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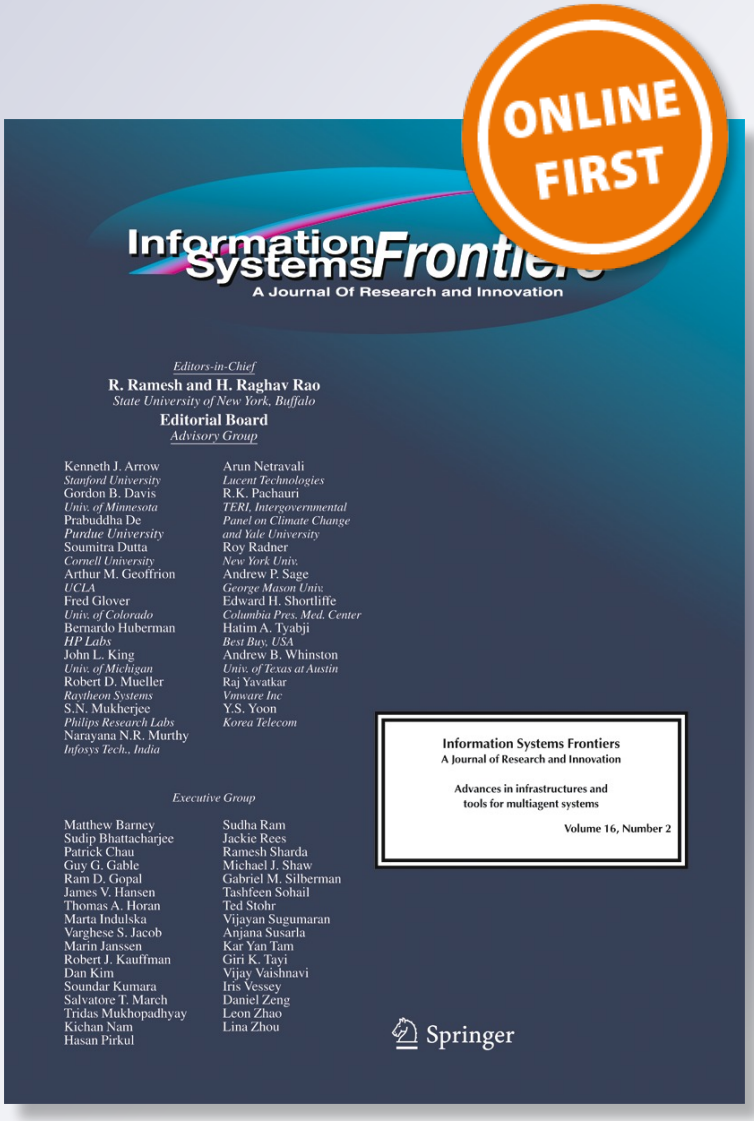
Information Systems Frontiers
A Journal of Research and Innovation

ISSN 1387-3326

Inf Syst Front
DOI 10.1007/s10796-014-9512-7



Springer

Inf Syst Front
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Abstract Information Systems (IS) has developed through adapting, generating and applying diverse methodologies, methods, and techniques from reference disciplines. Further, Action Design Research (ADR) has recently developed as a broad research method that focuses on designing and redesigning IT and IS in organizational contexts. This paper reflects on applying ADR in a complex organizational context in a developing country. It shows that ADR requires additional lens for designing IS in such a complex organizational context. Through conducting ADR, it is seen that an ethnographic framework has potential complementarities for understanding complex contexts thereby enhancing the ADR processes. This paper argues that conducting ADR with an ethnographic approach enhances design of IS and organizational contexts. Finally, this paper aims presents a broader methodological framework, Action Design Ethnographic Research (ADER), for designing artefacts as well as IS. This is illustrated through the case of a land records updating service in Bangladesh.

Keywords Action design research · Action design ethnographic research · Service delivery · Land records · Bangladesh

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Published online: 19 June 2014

1 Introduction

Given the wide view and diverse nature of the information systems (IS) discipline, there is a need for rigorous research methodologies. However, there are currently few rigorous methodologies in this discipline (Avgerou and Madon 2004). One approach is to draw methodological contributions from reference disciplines with a view to investigating complex issues (Thompson 2012). At the same time, IS scholars have been relentlessly striving to develop innovative methodologies, for example, action research in IS (Baskerville 1999b), canonical action research (Davison et al. 2004), design research (Hevner et al. 2004), action design research (ADR) (Sein et al. 2011), participatory action design research (Bilandzic and Venable 2011) and action design ethnographic research (ADER) (Alam, Brooks and Khan 2012). Among these, ADR has emerged as a significant approach, for example by its publication in MIS Quarterly (one of the top journals of the discipline (Sein et al. 2011)).

This paper employs ADR to design an IS for service delivery of updating land records in Bangladesh. Through conducting ADR it has been found that ethnographic methodological approaches and tools enhance the processes of ADR for complex organizational contexts, such as exist in this service delivery process. Thus, the ethnographic methodology offers a significant complement to ADR. This paper applies ADR together with ethnographic approaches and tools. Consistent with this, it demonstrates how ethnographic approaches can enhance action design research (ADR) and examines whether they can work together as a novel and rigorous methodology for the IS discipline.

Ethnography is a paradigm, a methodology and a basket of research approaches and techniques which shows potential contributions for qualitative research within the IS discipline (Myers 2004; Nandhakumar and Jones 2002; Myers 1999;

Nandhakumar and Jones 1997; Geertz 1973). The ethnographic methodology has been used in IS research for over 20 years and played a substantial role in studying complex contexts and solving practitioners' problems (Walsham 1995; Orlikowski 1992).

The nature of ethnographic research is empirical, longitudinal, inductive, interpretive, participant observation oriented and interventional. It seeks insights into everyday practices through applying its dual perspectives i.e. emic view (insider) and etic view (outsider) (Geertz 1983). Further, ethnographic research can provide a deeper understanding in IS research (Walsham 1995) and shows complementarities with interpretive, applied and interventional research e.g., action research (Davison et al. 2004; Nilsson 2000; Baskerville 1999a), design research (Gregor and Hevner 2013; Barab et al. 2004; Hevner et al. 2004) and action design research (Sein et al. 2011).

On the other hand, ADR is a prescriptive research method that aims to conduct design research through action research steps and processes, without separating context-design-intervention-evaluation (Sein et al. 2011). This paper chose ADR with a view to designing an IS for a land records updating service from a public section organization and then evaluating its organizational context. Remarkably, ADR sees organizational contexts as inseparable from the design and redesign of artifacts and IS. However, since ADR has been derived from design research, it suffers from a lack of tools and approaches to understand the contexts. In addition, ADR aims to identify problems and build processes from the users' perspective alongside researchers' skills and knowledge. The ethnographic research is a hallmark for understanding the context and users' perspectives (Geertz 1983). Thus, both ethnographic approaches and ADR are potentially complimentary, enabling better understanding of the context of users' perspectives and designing IS in organizational contexts.

This paper seeks to frame a rigorous and broader methodology that can accommodate both ADR and ethnographic approaches with a view to understanding, intervening and evaluating the complex organizational contexts, designing and redesigning systems, processes and artifacts in the contexts in which learning and knowledge develop. ADR and ethnographic approaches have the potential to complement each other. Thus applying them together provides a better understanding of IS phenomena in the complex context of developing countries. This paper, therefore, aims to develop 'Action Design Ethnographic Research' as a methodological framework through using ethnographic approaches throughout the stages and processes of ADR, illustrated by the design of an IS for updating land records service in Bangladesh.

2 Action research (AR) -design research (DR) -ethnographic research (ER)

Designing an ensemble artifact requires interactions between technological and organizational dimensions while organizational contexts, structures and networks also play significant roles (Gregor and Jones 2007). Action Design Research (ADR) aims to generate prescriptive design knowledge through building and evaluating ensemble artifacts in organizational settings (Sein et al. 2011; Hevner et al. 2004). ADR, thus, harnesses complementarities between Action Research (AR) and Design Research (DR) to study an artifact that is designed, used and redesigned in an organizational context. ADR aims to build artifacts in organizational contexts through framing DR into AR cycles such that processes become ensemble IT artifacts which emerge from design, use, practice, evaluation and on-going refinement in organizational contexts.

Action Research (AR) in IS research poses as a post-positivist and idiographic paradigm for studying technology in its human context (Baskerville and Wood-Harper 1996). AR understands the problem alongside provoking the change used to address the problem (Hearn and Foth 2005). The basic features for AR in IS are demonstrating potential contributions in practice (the action), to research (the theory) and to bringing the methods and findings in the manuscript into the requirements of practice and theory (Baskerville and Myers 2004).

Design Research (DR) is a research paradigm that deals with human problems through creating innovative artifacts (Beck, Weber and Gregory 2013), the result contributing knowledge to understand human problems (Hevner and Chatterjee 2010). It aims to create new and innovative artifacts consisting of constructs, models, methods and instantiations (Hevner et al. 2004; March and Smith 1995). Therefore, DR involves designing innovative artifacts and evaluating its performance to improve understanding of the behavioral aspects (Vaishnavi and Kuechler 2004). The significant feature of DR is to 'build' the artifact first; and then 'evaluate' its performance (Sein et al. 2011; Hevner et al. 2004; March and Smith 1995) .

Ethnographic approaches include a number of tools i.e., living in the research field, inductive and participant observation, open ended interviews, emic (insider/native) and etic (outsider) views etc. Further, it applies inter-subjective ways of knowing through 'reflexivity of actor'—the inquiring of researcher self and 'reflexivity of accounts'—ways of knowing the sense of clients or users which is beyond the self (Crabtree, Rouncefield and Tolmie 2012). Moreover, it interprets the meaning of contexts rather than the description. Contemporary ethnographic approaches intervene with a commitment to find ways to act more effectively to improve a deplorable situation. Thus, ethnographic approaches have potential value in empirical and interventional study through

setting research problems, intervening process, evaluating objectivity and generating knowledge.

Design research does not recognize organizational contexts (Sein et al. 2011 p. 38; Peffers et al. 2007) . In IS research organizational contexts play a vital role in shaping and reshaping artifacts and IS. Thus, design research in IS needs collaboration with action research that recognizes the role of organizational contexts during designing an artifact or IS and contribute toward knowledge and theory (DeLuca, Gallivan and Kock 2008). Though ADR has ambitions to understand contexts and designing artifacts in organizational contexts, it is not equipped with approaches and tools to understand these contexts.

Understanding organizational context and building ensemble artifacts in organizational context are highly challenging. Organizational context refers to the complex fabric of local culture, people, resources, purposes, earlier events and future expectations that are bounded by time-space-situations (Evered and Louis 1981; Patnayakuni and Ruppel 2010). In order to understand organizational contexts, researchers also need to observe actors' response, note their gesture and watch bodily responses to what is going around them (Goffman 1990). Thus, complex contexts include everyday organizing, practices, informal organizational behavior, various networks and dichotomy in organizational processes and behaviors. Moreover organizational context of IS research in developing countries is very important and complicated too.

Organizational context is inseparable in designing, redesigning and evaluating an IS in a specific organizational context. However, organizational context is dynamic, subtle and invisible. To this end, IS researchers suggested applying different modes of enquiries, perspectives and roles for unveiling organizational context. Ethnographic approaches have the potential to reveal underlying organizational contexts. Notably, Barley (1986) applies 'emic and etic' perspectives (1981), the focus on 'outsider and insider mode of inquiry' and Nandhakumar and Jones (1997) seek 'distance and engagement' roles. These perspectives are derived from the ethnographic methodologies and are briefly discussed in terms of framing ADR in an ethnographic framework.

Evered and Louis (1981) suggested applying insider and outsider views to the ethnographic perspectives, to understand organizational contexts with different roles and involvement of researchers along with methods, learning and epistemological strands (see Fig. 1). However, both views are potentially able to elicit insights from the situation under study.

Knowledge generating activities from organizational contexts are involved with dual mode of inquiries (insider and outsider views) that determine the nature of action, inquiries and roles of researchers. Thus applying both the perspectives enhance and enrich the validity of findings, analyses and interpretations by bringing the worlds of interpretations and scientific theory together (Schutz 1973). Being an outsider, a researcher focuses on scientific rules and theories. With a view to testing theories and rules s/he conducts controlled experiments and organizational design. Roles (or researcher) are limited, with outsider/unobtrusive as observer and rationalistic model builder. On the other hand, as an insider a researcher focuses on the world of interpretations instead of the world of scientific theories i.e. positivistic science. Thus in order to understand the users' interpretations on a particular system and processes, a researcher needs to focus on designing the processes as managing, intervening through action taking and redesigning through coping while inquiry is based on situational learning, action research and case research. So, an insider researcher's role varies from observer to participant observer to organizational actor.

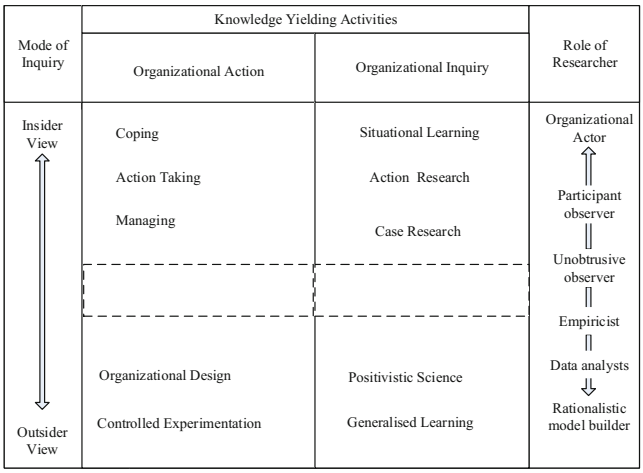

Fig. 1 Insider and Outside Modes of Inquiry (Evered and Louis 1981)

The outsider view also generates research findings usually with quantitative data, questionnaires and passive observation. The insider view generates data by 'being there' and becoming immersed in the organizational activities through participant observation and playing the role of organizational actor. Further, both the views provide opportunities to examine a single situation from different lenses and stances. So, applying both the perspectives allows the formulation of problems, the building of processes and to generate learning from situational contexts and generalized level through taking users' and researcher's views.

In a similar vein, Nandhakumar and Jones (1997) apply an ethnographic perspective, together with participant observation, to analyze executive IS. They argue that researchers' participation into the actors' world is challenging. There are numbers of obstacles, including deceptive behavior, sensitivity, deliberately misleading, dominant perception, actors' inability of expression, to understand their interpretations (Nandhakumar and Jones 1997). To address these challenges, they used both engaged and distant role for the researcher. The ethnographic methodology, as well as participant observation, allows researchers to understand a context from various positions: an engaged role as organizational actor and distant role

as outsider of the context. Thus, participant observation and insider/outsider views allow different roles for researchers and provide deeper understanding of organizational contexts as well as actor's interpretations.

Further, Barley (1986) applied both insider view (emic) and outsider view (etic); the insider view elicits context, practices and way of life from the perspective of participants along with concepts of the native's worldview while the outsider view relies heavily on the perspective of the researcher, uses the concepts of social science and aims to analyze the context, practices and ways of life theoretically (Barley 1986) Applying both the perspectives gives rich insights but it is often difficult to apply them. Thus, Barley (1986) suggests two directions: a) taking a collaborating role and b) a commitment to long term involvement. Taken together, the ethnographic perspectives provide the ability to understand organizational contexts and design IS in organizations because they apply to both perspectives of the actors in the organization and the researcher as an outsider to the organization. Ethnographic perspectives, therefore, give various roles, modes of inquiry, actions from various dimensions and generating both situational and generalized learning.

Furthermore, Farahmand and Spafford (2013) claim that understanding insiders—users, human dimensions and economic dimension—is significant for developing new technologies and IS. Any newly designed artifact and IS is always reshaped by the insiders' behavior to achieve their intended purpose (Farahmand and Spafford 2013).

Finally, in previous work we have showed that within the ADR processes and principles, there have already appeared ethnographic approaches in ADR (Alam, Brooks and Khan 2012). ADR seeks external and internal perspectives for mutual reciprocal relations in redesigning artifacts through ongoing use (Sein et al. 2011) . Mutual reciprocity between the researchers and the users can be better understood with insider and outsider perspectives which have derived from ethnographic methodology. Thus it has claimed that conducting ADR with ethnographic methodology is essential to reveal underlying organizational contexts.

3 A framework for action design ethnographic research (ADER)

The landmark of ADR is to seek inseparability between designing artifacts and organizational contexts. Thus ADR aims to build ensemble artifacts through designing, on-going use, intervention and evaluation in organizational contexts. Understanding contexts through intervention, evaluation and user's interpretations requires diverse roles and approaches of researchers. An ethnographic methodology is fully equipped with inventing, interpreting and evaluating contexts from various roles, perspectives and approaches. So, the ethnographic methodology shows significant complement to ADR stages: problem formulation, building intervention and evaluation, reflection and learning and formalization of learning. Thus, Fig. 2 (see below) explains how the ethnographic methodological framework complements all the stages and activities of ADR.

Formulating problems in organizational contexts is mutually influential and has reciprocal roles between researcher and actors of the organization. Thereafter, shaping artifacts, objective evaluation, emergence of artifacts and learning as organizational actors significantly rely on understanding from an insider perspective. On the other hand, data-driven problem formulation, initial design, on-going evaluation, guided intervention and learning as researcher derive from an outsider perspective. Therefore, conducting ADR stages with ethnographic methodology entails applying both insider and outsider perspectives as well as engaged and distant roles that enable researchers to understand contexts both as an actor of the organization and as a practitioner of the field.

3.1 Problem formulation

ADR formulates problems in organizational contexts drawing from empirical evidence and data driven by end-users and existing technologies (Sein et al. 2011). Researchers' engagement, long term involvement, observation, participant observation and being an actor in the context role bring empirical evidence. Tracing that empirical evidence requires the insider view which aims to discover underlying meanings of organizational contexts that are expressed through actions and artifacts (Prasad 1997). However, the outsider view implies 'looking on', in the sense of witnessing and examining processes and contexts externally to produce logical meaning and measurement (Evered and Louis 1981). Consequently, the outsider view allows the researcher to frame data driven problems. While ADR follows a cyclical process between problem formulation to building-intervention-evaluation, reflection and formalization of learning; it follows problem-fix-problem-fix, as if it is an iterative 'systems development lifecycle' (see Fig. 3) (Sein et al. 2011; Mantei and Teorey 1989) . Within this cyclical process of ADR, the ethnographic methodology offers potential advantage through applying insider and outsider view in formulating problems.

3.2 Building intervention and evaluation (BIE)

This stage iteratively weaves between three core activities: building artifacts, intervening in organizational settings and evaluating concurrently and objectively (Sein et al. 2011). BIE principles include reciprocal shaping between artifact and organizational contexts; mutual learning between researcher and practitioners; applying ongoing and objective evaluation.

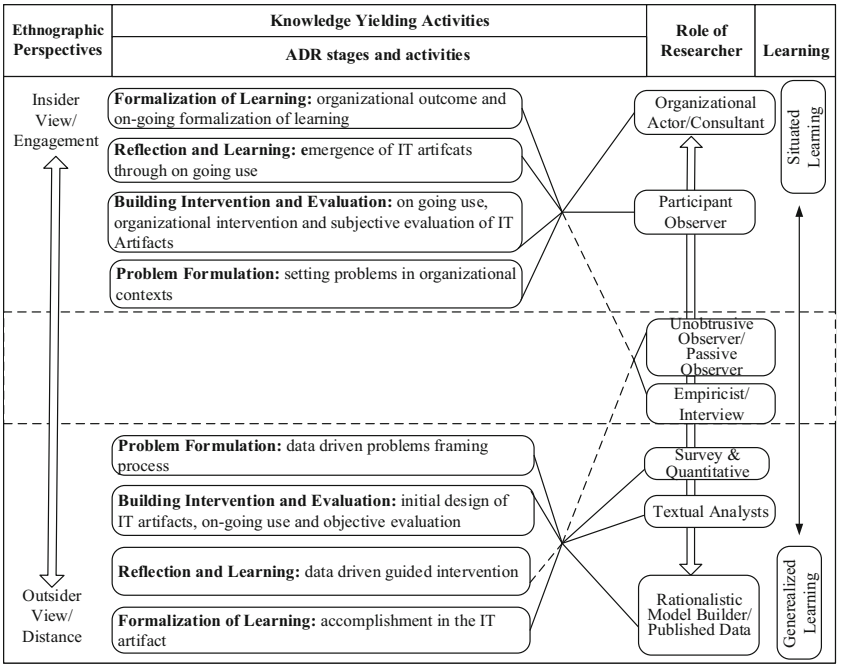

Fig. 2 Ethnographic Perspectives in ADR Process

It order to apply these principles, observation, involvement, interpretation and intervention are inevitable. Throughout the intervention and observation the insider view elicits insights from contexts. In contrast, the BIE principles also seeks the outsider view, to apply the researcher's theory of knowledge and resources. In addition, BIE needs context free and objective evaluation while the researcher needs to apply context free objective evaluation, i.e. best available through the outsider view. Moreover, it allows researchers to filter the ongoing activities as well as learning through their preset categories, codings that derive factual data and results as an objective evaluation (Evered and Louis 1981). Although ADER is highly situated, objective evaluation seeks to generalise its outcome. The researchers' involvement in the organizational context might hinder objective evaluation and give rise to a conflict of interests. Thus the outsider view gives objective and context free evaluation in ADR.

On the other hand, researchers' engagement as participant observer (insider view) is significant in an IS design, implementation and use because it leaves nothing un-interpreted, absurd and surprising (Nandhakumar and Jones 2002). It seeks meaning of every observation; what those observations mean and why (Kelly and Gibbons 2008). Thus, applying the insider view develops meaningful interpretations from the iterative relation between organizational contexts and designed artifact and IS.

Further, participant observation, intervention and engagement as a whole involves ethnographic 'live experience' of behavior, attitudes, practices, roles of actors and how they help to design change supported by local transformation

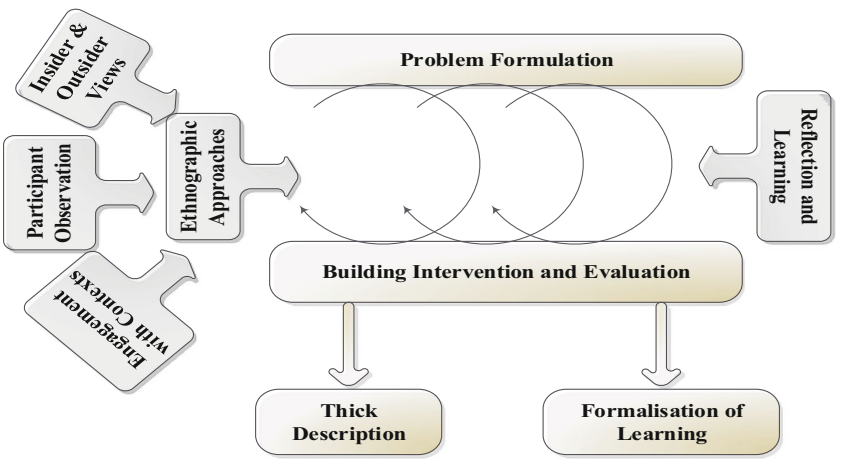

Fig. 3 Action Design Ethnographic Research model (Adapted from Sein et al. 2011)

(Barab et al. 2004). Applying the insider view, therefore, enhances the mutually influential role between researcher's knowledge and the actors' practices. As Sim (1999) noted, the ethnographic perspective has the potential to design artifacts and redesign them through contextualizing organizational practices. Furthermore, the insider view provides insights from evaluation in organizational contexts (Nedevschi et al. 2006).

The ethnographic perspective, together with researcher engagement and intervention does not leave actions as: being absurd, peculiar, pointless, irrational, surprising or confusing, rather finds their existing meanings lying in the local context and culture (Lee 1991). This is referred to as interpretive subjective evaluation; where subjective does not mean bias, rather it aims to seek contextual meanings and examine how the meanings interact with artifacts. This evaluation aims to reflect the actors' view and situated learning from ADER.

3.3 Reflection and learning

Reflection and learning is derived from formulated problems, theoretical premises and emerged solutions that contribute towards research processes and knowledge (Sein and Furuholt 2012). It applies 'guided emergence' a principle containing two contrasting views 'guided' and 'emergence' (Sein and Furuholt 2012). The former refers to an intervention i.e. guided. Always guided intervention is driven from an outsider's perspective. In contrast, the latter displays a sense of organic evolution, that is emergence, while an insider's perspective has the potential to derive emergence. ADR, therefore, needs both insider and outsider views to understand the emerging artifacts through on-going use (Sein and Furuholt 2012).

It can be seen that organizational contexts, practices and users' roles reshape the initial design of artifacts whereby alone the outsider view/distance relation cannot trace the emerging shape of artifacts because it requires close observation and engagement. However it requires guided intervention with logic, model and theory to redesign the emergent artifacts. Thus, both perspectives enhance the reflection and learning process of ADR.

3.4 Formalization of learning

This stage aims to formalize learning through generalizing the 'situated learning' (van Aken 2004). The situated nature of ADR outcomes includes organizational change and implementation of an artifact. Researchers, therefore, need to describe organizational outcomes and outline the accomplishments in artifact formalized learning.

The ethnographic perspective in IS bridges the gap between academics and practitioners through generating valuable learning and contributing to knowledge (Myers 1999). It provides analyses that are communicable and predictable (Sanday 1979). Organizational outcomes can be best expressed by organizational actors, which identifies that the researchers' engagement as an actor (insider perspective) is important. By contrast, applying the outsider view transmits situated learning into generalized learning that could be applicable to other similar contexts (Evered and Louis 1981). The outsider view helps to build a rationalistic model to transmit the situational learning into generalized design principles and outline the accomplishment in the artifacts from the ADR.

3.5 Thick description

The ethnographic methodology can harness potential advantage from the ADR. ADR requires researchers' intensive intervention into the context throughout its processes: formulating problems to designing solution to evaluation to learning and formalization. Consequently, applying an ethnographic methodology throughout these processes provides the opportunity to develop valuable ethnographic description (thick description) to disseminate learning and findings from the ADR. Thick description seeks multiple meanings and views. It unfolds multiple layers of meanings held by the members and practices of the organization (Nilsson 2000). Thick description aims to describe social events, behaviors, institutions, processes and context intelligibly (Geertz 1973). It relies on both perspectives: actors' and researchers'. According to Geertz (1973), seeing things only from an actor's point of view is equal to long distance mind reading. On the other hand, thick description is also important to ADR for identifying its learning and formalization of learning. Moreover, thick description aims to contribute to knowledge through detailed analysis of ADR findings.

The ethnographic methodology focuses on understanding the multiplicity of complex structures which are super imposed, knotted, strange, irregular and inexplicit through building rapport with the participants, conducting in-depth interviews with key informants, mapping fields, keeping a personal diary and a basket of other techniques. Thus applying an ethnographic methodology with ADR does not generate mere description, rather it generates interpretive, analytical and reflective, confessional description and critical reflection that can be seen as thick description.

As a result, thick description is an outcome of applying the ethnographic methodology throughout the ADR processes. The ethnographic methodology shows potential complementarities throughout the stages and activities of ADR in complex contexts (see Fig. 3). It allows the formulation of problems and design artifacts (BIE) in multiple cycles and multiple points of views; evaluates the on-going use of artifact from different roles and positions and identifies and transfers learning both as researchers and organizational actors. Consequently, applying the ethnographic methodology

iteratively in problem formulation and BIE generates significant insights and detailed findings that ultimately generate thick description.

Applying the ethnographic perspective along with participant observation and engaging and distancing from the contexts elicit multiple layers of meanings of contexts. In this regards Geertz notes that what practitioners do is ethnography (Geertz 1973). To develop thick description requires a researcher's long term involvement, intervention and the first-hand experience of a particular context. Together, ADR provides potential opportunities throughout every stage to employ ethnographic methodology and develop thick description from it.

Since researchers' long term involvement, intervention and first observation are the preconditions of ADR, it is possible to generate thick description while IS researchers conduct ethnographic ADR. Thus ADR with an ethnographic methodology enables researchers' to apply different views and roles whereby it is possible to develop analytical, interpretive, reflexive, confessional discussions, multiple layers of explanation and critical analyses known as thick description. We, therefore, propose Action Design Ethnographic Research (ADER) as a potential methodological framework.

4 Data collection methods

Both ADR and ethnography seek long term involvement and commitments of researchers to understand and intervene within the research context. Therefore, this study gathered data from longitudinal, interventional and participant observation oriented approaches and processes. The study was conducted for around 3½years in a public sector organization in a sub-district of Bangladesh, called Upzilla, Land Office, Rooppur (not real name). The study focused on improvements to the service involved in updating land records locally and throughout the country.

The study was initiated by the Divisional Commissioner, Khulna, head of an administrative division for the land and revenue administration. The ADER team comprised both professional and practitioners. One of the co-authors worked as a Section Officer in the Divisional Commissioner Office as well as core team member of introducing the new process of land record updating. He also presented the problems with updating land records in several meetings, workshops and training sessions with concerned officers and organizational staff. So it was possible to conduct participant observation arising from the responsibilities i.e., coordinating with the decision makers of this service and the decision implementers of this service. In addition, ten deputy commissioners which head the land updating service for ten districts were part of ADER team.

This ADER was initiated in October 2009 and the findings tracked until June 2013. As such, the study findings are derived from participant observation and interventions arising from field visits, inspections, official reports and documents analyses, workshops, meetings, consultations and training exercises, policy formulation and implementation, all relating to updating land records.

The initial design process was launched in December, 2009 in just one district. Thereafter nine districts have implemented the initial design from January 2010 onwards. Based on evaluation and analyses from the organizational actors and the researchers, the initial design was redesigned and that has been implemented throughout the country since April 2010. Thereafter, the redesigned process has been running in the organizations for about three years. Bias in the results was managed by interaction and reflection between the two co-authors, one as principally the 'insider'/civil servant, the other as 'outsider'/academic. This paper thus mainly focuses on how organizational contexts have further influenced the redesign of the implementation process (the redesign) of the land records updating service in Bangladesh.

5 ADER findings

5.1 Background

Bangladesh is a populous country with a total of 160 million people, and an average land per person of only 0.22 acre. However, it relies on an agro-economy because agriculture contributes 60 % of total GDP. Therefore, land is the only capital and source of livelihood for the majority of people. About 80 % of people depend on agriculture and the rate of land ownership transfer is very high. Thus, updating of land records is a significant service for citizens.

Updating land records, a core public service in the public sector, refers to changes in existing records. It is a process of updating the name of the owner of land in record registers after land registration (purchase) or inheritance (either loosing or gaining). Due to change of ownership, updating of existing records is essential to legalize land ownership.

Updating of land records service has been identified as problematic and outdated, a source of corruption and civil and criminal litigations by the government itself, the development partners, practitioners and civil society. Rampant corruption in this service delivery is a barrier to economic growth of the country. In addition to fraud, forgery and physical assaults, including murders took place due to land records related litigations. About 80 % of civil cases and 70 % of criminal cases are involved with land records related matters (Barakat and Prasanta 2004).

This service is delivered from a public sector organization, namely the Upazila Land Office (ULO). Upazila

refers to a sub-district, the bottom tier of public administration in the country. There are a total of 500 ULOs in the country. The ULO is headed by an Assistant Commissioner of Land (ACL). A ULO comprises of several local union Land Offices (LO) that is headed by a Union Assistant Land Officer (UALO).

There are two main provisions for updating land records: ULO's own initiatives and citizens' applications to the ULO for updating land records. Firstly, the ULO can update land records on the basis of two information networks: one, receiving a Land Transfer Notice after land registration is completed by the land Registration Office and the other is a report on updating land records from a LO. According to the legal provisions, following land registration a Land Transfer Notice is issued to the ULO for updating the appropriate records. On the other hand, where there is death of a landowner or any change takes place in the type of land, the LO reports to the ULO for the purpose of updating land records. However, functionally sending LO's reports to the ULO for updating land records as well as ULO's own initiative on the basis of Land Transfer Notice rarely takes place.

On the other hand, citizens can apply to the ULO to update land records. When citizens apply for a land records update, a number of complications can occur:

- Essential supporting documents with the citizens' applications for updating land records are wide, varied and unspecified.
- The application form is also not specified and citizens have no clear ideas on amount of fees and duration of service delivery.
- Citizens do not know what the steps following submission of an application.
- Since citizens' applications are high volume, it is not possible by ULO to update land records through its own initiatives.
- There have developed many intermediaries and middlemen in this service to mediate this complex process of service delivery to the citizens.

Usually a middleman submits a citizens' application with the requisite fees and required documents: land registration deeds, certified copies of existing records, sketch map of the land plots, and inheritance certificate from local union council. Thereafter the ULO conducts an initial scrutiny of the fees and supporting documents and asks the concerned LO to send a field inspection report on the application. The ULO hears the applicant or first party (new owner) and the second party (the seller and related individuals) and consults the LO's report and scrutinizes the registers of the ULO. Finally, the ULO either approves or rejects the application i.e., updates the land record or no change made.

5.2 Problem formulation

The citizens' access to this service is complicated because from application submission to accessing the service requires a number of documents and processes. The ULO has neither application forms nor the guidelines for supporting documents and the processes that need to be followed. Therefore, in order to mediate access to this service, several vested interest networks, known as 'middlemen networks' and 'bribery' networks, have been developed within and beyond the organization to mediate this service as an informal yet inextricably inevitable process. Without the middlemen network, accessing this service is nearly impossible because citizens need to start from a middlemen who keeps and sells the application form for updating land records. Although the government has designed a number of processes and systems: (e.g. citizen charter) public sufferings, extant of middlemen networks and 'bribery' networks remain dominant.

5.2.1 Data driven problems formulation

Several vested interest networks known as middlemen networks have been developed over a long time, both within and beyond the organization, to mediate citizens' access to this service with a high service charge, commonly known as a 'bribe'. This is because middlemen have to pay money to the organizational networks to process this service. There are two main reasons behind developing the middlemen networks: lack of organizational support to citizens relating to this service and skillful support of middlemen to the citizens.

Citizens are not well acquainted with completing the application form, the exact fees, which exact documents and to whom and where the application should be submitted and how the service is to be delivered. Since access to this service requires filing applications with appropriate documents and a follow up set of processes, it is difficult for citizens to submit an application and track the processes without any actor in the vested interest networks; the middleman, the stamp vendor, lawyers, deed writers and the subordinate staff of ULO or LO. Even after submission of application, it can be lost from the office or rejected without any notification, if it is not pursued by any middlemen network. The middlemen networks know how to mediate processes on behalf of the applicants, who provide their vested interests. Therefore almost every applicant uses a vested interest network actor for application submission, tracking, mediating and expediting services.

5.2.2 Context driven problems

Updating of land records service has been treated as a complex process, lacking clear guidelines and IS from the service providing organization, from the beginning. Consequently, this service has become a source of vested interests to the

actors within the organization and the middlemen networks. The staff have a network with the middlemen, thus the middlemen have access to and influence over the process of updating land records through expediting, granting and rejecting applications. The staff also maintain the flow of vested interest networks in the upper chain within the organization. As a result, citizens neither have access to nor have any understanding of the process. To preserve the flow of vested interests and keep the citizens' ignorant about the service, the ULO has not developed any IS for processing this service. In addition, the application forms for this service have been developed, maintained and sold by the middlemen networks. As a result, the middlemen networks are an inevitable part of the process of updating of land records. Therefore, applications that do not have any vested interests are either prevented from entering the service delivery process or rejected on any grounds by the organizational networks.

In this circumstance, even educated citizens enter into this service through the middlemen networks, because using a middleman is inevitable in filling in application forms, mediating this service as quickly as possible and for making possible cases which are impossible and legally complicated and challenging. The middlemen networks maintain application forms and supporting documents beyond the organizational networks and provide support to their clients for their cases. For example, they expedite service delivery for their clients' applications or manipulate the service delivery due to the vested interests. As a result, applications with vested interests receive faster service delivery while others are kept pending for several months or rejected for no good reason.

The ULO does not have any information system for citizens; for example, the application form, point of application submission, exact amount of fees, specific list of supporting documents, receipt for application submission, tracking options after submission, duration of service delivery and decision on the application. Where the organization failed to develop and maintain the information system for this service, the actors of the vested interest networks have developed and maintained them. It could be seen as mutually dependent because the vested interest networks maintain the information systems for this service, but the organization is both dependent on them and equally unwilling to find ways to overcome the problems of vested interests.

5.3 Building interventions and evaluation (BIE)

ADER aims to support the design of an information system to address the problems with, and enhance citizens' access to, the updating of land records service and to eradicate the vested interest networks. To this end, the ADER team intervened with organizational processes and contexts. In addition, three interactive workshops were conducted for reciprocal consultations with the officers and staff involved in this service delivery. The initial design was implemented, used and evaluated for five months before implementing at national level. After implementing the IS for this service throughout the country, an evaluation using participant observation and applying ethnographic approaches and tools was carried out over a period of about three years. This study has designed and redesigned the IS iteratively.

5.3.1 Initial design

It was identified that an application form is the basic means of citizens' access to the land records service, but it was very complex and maintained by middlemen networks. In addition, the form varied from district to district and middlemen to middlemen. Thus citizens do not have any idea of filling in the application form themselves. Also, since the organization does not have the application forms, citizens need to engage with this service through middlemen networks. Within this context, the ADER team focused on designing an application form that would be freely available to citizens and make it simpler to fill in. The application form has been divided into two parts: the first part is to be filled in by the citizens and the second part is to be used as acknowledgement of application. Since there was no specified application format for updating land records, various types of application forms were found within and across ULOs. These forms were developed by middlemen and so were quite complicated. Thus citizens needed to go to middlemen in order to buy an application form and at least get some help with filling in the application. Further, most of the citizens had to rely on the middlemen to mediate the whole service process.

Initially a unified application form for all the ULOs has been designed by the ADER team and made freely available at ULOs. It has reduced citizens' dependency on the middlemen and they have entered into the process of land records updating at the ULO. The newly designed application form has been kept simple with instruction for filling it and clear requirements for supplementary documents that need to be attached with the application. The application form contains all the necessary information and instructions: no fee for the application form; updating land records fees BDT 250.00; and maximum duration for service delivery set as 30 working days. All these instructions were printed on the back of the application form.

Moreover, after the submission of an application, the organization instantly provides an acknowledgement receipt along with an application ID. In addition, the date of the hearing is given on this acknowledgement receipt. Thus the new application form has been given a tracking option too. Further, other application formats have been banned. As a result, citizens were moved from the middlemen to the ULOs to submit the application and receive the service.

5.3.2 On-going use and evaluation

This initial design has been implemented in 10 districts for about five months. During this period, the ADER team closely observed and evaluated the on-going use and implementation. Since the newly designed application form is available and given out freely by the ULO, it has attracted citizens into the service delivery process through the ULO instead of through the middlemen. Consequently, the practice of submitting and mediating citizens' applications by middlemen has been significantly reduced compared with the previous system. Observation and empirical findings showed that during the period 1/3 of the citizens submitted their applications directly to the ULO, while previously it was less than 1/10.

However, it has not possible to uproot completely the middlemen networks from this service. While the middlemen networks found that their application forms, the previous one, were no longer required for this service, they reprint/copy the new form for their clients. Consequently, they shift their role from their old version of the application form to the new one. As a result, the benefits of the new system do not fully reach the citizens because the newly designed application form has been also partially utilized by the middlemen networks. With this newly designed form a significant number of citizens submitted their applications by themselves directly to the ULO instead of via middlemen network. However, a clear distinction has been created in this stage through the mediation of the middlemen network. They are still involved in mediating citizens' applications through expediting the better and the quicker service delivery than the rest.

5.3.3 Reflection and learning: Emergence of artifacts

The on-going use of the new system reflects two aspects: Firstly, the middlemen networks remain visible through filling in and submitting the application forms for illiterate people. Secondly, they are involved in processing supporting documents for the applications and expediting the service delivery for their clients. Since the application submission process did not exclude them from submission of applications, they have continued with the newly designed systems through assisting citizens and expediting the service. Further, the long list of supporting documents means the application remains a complicated process, especially for illiterate and inexperienced citizens. Thus a section of citizens do need to rely on the middlemen networks to appropriately arrange the supporting documents. In this way, the initial design has been redesigned through emergent practice from on-going use, in such a way that the citizens can rely more but often not completely, on the ULO for this service instead of the middlemen.

5.3.4 Redesign: Guided intervention

From the on-going use of the initial design, middlemen are involved at least three aspects: a) middlemen are involved in filling in and submitting applications for their clients; b) middlemen organize complex set of supporting documents for their clients and c) middlemen expedite the service delivery process using their networks with the staff. In order to address these issues, three guided interventions have been designed by the ADER team.

First: allowing applications only from the applicant or his/her representative is one way to exclude the middlemen networks from submitting applications. If an applicant or his/her representative is mandatory to submit application to the ULO, it would be able to remove the middlemen from this part of the process. Therefore, the application form has been redesigned so that the applicant needs to put his/her or his/her representative's photo on it for the land records updating service and to submit the application to the ULO by applicant themselves or by a nominated representative.

Second: the numbers of supporting documents have been reduced and simplified so that citizens' do not need to rely on middlemen networks to arrange them, for example, the supporting documents have been redesigned in such a way that if updating of the land record (mutation) has been done previously, nothing else is required other than the previously updated record as supporting document; this makes it easy to process the supporting documents of the applications and submitting applications by citizens themselves. Further, if there is any lack of supporting documents with applications, it should still be accepted by the ULO; the applicant can then submit the relevant documents during the hearing. This aims to reduce the rejection of applications on the grounds of lack of supporting documents when applications are submitted by citizens instead of middlemen networks. Usually citizens engage with the middlemen to avoid rejected applications due to lack of supporting documents.

Third: although regulations say to provide services chronologically, it was easy to manipulate by staff who could delay entering the application into the register or making a faster entry i.e., entering applications back dated to provide quicker service delivery in the chronological process. To address the loophole of back dated entry of applications from the middlemen network, the application has been designed with an acknowledgement receipt. This acknowledgement receipt uses a 'first come first served' rule. Since every application is given an ID number during its submission from the ULO, this provides the basis for a chronological order for processing this service delivery. In addition, policy has been agreed

to complete the application within 30 working days. These interventions and redesigns have enabled citizens' to have easier access and greater reliability on chronological order of service delivery.

5.3.5 Subjective evaluation: An outsider view

However, within a year of implementation the redesigned system has also been further reshaped by the middlemen network. Firstly, although it was mandatory to submit the application with the applicant's/representative's photograph on the application form, fake photograph were used by the middlemen networks. The middlemen used the fake photograph of the applicant and submitted their application. When an applicant comes into contact with middlemen networks, either it is for filling in applications or it is the offer of the middlemen networks to manage every process on their behalf. This provides greater profit to the middlemen and less hassle to the applicant.

In addition, the middlemen networks further reshaped the chronological order of the process in order to deliver this service faster. Since, the application receipt register is maintained manually, it is possible to tamper with application IDs and receiving dates. The application ID and date of receipt has become significant because of the 'first come first served' system. Therefore, the middlemen networks, with the help of the ULO staff, tamper with application IDs and the submission dates with a view to making faster service delivery.

With the redesign of application process and chronology in the service delivery, the staff have lost their private gains, received previously from the middlemen network. Thus, the ULO staff has further redesigned the process of application submission through adding some other documents that include notice forms for hearing from both the parties, a notice form for LO's reports and order sheet form. These documents are supposed to be supplied and prepared by the ULO staff after receiving applications from citizens. However, given that the citizens should submit their application with the relevant notice forms and the order sheets, staff's tasks have been reduced and has now involved the middlemen in the process. The middlemen have prepared a set of application forms and notice forms. Thus citizens are bound to go to the middlemen, at least for buying notice forms and order sheets. Thus the ULO staff have redesigned the application submission process to re-include these informal networks. With the redesigned application submission process the middlemen networks have come forward to prepare the whole set of documents for application submission: application form, notice form of the parties, notice form for the LO's reports and order sheet form. As a result, ULO staff have redesigned the IS in such a way that citizens need to enter into the service through middlemen. Since the middlemen networks ensure the vested interests of the staff, the ADER designed systems has been redesigned by the ULO staff.

5.4 Reflection and learning: Insider view

Redesigning the application through adding the photograph of an applicant or his/her representative to the application aimed to ensure that only the applicant could submit applications to the ULO. The photograph was used specifically to remove the middlemen from application submission process. However, the photograph mechanism has been kept outside the service delivery process because it does not have any other role in the record updating process. Consequently, middlemen keep their hold on submitting applications to the ULO by using fake photographs of applicants on the application. Since the ULO staff have a good network with the middlemen, they accept these applications with fake photographs. Thus, although the process has been redesigned with a view to involving citizens directly with this service delivery and removing middlemen, the organizational contexts, the ULO staff, have further redesigned the process for their private interests.

Since all the applications are entered into a paper based receipt register, this has been tampered by the ULO to manage the chronological application ID number. Besides, the staff have several means and techniques to tamper with application IDs and receiving date. Engaged observation revealed it that while issuing an application's acknowledgement receipt, the staff allocates the application ID number to the application but they put all the applications' ID numbers into the register once a week or fortnightly. This allows them to manipulate the chronological order of the service delivery. Moreover, the staff put some blank ID numbers that they fill in with applications received at later dates. This is how the applications received on later dates can have an ID number from a previous date and its priority.

5.5 Formalization of learning

The initial design was implemented for 5 months in 10 administrative districts in Khulna division. Following the Ministry of Land's engagement with the ADER process, a divisional level workshop conducted with Officers of the ULOs (Assistant Commissioner for Land) enabled the decision making officers to share their ideas and learning derived from the initial design with the Secretary of the Ministry of Land. Thereafter, on the basis of the initial design and reciprocal learning from the 10 districts, the redesigned process has been issued as an official circular for the whole county by the Ministry of Land. The redesigned process has been in operation since May 2010.

5.5.1 Learning by organizational actors

The middlemen network has connections to the organizational processes. Consequently, the organizational processes and middlemen networks are mutually dependent on each other in intra-dimensions (ULO-LO staff; ULO staff) and inter-dimensions (middlemen networks-ULO staff, middlemen networks-citizens). So, the initial design and the redesign process have been reshaped through the intra-action within the organizational staff and mutual interaction between the organizational staff and the middlemen networks. Incorporating the applicants photograph has played an insignificant role in excluding the actors of the vested interest networks from the application submission process because the identifier, the staff of ULO and use of fake photographs in the application and the middlemen networks have mutual vested interests. Similarly, expediting service delivery for applications using vested interests is taking place through their mutual interaction. Therefore, the middlemen networks in this service shift their position through continuously shifting the design and redesign of the service processes.

6 Empirical outcomes

The initial design and redesign of the organizational processes have significantly increased citizens' direct access to this service delivery. The empirical findings show that about $^1/_2$ of the total applications are now submitted by citizens to the ULO, a significant increase compared with before the initial ADER redesign process. On the other hand, the redesigned process has ensured service delivery for all applications within 30 working days compared with previously where there was no time-frame and consequently at least $^1/_3$ of the applications took more than 90 working days. Further the delays often took place in the cases of weaker sections of society. The redesigned process has simplified the application submission and tracking processes, empowered the citizens through creating guidelines and relevant information within the application form and achieved chronological order in service delivery, at least to some extent.

However, the limitation of the redesigned process is that there is no scope for prioritizing service delivery. It has both advantages i.e., visibly no scope of discrimination; and disadvantages i.e., no scope to prioritize service delivery. Consequently, prioritizing service delivery has become a hidden process space which the ULO staff and the middlemen occupy. Thus citizens need to pay a 'bribe' for the prioritized service. Further, the centralized application submission process in the ULO and the manual receipt register still allow for tampering with the chronological order and application ID number.

7 Future design

The organizational contexts of the staff-middlemen relations, the staff-the organizational upper chain relations, and citizens' ignorance are the main reasons behind the existence of the vested interests in the process of updating land records service delivery. The paper has addressed only a few issues, others include: low paid organizational staff; low literacy rates; complicated records; the presence of the middlemen networks outside the organization rooted in socio-political contexts and connected with organizational staff. Removing the middlemen networks from this service requires long term strategic interventions through iterative design and redesign of this service delivery process.

The ADER has generalized a list of learning points: the distance of the relationship between the service provider and the service recipients; installing technology to prevent and reduce intervention from middlemen networks in reshaping of the designed service delivery process and reducing tampering in application ID as well as chronological order in the service; and decentralization of the application submission process.

On the basis of the generalized learning, a model (see Fig. 4) can be framed for possible further design of this service. Since the literacy rate is low, most of the citizens would require a mediator to access this service. Consequently, technology mediated actors have the potential to remove the actors of the vested interest networks. They would be able to reduce citizens' interaction with service providers. Further, the country already has a network of 4,501 telecentres across the rural areas. The telecentres could be technology mediated intermediaries in this service. In this way, through building networks with telecentres for access to this service would enable this service to have decentralized access points. Consequently, decentralized access points and access through technological process should stop tampering with application IDs and the breaking down of chronological order. The status of the application could be received through an SMS service or online tracking from the telecentres. Furthermore, under the proposed process, this service would be delivered through the post, since there is countrywide public postal coverage.

The telecentres have already been mediating the service delivery of certified copies of land records to the citizens from the Deputy Commissioners office. Thus, to decentralize the application submission process through the telecentres would be the feasible removing middlemen networks from this service. To this end, there needs to be interfaces between the telecentres, the ULOs and the postal service developed.

Further, the Ministry of Land should revise the concept of chronological order service delivery because there should be a provision for urgent service delivery in emergency situations. In the case of urgent service, citizens are ready to pay 10–20 times higher than the usual fee to the government, which they currently pay as a bribe.

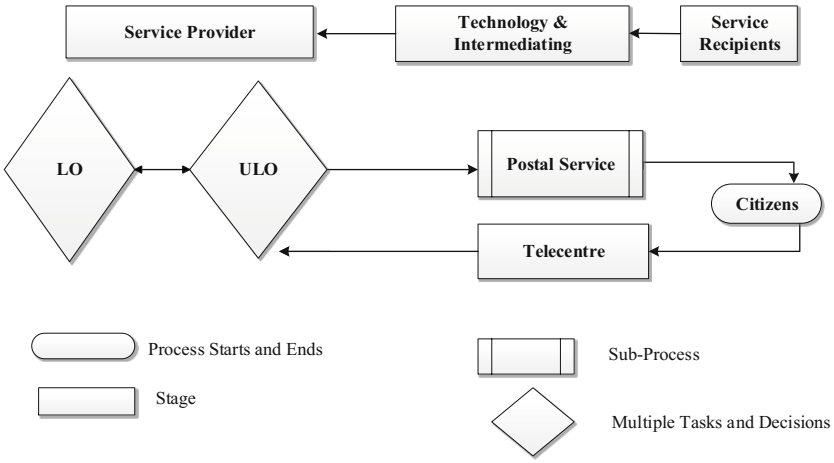

Fig. 4 Model for Future/Further Design of Land Records Update in Bangladesh

8 Conclusion

The case of land records updating service has shown how the complex organizational contexts have continuously reshaped the designed IS. The complex organizational contexts include the inherent networks between the staff and the middlemen, the 'insiders' as well as the staff's intention of reshaping the designed IS and the continual insiders' behavior. The designed IS and the organizational contexts are iterative. In order to trace every iteration, requires methods, approaches, tools and techniques for capturing users' intentions, behaviors and organizational contexts. Interventional methodologies without appropriate approaches and tools cannot reveal the underlying contexts and hidden intentions of the users.

ADR as an interventional methodology has the ambition to formulate problems in the context and design of artifact or IS and to evaluate those contexts. However, it has not explicitly specified how to understand the contexts and what the approaches and tools are required for tracing, designing and evaluating the contexts. Implicitly ADR refers to mutual reciprocity between the users and researchers which is derived from the insider and outsider views within the ethnographic methodology. Moreover, the ethnographic methodology includes: participant observation (engaging and intervening with the contexts), interpreting the contexts through insider and outsider views and generating multiple layers of interpretations through thick description.

This study, thus, has applied ADR together with ethnographic approaches as a methodological framework, or Action Design Ethnographic Research (ADER), which has elicited complex organizational contexts around the land records updating service in Bangladesh. It has revealed how the staff and the middlemen are connected and how they reshaped every iteration of the designed and redesigned IS in this case. ADER offers iterative processes, alongside different lenses and roles, from problem formulation to design (BIE) to evaluation to learning, all intimately tied together.

ADER can play a key role in better understanding complex contexts, where informal practices dominate over the organizational rules and the designed IS and processes. ADER gives the opportunity to formulate problems and interact with BIE through multiple cycles such that the contextual problems can be formulated from the data i.e. rather than relying on the researchers' knowledge and perceptions, the problem can be formulated through empirical evidence arising from engagement and observation.

Finally, understanding on-going use and continuous reshaping of designed IS by users and contexts is challenging where practices are diverse, hidden and deliberately deceptive. Thus this ADER study has provided the researchers' engaged with the context as insider with the opportunity to trace the continuous reshaping of the IS by the users. Moreover, an objective evaluation is often helpful in the case of interventional research, thus applying an outsider viewpoint helps to conduct context free evaluation. However, the insider view also brings forth the researchers' reflection that could be seen as subjective evaluation. Finally, ADER has the potential to identify learning and transfer it to the practitioners through model building. Although conducting ADER is challenging because it requires long term involvement, commitment and skills, it has the potential to provide valuable ethnographic analysis i.e. 'thick description', for both IS practitioners and professionals.

Acknowledgments An earlier version of this submission was presented at IFIP WG 8.6 2013, please see Brooks, L., & Alam, M. S. (2013).

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