

ICT DRIVEN TRANSFORMATION OF STATE-OWNED ENTERPRISES IN A DEVELOPING COUNTRY

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Abstract

Extant research has considered the appropriateness of contemporary Enterprise Architecture Management (EAM) to support management of Enterprise Transformation (ET) and recommend context specific EAM approaches. In line with that, drawing on path creation as a theoretical lens, we propose a conceptualization of ICT driven transformation in state-owned enterprises in a developing country as an emerging path creation process. As multifarious challenges are inherent in ICT driven innovations in developing countries, we argue that entrepreneurs – initiators of, or participants in, change –take advantage of these challenges and start to identify options to transform established practices through reflection and experimentation. Hence, ET, in the given context, is not a pre-planned, coordinated approach; rather transformation emerges by “mindful deviation” of the entrepreneurs which can take different paths. We explore these ideas in an ICT driven initiative in Bangladesh for a state-owned enterprise. We discuss theoretical implications in understanding the entrepreneurial process through which ICT driven innovation in developing countries can be successfully transformed creating new paths.

Keywords: ICT driven transformation, Challenges, Developing country, Path creation

1 Introduction

As Information Technology (IT) has become an increasingly integral component of enterprises (Basole and Demillo, 2006), many studies see it as the key to transformation (Rouse, 2006b). In line with this argument, public enterprises in developing countries¹ have widely used IT to realize its transformational potential for the socio-economic development of their people (Avgerou and Walsham, 2000; Heeks, 2002). Literature shows that, most IT initiatives undertaken in developing countries were merely efforts towards digitization of an existing government process and/or activity and adopted a project approach (see, e.g., Sahay and Walsham, 2006; Madon et al., 2007; Madon et al., 2009). Such an approach, ignores the holistic perspective of Enterprise transformation (ET) (Rouse, 2006b) and results in disconnected and inefficient silos of technology, information and business processes (Basole and Demillo, 2006) for which most of the enterprises fail to encounter the challenges of change in transformation (Rouse, 2005). Consequently, most of the efforts end up in partial or complete failures (Avgerou and Walsham, 2000; Heeks, 2002; Sahay and Avgerou, 2002). In turn, transformation of public enterprises in the context of developing countries deserves special attention.

Enterprise Architecture Management (EAM) is believed to support the management of ET to a large extent (Asfaw et al., 2009; Labusch and Winter, 2013). Despite the holistic approach of EAM to manage the transformational events in an enterprise (Winter et al., 2012; Labusch and Winter, 2013), there is a growing concern of using a contemporary EAM framework for ET (Winter et al., 2012; Labusch et al.,

2013; Molnar and Proper, 2013). It is argued that there is no best path or “silver bullet” to succeed in ET (Rouse, 2001; Buran and Chew, 2006; Lahrmann et al., 2010), but rather any approach is dependent on the contingent factors of the transformation context (Baumöl, 2005; Rouse, 2005; Buran and Chew, 2006; Lahrmann et al., 2010). Though the transformation aspects of government organizations have recently received the attention of many researchers (Janssen and Cresswell, 2005; Irani et al., 2007; Dhillon et al., 2008; Van Veenstra et al., 2009; Henningsson and Van Veenstra, 2010), the Information Systems (IS) literature still lacks in knowledge to a large extent, on how a public enterprise in the developing countries can successfully transform.

Following the demand of a context-specific transformation management approach (Baumöl, 2005; Rouse, 2005; Buran and Chew, 2006; Lahrmann et al., 2010), this study seeks to answer the following research question: “*How does a state-owned enterprise in a developing country transform in the context of ICT driven service innovation?*”

We draw on path creation theory (Garud and Karnøe, 2001) to conceptualize ET (Rouse, 2005) as an emergent process. We argue that challenges provide opportunities for entrepreneurs² to identify options (Ravishankar, 2013), exert reflection and experimentation (Sturdy et al., 2006) and create a path (Garud and Karnøe, 2001). Entrepreneurs do this by transforming established practices (Wagner et al., 2013) in terms of the relationships with one or more key constituencies, e.g., customers, employees, suppliers, and investors (Rouse, 2005). We draw on this conceptual framework to explore how a public enterprise engages in enterprise transformation while addressing the challenges of a simple digital service innovation.

The rest of the paper is structured as follows. The next section starts with an in-depth discussion of ET and challenges in public ET. We then focus on the challenges of digitization in developing countries and how it helps to transform a public enterprise linking it to the literature on path creation. This is followed by our research approach and a description and analysis of the case. Finally, the paper ends with a discussion of contributions and outlining implications for theory and practice.

2 Literature Review

2.1 Enterprise transformation and its management

Transformation of an existing enterprise has been recognized as the greatest challenge as it involves fundamental changes dismantling the “as is” enterprise to create the “to be” enterprise (Rouse, 2006a). It “encompasses both broad internal changes in structure, systems, skills and even culture of an enterprise and deep changes in its external links to the environment” (pp. 15), thus covering overall business strategy, relationships with suppliers, customers and other stakeholders (Hanna, 2010). As a consequence, transformation tends to be a long term process, not a single event or one-time fix (Rouse, 2006c; Hanna, 2010) and significantly differs from the numerous approaches (e.g., turnaround of business, reengineering of processes, process improvement, Total Quality Management (TQM)) to encounter challenges within the enterprise (Rouse, 2006b; Hanna, 2010).

Recently, many studies indicate that EAM has the potential to support management of such ET (see, e.g., Labusch and Winter, 2013; Asfaw et al., 2009; Pulkinen et al., 2007) since EAM not only provides a holistic perspective of an enterprise to its stakeholders (Winter et al., 2012; Labusch et al., 2013), but also serves as a tool enabling better business-IT alignment (Pereira and Sousa, 2005; Molnar and Proper, 2013) through guidance or providing information for coordination (Pulkinen et al., 2007), communication (Asfaw et al., 2009) and decision making (Bernard, 2005). On the contrary, Winter et al. (2012) claimed that EAM and management of ET are different though they possess commonalities. Again, Abraham et al. (2012) state that EAM’s performance in coordination is worse than expected.

However, in a recent study, Labusch and Winter (2013) identified eight major activity areas for management of ET. They mentioned that in general EAM provides valuable inputs to the management of ET activities but shows weaknesses when it comes to information about individual actors or environmental information, organizational culture, resistances or organizational rituals. Another study shows that appropriate EAM approach depends on the contingent factors of the transformation situation (Lahrman et al., 2010). Rouse (2006a) mentions that there is no single best model or path to success in ET. Similarly, Buran and Chew (2006) explain that there is no single formula or process; rather, the appropriate approach depends on a particular firm in a particular industry at a particular time.

Consequently, the transformation of a state-owned enterprise in a developing country needs to be understood in its context, since all the well-known barriers for digitization (hence, transformation) in developed countries are not only amplified within developing economies, rather further unique constraints encountered (Heeks, 2002).

2.2 Challenges in ICT-driven transformation

Research in developed countries has identified numerous challenges for transformation in the public sector. Transformation of the public sector is largely challenged by political pressure (or lack of) (Fernandez and Rainey, 2006; Janssen and Cresswell, 2005), division of cost (Ebrahim and Irani, 2005; Janssen and Cresswell, 2005) and the structure of public sector (Janssen and Cresswell, 2005). Lack of IT governance (Fernandez and Rainey,2006) , lack of skilled IT professionals (Ebrahim and Irani, 2005) and security threats(Ebrahim and Irani, 2005) are also described as impediments of such transformation. Gil- Garcia et al. (2007) identified adoption of a project management approach, lack of implementation guidelines, system complexity and incompatibility (Gil- Garcia et al., 2007) as major road blocks for ET while regulation, organizational and people related issues were mentioned by Henningsson et al. (2010). In addition, lack of coordination (Ebrahim and Irani, 2005; Janssen and Cresswell, 2005), lack of knowledge about necessary changes and absence of a transformational mindset (Van Veenstra et al., 2009) were also identified as challenges for ET transformation in the public sector.

In the context of developing countries, the list includes more unique challenges for ICT based initiatives. ICT projects in those countries are largely challenged by a lack of power supply (Ovia, 2005), internet connectivity (Thapa and Saebø, 2011), national strategy, legislative regulations and weak ICT policy (English et al., 2011; Latifov and Sahay, 2013). Political challenges like lack of government support and commitment (Bhatnagar, 2000; Sahay and Walsham, 2006; Madon et al., 2009), political instability (Thapa and Saebø, 2011; Silva and Westrup, 2009), lack of alignment within the multiplicity of interests, actors and technologies participating in the projects (English et al., 2011; Thapa and Saebø, 2011; Latifov and Sahay, 2013) along with inadequate financial resources (Best and Kumar, 2008) and over dependence on foreign donors (Odedra-Straub, 1993) are also attributed as major constraints to such initiatives. In addition, entrepreneurs often struggle to incorporate local communities (Puri and Shahay, 2007; Walsham, 2012) in the ICT projects and to build trust by changing those communities' mind set (Braa and Sahay, 2012).

In this paper, we want to explore how entrepreneurs manage such complex challenges without using the standard architecture framework. We argue instead that, the inherent presence of challenges in ET in developing countries facilitate entrepreneurs to combine or blend existing knowledge with emergent ideas; and technological and human resources and create a new path.

2.3 Conceptualizing ET as a path creation process

Path creation has emerged as a powerful theoretical perspective to conceptualize innovation (e.g., Henfridsson et al., 2009; Karnøe and Garud, 2012). This theoretical construct was developed in a reaction

to the theory of path dependence used in evolutionary economics (David, 1985; Arthur, 1989). Path dependency, ignoring the firms or actors involved, emphasizes the temporality and dynamic adaptation to random events to understand a technological innovation and its adoption over time. It considers human actors play passive or conservative role with respect to the alternative available in their environment (Boland et al, 2007). On the contrary, path creation emphasizes the active role of entrepreneurs, who deviate from their original intentions to shape paths in real time and create new futures (Garud and Karnøe, 2001). While navigating the complex flow of events, they are fully aware that success and failure are two sides of the same coin (Bijker et al., 1987) and only some of them may create a new path (Garud and Karnøe, 2001). Hence, entrepreneurs can follow a predefined path or create a new path for a successful innovation. In this study, we explore how ET emerges as a path creation process rather following a predefined path to success.

According to Scott and Mark (2006), entrepreneurs in a transformation team must “think out of the box” and challenge the status quo embracing the uncertainty and risks. However, fundamental changes with an organization means changing its “hearts and minds” (Shields, 2006) and such changes encounter powerful resistance from established institutional and social practices (Hanna, 2010). Hence, entrepreneurs of ET cannot exercise unbounded strategic choice due to such embeddedness. So, they are constrained by existing institutional and social practices that they try to overcome (Garud and Karnøe, 2001) while transforming enterprises. We argue that successful entrepreneurs can overcome the challenges associated with ET in developing countries through ‘mindful deviation’(Garud and Karnøe, 2001). As Garud and Karnøe (2001, pp. 2) explain:

“Mindfulness implies the ability to disembed from existing structures defining relevance and also an ability to mobilize a collective despite resistance and inertia that path creation efforts are likely to encounter”.

ET usually results from a net of collective actions of different communities. Understanding and balancing the concerns, and desires of an enterprise’s diverse stakeholders - and finding the “sweet spot” among the many competing interests is really challenging (Rouse, 2006a). Entrepreneurs in ET process are hence involved in transformation of ideas to insiders and outsiders through interactive “translations” (Garud and Karnøe, 2001). Translation helps to create paths by offering a common ground among participants and by helping them to overcome resistance and indifference. As the complex and difficult tasks of transforming an enterprise cannot be done by a single individual or an organization (Buran and Chew, 2006), to succeed in ET, entrepreneurs mobilize others by transferring their ideas to the stakeholders and overcome the challenges like lack of alignment between policy and implementation, resistance to change and other strategic gaps (Karnøe and Garud, 2012).

Buran and Chew (2006, pp. 390) state that “the essence of enterprise transformation is choice and focus”. They argue that success of ET largely depends on how entrepreneurs respond to the options confronting them against the defined goals of the transformation. Entrepreneurs in the transformation world re-organize their actions continuously to the needs and opportunities they discover, which might lead towards a new path (Buran and Chew, 2006). Hence, by focusing attention to the phenomena in the making (Garud and Karnøe, 2001), we aim to understand the flow of actions navigated by entrepreneurs in ET over time and explore whether and how it leads to a process of path creation rather than a random or determined outcome.

3 Research Setting and Approach

3.1 Research setting

The research setting for this study encompasses an ICT initiative (AgriCorp- pseudonym) in Bangladesh. One of the researchers spent time in Bangladesh investigating this project in three phases from April,2013

to September, 2014.

AgriCorp is a state-owned enterprise which coordinates 15 sugar mills operating throughout Bangladesh. In 2009, it started offering SMS-based purchase order (“e-Purjee”) for sugarcane issued to the sugarcane growers’ during its crushing season to supply a specific amount of cane to a particular sugar mill on a scheduled date. This simple initiative, in turn, by incorporating other services like notification of cancellation of cane supply order or payment rescheduling, web-based e-Purjee printing facility, online dashboard for real time observation of cane production, crushing, e-Purjee distribution and farmers’ feedback, eventually, replaced the 80 years’ legacy sugarcane procurement system benefitting both the farmers and the sugar mills.

In the choice of the case, our primary interest was to find out a state-owned enterprise which has successfully transformed. We found that AgriCorp has got phenomenal growth of sugarcane procurement (Public documents of AgriCorp, 2013) and the culture of the organization is changing radically due to a series of ICT driven innovations and hence, considered it as our case of study.

3.2 Data collection

Adopting an interpretive approach to data collection (Orlikowski and Baroudi, 1991; Walsham, 1995), we conducted a combination of semi-structured interviews, unstructured interviews, direct observations and document analysis, primarily at AgriCorp, but also at associated organizations (e.g., technical support provider, mobile operators) and for farmers. Semi-structured interviews were used as they have been suggested as an effective tool which facilitates the researcher to fine-tune their inquiry based on respondents’ answers, hence, can explore deep insights of the events being investigated (Nandhakumar and Jones, 1997) and it also helps to seek a new angle on the topic being investigated (Kvale, 1996). For the farmers, unstructured interviews were conducted, so that they can talk about their personal experiences openly and freely, and their intimate and emotional disclosures can be noticed (Kvale, 1996) making it a bit informal. In total, fourteen semi-structured interviews and five unstructured interviews were conducted over a period of eighteen months in three phases.

To provide a cross sectional view of the transformation process, we approached interviewees across different levels of management such as the director, the head of MIS department, senior manager, the project coordinator, technical consultant, and senior executives. Follow-up interviews were also carried out for clarification of certain issues of interest that emerged after processing the data collected initially. Since one of the researchers is bilingual (English and Bengali), the interviewees were offered the flexibility to use English or Bengali. The interviews were conducted at the work place of the interviewees and lasted between 50 to 90 minutes. Most of the interviews were tape recorded and transcribed while written notes were taken for all the interviews. Along with these we had multiple informal discussions over the phone and via Skype. One of the researchers experienced the flow of events in a live setting, while visiting the head office and a sugar mill in Faridpur, and observing the system works. In addition, the researcher conducted five unstructured interviews (in Bengali and lasted for 30 to 45 min.) of farmers registered with that mill and who interact with the system. Finally, we accessed a large volume of archival data including the project plan, survey reports, progress reports, news clippings, company websites, campaign materials (e.g., brochures, posters). The documents were reviewed to get background information on the operation of the project and to verify and confirm the interpretations made through the data analysis process.

3.3 Data analysis

Following Miles and Huberman (1994), interview transcripts, observation notes and other materials were coded (descriptive) to identify and highlight the extract relating to the challenges and the entrepreneurial responses to those challenges during the innovations. In the next stage, inspired by the theoretical

perspective of path creation (Garud and Karnøe, 2001), responses observed in the last stage were investigated to look for pattern wherein similar patterns of responses were grouped together into themes (i.e., experimenting and exploration of options in real time, disembedding traditional practice and mobilizing actors through translation). These themes collectively indicate whether the innovation is only a success or a new path has been created by the entrepreneurs. A close observation at the empirical data and paying attention into the theme identified in stage two enabled us to group those themes and conceptualized that transformation (Rouse, 2006a) of a state-owned enterprise as an emergent path creation process. Thus, it was an iterative process to look at the empirical data and relating it with the theoretical framework to explain it.

4 Case Context

In November, 2010 AgriCorp launched the first of its kind ICT initiative in the agricultural sector of Bangladesh aiming at instant delivery of sugarcane purchase orders to the farmers reducing the uncertainty of the previous paper-based system based on hand-written small papers called “Purjees”. In the event that a farmer receives the purchase order (Purjee) late, he cannot bring his harvest at the right time and fails to supply on due date losing vital income. In extreme cases, this causes a total failure to sell the harvest. Similarly, a “No Cane” situation at the mill yard might arise and mills might run under capacity causing significant losses of public resources if few of the Purjee receivers cannot supply canes on the scheduled date due to late notification. Eventually, the farmers started losing their interest to produce sugarcane and the country was forced to import more sugar. Considering the extreme importance of Purjee, unscrupulous and corrupted staff in the sugar mills took advantage of it and farmers had to bribe staff for getting their Purjee on time and even to ensure that their Purjee was not sold illegally to others. AgriCorp, in response to such known-to-all, long term problems, initiated an SMS-based purchase order e-Purjee (electronic Purjee) leveraging ICTs to deliver the appropriate information at the right time to the sugarcane farmers.

e-Purjee was an initiative undertaken by AgriCorp in 2008 under the umbrella of a “Quick Win” digital service innovation project by the Bangladesh government to directly impact the sugarcane farmer (AgriCorp Public Document, 2013). Following the success of the pilot, in 2010, e-Purjee was implemented in 13 more sugar mills across the country bringing all 15 state-owned sugar mills under this system. Though e-Purjee started by sending SMS only for purchase orders, the SMS-based system became a multi-aspect solution which included notifications about occasional cancellations of cane supply due to factory breakdown or during natural disasters and notifications about payment rescheduling (AgriCorp Public Document, 2013). Showing the SMS to the mill staff, farmers got the right to claim that their e-Purjee had been issued but struggled sometimes to collect the paper copy which was still a prerequisite to get the payment for the canes supplied by them. Hence, as the next initiative, a web-based Purjee management system was introduced by AgriCorp facilitating e-Purjee receivers to get it printed from Union Information and Service Centers (UISCs) located at their vicinity at a cost of BDT 3³ or from any computer connected to the Internet. Due to the difficulty of monitoring and managing e-Purjee by the 15 mills in the country, an online dashboard was developed that instantly updated on issuance of e-Purjee, thus facilitating top management to observe the real-time data on cane production and crushing. It also created notifications when an SMS was dispatched from any mill or when a customer provided feedback. Even after such initiatives, corruption of those internal staff and their nepotism in e-Purjee distribution continued though reduced to a large extent. AgriCorp developed and piloted an online gazette to ensure that the field staff could not manipulate the data collected from surveys conducted each year.

The series of innovations have been attributed as reason for which the production of sugar has increased 72.22%, from 62,203 Metric tons in 2009-2010 to 1,07,123 Metric tons in 2012-13, contributing to an improved performance of the nation’s sugar industry (AgriCorp Public Document, 2013). It introduced completely a new way to deliver services to the farmers and changed the way AgriCorp along with its

other mills were operated. Most of the informants pointed out that the enterprise had to train existing officers, needed technical people and changed the way of day to day activities as well as supervision. One of the senior executives stated that:

“It has changed our way of thinking, way of operation. It has lessened our pressure as we need not to run after the corrupted CDAs (field extension workers are known as Cane Development Assistants). The farmers can reach us anytime and we can do as well”.

While a farmer expressed his reaction:

“A simple SMS changed our life. I never thought of getting a Purjee sitting at my home”.

Despite these successes, the innovations were not a straight forward process for AgriCorp entrepreneurs. One of the managers claimed:

“It was very difficult to adopt such a system in a government organization. It would be easy in a private organization”.

The first hurdle was to identify the appropriate technology that could deliver services to the farmer. Considering the unavailability of internet facility, frequent power failure, cost of computer hardware and availability of mobile phone among the farmers, AgriCorp chose mobile devices to reach the target group. But the top management faced extreme resistance from internal employees in association with few influential farmers connected with them. As the Ex-director of AgriCorp stated:

“It was a big syndicate. Many of the employees’ interests were involved in it. So, it was very difficult for the top management to implement such a system”.

Moreover, the lack of computer literacy of the employees and top management of the sugarcane mills was a constraint to kick off the project, for its smooth operation and for further innovation. As reflected by the statements of the senior manager:

“Even we did not know what is server, what is domain, how to run computer. [...] we were not convinced. He persistently tried to convince us for a long time”.

AgriCorp struggled to change the mindset of the farmers regarding technology and to create awareness. The ex-Director of AgriCorp added:

“As it was related to their [farmers’] livelihood, they became very concerned and were afraid of what is going to happen. In fact, we ourselves were not even that much sure of the impact and output of the system”.

The entrepreneurs had to overcome the barrier of illiteracy and very low income of the farmer through experimentation. As reflected by the IT manager:

“We thought of sending SMS in Bengali, but as the basic handsets did not support Bengali apps and fonts, we had to write the message in English. Otherwise the farmers had to buy new sets which could be nothing but ruining such an innovation”.

They trained the farmers and adopted below the line advertisements. It did not work at the very outset. It required promotion to the whole community perceiving that at least one kid of each family, or a neighbour who can read English and can be requested to read the message. The barriers have now been overcome but the coordinator claimed: “ [...] it took a long time and lot of actions to come to this stage”.

5 Empirical Findings and Analysis

The analysis shows that the entrepreneurial process was continuous and progressive. We see the entrepreneurs take advantage of ambiguity and multiple options provided by challenges. Entrepreneurs were found to consider themselves embedded into traditional and local practices while they tried to depart

from them to create a new future. Analyzing the series of responses we could identify certain patterns in the responses to the challenges which took place repeatedly (due to space constraints only one instance has been given in Table 1). By integrating those patterns of responses we come up with three themes (i.e., experimenting and exploration of options in real time, disembedding traditional practice and mobilizing actors through translation). These themes collectively indicate that a new path was created (Garud and Karnøe, 2001) by transforming AgriCorp through series of ICT innovations.

Key Challenges	Responses	Outcome
Selection of appropriate technology	Theme: Experimenting and exploring options in real time Examples: Choosing mobile to send e-Purjee Using mobile for rescheduling payment, cancellation of order	Enterprise Transforms in an emerging path creation process
Unavailability or weak internet connectivity	Using mobile for customer feedback Developing web-based management system Using UISCs to facilitate hard copies of e-Purjee from web Developing online dashboard to monitor real time e-Purjee distribution	
Frequent power failure	Developing and piloting online gazette	
Resistance from employees	Theme: Mobilizing actors through translation Examples: Convincing Government and raising fund Negotiating with technical service provider	
Resistance from outsiders	Negotiating with mobile operators Negotiating with access to information (a2i, a project by Bangladesh Government) to facilitate e-Purjee printing through UISCs	
Tyranny of corrupted employees	Negotiating with software development firm	
Misrepresentation of collected data by internal employees	Theme: Disembedding traditional practice Examples: Using ICTs in service delivery despite of illiteracy, poverty, negative mindset of farmers for replacing 80 year old hand to hand delivery Using technologies in organization even in lack of technical know-how of top management, lack of technical staffs and established organizational practices	

Table 1: Recognizing ET as an Emerging Path Creation Process

As indicated in the case, the initial objective of AgriCorp was to send SMS-based Purjee to the farmers to overcome a known to all problems over the last few decades. Installing the mobile platform for farmers invited new challenges for the entrepreneurs and those challenges offered them new and multiple options to choose while the innovation was in progress. For example, the challenges of poor infrastructure and weak network connectivity were overcome by selecting the mobile platform as the medium, still they had to rely on local computer centres (UISCs), for printing electronic purchase orders (e-Purjee). It was found that the hard copy of the e-Purjee was still a prerequisite and farmers still struggled to collect the paper copy from the unscrupulous CDAs or mill staff and required to often bribe them. This challenge was responded to by developing the web-based Pujree management system which facilitated farmers to print a Purjee issued in favor of them from UISCs located at their vicinity or from any computer connected to internet.

In response to the challenges like the notification of payment rescheduling, order cancellation and to receive feedback from the cane farmers, AgriCorp reutilized its SMS-based service. But monitoring and management of such systems became challenging for the enterprise. As a consequence, an online dashboard had been developed that instantly updated on issuance of e-Purjee and facilitated the top

management to observe the real-time data on cane production and crushing; and dispatch and receipt of SMS from the sugar mills for different purpose. Later on they realized that the effectiveness of their innovation depended on the raw data being entered in the system and found it misleading. To address the challenge of manipulation of data by corrupted CDAs, the sugar mill authority planned to introduce an online Gazette system and piloted it.

In addition, AgriCorp was found to struggle with sending English SMS to the illiterate farmers. In response to that they planned to send SMS using the local language (Bengali) which they abandoned considering the fact that new mobile apps might not be compatible to the basic handsets which farmers used and the farmers did not have spare money to buy high-tech phone. Hence, the entrepreneurs had to change and fit in their ideas and plans several times over time to explore options (Garud and Karnøe, 2001) according to needs and opportunities offered by the challenges encountered.

Our analysis shows that when the entrepreneurs in AgriCorp encountered challenges like the resistance of internal employees and influential farmers having connection with the corrupted employees, and the indifference and reluctance of top management and government, they worked as boundary spanners. Taking on such a role they translated and transformed their ideas skillfully to different stakeholders and created a “shared space” mobilizing (Garud and Karnøe, 2001) them for the innovative steps. Even some challenges like the negative mindset of the farmers towards change, their illiteracy and ignorance were responded to by engaging different stakeholders to disseminate the potential benefits of the new approach and to demonstrate how the long term problems could be resolved using the approach, hence building interest in farmers. In this process, AgriCorp engaged and mobilized the government organizations, a2i, media people, UISCs to reduce resistance, create awareness, and develop desire in farmers to use the system. They were also found to motivate the neighbours of the farmers to assist them by using their mobile handset or helping them read the SMS.

The top management of the sugar mills and the policy makers were initially reluctant to initiate an approach which was far away of the 80 years of traditional work practices within the enterprise. It was observed that the illiterate, poor farmers, who had negative mind set regarding technology, were also against such an initiative. Our data analysis showed that AgriCorp entrepreneurs deliberately positioned themselves at the periphery of these established practices so as to disembed them (Garud and Karnøe, 2001). It took almost two years to kick off the innovation. Hence, challenges in AgriCorp were found offering different actors dispositions to act and transform their own existing competencies (Karnøe and Garud, 2012).

Meanwhile, the series of innovations completely changed AgriCorp’s service delivery systems, monitoring and management systems, coordination between AgriCorp and other sugar mills; resulting in the fundamental change of organizational culture and relationships of AgriCorp with its stakeholders. However, since these sorts of fundamental changes within an enterprise encounter strong resistance from established institutional and social practices (Hanna, 2010), so does AgriCorp. Our analysis shows that as a consequence to such resistance, entrepreneurs during transformation could not exercise unbounded strategic choice and tried to overcome it (Henfridsson and Yoo, 2013). We found that AgriCorp entrepreneurs overcome this resistance by disembedding established practices for which they needed to translate and mobilize others involved in the process. It implies that successful entrepreneurs overcome the resistance associated with ET through disembedding established practices and translating their approaches, hence by ‘mindful deviation’(Garud and Karnøe, 2001). Our analysis shows that the journey towards the end, here, was not predesigned, predetermined nor structured. It unfolded as the entrepreneurs explored options while encountered challenges one after another. Hence, such “mindful” exploration of options emerges as a new path in enterprise transformation.

The next section discusses how our empirical findings relate to existing literature and relevant theoretical

perspectives to develop a novel understanding of transformation of state-owned enterprises in the context of developing country.

6 Discussion and Implications

The literature on ET highlights a predesigned and structured style of management for ET. Most of the researchers have focused on contemporary EAM or fine-tuned context specific EAM for successful transformation (e.g., Hauder et al., 2013; Labusch and Winter, 2013; Labusch et al., 2013; Asfaw et al., 2009; Buckl et al., 2010; Lahrmann et al., 2010; Labusch and Winter, 2013). In contrast, our study contributes to the literature of ET management and ICT for development by offering a detailed account of how enterprises successfully transform without adopting such a classical framework. Our analysis suggests that challenges in ICT driven innovations in developing countries offer opportunities to entrepreneurs to look at the innovation process from different angles and, thus, transform an enterprise creating different paths.

We found that top management encountered multifarious challenges and addressed those successfully taking real time decisions to make a path. Though the literature suggests a holistic management approach (Hauder et al., 2013; Labusch and Winter, 2013; Labusch et al., 2013), we argue that the challenges encountered and the flow of actions navigated to address those challenges can be considered as clear and logical steps (Scott and Mark, 2006) which can eventually lead towards the transformation of an enterprise. Success, thus, depends on how skillful entrepreneurs take advantage of those ambiguous and strategic spaces (Ravishankar, 2013) offered by emerging challenges. Hence, our study shows that ICT driven transformation in a public enterprise is neither a pre-planned, structured sequential process nor an outcome of random events. Rather the complex flow of actions was navigated mindfully by the entrepreneurs leading towards transformation. Our argument in this context is supported by research (e.g., see Basole and Demillo, 2006; Rouse, 2006a) claiming that a company that does not use a standard-based architecture or design can survive transformation but requires complex change processes. Finally, by focusing on the process by which entrepreneurs take advantage of challenges to create new paths, we conceptualize ICT driven transformation in a state-owned enterprise as a flexible modular approach which involves “mindful deviation” leading towards a process of path creation (Garud and Karnøe, 2001) rather than a random or determined outcome.

By conceptualizing ET in developing countries as an emerging path creation process, we complement the recent study by Molnar and Proper (2013) who argue that reflexive actions upon enterprise engineering are adequate enough. However, our study offers a distinctive perspective which shows transformation emerges upon how entrepreneurs deviate “mindfully” and explore available options to create the path. As path creation is always entangled with failure or success (Garud and Karnøe, 2001), such view of transformation as an emerging process accentuates the significance of dynamism of entrepreneurs to navigate the path.

We claim that the rigid and complex EAM framework may not be effective in such emerging process. Instead, most of organizations are found to struggle with the EAM approach if there is unclear goal and unclear demands for EAM team (Hauder et al., 2010). Moreover, lack of expertise and experience in EAM mostly ends up with failure in transformation (Hauder et al., 2010). Given this, we argue that contemporary EAM may not be a suitable approach for state-owned enterprises in the developing country, rather reflexive actions and on demand coordination are more applicable to such enterprises.

7 Limitations

One of the limitations of this paper is relatively small number of respondents. However, by ensuring the diversity of the interviewees, we tried to increase the sample’s representativeness and captured different

perspectives of the topic under study. Still, we believe that more in-depth field studies and drawing from other cases could facilitate us to generalize our findings in the context of developing countries.

8 Conclusions

Focusing on a state-owned enterprise in a developing country, this study provides rich insights into the literature of enterprise management. It unleashes the transformation process of an enterprise which does not adopt classical enterprise framework. We found that the transformation in such context is path creation process which emerges due to reflexive actions of the entrepreneurs encountering multifarious challenges in developing countries. The study suggests that ‘mindfulness’ of entrepreneurs is a key aspect of emerging transformation process. The study also suggest that rigid EAM framework may not be a suitable tool for management of ET, rather unstructured, non routine and on-demand management fits well in the developing country context. However, future research could focus on general applicability of our findings in other developing country setting. Moreover, since the emerging process of transformation is mainly guided by the customers, exploration of value co-creation in such setting might be an interesting area for future researches.

Notes

1. According to World Bank (2004), developing countries are those countries having low or middle Gross National Income (GNI) per capita per year and those with subpar ‘economic structure’. Sometimes it is also referred as emerging economies.
2. In this study, the term “entrepreneurs” is used to refer to the individuals, groups or organizations who initiate changes (transformation) or participate in the implementation of those changes(transformation) (Battilana et al., 2009; Henfridsson and Yoo, 2013). Hence, it includes a wider range of actors including the enterprise itself, partner organizations, donors, technical service providers, mobile operators, different media, users and other stakeholders of the whole transformation process. Thus, while the term “entrepreneur” is a central tenet of institutional theory we are not focused on their inter-relationship in this paper.
3. Currency exchange rate 1 GBP= 125 BDT; Source: [http:// www.xe.com](http://www.xe.com) (accessed on October 20, 2014).

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