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ICT-Driven Organizational Transformation in Microfinance Organization: A View from Critical Realism

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Abstract:

In Information and Communication Technology driven organizational transformation studies various theories namely the structuration theory, institutionalization theory and actor network theory have been used by the scholars of information systems and management. Despite the inherent strength of each theory, technology driven organizational transformation studies using these theories propose conflicting findings in many cases mainly because of the theoretical heterogeneity in focusing technology, human and non-human agents, and structures. In studying information and communication technology driven organizational transformation in microfinance organizations we used the framework of Critical Realism that helps minimizing the shortcomings of other theories in studying the process of transformation through its stratified domain approach and explanatory framework. This paper presents the material and social changes that information and communication technology engenders in microfinance organizations of a developing country.

Keywords: Organizational transformation, critical realism, microfinance organization, information systems

1. Introduction

Use of ICT (Information and Communication Technology) into an organization usually engenders material and social changes. Scholars of information systems and management studies has been using different constructivist approaches such as Structuration Theory [48], Institutional Theory [3] and Actor Network Theory [31, 60] to look into the ICT-driven organizational change sometimes resulting with conflicting views. Despite the inherent strength, these social theories have different assumptions and negligence about the agents/actors and structures involved in the change process which sometimes lead into non-agreeable conclusions among the studies. As a grant type of social theory, Critical Realism (CR) developed by Roy Bhaskar [9-11] may help minimizing the weak areas of these constructivist theories in studying ICT-driven organizational change with the concept of stratified domains and with more realistic emphasizing on agents, structures and their influences.

ICT-driven organizational transformation in microfinance organizations has so far been an unexplored area in information systems research. The characteristics of microfinance organizations, and the economic, human resources, social and cultural contexts within which the organizations operate are different from that of formal financial organizations [16, 28]. This paper reviews the background literature on ICT-driven organizational transformation, identifies notions and some drawbacks of different theories used in ICT and organizational studies, and using the framework of the theory of social realism this paper looks in the ICT-driven organizational transformation in microfinance organization in Bangladesh.

2. Background Literature: ICT-Driven Organizational Transformation

Because of the advent of ICT and its tremendous development since the middle of the last century, the impact of ICT within organizations has become an agenda of interest, which was coined in an early work of Leavitt and Whisler [34]. It has been argued that if one thing has come to dominate management and organizational thinking over the past two decades, it is ICT-driven organizational change [51, 58, 24, 21, 55]. Markus and Robey [36] assert that theory-building and good theory-guided research in this field have been increasing the likelihood that technology will be employed with desirable consequences for users, organizations, and other interested parties. However, the transformative effects of ICT are not the same in all situations within all types of organizations. An early work of Brynjolfsson and Lorin [12] noted that the diffusion of ICT in the modern workplace may benefit some types of organizations more than others, and sometimes it may have negative implications for some aspects of the organization. The interplay between technology and organizational systems is not the same in all organizational settings, because organizations vary in their internal dynamics [25]. Barrett et al. [8] argue that a considerable proportion of planned organizational interventions designed to engender change with ICT resulted in significant, widespread, and often unanticipated organizational change. Orlikowski and Yates [49] assert that the technological innovation is rarely neutral in its effect upon different organizational forms.

The nature of relationship between ICT and organizational design has been under scrutiny since the mid-1990s. However, it is not yet clear which types of organizations are benefiting most from the use of ICT and what kind of negative implications it may cause, in what circumstances. Brynjolfsson and Lorin [12] assert that empirical research has been hampered by a scarcity of meaningful data on organizational design. As a result, theories of the impact of ICT within organizations are often only loosely grounded in empirical evidence, and different theories sometimes come to contradictory conclusions about how ICT changes organizations. For instance, the question of whether ICT tends to favor centralized decision-making or decentralization has been a subject of contentious debate [46, 63]. Orlikowski and Yates [49] describe ICT within organizations as messy, dynamic, contested, contingent, negotiated, improvised, heterogeneous, and with multilevel characteristics that depends on the internal and external contexts within which the technology acts and interacts. However, the intensity of technology-mediated organizational change largely depends on the institutional norms, structure and procedure. Orlikowski and Barley [46] argue that the more rigid the institutional norms, structures and working procedure in an organization, ICT is less potential to engender changes within the organizations.

3. Different Theoretical Perspectives

Major theoretical perspectives that have been influencing the methodology of information systems research are Structuration Theory [22] and Actor Network Theory [33, 32]. Each of the theory has its strength in helping information systems researchers depending on the nature of real world of interest and the objectives of the study. As a post-empiricist social theory, structuration theory helps analyzing social phenomena in the frame of social structure and agent interacting as inseparable forces in shaping and reshaping their properties and characteristics [22]. This theoretical perspective has most commonly been used in examining the relationship of technology and organizations [43, 45, 67]. However, in structuration theory, technology has got relatively negligence in technology-mediate changing process in organizations. Jones [29] asserts that this perspective is useful in conceptualizing social structures that have no certain form, and it has a tendency of ignoring the inherent materiality of technology. Studying information systems and the interplay between technology and organization in particular, the material aspect of technology needs to be under consideration.

Information systems researchers, more specifically who concentrate on analyzing the interplay between technology and organization using ANT, usually do not agree with the short shift given to the technology artifact by the structuration theory [27, 39, 61]. They claim that as a methodological framework, the ANT is more suitable for emphasizing on the material value of technology in organization. ANT helps describing actors and their networks that are involved in a social situation [33, 32]. It includes all human and non-human forces and describes how their networks are built or assembled and maintained to achieve a specific objective [13, 14]. ANT can more technically be described as a "material-semiotic" method as it maps relations that are simultaneously materials and concepts, and it is argued that as a theory of methods, it can be helpful in describing the relationships between technology and organizational aspects in a given situation [27].

Despite the strengths of ANT in describing the maps of actors and their networks in a situation, this social theory of methods has been criticized from different angles ranging from philosophical notion to procedural aspects in ANT. Irrespective of human and non-human actors, collectively referred to as actants, ANT assumes that all entities in a network can be and should be described in the same terms according to its principle of 'generalized symmetry'. Shapiro [56] asserts this assumption as 'amoral' as the values and norms of the actors are not recognized in ANT. It also presents important and unimportant actors and for that the ANT approach is accused of collapsing into an endless and heterogeneous relativist regress [19, 41]. It emphasizes on descriptive accounts of analysis of actors' network, does not usually explain 'why' and 'how', which carry much importance in analyzing technology mediated organizational change processes. Amsterdamska [2] argues that research based on ANT perspective remains entirely descriptive and fails to provide explanations of social processes. ANT also does not account for pre-existing structures, such as power, rather sees these structures as emerging from the actions of actors within the network and their ability to align in pursuit of their interests [61]. Reed [53] also argue that ANT examines social actions at micro-level but ignores the context within which the actors act and are influenced. It is however useful for examining the design and implementation phases of technology rather than using it in analyzing the interplay between technology and organization. Although it is not very popular yet, a number of scholars call for using Critical Realism (CR) in studying technology mediated transformation in organizations as the shortcomings of above mentioned perspectives are minimized in CR [20, 37, 38, 41, 59].

4. Critical Realism in in Organization and Information Systems Research

Information systems researchers are mostly influenced by positivist and interpretivist epistemological and ontological assumptions about the real world of interest [47, 42, 59, 64]. Despite the prevalence of logical strengths, both the assumptions however have been criticized for their weaknesses as philosophical stances in doing research. Because of the philosophical assumptions of positivist paradigm that the phenomenon of interest is single, tangible and fragmentable, and low-like generalization independent of time and context is possible, and that the data is out there – need not to dig into the deeper layers of the phenomenon and researchers are detached from the phenomenon and cannot add value, which lead to a shallow analysis about the interplay between technology and organizational systems [35, 17, 40, 47, 26, 42]. On the other hand, interpretivism is criticized for its subjective biasness, mind-dependency, incapability of generalization and not accepting the causal explanation of the real world [47, 18, 42, 54]. Critical Realism is one of the post-modernism paradigms that strive to address the ontological and epistemological flaws of positivism and interpretivism, which has been established by the writings of Roy Bhaskar [9-11].

Critical Realism is an explanatory framework emphasizing on ontology for analyzing complex social phenomena that implies arguments for realist social theory as a basis of analysis, and is a methodology for theorizing the relative interplay of structure, culture and human agency, the central issues in social and organizational research [5]. Critical realists are concerned with ontological depths and identifying causally efficacious mechanisms. These mechanisms are seen enduring, and are given far more explanatory weights than that of constructionist ontology and epistemology [53]. Critical realists argue for a shift from prediction to explanation[5].

Critical realists claim that other ontological perspectives in social science such as behavioral approaches, institutional theory, structuration theory and actor network theory (ATN) either ignore structure or human agency in analyzing the phenomena of interest [4]. Critical realists attempt to analyze the effects of structure and human agency on each other keeping them conceptually distinct. In fact, social structure and human agency cannot exist without each other, and through interactions new structures may emerge which are logically postdated of those human actions [10, 18]. According to the theory Critical Realism, social changes evolve through three phases – 1) structural conditioning – the preexisting structural properties that are also the consequences of past actions, 2) social interaction – during the engagement of agent to the structure and engender changes through interaction, and 3) structural elaboration/reproduction – continues to make changes as long as human agency acts on the structural properties [4]. Thus, the logical framework of Critical Realism can help in analyzing technology mediated change process and the outcome of changes in organizations and society.

Critical Realism has strong emphasis on the ontological perspectives of social phenomena on a stratified manner, which is one of the basic tenets of this theory. Ontologically, Critical Realism has three nested domains, namely, the *real*-structures or mechanisms of real world that exist independently of outer world. The *real* domain contains *actual*-the events that those mechanisms could potentially generate. The *actual* domain in turn contains *empirical*- the subset of the event of *actual* domain that are observed and experienced[11, 37]. Critical realist theory explains an event by identifying the mechanisms that generate events, and of which what the researchers observes at *empirical* domain, not predicting what will happen as result of that mechanisms and events.

Critical Realism is a general type of social meta-theory that does not mention technology, but has the ability to analyze technological perspectives such as technology mediated organizational change with its sequential procedure of analysis, and the mechanisms and events of stratified nested domains. The theoretical lens of this theory can be used to develop concepts and midrange theories about technology mediated socio-cultural structure and human agent in the organizations and society [59, 64, 37, 38].

5. Overview of the Organizations

5.1. ASA

Association for Social Advancement (ASA) is one of the largest microfinance organizations in Bangladesh that covers about 4 million microfinance borrowers from its 2,932 branch outlets by 20,000 staff-members. ASA started its microfinance program in 1992, and since then it has been implementing only microfinance program and developed a low-cost operational model for financial service delivery at the community level that has been followed by different microfinance organizations in country and abroad. As ASA has been implementing only microfinance program, the organizational structure and working procedures are relatively less complex than that of organizations implementing multiple development programs like BRAC. Until 2007, the information systems of ASA were manual, although at the head office level spreadsheet software was used for compiling field data and generating summary reports. In 2007 ASA initiated computerization of its information systems with in-house developed software, and in a relatively rapid process ASA developed and implemented its computerized information systems in all its branch offices. ASA used the computerized systems in parallel with the manual systems for a considerable period of time. After going through a rigorous systems testing and implementation process, ASA stopped using the manual systems in January 2011.

5.2. BRAC

BRAC is one of the largest development organizations of the world having 1,11,000 employees and covers about 138 million socially and economically marginalized people under its development endeavors in country and abroad. BRAC started its journey in 1972 just after the liberation war in Bangladesh. It has been implementing multiple development programs in social, economic, agricultural, health, education and legal sectors. Microfinance program is one of the largest development programs of BRAC that started in 1974 where 25,000 staff members provide financial services for about 5.0million borrowers from 2,083 branch offices throughout the country. The organizational structure and working procedure of BRAC are not as straightforward as ASA as it provides supports from different development programs for the same community people from relatively complex organizational structure with different norms and values than that of ASA. BRAC started using computerized information systems for microfinance at its head office in 1985 for compiling and producing summary reports using paper-based monthly data of microfinance operations sent from the field offices. At field level, the information systems remained manual until 1999. BRAC started field office computerization in 1999 with the help of an IT firm, and it took couple of years for computerization and reconciliation of field data.

6. Methodology

In designing methodology, we used the theoretical lens of Critical Realism to identify how ICT engenders changes in microfinance organizations. We conducted a number of semi-structured interviews, focus groups and observations in *actual domain*[11, 37]of ASA and BRAC as shown in the table below. Semi-structured interviews were conducted with

management staff members at head offices and field offices, and the focus groups were conducted with the frontline staff members of the organizations. We also conducted some interviews with the management staff members of PKSF, the apex finding body and MRA, the Microcredit Regulatory authority of the government. The interview and the focus group data was recorded using research instruments designed for the study and voice recorder, and the field notebook was used to record data collected during observations and informal discussions.

Organization	Semi-structured Interview	Focus Group
ASA	21	7
BRAC	22	6
PKSF (Apex funding body)	5	-
MRA (Regulatory authority)	3	-
Total	51	13

Table 1: Method of Data Collection

The fieldwork for collecting data started in 2011 and data processing and analyzing works of this study ended in 2013. The data was processed and analyzed using NVIVO following the procedure of Grounded Theory [23]. At the beginning, we used *open coding* method and subsequently for the process of merging the similar codes the *axial coding* method derived from grounded theory was carried out in order to form *categories* on different issues of interest.

7. Findings and Discussion

We explored the ICT-driven organizational transformation that happens at the *actual domain* in ASA and BRAC using the theoretical lens of Critical Realism, and the transformation that have been observed in this study at *empirical domain* are discussed here. The material and social perspectives of change, the causality and process of change, and the attribute-dependency of the artifacts of ICT in the organizations are discussed below.

7.1. Organizational Transformation: Material Perspective of Change

It has been observed that a significant ICT-driven structural change occurs in microfinance organizations through reducing the organizational structure both horizontally and vertically. ICT reduces the support-service structure horizontally, and the management and supervisory layers vertically. ICT causes the midlevel structure to 'shrink' in microfinance organizations. At the borrowers' group level ICT eliminates sub-groups on different social aspects such as education, agriculture, health which are purposefully formed for better social and economic outcome of the intervention. ICT also weakens the importance of Group Leader and the ties among the members of the group, and drives microfinance towards 'individualism' losing the social benefits of 'collectivism', one of the major objectives of this development program.

ICT helps boosting the operational performance significantly, especially at the frontline operational level. It has been observed that after using ICT operational staffs work with almost double client-portfolio, and the span-of-supervision expanded significantly. ICT also engenders changing the mechanism of supervision from frequent site visiting to analyzing the performance indicators remotely. Because of the use of ICT, information about the field level performance goes directly to the head office on the same day. Previously it used to go through the mid-level managers where they were largely involved with information collection and compilation process. Because of this ICT-mediated change a *loss-of-middle* phenomenon emerges.

It has been observed that the ICT has two contradictory influences to the delegation of authority in microfinance organizations. Firstly, the use of ICT at the lower level of the organization increases the ability to make decisions because of the availability of decision support information. Because of the availability of decision support information at the lower level the higher authority develops trust about the capabilities of lower level, which leads to decentralization. Secondly, as the higher authority gets more information about the lower level operations using ICT and can communicate in a quicker way, a better scope for making control over the lower layer is possible. Finally, a tendency towards centralization of authority prevails in this financial organization.

Microfinance has been criticized as a corruption-prone intervention in the developing countries [1, 30]. In this study, the major types of corruption that have been identified were - disbursing a loan in a fake name, providing a new loan for recovering running or previous loan(s), collecting loan repayment and savings installments but not depositing at the office, disbursing a loan to a borrower who has running-credit with other organization(s), not holding group meetings, and excluding poorer segments of the community during borrower selection. In short, this study found that ICT prevents most of the corruptions through making the information transparent but it largely depends on the 'ethical ambiance' for this highly distributed financial intervention. Because of the use of ICT, the evidence of misappropriations cannot be hidden for long time and hence the tendency of doing this has been declining, resulting a better 'anticorruption ambiance' in microfinance.

7.2. Organizational Transformation: Human Resources and Social Perspective of Change

The study found a significant ICT-driven changes in human resources and socio-organizational perspective in microfinance organizations. Typically, working in microfinance organizations, especially at the operational level has been

perceived as a very laborious, risky and socially shameful job, and hence people are reluctant in seeking microfinance job even in the countries like Bangladesh where a significant proportion of people are unemployed. In a typical microfinance organization both male and female staff members need to work from 7 a.m. to mid-night, almost 7 days in a week within a risky and unpleasant environment. It was observed that ICT played an emancipatory role in the working procedures and social perspectives in microfinance organization. Because of the use of ICT, staff members can complete their daily works within 4 p.m. Because of this, the retention rate has been improved. The practice of bullying, which is common in typical microfinance organizations has been reduced significantly. Because of the use of ICT the overall professional skill of staff members of all levels has been increased. However, a portion of human resources those who have low educational background but working for a long period of time for the organization have been sidelined.

7.3. Organizational Transformation: The Causality and Process of Change

The ICT-driven transformations discussed above have their own dynamics and intensity depending on the content of the systems and the context within which the change unfolds [50, 60]. The changes have their dynamic pluralities and the process of change moves through structural and functional nodes of different internal and external subsystems of the organizations [57, 11, 37]. The nodes are being changed with the functions of ICT, and in turn make changing influences upon other nodes in a dynamic engagement. These changing implications are intertwined and dynamic rather than singular or static [44, 49]. The process of ICT-driven change flows in microfinance organizations like a 'billiard-ball', putting influences of change to different aspects both direct and indirect ways depending upon the organizational and social contextual settings in which the ICT operates. The dynamics of the influences upon related aspects have their multifarious characteristics, sometimes with endless loops among them.

Because of the use of ICT different aspects within microfinance organizations are changed and the changed aspects are influencing other internal and external aspects to be changed which has been observed at *empirical domain* of the organizations. For example, the use of ICT helps increase operational performance of microfinance organizations which leads to the increased income and financial self-sufficiency of the organizations. The increased income and financial self-sufficiency of the microfinance organizations are associated with the declining of interest rate, and this change influence other aspects to change. In this way other changes take place within the organizational systems through influencing each other in a dynamic way. It can be with direct influence, and can be indirect and messy as Orlikowski and Yates asserts [49].

7.4. Organizational Transformation: Organizational Attributes and Change

The nature and the intensity of ICT-driven transformation also depend upon the organizational and external contexts such as human resources, overall institutional attributes and policy frame of external influencing bodies. The profile of the human resources of the microfinance organizations and borrower community is a determining factor for how effective the implications of the change would be. It is somewhat limited by the basic quality of human resources who use ICT.

The nature and intensity of ICT-driven transformation depend on the overall institutional attributes of the organizations [3, 46]. The institutional attributes, such as the formal and informal structures of the organization, the legal system, cognitive frameworks (norms and values, intellectual properties), organizational power and politics, and the decision making processes influence the nature and extent of change. It has been observed in the study that the microfinance organizations that already have strong institutional attributes, the implications for change of the use of ICT is weaker than the loosely-framed organization with less explicit rules and procedures. In the loosely-framed organization, ICT can effect radical change and play a strong role in making the organization more rule-based through setting organizational policies and rules [46]. However, implementing the ICT within the loosely-framed organization is harder than doing so within the more organized one. For example ASA implemented ICT in all of its branch offices in about three months whereas BRAC needed years to do so. As observed ASA did not move much from its operational rules, policy and procedures. This phenomenon comply with the theoretical statement of Orlikowski and Barley [46] that the more rigid the institutional norms and structures in an organization, ICT is less potential to effect changes within organizations of this sort.

It was observed in the study that the organizations that exclusively implement microfinance programs, such as ASA, tend to have stronger institutional attributes than BRAC that implements microfinance together with other development programs. Considering this organizational issue, multi-program implementing organizations like BRAC have distinctly separated its microfinance program from other development programs. The potential for ICT-mediated change may also vary between the organizations that work under the strong policy frame of external funding agencies, and the organization that do not work under such type of external policy frame. The ICT-mediated changes are likely to take place faster, and to a greater extent within the organization that does not work under the rigid policy frames of external agencies. Organization that works under the policy and procedures of regulatory authority is less free to adapt changes that the ICT offers as they cannot go beyond the policy frame of the external regulatory authority.

8. Conclusion

In both the organizations, we explored *real domain* where the structures and mechanisms exist independent of us [11, 37] to identify and analyze the ICT-driven organizational transformation in the organization and social contexts of microfinance organizations. Within the *real domain* we tried to understand the *actual domain* where ICT has implications for change, and the change we observed at the *empirical domain* within the *actual domain* in are presented above. We found that ICT has implications for change both in material and social perspectives of the organizations, and the changes

are intertwined and has direct and indirect influences in second and further orders of change to different aspects of the organizations. It has been observed that the nature and intensity of ICT-driven change largely depends on the institutional attributes such as formal and informal structures, legal, regulatory and cognitive frameworks of the organization. Although the theory of Critical Realism has not been used largely in studying ICT and organizational transformation but this general type of social meta-theory can be a useful theoretical lens in analyzing ICT-driven organizational change with its sequential procedure and the mechanisms events of stratified nested domains.

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