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## Factors Hinder the Implementation of Information Systems in Microfinance: A Bangladesh Perspective

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### **Abstract:**

*Information systems can be a great tool for managing microfinance interventions efficiently both in operational and policy perspectives. A successful computerization of information systems can significantly boost that efficiency in an organization and the sector as a whole. Microfinance sector of Bangladesh is a large and important sector of the country that has been in its existence for a long period of time covering a significant proportion of the households of this developing country. This paper looks into the trajectory of computerization of the information systems of microfinance sector and investigates the factors that hinder the computerization movement of the sector as a whole, and proposes a number of theoretical propositions for the knowledge domain of information systems implementation. A quantitative survey has been conducted to look into the overall scenario of information systems of the sector and a qualitative case study has been conducted to understand the deeper layer of the factors that hinder computerization of information systems of microfinance within the contextual setting of this developing country.*

**Keywords:** Information systems, implementation, microfinance, hindering factors

### **1. Introduction**

Irrespective of size and nature every organization has information systems, and the information system means a lot for the operational and policy potentials of any organization (Land and McGregor, 2002). With the advent of Information and Communication Technology (ICT) and its tremendous development, a movement of computerization of information systems in organizations has been going on since mid-1970s. In terms of operational and business intelligence, the organizations using computerized information systems usually enjoy competitive advantage in an industry or sector of any country. However, successfully computerization of an existing manual information system or a new one is a challenging endeavor, especially, within the contextual setting of a developing country (Heek, 2002). An array of factors may hinder the implementation of computerized information systems in an organization or a sector. Identification and understanding the factors that hinder successful computerization of information systems may help managers and policymakers of organizations and a sector as a whole to cope with the factors hinder. This paper looks into the trajectory of the implementation of computerized information systems in microfinance sector of Bangladesh, and identifies the factors that hinder computerization of this large and important sector of this developing country.

### **2. Microfinance**

Microfinance is a development program that provides small amounts of credit without collateral to the economically and socially marginalized people, in most cases to the women. It is believed that, using this credit, the borrowing households are enabled to break out the vicious cycle of poverty through creating self-employment (Yunus and Jolis, 1998). As Smith (1776) asserted, 'Money, says the proverb, makes money. When you have got a little, it is often easy to get more. The great difficult thing is to get that little'. Microfinance program is designed to provide this 'little capital' as a 'micro-credit' to the people in poverty. Microfinance intervention is a 'semi-formal' financial service dedicated to the unbanked community to grant right of access to finance (World Bank, 1997; Yunus and Jolis, 1998). Microfinance providing organizations form groups with marginalized homogeneous people and provide financial services to the group members at their community level. As per design, dedicated staff members of microfinance organizations hold group meeting and collect loan repayment instalments and savings from the borrowing members. In some cases it also provides insurance services, and involves group members with a process of social development.

### 3. Literature Review

#### 3.1. Information Systems in Organizations

Information and information systems are inseparable aspects from an organizational system. Land and McGregor (2002) describe this notion of information and information systems in organization as 'All organizations, from the smallest one-man business or the parish council of a small village, to the largest multinational enterprise or the administrative machine of the largest nation state, have information systems. Information systems exist to generate, record, manipulate, and communicate data necessary for the operational and planning activities which have to be carried out if the organization is to accomplish its objectives' (p.1). Without generating, passing, receiving and using information, organizations cannot work. In identifying the taxonomy of information in organizations, Land and McGregor (2002) found five basic types of information that most organizations keep in their systems and use. Those are: descriptive information; probabilistic information; explanatory and evaluative information; unexpected information; and propaganda. Such information is used by organizations for operational, problem avoidance and problem-solving, coordinating, controlling, and planning and development activities. However, whatever the forms and types are, the information must belong to a system (Hofkirchner, 2011). The system may be formal or informal, and can be natural, manual or digital. Although information and information systems are integral parts of all types of organizations, these were largely absent in the descriptions and analyses of organizational theories, especially in classical ones. However, in modern age organizational specialists and economists consider information as a primary ingredient in organizations with similar importance to capital, labor and materials (Capurro, 2003).

#### 3.2. Implementation of Information Systems

Implementing information systems that involve a large and heterogeneous users distributed over a vast geographic area is challenging. Although the rate of successful implementation is gradually increasing due to the methodological refinement, need recognition of management and improved user conciseness, a considerable proportion of large information systems still end with implementation failure or partial success (Verner et al., 2006). The benefits of using information systems in organizations depend on how successfully the systems have been implemented. Because of this, the measurement of information systems success remains a prime concern among the researchers, practitioners and managers of organizations, and for that a long standing tradition of studying the success and failure factors to information of systems implementation has been going on. Different scholars of information systems research have proposed different models of measuring the success of information systems in organizations. Brynjolfsson (1993) emphasized on the productivity paradigm of the systems as the measure of success while DeLone and McLean (1992) used individual and organizational effectiveness indicators and in a later model DeLone and McLean (2002) included net benefit to their previous model as dependent variable to measure the success of an information system. In fact, information systems success models proposed by DeLone and McLean (1992; 2002) have been used as benchmarks and theoretical basis of the studies on IS success for a long period of time (Nguyen, 2015).

As one of the notable contributors, Shaberwal et al. (2006) suggested to include contextual factors in which the information systems are developed, used and unfolded overtime. However, Chowdhury and Salahuddin (2017) argues that all the factors that should be considered for studying the implementation success of an information system can be merged into three categories of factors namely 1) organizational factors, 2) technological factors, and 3) management factors. However, after a thorough review of a large number of articles published on information systems, Ghadiyali et al. (2011) categorizes the challenging issues into three categories namely 1) conceptual challenges, 2) empirical challenges, and 3) trust related challenges in development and implementation of information systems. Analyzing the success and failure of information systems implementation can also be performed from the angles of internal enabling and hindering factors to the organization, which are more controllable and the enabling and hindering factors external to the organization on which the organization has less control. However, there is a dearth of studies that analyze the factors hindering the implementation of computerized information systems in a sector as a whole. As an unexplored area, this study concentrates on the factors that hinder the implementation of computerized information systems in microfinance sector of Bangladesh.

### 4. Methodology

The findings, discussions and propositions that have been presented in this paper are based on a field work for PhD study on microfinance. Authors conducted a literature survey on the implementation of information systems. A questionnaire survey with 58 microfinance organizations has been conducted for collecting quantitative data, and a case study using semi-structured interviews and FGDs (Focus Group Discussion) with 6 microfinance organizations has been conducted in order to understand the deeper and subjective opinions on the factors hindering the implementation of computerized information systems in microfinance sector of Bangladesh.

Organization	Semi-Structured Interview	Focus Group Discussion
ASA	21	7
BRAC	22	6
DBS	8	3
SJK	5	2
TMSS	12	5
UDDIPON	16	7
Total for 6 cases	84	30
PKSF (Apex Funding Body)	5	-
MRA (Microcredit Regulatory Authority)	3	-

Table 1: Method of Qualitative Data Collection

Finally, a number of semi-structured interviews were conducted with the staff members of PKSF (apex funding body) and MRA (Microcredit Regulatory Authority) of this country to get their opinions from funding, controlling and regulatory viewpoints. Most of the field works, data processing and analysis were conducted during the period of 2011-2013. The quantitative data was processed and analyzed using SPSS and the quantitative data was processed and analyzed using NVivo.

### 5. IS Implementation in Microfinance: A Trajectory

During early 1900's when Nobel laureate poet Rabindranath Tagore used to provide collateral-free small loans to the farmers in some areas of Bangladesh, Tagore was concerned about the accounting and information systems of his microfinance intervention, and included these aspects in the curriculum of the college he established in the area of intervention (Nath, 2004). During mid-1970s BRAC and Proshika, two large development organizations started providing small amount of money as collateral-free loans to the economically marginalized farmers in rural Bangladesh, and that interventions were supported with fully manual information systems. Gradually, both the organizations expanded their coverage of microfinance interventions and went through a process of structuring both the operations and information systems. However, until 1986 the information systems of microfinance organizations of Bangladesh were manual, usually maintained by the staff members of accounting department.

In 1986, after attending an international conference in Europe Mr. Kazi Faruque Ahmed, the founder of Proshika told his 40 accountants and microfinance program monitors at head office that they need not to do their data related jobs. Mr. Ahmed told them that he would give them a machine called computer to do the 'donkey jobs'. The staff members would do more creative jobs for the organization. The staff members were afraid of losing their jobs as they thought that the computers would replace them. Mr. Ahmed told them to rest assured about their job and bought some computers for Proshika. He hired an IT consultant from UK to develop the information systems for microfinance. Within some months an information system for microfinance was developed to use at head office of Proshika. That was the first computerized information system for microfinance in Bangladesh, if not first in the world.

During the period from 1986 to 1997, the information system of Proshika was the only computerized information system for microfinance program management in Bangladesh although a huge number of microfinance organizations were established by that time. However, besides manual data processing, some of the organizations used spreadsheets software for summarizing operational data, but not database-backed full-fledged customized computerized information system was used for microfinance. As Figure 1 shows, after implementation of the information system for Proshika in 1986 it took about 20 years to implement computerized information systems in less than 10% microfinance organizations in Bangladesh.

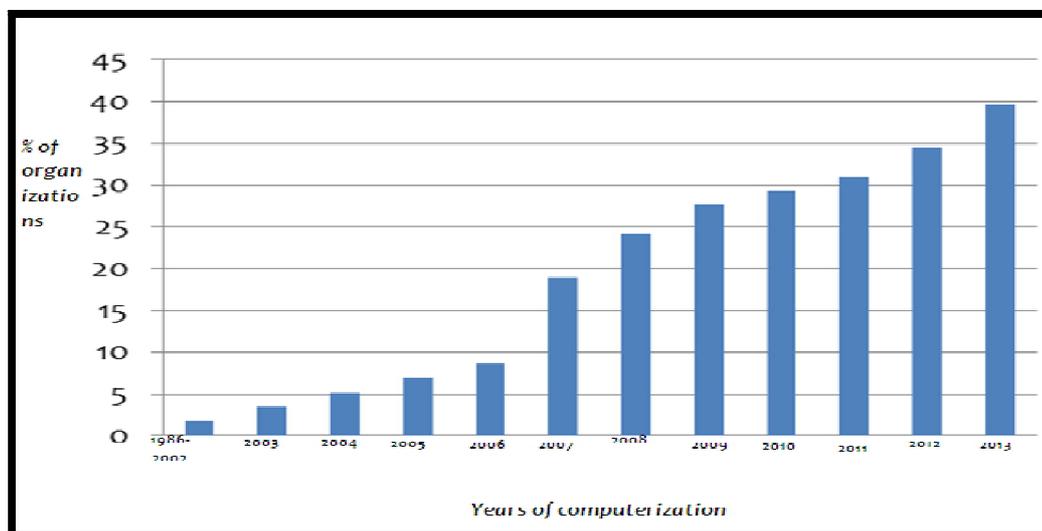


Figure 1: Use of Computerized Information Systems in Microfinance Organizations

It is seen in Figure 1 until 2007 the pace of computerization of information systems was very slow, although it was observed that the microfinance organizations that had computerized their information systems enjoyed significant benefits in their operational performance, monitoring and supervision, and transparency (Mia, 2013).

## 6. IS Implementation in Microfinance: Factors Hinder

As mentioned earlier in methodology that in order to understand the factors hindering the computerization of information systems for microfinance management, quantitative data has been collected using a questionnaire survey and qualitative data has been collected using semi-structured interviews and Focus Group Discussions for getting a deeper understanding about the hindering factors.

Reasons	% of Organizations
Scarcity of skillful IS professionals	60
Financial problem	53
Electricity problem	33
Dependable software firms are not available	20
Software and training costs are high for smaller organizations	20
Existing software do not match PKSF (apex funding body) requirements	20
Software firms are in Dhaka, difficult to get services out of Dhaka	20
Field staffs are not capable of using	15
Management is not capable to think about this	15
Few number of branches, not needed	10
Computerized system for MF is complicated	10
Internet bandwidth problem	10
Maintenance is complex, difficult to computerized	8
Others	8

Table 2: Reasons for Not Using Computerized Information Systems  
n = 40 Microfinance Organizations That Do Not Use Computerized IS (Multiple Responses)

Using quantitative data, Table 2 shows that the scarcity of skillful IS professionals and software firms, financial inability, electricity problem, mismatching between information requirements and the output of existing software, inability of management and field staffs, and uncertainty of support services in remote areas were the major factors that hinder computerization of the information systems of microfinance organizations. In quantitative survey it appears that majority of the organizations mentioned financial, professional and infrastructural problems because of which they did not computerized their information systems for microfinance interventions.

Although, the findings using the semi-structured interviews and Focus Groups Discussions match with the findings using questionnaire survey in many respects, the qualitative method could go into the deeper layer of the hindering factors and found some critical aspects that did not come with the questionnaire survey. Major hindering factors of computerization of information systems of microfinance organizations that were found with qualitative study are discussed below.

### 6.1. Scarcity of IT Firms and Experts

A considerable number of organisations mentioned the scarcity of IT firms and experts in the country as one of the strong barriers to IS computerization. It was observed that the scarcity of IT firms and experts grounded in both technology and microfinance knowledge is one of the factors that hinder the use of computerized information systems for microfinance. The working processes and procedures of microfinance differ from organisation to organisation, and due to the lack of standardized processes and procedures of microfinance intervention, developing an information system that could be used in all organisations is difficult. IT firms or professionals with the knowledge and skills for working on the information systems with domain knowledge of different business processes and procedures tend not to develop that much in the country yet.

### 6.2. Financial Issues

A considerable number of organizations mentioned that they did not computerize their information systems with customized software because of the financial problem. It was observed that most of the small and medium sized microfinance organizations are not financially strong. These organizations are highly dependent on loan money for their microfinance operations. Due to financial constraints, these organizations tend to be less interested in spending significant amounts of money on information systems from their microfinance capital. Especially, the poor performing small and medium sized microfinance organizations face more financial constraints. The management staff of small microfinance organizations perceived that those organizations that have a small number of branches can manage their data with manual

information systems. They stated that small organizations cannot afford the costs of computerized information systems. The Program Coordinator of SJK stated,

'...organizations those have less than 40 branches cannot afford computerized information systems financially. The hardware and software cost is not affordable for them with the income from microfinance'.

Some organizations speculated that they would get more return in a shorter time if they invest their money in microfinance instead of investing it on IS computerization. Some are more interested in capturing new geographic areas for microfinance operations rather than investing on IS computerization. The Assistant Director of UDDIPAN however said,

'...we concentrated more on the expansion of the program rather than concentrating on IS computerization. We did not like to spend on computerization of information systems from the microfinance capital...but we now realize that computerized information systems could also be instrumental in our program expansion.'

### *6.3. Electricity and ITS Infrastructural Problem*

As a developing country the problem of electricity, both in terms of area coverage and the quality of supply, is a common phenomenon in Bangladesh. During the period of field work, a considerable portion of the country was not covered by the electricity network. Even in the areas where there was network coverage, there was a significant amount of interruption in the supply of electricity throughout the year. It was also observed that the Internet bandwidth tends to be weak in most parts of the country. More recently, some mobile phone operators have been providing Internet services through Internet modems, but the available bandwidth is not yet adequate for running on-line web-based information systems smoothly as it was observed during field visits in different parts of the country. The lack of power supply and the inadequate IT infrastructure within the country discourage microfinance organisations from migrating to computerized information systems from manual systems.

### *6.4. Fear That the Organizations are Incapable of Replacing Manual Systems with Computerized Systems*

Information systems for microfinance are distributed, complex, sensitive and non-standardised, that are used by the semi-literate staff members, and in many cases for the non-literate borrowers in underdeveloped rural and slum settings. In these circumstances organisations are doubtful about their ability to replace their manual information systems with computerized systems. One of the Branch Managers of BRAC stated,

'...many microfinance organisations of this country do not computerize their information systems considering the big hassle of computerizing paper-based data in the field. The paper-based data that has been used currently in the field is not accurate in a considerable proportion in almost all organizations. For that the top management fears about the reconciliation efforts that they would have to make during computerization'.

It has been observed that organisations take years to computerize the running transaction data and the reconciliations needed for this. The Head of Automation project of BRAC said that they had to go through a rigorous reconciliation process taking a number of years when they started branch office computerization.

### *6.5. Fear of the Inability to Maintain Computerized Systems*

Microfinance is by nature a volatile program. There are frequent changes in program policies and operational procedures with which information systems need to comply. Microfinance program operations take place in a distributed manner, mostly in rural areas far from head offices. The maintenance of computerized systems with frequently changing requirements is difficult in remote operational areas. The microfinance operations cannot be stopped even for a day if the system is down. From the discussion with the IT staff, it appeared that the organizations, especially the mid-sized ones, fear that it would be very difficult for them to manage this maintenance intensive remotely located hardware and software, and so they stay with their manual systems. The Assistant Manager, IT of UDDIPAN said,

'...it would be a tough job to maintain all the data, software and hardware of the vast and remote operational areas of the organization if we computerize all the branch offices. The systems cannot be remained down for long time as the microfinance operation goes on'.

### *6.6. Fear That Existing Staff will be Unable to Use Computerized Systems*

It was observed during field visits and focus group discussions with the frontline operational staff that majority of microfinance staff members have very low educational backgrounds. In most cases they are recruited from the local area. These staff members are not familiar with computerized information systems. Management staffs fear that most of their existing staff members would not be able to work with computerized information systems, as the Regional Manager, SJK and the Assistant Zone Manager, TMSS asserted. They also fear that if they try to replace the existing staff members with more educated personnel capable of using computerized information systems, then it would have a negative impact upon their profitability, at least in the short term, as higher salaries would be needed for them.

### *6.7. Fears of Transparency*

Microfinance organizations are monitored and regulated by the funding agencies and the government regulatory authority on a regular basis. A significant number of microfinance organizations do not want that the external funding and regulatory bodies can see all their true financial and operational performances. The higher management thinks that if their information systems become computerized then they would not be able to hide information from the monitoring and regulatory bodies. For example, PKSF, the apex funding body does not provide finance if the organization's OTR (On-Time Realization) is below a certain percent. MRA (Microcredit Regulatory Authority) can call for disciplinary action and even

cancel the operational license of microfinance organizations if they find operations which are not within the regulatory frame. Many organizations prefer to sacrifice the benefits of computerized systems and want to remain non-transparent to the external funding and regulatory bodies by using manual information systems.

## 7. Theoretical Propositions

Based on the study we conducted using quantitative and qualitative methods on information systems implementation of a semi-formal distributed financial system operated by management and operational staff members with low educational profiles in the social and infrastructural setting of a developing country, we draw following theoretical propositions.

### 7.1. Methodological

- A quantitative study with positivist epistemological stance is not instrumental to unearth all the hindering factors functioning against implementation of information systems.

### 7.2. Empirical

- Opportunity cost of investment on information systems is a common consideration where money earns money as a shorter-term return.
- Nonexistence of proper infrastructure and scarcity of IT firms with business domain knowledge significantly hinder the implementation of information systems.

### 7.3. Trust

- Lack of confidence about the organizational ability of system migration is a strong barrier to computerization of information systems.
- Tendency of hiding information from external interest groups potentially hinders the implementation of information systems.

## 8. Conclusion

Implementing computerized information systems in microfinance sector moved in a noticeably slow pace within the contextual setting of this developing country. Different empirical and trust related factors internal and external to the organizations and the sector as a whole function to hinder the movement of computerization of this large and important sector of the country. The findings of the study may help the practitioners and policymakers of microfinance of the country and the countries with similar contextual setting elsewhere around the world to cope with the factors hinder. The findings may help faster and successful computerization of the information systems of microfinance organizations. The theoretical propositions that have been drawn based on the findings of this study might contribute to the knowledge domain of information systems implementation in the academic world.

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