

Microfinance from Information Systems perspective – A review

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Abstract— The increasing importance of Information Systems (IS) in the global economy prompts microfinance researchers to view the industry from an interdisciplinary perspective. A review paper for microfinance from the IS perspective will create a firm foundation for advancing knowledge. It will facilitate theory development, close areas where a plethora of research exists, and uncover areas where research is needed. The objective of this paper is to propose a framework with the help of demonstration of organization of microfinance literature using IS theories. The reason for using IS theories for the purpose is to bring both the disciplines on a common platform so that their integration becomes easy. The paper discusses and critiques different classical theories that are used in the IS discipline. It also addresses the issue of information asymmetry which is prevalent in the microfinance sector with the help of IS.

Index Terms— Decision support systems , Information Systems (IS), Management Information System (MIS), Microfinance, Microfinance Institution (MFI) , Outreach and Self Help Group.

1 INTRODUCTION

Poor households are typically excluded from the formal banking system for lack of collateral, but the microfinance movement exploits new contractual structures and organizational forms that reduce the riskiness and costs of making small, uncollateralized loans. Microfinance programs have also demonstrated that even poor households can save in substantial quantities. Success stories are being written around the world, from underdeveloped to developed nations. Advocates have broadcast these successes widely, and donors have been quick to pledge billions of dollars to support the expansion of programs in the next decade [12].

A Microfinance Institution (MFI) is an organization that provides small amounts of credit and potentially other small-scale financial services to clients without access to the formal banking system. These customers are poor and cannot offer standard collateral. Administrative costs are high in relation to the size of the transaction. By reaching these underserved clients, MFIs help alleviate poverty, support investment in business opportunities and contribute to the development of a country's financial system [14]. In India there are almost 800 to 1500 MFIs rendering financial services to the poor. The National Bank for Agriculture and Rural Development (NABARD) of India has reported that bank loans amounting to Rs. 3732.33 crore have been disbursed to 581 MFIs during the year 2008-09. The loans were given for lending to the poor both in the urban and rural areas by the MFIs.

Further, NABARD [13] has reported that under the Self Help Group-Bank Linkage Programme, as of 31 March 2009, there were more than 61.21 lakh saving-linked SHGs and more than 42.24 lakh credit-linked SHGs and thus about 8.6 crore poor households have been covered under the Self Help Group-Bank Linkage programme.[14]

Despite the widespread coverage by MFIs in India, the sector has failed to acknowledge the importance of technology in its business. At present the cutting edge technology has the disrepute of being considered as another upgraded computer system that can do a higher number of computing at a faster rate. Though this may be true at a very micro level, the widespread macro level impact of technology is rarely understood. Technology in the context of MFI sector could represent the end-to-end business solutions that are based on intelligent computing devices in various forms. Technology, as we talk of it today, can address the fundamental issue constraining the growth of the MFI sector, that is, customer information systems and management.

Technology can be applied at two levels. One is central system, that is, the main computing platform for multiple channels. The other is the field technology, where most of the microfinance client related transactions are carried out. The field technology helps in standardized information collection and its transmission to the central location. It literally transforms the agent into a decentralized branch with an ability to perform head office functions, if so delegated.

The central system provides an ability to handle huge amounts of disparate customer data from various sources and offers processing capability that could carry out analysis of the same. This reduces the turn around time for all activities done centrally and makes the set up more agile and responsive to change. The central system shall help in generation of customized management information system (MIS) reports at any desired level of aggregation right down to the most granular level. It also facilitates tracking and monitoring of a customer across multiple relationships. It assists operations in off line mode from areas where direct connectivity is not readily

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available and help in the development of new products based on rich source of customer data [11].

At present the role of IS is limited to the collection and reporting of data in the microfinance sector. But the IS theories have the potential to increase this scope. The paper aims to discuss this in detail. The paper will present different IS theories that are currently existing and use the befitting theory for microfinance. The paper uses systems approach to make integration of both IS and microfinance easy. The methodology followed for the purpose is categorization of 3 articles ([4], [5], [15]) based on input, process and output respectively.

2 IS THEORIES

The topics covered by IS researchers are IS theorizing based on evolutionary and non-evolutionary approach, experiential computing, Giddens's structuration theory, impact on knowledge sharing and team performance, neuroimaging based on trust and distrust, adoption by groups, development of decision support systems, managerial decision making. The research articles basically cover the organization and technology interaction.

The evolutionary approach by Kock [10] holds great promise as one of the possible pillars on which information systems theorizing can take place. Evolutionary psychology builds on evolution theory [6], to which many fundamental contributions have been made in the period going from 1910 to 1980. The framework for information systems theorizing based on evolutionary psychology and theoretical integration serves as a guide for information systems researchers, especially those interested in understanding how evolved brain modules and mechanisms may influence human behavior toward technology.

Arguably, evolutionary psychology can provide the key to many counterintuitive predictions of behaviour toward technology, because many of the evolved instincts that influence our behavior are below our level of conscious awareness; often those instincts lead to behavioral responses that are not self-evident. The approach is centered on key human evolution and evolutionary genetics concepts and notions. One of the examples on evolutionary information systems theory is 'media naturalness theory'. The theory can be explained with the help of parameters. Say, P represents psychological trait. An example of psychological trait P would be "attention to colors." Individuals possessing this trait would have an instinctive response to objects displaying colors other than black and white, paying more attention to them. Individuals not possessing this trait would pay no particular attention to those objects. Like most gene-trait relationships, the relationship between G (gene) and P is moderated by the development environment D. Thus the psychological trait P influences the task performance T, or the performance of an individual in a task such as hunting or foraging. Hantula et al.'s [7] research is based on ancestral foraging theory, and includes predictions about humans make decisions in an online environment.

Another classic approach by Giddens [8] is known in the IS as structuration theory, since the early 1970s Giddens has published more than 30 substantial sociological works, all of

which he considers to be part of a single, continuous intellectual project. For analytical purposes, Giddens identifies three dimensions of structure (signification, domination, and legitimation). An everyday example may help to illustrate this. The clothes that people wear to work reflect the influence of social structures that are reproduced by individuals' conformance with accepted practice. We may expect, for example, that people working in an office will typically wear, more or less formal, business attire, such as a suit or smart casual clothing. When encountering somebody in a work setting we draw on structures of signification that inform our understanding of that person's role. So, if we meet a person in a white coat in a hospital we are likely to assume that they are a doctor (at least in many settings), or, in a laboratory, that they are a scientist. Clothes do not simply indicate who a person is, but also convey important messages about the powers that they are considered to hold (i.e., structures of domination). Thus police officers' uniforms enable them to gain access to a crime scene or to influence people's behavior in ways that would be unlikely to be successful if they were in plain clothes, while in a military setting, sometimes subtle differences in people's uniforms are important indicators of rank that are significant in that context, whether or not they are recognized by civilians. There are also structures of legitimation that define the appropriate dress code in particular settings, the transgression of which may invoke sanctions.

System theory is another classic theory which is concerned with developing systematic frameworks for describing general relationships in the empirical world. Kast and Rosenzweig [9] define a system as an organized, unitary whole composed of two or more subsystems, and delineated by identifiable boundaries from its environmental system. They further differentiate between open and closed systems as systems that "do" and "do not" interact with their environments respectively.

The theories discussed earlier do not present a holistic picture. The evolutionary theory ignores the organisation process aspect. It deals with the traits born out of genes, their interaction with the environment and its outcome. On the other hand the Giddens's theory takes into account the organisation processes as well as the customer input but ignores the output and output is an important aspect in the social context. The paper has used this comprehensive theory to develop a framework to organise the microfinance literature discussed in the next section.

3 MICROFINANCE LITERATURE

The microfinance literature mostly covers topics based on social and financial performance, impact assessment, deepening outreach, financial risks, transition of organisation, sustainable delivery models, different products such as health insurance, microentrepreneurship, information asymmetry. The research methodology followed in most of them is case study. Therefore it becomes difficult to categorize them but the task can be made easy with the help of a framework.

The procedure for categorizing the literature is straightforward. It is based on the comprehensive IS framework namely,

systems framework. A general model of the framework consists of one or more inputs to a system, and one or more outputs from the system. Inputs are transformed into outputs as a result of their interaction with two or more subsystems. Fig.1 represents the same.

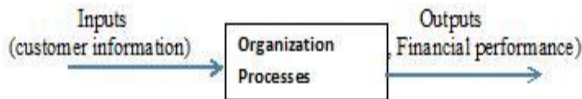


Fig.1: Systems framework

The framework provides clarification of thought on the subject of microfinance research and allows a microfinance researcher to more accurately define and consider the scope of his or her research. It should also encourage microfinance researchers to systematically consider the entire domain of microfinance research, and facilitate proper identification of areas worthy of microfinance research resources. Ultimately, this should result in a reasonably balanced program of microfinance research activity.

The use of the framework has been partially illustrated here through examples. The methodology followed for the purpose is by focusing on the abstract of each article, it is a simple process to identify the key issues the author(s) are addressing. For example consider the classic paper by Churchill [4] 'Banking on customer loyalty' that presents the input side of the organization. The abstract for the article reads as follows:

"Enhancing customer loyalty is a microfinance institution's most important business strategy. Every critical element involved in managing microfinance operations—from product pricing to staff incentives, from marketing to eligibility requirements, from client screening to the menu of available services—can (and should) be formulated to promote loyalty. While most MFIs recognize the importance of client retention, few have designed business strategies to maximize customer loyalty. Hopefully that will change. This article details the economic impact that customer loyalty has on a microfinance institution (and the negative effect of desertion)."

From reading the abstract, it can be initially determined that Craig is dealing with desertion and loan losses, word of mouth referrals and compounding profit. Reading the article confirms the initial determination. Therefore the article focuses on the customer information to achieve customer loyalty. Loyalty is the attachment a customer feels for a company's people, products, and services. The system needs knowledge about the customers to measure this attachment. Thus it is felt that following information can be gained with the help of robust information systems.

1. Information about regular purchases made by the customer.
2. Information regarding purchases made across the

product and service lines.

3. Information regarding customer referrals
4. Information about demonstration of immunity to the pull of the competition.

Similarly, 'The Transformation of the Microfinance Sector in India: Experiences, Options, and Future' [15] presents a study on the Indian microfinance organisation. Following abstract suggests the same:

"This paper discusses the growth and transformation of microfinance organizations (MFO) in India. Issues that have triggered transformation include size, diversity, sustainability, focus, and taxation. Transformation experiences in India are few. To move to the mainstream, non-governmental organizations (NGOs) choose from three popular forms of organizations: non-banking finance companies (NBFCs), banks, and cooperatives. It appears that there is no ideal path for spin-off. Regulatory changes are needed to allow MFOs to graduate to other legal forms as they grow organically. NGOs must be permitted to invest in the equity of MFOs, as is the case in Bolivia and Africa. Norms for setting up MFOs under current legal forms should not be eased. Regulations should ensure that they help genuine MFOs and not others masquerading as MFOs."

From reading the abstract and the paper it can be determined that the author wants to focus on the processes of the organisation. The factors that trigger transformation are size, diversity, sustainability, focus and taxation. The IS can make this transformation easy by capturing knowledge related to the processes in the organisation. The organisation process is impacted by:

1. Attitudes of people manning these organizations
2. Combination of savings and risk mitigation products offered
3. Transparent systems and accountability
4. "commercial," and other activities that are "developmental."
5. Taxable grants

The other paper [5] that discusses the social performance of the MFIs has following abstract:

"Microfinance promises to reduce poverty by employing profit-making banking practices in low income communities. Many microfinance institutions have secured high loan repayment rates but, so far, relatively few earn profits. We examine why this promise remains unmet. We explore patterns of profitability, loan repayment, and cost reduction with unusually high-quality data on 124 institutions in 49 countries. The evidence shows the possibility of earning profits while serving the poor, but a trade-off emerges between profitability and serving the poorest. Raising fees to very high levels does not ensure greater profitability and the benefits of cost-cutting diminish when serving better-off customers."

The paper answers some of the questions that are at the heart of debate within academicians and economists. Does raising interest rates exacerbate agency problems as detected by lower

loan repayment rates and less profitability? Is there evidence of a trade-off between the depth of outreach to the poor and the pursuit of profitability? Has 'mission drift' occurred – i.e., have microbanks moved away from serving their poorer clients in pursuit of commercial viability? Use of IS can help answer these questions by building suitable reporting structures.

4 MICROFINANCE CHALLENGES

One of the great accomplishments of the economics of information, after all, has been to show how information asymmetries undermine credit markets in places where potential customers have few assets to offer as collateral [2].

This is applicable for both group and individual lending. The joint liability contract can, in principle, mitigate moral hazard and adverse selection by harnessing local information and enforcement possibilities and putting them to use for the bank. ([1] and [3], provide theoretical perspectives and empirical tests of group mechanisms in this Feature.)

'Individual-based lending' which draws on traditional banking practices and involves a standard bilateral relationship between the bank and customer – and, in the absence of other interventions, is most vulnerable to problems imposed by information asymmetries and weak enforcement capacities.

Information Systems can help overcome following challenges in the microfinance sector:

1. The timing gap within the person's own cash flows
2. Lack of reliability and trust to enable exchanges with unknown people.
3. Variations in operations due to seasonality, uncertainty, and scale
4. Dearth of organized avenues or products designed to address the saving needs of the rural people.
5. Increasing the transaction costs
6. Usage of detailed legal contract for controlling behaviour
7. Rampant use of artificially propped up systems that was to collapse when the subsidies were removed and the transaction costs became real.
8. Contracts agreement codification

It can also become a common channel for different stakeholders of the microfinance industry.

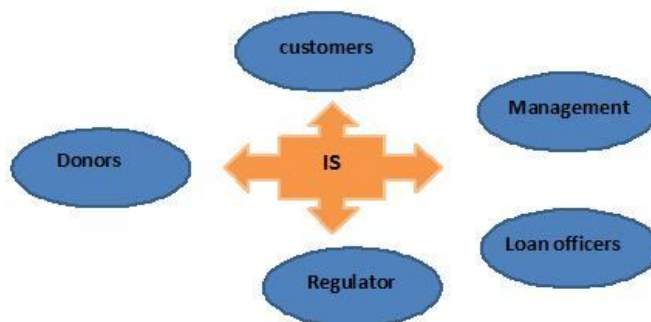


Fig.2: Stakeholders of information systems

5 CONCLUSION

This paper has presented three classical IS theories. The theories have been explained with the help of examples. They have been critiqued in the context of microfinance. The paper has successfully demonstrated the use of system approach (IS theory) to cluster the microfinance research articles. The clustering is based on input which is related to desertion, loan losses, repayment schedules, interest rate; organisation process and output. It will provide a mechanism for microfinance researchers to organise the literature in a way so that the challenges due to information asymmetry can be overcome.

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