analysis has no ideal route of analysis, it is flexible in nature and needs to match with what the researcher wants to uncover. However, it is important for the researchers to acknowledge the ‘active role’ and explicitly describe the decisions (Braun & Clarke, 2006). This phase ends after multiple rounds of reading and refinement and we end up having data extracts coded under different sub-themes that explain how MFS is actually helping in the goal accomplishment process. In the fourth phase, we review the sub-themes and then group those under broader affordance themes through abstraction (See Appendix A for details on the thematic analysis). We ensure that these themes capture the story in the data like characters do in a novel (Braun & Clarke, 2019a; Clarke & Braun, 2018). Next, we go back to the full data set with the lens of broader affordance themes to recheck and also to find out how users actualize those affordances. We acknowledge that MFS affordances can only be realized when those are actualized within the social and cultural context of the users (Bygstad et al., 2016). The final phase of thematic analysis is the last opportunity for analysis and while we write up the findings and discuss the results, we remain aware to relate back the understandings with the broader ICT4D literature.

4.0 Findings

We find the following affordances and actualization techniques in the context of using MFS in Bangladesh –

Affordance 1: Financial Services Accessibility

Most of our respondents do not have a bank account. We expected this since as of 2018, about 53% of the working-age population in Bangladesh were unbanked, i.e., they did not have any bank, mobile money, or nonbank financial institution account (Sahai & Schueth, 2019). Historically, it has been a chronic problem for the financial sector of Bangladesh. However, this problem creates an opportunity for MFS to provide affordance of financial services accessibility, an ability that allows MFS users to enter and manipulate the complex milieu of financial services. Our respondents assert that they can perform many of their necessary financial transactions through MFS even though they do not have a bank account.

- *“Sometimes, it is hard for me to manage my home expenditure at the end of the month. Suppose I am short by 1,000 taka. What can I do? Then, I pull the money from my bKash. When I have extra, I put it in my bKash. Then, I take it out when I am in real trouble. It is my friend...I also sometimes use it when I need money for medicine...”*
- *“I send my loan installment to my village lender through bKash every month. It has been a blessing. Before, I sometimes missed payment because nobody I trust was going to the village.”*
- *“I do not have capacity to open a bank account. So, I can keep even 100 – 200 taka. Can I do that in a bank? Even if I have a bank account, what is the use? My parents cannot withdraw money from a bank. It is too difficult for them. With MFS, they get it within 10-15 minutes.”*

The actualization techniques that our respondents employ for this affordance is to get information about MFS, compare pros and cons in relation to sending money by a carrier and open personal accounts because they may not find an agent in time of an emergency. The MFS applications do not require a smartphone. A feature phone is enough to carry out transactions. However, many of the unbanked respondents mention that they prefer agents since the system seems overly complicated to them. Some of them admit that they were scared the first time they used MFS since they cannot “see the money”. But, over time they actualize the affordance by repeated use.

Affordance 2: Self-Controlling Ability

We find that unbanked people often use MFS accounts for saving purposes, which implies that they perceive MFS as a tool for self-control. Respondents are worried that if they keep money at home, it may either be spent or stolen. So, they keep a part of their money in the MFS account for financing future potential expenditures such as school admission fee or examination fee, both of which are ‘once a year’ expenditures but can be significant amounts for many of our respondents. If our respondents were rational economic agents, then this behavior does not make sense. They certainly know that this money is needed for compulsory future expenditure. Still, they feel the need to put some sort of barrier that would prevent them from quickly accessing the money. They do not want to keep the cash with themselves.

- *“The person who convinced me to open a bKash account told me that it can help me in time of need. I do not have a bank account. If I have the money in my hand, somehow it will go away. But, if I keep it in bKash, it will be there when I need it for an emergency such as my daughter’s exam fee.”*
- *Sometimes, I need to send big amount like 50,000 taka for 2-3 months together. If I had kept it in my hand, you know, it would never stay. I would definitely put it in other use. Then, I would be in trouble. So, I keep it in bKash. So, it is there. I will not ‘break’ it for other purposes.”*

One of the actualization techniques is opening of personal account that respondents can use as a savings account though most of them either are not aware of the interest available on the balance or do not care about the small potential interest income. Respondents also mention that they often deliberately try to forget the existence of the savings so that they do not pull it out of the MFS account unless they have to cater for an emergency. Some female respondents tell us that they sometimes do not inform their husbands or sons about the savings in the MFS account fearing that the husbands/ sons may force them to take the money out.

Affordance 3: Spatial and Temporal Mobility

One issue that respondents routinely mention about is how MFS allow them to achieve spatial and temporal mobility in carrying out a transaction. Banks usually have a certain physical location and a limited time of service. In rural areas, branches of the banks are generally located in the ‘bazar’ (a local village market), a hub of economic activities. The point at issue is that the ‘bazar’ can often be situated far away from the dwelling places of many families. Therefore, it

can be difficult to access banking services whenever there is a need to send or retrieve money. Many respondents mention this problem and explain how MFS has given them ways to bypass spatial and temporal constraints imposed by a bank. Some examples are provided below –

- *“It is so easy to send money now. I can send money now at any time, even in an emergency basis. I do not have to stand in line for hours.”*
- *“In our business, most people use either bKash or Rocket. It is necessary for us because bank is open for transactions for a limited time only.”*
- *“I cannot use banks most of the times since I am at work. How can I go to the bank? They are open for transactions till 3 in the afternoon. My boss will not allow me to go for a long time. That is why I think bKash is ‘safety’.”*

It is also important to note the social contexts. Respondents mention that they had often gone to the bank after an arduous journey only to find out that the officer is not in the bank on that day.

- *“It is available everywhere and anytime. My village house is far, it takes at least 2 hours to go to the ‘bazar’ if the weather is a bit cooler. Then, I get really angry if I hear from my daughter that the officer will not come back that day...can she go every day? She has works to do...and it is not safe always...”*
- *“I was so happy...bKash is so beautiful. Before I had to go far with money, I had to pay bus fare, go up and down in the bus...now, I just tell that I want to send this amount, then ‘hoosh’, done...Then, I call and confirm with my family...done.”*

Our respondents employ interesting actualization techniques to realize this affordance. They ask family members back in the villages to try to maintain good relationships with the agents who in many cases are small shop owners, or neighbors who have their own mobile phones with MFS accounts and can afford to get mobile internet. That way, the family members do not need to go to the bank.

Affordance 4: Disintermediation Ability

Many respondents mention that using MFS provides them with a certain level of freedom. The affordance in this case is the potential for disintermediation. Most of our respondents are unbanked and according to them, one of the major barriers in opening a bank account is the requirement of various documents such as national identification cards, proof of employment, a regular income, minimum balance, service charge etc. that many of them do not possess. Some respondents, despite having bank accounts, prefer to use MFS for transferring small amounts since handling banking activities takes up quite a bit of time; and it is often difficult for respondents who work to find the necessary time. Some mention the problem of matching the signature – a mandatory requirement in banks – for the issuance of a cheque. Some respondents cannot sign or even if they can, it does not fit the precise verification procedure of the banks. Some respondents mention that

MFS agents often decline to withdraw small amounts of money and as a result, maintaining personal MFS account is a better option.

The above discussion suggests that disintermediation ability affordance has two layers of actualization techniques. First, the agent-based system frees them from the banks and second, personal accounts liberate them from agents.

- *“I have an account in the bank, but I do not like the service much. I get confused sometimes...for example, with ATM machines...sometimes the card gets stuck. If I send somebody else with cheques, then sometimes there is problem with signature matching etc. even though I have signed it myself.”*
- *“I want to have it myself. In that way, I can recharge my account anytime. I do not have to wait for any agent.”*
- *“Sometimes agents delay intentionally. My family members are waiting in the village, but agents are so slow. I think this is a problem, so I have opened my own account.”*

Some respondents who have bank accounts claim that they prefer MFS because it is difficult to send money to villages using banks. Older parents often find it hard to withdraw money as many of the banks are situated far away from home. According to those respondents, MFS is less time consuming and easier for their parents.

- *My parents are old; they cannot travel to the bank. In fact, the banks are very far from our house. So, it will take a long time. But I can send money within 10-15 minutes if I use bKash.”*

Affordance 5: Self-Sustainability

The respondents also mention how MFS has provided them with self-sustainability, an affordance that we define as the ability to perform certain tasks with little or no help from others. The respondents without a bank account are generally migrant workers who have come to the capital city for better opportunities. Previously, these workers needed to ask someone from their own villages to carry the money over to their families as a favor. Naturally, there was no control over the timing. Respondents were completely dependent on other people and sometimes had to pay a share of the transportation costs. Some also experienced unfortunate incidents, e.g., family members not receiving the full amount or the carrier complaining about pick pockets and/ or theft. The migrant workers felt insecure since they had no way to verify those claims and had to trust whatever the carrier was telling them.

- *“I no longer need to depend on anybody else. My parents can get the money immediately. It is also very convenient; it saves me a lot of time.”*
- *“Before, I had to send money through somebody, or sometimes I had to visit those people who are going to the village. And it was not 100% secure, they may not deliver the full amount. It was so frustrating...I work really hard to send money to my family...”*

Many female migrant workers mention that they feel safe since for using MFS they do not have to go outside. Most of these females work as household helps for relatively wealthy families performing daily chores and looking after children of their employers. Therefore, it is difficult for them to get free time and in some cases, permissions from their employers to go outside and send money either through an acquaintance from their village or an MFS agent. Many females have come to the capital city for the first time and have little knowledge about the neighborhood they are staying in. They argue that these situations are no longer binding since they can carry out transactions using MFS even staying indoors.

- *“I cannot go outside as I wish. Madam may not be at home or maybe she will not let me go outside. So, MFS is easier for me to recharge my mobile from home or send small amount to my family like 100, 200 taka.”*
- *“I cannot go outside at night. But maybe there is an emergency at my village home. So, I can easily send money from my mobile. I do not need to wait for the morning and go to an agent.”*
- *“I may not get agent when I need. Also, they are always out of money...very annoying...I prefer my own account...no need to depend on agents.”*

Some respondents mention that agent system liberates them from entering the number and amount by themselves since they are fearful of making mistakes. In such cases, money will be sent to a wrong account. Some of them actually faced this problem and never got the money back. Therefore, they claim that agent-based system helps them to complete transactions even if they do not understand the system themselves.

- *“I am not well educated. I can sign my name, yes. But I get afraid that I will put in a wrong number and then money will go to another account. Then, how can I recover? I use agents. I feel that it is good. Even if I am not educated, I can use MFS like other educated people. I see many educated people also use agents.”*

Some respondents feel they acquire self-sustainability because they sense safety in the cashless nature of MFS. In Bangladesh, it can be risky to carry cash in the road and even keep it at home. Respondents tell us that MFS reduce their chances of getting mugged. Some respondents mention that MFS allow them to have a backup in case they forget their wallet at home.

- *“It helps me transact faster, you know, as opposed to carrying cash. It provides me with security. I do not have to worry about getting robbed for big amount of cash I am carrying. This is such a relief.”*
- *I always keep my money in mobile...who knows who will take the money away if I keep it at home?”*

- *“I always try to keep a balance of 5,000 taka. If I go out in a hurry and forget my bag, then I can still operate since I have my phone with me. At least, I can ‘cash out’ 5,000 taka in any emergency. It gives me such mental peace.”*

The techniques for actualizing self-sustainability affordance are to open personal accounts and/ or maintain good relationships with agents (because many of the respondents do not understand how to operate a mobile device even if it is a feature phone). The relatives at villages are also encouraged to maintain good relationships with agents, or neighbors with personal MFS accounts.

Affordance 6: Secrecy Maintainability

One analysis reveals an interesting affordance of secrecy maintainability. The respondents perceive MFS as a vehicle that allows them to maintain confidentiality about their financial transactions and/ or savings. In most cases, older females mention their need to send money to relatives without letting their husband or adult children know about it. These females also feel empowered that money can be kept in their personal accounts and since their family members usually do not know the PIN, the family members cannot withdraw the money by themselves. Some respondents mention that they never informed their adult children even about their personal MFS accounts. Culturally, Bangladesh has specific gendered roles and many female migrant workers do not have full control over their own earnings and how they spend it. From their perspective, MFS have given them an opportunity to keep their transactions private since they do not require others’ help.

- *“One problem is that there is a PIN. If my children know the PIN, they can withdraw. This is a problem for me. I can send money to my relatives. They will not allow if they know.”*
- *“I can keep my money to myself. It is better...nobody can know that I have money. If I fall sick, then who knows if my children will take me to the doctor or not...so, I will tell them I have money in my bKash, get that out for me and then take me to the doctor...Only then they will know I have money.”*
- *“Bank is different. MFS is personal. If I want to go to the bank, my children or husband will know. But I can use bKash and send money to my relatives whenever I want. I have it in my phone.”*
- *If I were using banks, I needed to explain to my family members as well as to the bank officers why I am withdrawing money. They ask too many questions. Suppose the bank can tell me you can only withdraw 10,000 taka today...yes, bKash also has a limit. But they do not ask me questions...ha ha ha...”*

The technique employed to actualize secrecy maintainability affordance is to have secret personal accounts and be vigilant about not sharing the knowledge of it with others.

Affordance 7: Networkability

MFS help our respondents to maintain and enhance their social networks by allowing them to send money regularly or in emergency situations to their family members who live in remote villages and therefore, do not have easy access to banks. We term this affordance as networkability, i.e., capability of networking. In most cases, our respondents are the only earning members in the family and they make regular monthly transfers through MFS. In other cases, they send money for emergencies such as surgery or medical treatments.

- *“Sometimes my family members from village inform me about their shortage of money. I can send immediately through bKash. If they are happy, I am happy. I also recharge their phones from here.”*
- *“I send one thousand taka for my mother’s medicine. Also, I can send 50, 100, or 200 taka to my relatives whenever they need it. At least, I can be of some help. After all, they are family.”*
- *“We can help each other with this. If a friend or a family member is in need of money, I can use my mother’s account or I can use an agent. It basically allows me to help others.”*
- *“I am a widow, so people help me, and they send money through bKash. My brother sends me money from abroad. It is so easy.”*

Some respondents mention that they feel good when they help their family members. The collectivistic culture of Bangladesh also puts pressure on them to share their earnings. They send money not only to the immediate family members but also to the families of their maternal/paternal uncles, cousins etc. Many are happy to do so since they know they are obtaining a ‘kindness credit’, a gesture that may be reciprocated in the future. It seems to be a conscious decision by our respondents to use networkability affordance of MFS to develop social capital .

- *“I can help others in need. I feel good to do this. I know that they will help me in my time of need. This is important. I always try to help others.”*

However, this is not a new practice that has emerged with MFS. People have been using acquaintances from their villages to transfer money for a long time; MFS has simply made networking less time-consuming and easier. Respondents actualize this affordance by using agents and/ or opening personal accounts and in many cases by introducing their family members – who are not familiar with these services – to the benefits of MFS. Table 1 summarizes the affordances and the associated actualization techniques –

Table 1

Affordances and associated actualization techniques

Affordances	Actualization Techniques
Financial Services Accessibility	<ul style="list-style-type: none"> - Gaining knowledge about MFS from several sources and repeated use - Evaluating pros and cons of transacting through an acquaintance versus using MFS - Opening personal MFS account or using agent services
Self-Controlling Ability	<ul style="list-style-type: none"> - Opening personal MFS account - Deliberately trying to forget about the savings - Keeping the knowledge of MFS account secret from family member
Spatial and Temporal Mobility	<ul style="list-style-type: none"> - Maintaining personal MFS account - Using the same agent every time to build trust - In the absence of personal accounts maintaining good relationships with agents as well as neighbors with personal MFS accounts
Disintermediation Ability	<ul style="list-style-type: none"> - Using agents to become free from the banks - Using personal MFS account to become free from the agents
Self-Sustainability	<ul style="list-style-type: none"> - Opening personal MFS account - Maintaining good relationships with agents
Secrecy Maintainability	<ul style="list-style-type: none"> - Maintaining personal MFS account - Keeping the PIN secret - Keeping knowledge of the personal account secret
Networkability	<ul style="list-style-type: none"> - Introducing MFS to family members - Using agent-based system - Opening personal MFS account

5.0 Discussion

We find that MFS use can open an action potential for accessing financial services if the users employ various techniques to actualize the affordance within their social contexts. Other studies focusing on developing countries in Africa and Asia (Andrianaivo & Kpodar, 2011; Donovan, 2012; Mishra & Bisht, 2013; Morawczynski, 2009; Siddik, Sun, Yanjuan, & Kabiraj, 2014; Wenner, Bram, Marino, Obeysekare, & Mehta, 2018; Zins & Weill, 2016) also find that unbanked people tend to achieve at least a preliminary financial inclusion through MFS. Diniz, Bailey, and Sholler (2014) examine a case of financial inclusion in a banking system in Brazil and argue that altering contexts rather than technology is crucial for successful implementation of an ICT4D project. Bisht and Mishra (2016) analyze three ICT driven initiatives for financial services and find that these services are best utilized when along with the technology structure the provider offers some level of flexibility for end users. Joia and dos Santos (2019) examine an ICT equipped bank branch on a boat and find that even though the boat bank has been able to offer some financial services, contextual issues such as lack of basic financial education and involvement of local people impede sustainable financial inclusion. Our research also suggests that actualization of financial services accessibility by MFS users depends on their capability to navigate the system that is often obstructed by lack of knowledge and hence they have to endure

a period of ambivalence while comparing MFS and human carrier with regards to sending money to their village homes and also rely on agents due to fear of making mistakes.

Our study reveals that MFS users often face decisional conflicts. They want to save for future expenditure (school admission fees, medical care, wedding, dowry etc.) but they argue that the money will be spent away if it is in their hands. It points to the need of self-control, and MFS in the absence of a bank account affords them to do so. They try to employ rules for self-control such as opening personal MFS accounts, exerting mental efforts to ‘intentionally forget’ about the amount and keeping the knowledge secret from other family members. This problem of self-control is neatly captured by Thaler and Shefin (1981) in their groundbreaking work in behavioral economics where they dub this problem as a conflict between “farsighted *planner* and myopic *doer*” (p. 392). They argue that “people will rationally choose to impose constraints on their own behavior, ...that such precommitments will occur primarily for those goods whose benefits and costs occur at different dates.” (Thaler & Shefin, 1981, p. 398).

Mobile artifact, with its ability to blend multiple usage contexts, allows users to achieve multi-functionalities within rich social situations (Middleton, Scheepers, & Tuunainen, 2014). Perceived mobility directly affects the intention to use mobile financial services (Yen & Wu, 2016). The innate ubiquity and portability of mobile devices engender multiple types of mobility such as spatial and temporal. MFS platforms, as we see in our study, alter the perception of fixed space and time for financial transactions. Mobile devices make transformational impacts on lived experiences by altering the spatial and temporal mobility even though everyday practices are deeply connected with time bound social activities (Green, 2002). These mobility affordances also reduce the transaction costs of accessing financial services as we see that respondents are not bound by specific bank location and banking hours.

Ability to disintermediate banks and MFS agents is another affordance that emerges as a recurring theme in our analysis. The respondents actualize this affordance by using agent based MFS and also by opening their own accounts. It is interesting to note that MFS platforms in Bangladesh are legally connected with different banks. However, our respondents perceive MFS as separate from traditional banking services since from their perspective, it is less bothersome for small transactions. It is still early to say how the overall workings of the MFS is going to play out in emerging markets like Bangladesh due to a variety of complex socially embedded issues (education, gender roles, power relations – both individual and institutional), but, emergence of new types of financial systems such as MFS is surely going to alter the existing regulatory climate globally (Geva, 2016).

Thapa and Sein (2018) argue that an affordance sometimes may give rise to another new affordance. We observe a similar phenomenon. The affordance of disintermediation ability does not only liberate our respondents from banks and agents, but also makes them less reliant on village acquaintances for sending money to their families. Consequently, our respondents feel confident in their own capabilities to complete financial transactions with little or no help from others. In other words, MFS give the users a self-sustainability affordance. As a result, they do not need to maintain good relationships with weak social ties, and instead they focus on forging good relationships with MFS agents to actualize self-sustainability affordance. We argue that self-sustainability can give rise to an outcome of empowerment. Empowerment has been a frequent theme in MFS research, but the conceptualizations of empowerment are different. Most of the research studies see empowerment either through the lens of financial inclusion or gender

(Adaba, Ayoung, & Abbott, 2019; Maurer, 2012; Mostafa, 2011; Nugroho & Chowdhury, 2015; Sam, 2017). In our case, however, the respondents are not completing a novel transaction through MFS. They have been using acquaintances but without the control. Therefore, by using MFS they unlock the potential to establish control over their transactions with very little or no help from others and feel empowered as a result.

Self-sustainability, in a similar manner, can give rise to the affordance of secrecy maintainability. Many female respondents, as evident from our findings, want to keep their transactions secret from their male family members. In Bangladesh, despite remarkable achievements in female education, gender-based power asymmetry still looms large in most of the households. Females are not always allowed to make their own financial decisions. As presented in the findings, if female respondents send money to their parents and relatives, they want to keep those transactions secret from their husbands and adult sons. In the past, maintaining this secrecy has been very difficult since they had no option but to send the money via someone whom the family members recognize. After using MFS our respondents can complete their financial transactions in secrecy. Morawczynski (2009), while investigating the use of M-Pesa in Kenya, finds a similar result since use of M-Pesa allowed females to accumulate secret savings and enjoy a certain level of autonomy from their husbands. In our study, we find that our female respondents are not only concerned about their husbands but also their adult sons who may take away their savings.

Another important affordance that emerges from MFS use is the potential for creating social capital through enhanced networkability. We find that our respondents are eager to cultivate social ties by sending money to their family members, even to extended ones. This is expected since the family social network in Bangladesh is quite widespread. The works by Thapa and Sein (2010) and Sein and Thapa (2018) on ICT use and social capital are illuminating here. They find bonding, bridging, and linking social capital emerging from the use of wireless networking project in Nepal. In our study, the networkability affordance emerging from MFS use is basically creating ‘bonding social capital’ which refers to the social ties between people of similar social backgrounds such as family, close relatives, friends, and neighbors (Thapa & Sein, 2010). Similar to what Morawczynski (2009) observes in Kenya regarding the use of M-Pesa, we also find that many of our respondents actively invest in their immediate social networks by transferring money to close social ties in times of need such as illness, school admission, marriage etc. It is interesting to note that these transfers are not always simple charity. Some respondents view such transactions as ‘kindness credits’ and expect a reciprocity of these kind gestures in due time. The affordance of networkability, therefore, reveals an expectation of exchange relationship that is being supported and perpetuated by the use of MFS. Therefore, we argue that networkability affords the MFS users to continue their membership in the community even if they are not physically present in their villages. This active building of social capital situates our finding in a different angle compared with that of Sein and Thapa (2018) who argue that existing ‘bridging and linking’ social capital can facilitate the process of affordance perception and actualization. Based on our findings, we argue that networkability of MFS can actually help in creating and maintaining the ‘bonding’ social capital as an outcome when users actively take the decision to invest in the relationship as seen by Thapa, Sein, and Sæbø (2012) in their work in Nepal.

6.0 Conclusion

This research makes contribution to the extant ICT4D literature on MFS in three ways. First, using affordance theory as a guiding tool in MFS context, this research illuminates the socially and culturally embedded use of the MFS platforms by identifying the latent MFS affordances. Second, there is a lack of research on MFS use in developing countries. Only M-Pesa in Kenya received a certain level of attention from scholarly research. Even though MFS has started to stamp its foothold in Bangladesh, almost no academic research exists that aims to build deeper understanding of how MFS platforms help users in Bangladesh, or similar developing countries, to accomplish their everyday goals by unlocking the affordances. Third, our research sheds light on how differently women in a developing country like Bangladesh use MFS platforms based on their goals that are quite dissimilar to the goals of the men. The self-sustainability and secrecy maintainability affordances point to the need to gender disaggregate the technology usage data to reveal possible unconventional use by women. Lastly, our study reinforces the idea that MFS help in supporting communities by helping the users to build social capital through enhanced and easier networkability.

The practical implications of this research are fourfold. First, this research will help providers of MFS services to understand their product beyond design and usability features. Affordances and actualization techniques uncovered in this study illuminate the complex goal directed behavior pursued by MFS users. This understanding can potentially unlock new ways to reach target markets by altering the messages that resonate with the affordances. Second, policymakers can understand how MFS is influencing the lives of the citizenry while assessing the effectiveness of those services. It is important to note that numeric statistics such as number of transactions, amount of money transferred alone cannot depict the true nature of social embeddedness of MFS in a developing country like Bangladesh. Third, the designers of MFS products as well as mobile applications also need to understand how their intended design and/or product features are being utilized in connection with actual needs. Understanding the affordances may help them to come up with better product and design features and educate the potential users in different ways. Fourth, people who are still facing ambivalence regarding using MFS may also develop a new notion about the usefulness of these tools once they acquire more knowledge of the affordances.

This study has implications for future research. Researchers can study affordances in different contexts, e.g., studies can be conducted to understand affordances and actualization techniques utilized by merchants and government agencies that use MFS as a supporting tool. This understanding can facilitate economic research on how efficient and effective MFS based delivery system has been in terms of speed, reduction of corruption, access to services etc.

Despite having important scholarly research and practical implications, this study has limitations too. The study is conducted in Dhaka, the capital of Bangladesh. Even though our interviewees vary in age, gender, education, and occupation, it might have been possible to uncover more details if people living in other parts of the country had been included. Also, this study focuses only on individual users of MFS, and therefore, does not reveal any organizational affordances that may result from MFS based transactions.

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

References

- Adaba, G. B., & Ayoung, D. A. (2017). The development of a mobile money service: an exploratory actor-network study. *Information Technology for Development, 23*(4), 668-686. doi: <https://doi.org/10.1080/02681102.2017.1357525>
- Adaba, G. B., Ayoung, D. A., & Abbott, P. (2019). Exploring the contribution of mobile money to well-being from a capability perspective. *The Electronic Journal of Information Systems in Developing Countries, 85*(4), e12079. doi: 10.1002/isd2.12079
- Andrianaivo, M., & Kpodar, K. I. W. P. (2011). ICT, financial inclusion, and growth: evidence from african countries: IMF Working Paper (11/73).
- Bankole, F. O., Bankole, O. O., & Brown, I. (2011). Mobile banking adoption in Nigeria. *The Electronic Journal of Information Systems in Developing Countries, 47*(2), 1-23.
- Bernhard, E., Recker, J., & Burton-Jones, A. (2013). *Understanding the actualization of affordances: A study in the process modeling context*. Paper presented at the International Conference on Information Systems, Università Bocconi, Milan.
- Bisht, S. S., & Mishra, V. (2016). ICT-driven financial inclusion initiatives for urban poor in a developing economy: implications for public policy. *Behaviour & Information Technology, 35*(10), 817-832. doi: 10.1080/0144929x.2016.1183711
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*, 77-101.
- Braun, V., & Clarke, V. (2012). Thematic analysis. In H. Cooper, P. M. Camic, D. L. Long, A. T. Panter, D. Rindskopf & K. J. Sher (Eds.), *APA handbook of research methods in psychology, Vol. 2: Research designs: Quantitative, qualitative, neuropsychological, and biological* (pp. 57-71). Washington, DC: American Psychological Association.
- Braun, V., & Clarke, V. (2016). (Mis)conceptualizing themes, thematic analysis, and other problems with Fugard and Potts' (2015) sample-size tool for thematic analysis. *International Journal of Social Research Methodology, 19*(6), 739-743 doi: <https://doi.org/10.1080/13645579.2016.1195588>
- Braun, V., & Clarke, V. (2019a). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health, 11*(4), 589-597.
- Braun, V., & Clarke, V. (2019b). To saturate or not to saturate? Questioning data saturation as a useful concept for thematic analysis and sample-size rationales. *Qualitative Research in Sport, Exercise and Health, 11*(1), 1-16 doi: <https://doi.org/10.1080/2159676X.2019.1704846>
- Bygstad, B., Munkvold, B. E., & Volkoff, O. (2016). Identifying generative mechanisms through affordances: a framework for critical realist data analysis. *Journal of Information Technology, 31*(1), 83-96. doi: <https://doi.org/10.1057/jit.2015.13>
- Castro, F. G., Kellison, J. G., Boyd, S. J., & Kopak, A. (2010). A methodology for conducting integrative mixed methods research and data analyses. *Journal of Mixed Methods Research, 4*(4), 342-360. doi: 10.1177/1558689810382916

- Chen, G., & Rasmussen, S. (2014). *bKash Bangladesh: A fast start for mobile financial services*. Washington DC: World Bank
- Clarke, V., & Braun, V. (2018). Using thematic analysis in counselling and psychotherapy research: A critical reflection *Counselling and Psychotherapy Research* 18(2), 107-110.
- Dini, A. A., Sæbo, Ø., & Wahid, F. (2018). Affordances and effects of introducing social media within eParticipation—Findings from government-initiated Indonesian project. *The Electronic Journal of Information Systems in Developing Countries*, 84(4), e12035.
- Diniz, E. H., Bailey, D. E., & Sholler, D. (2014). Achieving ICT4D project success by altering context, not technology. *Information Technologies and International Development*, 10(4), 15-29.
- Donner, J., & Tellez, C. A. (2008). Mobile banking and economic development: Linking adoption, impact, and use. *Asian Journal of Communication*, 18(4), 318-332.
- Donovan, K. (2012). Mobile money and financial inclusion. In T. Kelly & M. Mingers (Eds.), *Information and communication for development* Washington. DC: World Bank.
- Duncombe, R. (2012). An evidence-based framework for assessing the potential of mobile finance in sub-Saharan Africa. *The Journal of Modern African studies*, 50(3), 369-395.
- Duncombe, R., & Boateng, R. (2009). Mobile phones and financial services in developing countries: a review of concepts, methods, issues, evidence and future research directions. *Third World Quarterly*, 30 (7), 1237-1258.
- Gaver, W. W. (1991). *Technology affordances*. Paper presented at the CHI '91 Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, New Orleans, Louisiana, USA.
- Geva, B. (2016). Disintermediating electronic payments: Digital cash and virtual currencies. *Journal of International Banking Law and Regulation*, 31(12), 661-674.
- Gibson, J. J. (1979). *The Ecological Approach to Visual Perception*. Boston, MA: Houghton Mifflin Company.
- Green, N. (2002). On the move: Technology, mobility, and the mediation of social time and space. *The Information Society*, 18, 281-292. doi: 10.1080/0197224029007512
- Hartson, H. R. (2003). Cognitive, physical, sensory, and functional affordances in interactional design. *Behavior and Information Technology*, 22(5), 315-338.
- Islam, M. Z. (2019). MFS reach widens, *The Daily Star*. Retrieved from <https://www.thedailystar.net/business/news/mfs-reach-widens-1693450>
- Jack, W., & Suri, T. (2014). Risk sharing and transactions costs: Evidence from Kenya's mobile money revolution *American Economic Review* 104(1), 183-223.
- Jaradat, M.-I. R. M., & Faqih, K. M. S. (2014). Investigating the moderating effects of gender and self-efficacy in the context of mobile payment adoption: A developing country perspective. *International Journal of Business and Management*, 9(11), 147-169.
- Joia, L. A., & dos Santos, R. P. (2019). ICT-equipped bank boat and the financial inclusion of the riverine population of Marajó Island in the Brazilian Amazon. *Information Systems Journal*, 29(4), 842-887. doi: 10.1111/isj.12200
- Kanobe, F., Alexander, P. M., & Bwalya, K. J. (2017). Policies, regulations and procedures and their effects on mobile money systems in Uganda. *The Electronic Journal of Information Systems in Developing Countries*, 83(7), 1-15.
- Kendall, J., Maurer, B., Machoka, P., & Veniard, C. (2012). An emerging platform: From money transfer system to mobile money ecosystem. *Innovations*, 6(4), 49-64.
- Kim, M., Zoo, H., Lee, H., & Kang, J. (2018). Mobile financial services, financial inclusion and development: A systematic review of academic literature. *The Electronic Journal of Information Systems in Developing Countries*, 84(5), e12044. doi: <https://doi.org/10.1002/isd2.12044>
- Lanamäki, A., Thapa, D., & Stendal, K. (2016). *When is an affordance? Outlining four stances*. Paper presented at the Working Conference on Information Systems and Organizations (ISO) Dublin, Ireland.
- Leonardi, P. M. (2011). When flexible routines meet flexible technologies: Affordance, constraint, and the imbrication of human and material agencies. *MIS Quarterly*, 35(1), 147-168.

- Leonardi, P. M. (2013). When does technology use enable network change in organizations? A comparative study of feature use and shared affordances. *MIS Quarterly*, 37(3), 749-775.
- Majchrzak, A., & Markus, M. L. (2012). Technology affordances and constraints in Management Information Systems (MIS). In E. Kessler (Ed.), *Encyclopedia of Management Theory*. Thousand Oaks: Sage Publications.
- Malinga, R., & Maiga, G. (2020). A model for mobile money services adoption by traders in Uganda. *The Electronic Journal of Information Systems in Developing Countries*, 86(2), e12117. doi: <https://doi.org/10.1002/isd2.12117>
- Mao, J. (2014). Social media for learning: A mixed methods study on high school students' technology affordances and perspectives. *Computers in Human Behavior*, 33, 213-223.
- Mas, I., & Morawczynski, O. (2009). Designing mobile money services: Lessons from M-PESA. *Innovations*, 4(2), 77-91.
- Maurer, B. (2012). Mobile money: Communication, consumption and change in the payments space. *The Journal of Development Studies*, 48(5), 589-604. doi: 10.1080/00220388.2011.621944
- Mbogo, M. (2010). The impact of mobile payments on the success and growth of mirco-business: The case of M-Pesa in Kenya. *The Journal of Language, Technology & Entrepreneurship in Africa*, 2(1), 182-203.
- Mettler, T., Sprenger, M., & Winter, R. (2017). Service robots in hospitals: New perspectives on niche evolution and technology affordances. *European Journal of Information Systems*, 26(5), 451-468.
- Middleton, C. A., Scheepers, R., & Tuunainen, V. K. (2014). When mobile is the norm: Researching mobile information systems and mobility as post-adoption phenomena. *European Journal of Information Systems*, 23(5), 503-512.
- Mishra, V., & Bisht, S. S. (2013). Mobile banking in a developing economy: A customer-centric model for policy formulation. *Telecommunications Policy*, 37(6), 503-514. doi: <https://doi.org/10.1016/j.telpol.2012.10.004>
- Morawczynski, O. (2009). Exploring the usage and impact of “transformational” mobile financial services: the case of M-PESA in Kenya. *Journal of Eastern African Studies*, 3(3), 509-525. doi: 10.1080/17531050903273768
- Mostafa, M. (2011). Mobile microfinance and empowerment: The case of E-masary for financial inclusion in Egypt. *Strategic Foresight Journal*, 2(11), 11.
- Ngugi, B., Pelowski, M., & Ogembo, J. G. (2010). M-Pesa: A case study of the critical early adopters' role in the rapid adoption of mobile money banking in Kenya. *The Electronic Journal of Information Systems in Developing Countries*, 43(3), 1-16.
- Norman, D. (1988). *The Psychology of Everyday Things*. New York, NY: Basic Books.
- Nugroho, L., & Chowdhury, S. L. K. (2015). Mobile banking for empowerment muslim women entrepreneur: Evidence from Asia (Indonesia and Bangladesh). *Tazkia Islamic Finance and Business Review*, 9(1), 83-100.
- Piccoli, G. (2016). Triggered essential reviewing: The effect of technology affordances on service experience evaluations. *European Journal of Information Systems*, 25(6), 477-492.
- Sæbø, Ø., Federici, T., & Braccini, A. M. (2020). Combining social media affordances for organizing collective actions. *Information Systems Journal*, 30(4), 699-732 doi: 10.1111/isj/12280
- Sahai, R., & Schueth, S. (2019). Bangladesh Wave 6 Report: Sixth Annual FII Tracker Survey: Financial Inclusion Insights: Applied Research for Digital Financial Inclusion.
- Sam, S. (2017). Towards an empowerment framework for evaluating mobile phone use and impact in developing countries. *Telematics and Informatics*, 34(1), 359-369. doi: 10.1016/j.tele.2016.06.003
- Scheepers, R., Scheepers, H., & Ngwenyama, O. K. (2006). Contextual influences on user satisfaction with mobile computing: findings from two healthcare organizations. *European Journal of Information Systems*, 15(3), 261-268. doi: 10.1057/palgrave.ejis.3000615
- Seidel, S., Recker, J. C., & vom Brocke, J. (2013). Sensemaking and sustainable practicing: functional affordances of information systems in green transformations. *MIS Quarterly*, 37(4), 1275-1299.

- Sein, M. K., & Thapa, D. (2018). Social capital in enabling quality healthcare: The case of a telemedicine project in Nepal. *Electronic Journal of Information Systems in Developing Countries*, 84(e12046), 1-9. doi: <https://doi.org/10.1002/isd2.12046>
- Siddik, M. N. A., Sun, G., Yanjuan, C., & Kabiraj, S. (2014). Financial inclusion through mobile banking: A case of Bangladesh. *Journal of Applied Finance and Banking*, 4(6), 109 - 136.
- Stendal, K., Thapa, D., & Lanamäki, A. (2016). *Analyzing the concept of affordances in Information Systems*. Paper presented at the 49th Hawaii International Conference on System Sciences.
- Strong, D. M., Volkoff, O., Johnson, S. A., Pelletier, L. R., Tulu, B., Isa, B.-O., . . . Garber, L. (2014). A theory of organization - EHR affordance actualization. *Journal of the Association for Information Systems*, 15(2), 53-85.
- Thakur, R., & Srivastava, M. (2014). Adoption readiness, personal innovativeness, perceived risk and usage intention across customer groups for mobile payment services in India. *Internet Research*, 24(3), 369-392. doi: [doi:10.1108/IntR-12-2012-0244](https://doi.org/10.1108/IntR-12-2012-0244)
- Thaler, R. H., & Shefin, H. M. (1981). An economic theory of self-control. *The Journal of Political Economy*, 89(2), 392-402.
- Thapa, D., & Sein, M. K. (2010). *ICT, Social capital and development: The case of a mountain region in Nepal*. Paper presented at the Proceedings of Third Annual SIG GlobDev Workshop, Saint Louis, USA.
- Thapa, D., & Sein, M. K. (2018). Trajectory of affordances: Insights from a case of telemedicine in Nepal. *Information Systems Journal*, 28(5), 796-817.
- Thapa, D., Sein, M. K., & Sæbø, Ø. (2012). Building collective capabilities through ICT in a mountain region of Nepal: Where social capital leads to collective action. *Information Technology for Development*, 18(1), 5-22.
- Tim, Y., Pan, S. L., Bahri, S., & Fauzi, A. (2018). Digitally enabled affordances for community-driven environmental movement in rural Malaysia. *Information Systems Journal*, 28(1), 48-75.
- Volkoff, O., & Strong, D. M. (2013). Critical realism and affordances: Theorizing IT-associated organizational change processes. *MIS Quarterly*, 37(3), 819-834.
- Volkoff, O., & Strong, D. M. (2017). Affordance theory and how to use it in IS research. In R. D. Galliers & M.-K. Stein (Eds.), *The Routledge Companion of Management Information Systems*. Abingdon: Routledge.
- Wamuyu, P. K. (2014). The role of contextual factors in the uptake and continuance of mobile money usage in Kenya. *The Electronic Journal of Information Systems in Developing Countries*, 64(4), 1-19.
- Wenner, G., Bram, J. T., Marino, M., Obeysekare, E., & Mehta, K. (2018). Organizational models of mobile payment systems in low-resource environments. *Information Technology for Development*, 24(4), 681-705. doi: [10.1080/02681102.2017.1311830](https://doi.org/10.1080/02681102.2017.1311830)
- World Bank. (2019). The World Bank in Bangladesh Retrieved October 14, 2019, from <https://www.worldbank.org/en/country/bangladesh/overview>
- Wyche, S., Simiyu, N., & Othieno, M. E. (2018). Understanding women's mobile phone use in rural Kenya: An affordance-based approach. *Mobile Media & Communication* 7(1), 94-110.
- Wyche, S., & Steinfield, C. (2016). Why don't farmers use cell phones to access market prices? Technology affordances and barriers to market information services adoption in rural Kenya. *Information Technology for Development*, 22(2), 320-333. doi: [10.1080/02681102.2015.1048184](https://doi.org/10.1080/02681102.2015.1048184)
- Yen, Y.-S., & Wu, F.-S. (2016). Predicting the adoption of mobile financial services: The impacts of perceived mobility and personal habit. *Computers in Human Behavior*, 65, 31-42. doi: [10.1016/j.chb.2016.08.017](https://doi.org/10.1016/j.chb.2016.08.017)
- Zins, A., & Weill, L. (2016). The determinants of financial inclusion in Africa. *Review of Development Finance*, 6, 46-57.

Appendix A: Data Analysis Process

What is the actual role of MFS in this goal accomplishment?
 What is the underlying socially embedded potential that MFS is helping to unlock which other modes of goal accomplishment are not currently doing adequately?

Goals	Data extracts	Sub-themes	Affordance Themes
<ul style="list-style-type: none"> - Send money - Receive money - Save money 	<p>“I want to send money to my parents”</p> <p>“I need to pay my suppliers”</p> <p>“I am a widow...my brother sends me money in bKash</p> <p>“Suppose I am short by 1000 taka. What can I do? Then, I pull the money from my bKash. When I have extra, I put it in my bKash. Then, I take it out when I am in real trouble.”</p> <p>“I do not have capacity to open a bank account. So, I can keep even 100 – 200 taka. Can I do that in a bank?”</p>	<ul style="list-style-type: none"> Providing basic financial services No bank account 	<ul style="list-style-type: none"> Financial Services Accessibility
<ul style="list-style-type: none"> - Save money for future expenditure 	<p>“I do not have a bank account. If I have the money in my hand, somehow it will go away. But, if I keep it in bKash, it will be there when I need it for an emergency such as my daughter’s exam fee.”</p> <p>“If I had kept it in my hand, you know, it would never stay....So, I keep it in bKash”</p>	<ul style="list-style-type: none"> Problems with regulating oneself Putting a binding 	<ul style="list-style-type: none"> Self- controlling Ability
<ul style="list-style-type: none"> - Send money at any time - send and receive money quickly 	<p>“In our business, most people use either bKash or Rocket. It is necessary for us because bank is open for transactions for a limited time only.”</p> <p>“I do not have to stand in line for hours.”</p>	<ul style="list-style-type: none"> Time flexibility Time saving 	<ul style="list-style-type: none"> Temporal Mobility

Goals	Data extracts	Sub-themes	Affordance Themes
<ul style="list-style-type: none"> - Do not want to pay bus fare - Do not want to send old parents or young daughters far from home to receive money - Do not want to stand in line 	<p>“My village house is far... my daughter.... has works to do...and it is not safe always...”</p> <p>“Before I had to go far with money, I had to pay bus fare”</p> <p>“My parents are old...they cannot walk far in this heat...”</p>	<ul style="list-style-type: none"> Reducing tension regarding unsafe travels and destinations Saving money by reducing the need to travel Reducing difficult travel 	<p>Spatial Mobility</p>
<ul style="list-style-type: none"> - Do not want to deal with bank procedures or uncooperative agents - Do not want to send parents to banks to receive money because old parents often do not understand the complicated bank procedures, and completing these procedures are time consuming 	<p>“I have an account in the bank, but I do not like the service much. I get confused sometimes...for example, with ATM machines”</p> <p>“I can recharge my account anytime. I do not have to wait for any agent.”</p> <p>“My parents are old; they cannot travel to the bank.</p> <p>“If I send somebody else with cheques, then sometimes there is problem with signature matching”</p> <p>In fact, the banks are very far from our house. So, it will take a long time</p>	<ul style="list-style-type: none"> Helping people without education to get financial services without going to the bank Alternative/ Choice to bypass agents Alternative / Choice to bypass bank procedures 	<p>Disintermediation Ability</p>
<p>I can send money myself or with the help of agents</p>	<p>“I no longer need to depend on anybody else”</p> <p>“I cannot go outside as I wish. Madam may not be at home or maybe she will not let me go outside. So, MFS is easier for me to recharge my mobile from home or send small amount to my family like 100, 200 taka.”</p> <p>“I am not well educated...I use agents. I feel that it is good. Even if I am not educated, I can use MFS like other educated people.”</p>	<ul style="list-style-type: none"> Freedom from using other people Overcoming barrier/ Enhancing competence / Boosting confidence 	<p>Self-Sustainability</p>

Goals	Data extracts	Sub-themes	Affordance Themes
Do not want to let anybody know about my money	<p>“I can send money to my relatives. My children will not allow if they know.”</p> <p>“Bank is different. MFS is personal. If I want to go to the bank, my children or husband will know. But I can use bKash and send money to my relatives whenever I want. I have it in my phone.”</p>	<p>Concealing financial transactions</p> <p>Hiding savings from family members</p>	<p>Secrecy</p> <p>Maintainability</p>
Want to help family members/friends in emergency, they will also help me back	<p>“Sometimes my family members from village inform me about their shortage of money. I can send immediately through bKash. If they are happy, I am happy.”</p> <p>“I can help others in need. I feel good doing this. I know that they will help me in my time of need.”</p>	<p>Gratification from helping others</p> <p>Obtaining ‘kindness credit’</p>	<p>Networkability</p>