

## **Institutional Entrepreneurship in Public Organizations and Institutional voids in Emerging Economies**

### **Abstract**

Deploying institutional entrepreneurship theory, this longitudinal case study investigates the micro-institutional context and changes in field and organizational structures and processes of a public organization directed to overcome institutional voids of regulatory, normative and cultural-cognitive nature observed in emerging economies. The empirical elements stems from an in-depth case study of Delhi Metro Rail Corporation in India. First, our rich dataset offers insights into how pioneering intra-organizational processes can rationalize practices and culture within institutional entrepreneur. More specifically, the internal mechanism of an institutional entrepreneur is developed to overcome inertial and cultural barriers for adoption of new ways of aligning organizational capabilities. Second, we observe how institutional entrepreneurship can help overcome the institutional voids. We investigate how effective network interface management can be achieved between public organizations, financiers and contractors through capability building in respective organizations which helps address the issue of institutional voids. This study offers invaluable insights into how public organizations evolve during live projects to meet the challenges of voids in their institutional environment. Practical implications and further research avenues are discussed.

**Keywords:** *institutional entrepreneurship; institutional voids, longitudinal research; case study; emerging economy, public sector, infrastructure development, India*

## Introduction

This paper theoretically and empirically addresses the role of institutional entrepreneurship (IE) (David et al. 2013; Henfridsson and Youngjin 2014; Tracey et al. 2011) in the development of public infrastructure by public organizations in India and looks at how institutional entrepreneurship can help overcome the institutional voids which are widely prevalent in emerging-economy (EE). A major challenge faced by EE like India is its capacity to fulfill the needs of its urban population by providing basic public amenities such as healthcare and efficient and economic mass transport which typically includes light railway transit, bus transit, tram and underground (Fouracre et al. 2003; George et al. 2014). The major hindrances to successful infrastructure projects in EE are the presence of what authors have called as the institutional voids in these countries (Khanna and Palepu 2013; Khanna et al. 2005; Luo and Chung 2013; Mair and Marti 2009). We study how institutional structures, cultural norms and practices emerge in public organizations involved in large public infrastructure developments projects and how these can mitigate the impact of institutional voids. Our paper investigates over time how institutional entrepreneurship has influenced the construction of a mass transport system in the capital city of New Delhi, India.

Institutional entrepreneurship can be understood as a means to create new organizational forms with institutional pressures (DiMaggio 1988b; DiMaggio and Powell 1991; North 1990b). It can involve changes to the elementary structure of the formal and informal rules of the game (Garud et al. 2002). IE is vital to shape institutional norms and creates capability to deal with issues like resource management, legitimacy and organizational politics (Greenwood and Suddaby 2006; Maguire et al. 2004; Oliver 1992). It can also introduce appropriate transformation to break the systemic inertia and may help to generate avenues for goal convergence in face of adversity or uncertainty (Greenwood and Hinings 1996).

While private organizations are exposed to market elements that drive change, public organizations are often perceived as falling behind in terms of innovation, agility and efficiency

(Girth et al. 2012; Hefetz and Warner 2011). Thus, IE may help to foster change in public organizations (Bovaird 2003, 2004; Francis et al. 2009; Ring and Perry 1985). In contrast to private sector organizations, public sector organizations have unique properties and characteristics (Ferlie et al. 1996; Klein et al. 2013; Mahoney et al. 2009). In the public sector, usually, there are no substitute companies for the services provided by the public organization. For example, in most countries, public infrastructure projects can be undertaken only by a specific government agency and this is very much true for India (Siemiatycki 2006). Although this kind of public ownership of resources can potentially generate social benefits (Mazzucato 2013), it can also lead to bureaucracy, nepotism and top heavy organizations that resist institutional change (McNulty and Ferlie 2004). Thus, public organizations are ideal candidates for IE given the wider societal benefits their transformation can generate (Fouracre et al. 2003; Pucher et al. 2004; Pucher et al. 2005). Also, most of the current studies focus on IE in private organizations (Dobbin and Dowd 1997; Haveman 1992; Munir and Phillips 2005; Zajac et al. 2000), and further empirical research is needed to investigate IE in public sector organizations.

The major thrust of extant literature has been on evidence collected from developed countries or primarily of organizations that originate from developed countries (Lawrence et al. 2002). Recently, a small number of studies have focused on changing organizational scenarios in EE such as China (Child et al. 2007; Khan et al. 2007). Indeed, we find a gap in extant literature when we venture to uncover how the IE process can take place in the context of an EE, where political, economic and social contexts are substantively different from that of a developed country. The issues of institutional voids has been widely studied in the business and entrepreneurship setting (Khanna and Palepu 2000; Khanna et al. 2005; Mair and Marti 2009; Mair et al. 2011; Puffer et al. 2010). Authors have discussed the institutional challenges that companies might face while doing business in EE (Khanna and Palepu 2000; Khanna et al. 2005). Also, authors have looked at the impact of institutional voids on individual entrepreneurship development and sustenance in EE (Mair and Marti 2009; Mair et al. 2011;

Puffer et al. 2010). These institutional voids can hamper market functioning, market development and market participation (Mair and Marti 2009). In the context of public organizations and public infrastructure, the institutional voids could impede timely completion of projects due to lack of efficient processes and limited access to resources like raw material, human capital which are widely available in developed economies (George et al. 2014). Yet, while investigating individual entrepreneurship in EE, authors have observed that entrepreneurs learn to work in and around institutional voids (Mair and Marti 2009). To the best of our knowledge, no such study exists which investigates how IE in public organizations can overcome institutional voids in EE. Thus, more theoretical and empirical research is needed to understand the process of IE in EE and how it can overcome the institutional voids.

Taking into consideration the under-examined aspects of IE, this paper therefore addresses one main question: How does institutional entrepreneurship help overcome the institutional voids observed in emerging economies? We empirically investigate the construction of Delhi metro in the Indian capital, an example of mass rapid transit system (MRTS), by Delhi Metro Rail Corporation (DMRC) over time. The paper elaborates theory through empirical investigation of IE in public organizations as a longitudinal process study. The empirical element of the paper is informed by combining secondary data analyses with an in-depth process study of a single case study over 20 years (Pettigrew 1990). We focus on India since as an EE it provides a unique natural setting for our study as the underlying factors present in the local system can attune the decisions arising in these conditions. Over the years, metropolitans in India had seen the inadequate urban planning by city officials (Fouracre et al. 2003; Mishra 2000). India has seen the development of metros in two major cities, Kolkata and Delhi. Kolkata metro took more than 20 years to construct, faced severe cost overruns and ridership issues (Lakshman 2007; Sadana 2010), whereas, Delhi Metro was constructed on schedule and within the budgeted cost. Delhi Metro has also been well accepted by local commuters (Lakshman 2007; Mishra 2000; Sadana 2010; Thatchenkery 2009).

This study offers two distinct but yet cumulative contributions. First, we observe how IE is engendered in public organizations in EE. We achieve this through the unique setting of our empirical datasets, in a public sector organization in an EE, which helps us to study over time and in-depth institutional change that self-enforced temporal pressures can bring about in an organization. In other words, our rich dataset offers insights into how pioneering intra-organizational processes can rationalize practices and culture within its boundary. More specifically, the internal mechanism within the boundaries of an institutional entrepreneur is developed to overcome strong inertial and cultural barriers for adoption of new ways of aligning organizational capabilities for symbiotic outcomes. Second, we observe how IE can help overcome the institutional voids in EE. We empirically investigate how effective network interface management can be achieved between public organizations, financiers and contractors through capability building in respective institutions while engaged in large infrastructure development projects. The capability building activity in various stakeholders helps address the issue of institutional voids. This study offers invaluable insights in how public organizations evolve over time to meet the challenges of voids in their institutional environment during live projects.

The remainder of the paper is structured as follows: In the next section, institutional change, institutional entrepreneurship and institutional void literature is reviewed to develop an initial conceptual framework. The next two sections present our methods and findings. We then discuss our findings, and the final section provides implications for practice and limitations.

## **Conceptual background**

### ***Institutional change and entrepreneurship***

IE can be understood as a means to create new organizational forms with institutional pressures (DiMaggio 1988a; North 1990a; Powell and DiMaggio 1991). The IE exhibit two important traits: (i) they initiate change, and (ii) they proliferate and implement change in their organizations (Battilana et al. 2009). Theory of IE has been organized along three broad

categories: creating, maintaining and disrupting institutions (Clemens and Cook 1999; Lawrence 1999; Lawrence and Suddaby 2006). Also, institutional transformations can bring about adjustments in their organizational environment. Within the institutional theory literature, prior studies have highlighted the progress and innovation that institutions can bring about (Hargadon and Douglas 2001; Munir and Phillips 2005). Some authors have looked at how IE works in emerging fields (DiMaggio 1991; Fligstein 1997; Greenwood and Suddaby 2006; Hinings and Greenwood 2002), whereas other authors have explored IE in mature fields (Greenwood et al. 2002; Lounsbury 2002; Maguire et al. 2004; van Dijk et al. 2011). Though IE can help foster change in public organizations, especially relevant in India, and as discussed below, there is limited extant literature that investigates IE in public institutions and in EE (Bovaird 2003; Francis et al. 2009; Ring and Perry 1985).

### ***IE in public organizations and emerging economies***

The myriad of extant research on IE is focused on private organizations (Hargadon and Douglas 2001; Haveman 1992; Holm 1995; Jain and George 2007), though some studies have looked at other contexts such as hospitals, global regulatory institutions (D'Aunno et al. 2000; Ruef and Scott 1998; Wijen and Ansari 2007). In the private sector, we observe that with field maturity few firms form the nucleus of this sector and other subordinate firms tend to get relegated to the periphery (DiMaggio 1983). Yet, authors have found that in spite of maturity, stability is transitory (Hoffman 1999). This stability was displaced due to various reasons ranging from social change to competition to regulatory change. These system changing shocks could be either endogenous or exogenous in nature (Lounsbury 2002; Markard and Truffer 2006; Miozzo and Dewick 2002; Oliver 1992). Unlike in private companies, in the public sector, usually, there are no substitute companies for the services provided by the public organization. For example, in some countries, public infrastructure projects can be undertaken only by the government agency, and similar is the situation with other public services. And, if the public infrastructure is built by a supplier or services provided by a contractor, there might be conflict of

interests between the public organization and the service provider (Sminia 2011). Although this kind of public ownership of resource can generate social benefits and potential innovative activities (Gil et al. 2012; Mazzucato 2013), it can also lead to bureaucracy, nepotism and top heavy organizations that resist institutional change. Thus, prior studies have argued that large public organizations are resistant to mobility in both ideas as well as people, and organizational changes are few and far in between (Fouracre et al. 2003). However, public organizations are ideal candidates for IE given the societal benefits their transformation can generate (Fouracre et al. 2003). Prior studies have so far offered an incomplete picture beyond private or regulatory organizations and this limits our understanding of IE in public organizations.

IE longitudinal studies have looked at cases in various countries and under different institutional environment. Longitudinal studies, in either contemporary or retrospective manner, are interesting since they present an in-depth view on changes that take place within an organization or an organizational field (Berends et al. 2011; Paquin and Howard-Grenville 2013). Studies have examined how “*change was initiated from the center of an organizational field*” in North America (e.g., Greenwood and Suddaby 2006: 27). For instance, well documented examples include IE in the emerging fields of HIV/AIDS treatment in Canada (Maguire et al. 2004), and the phenomenon of proto-institutions in the context of collaborations of Mère et Enfant, a European non-governmental organization (NGO), with NGOs in Palestine (Lawrence et al. 2002). Authors have also explored reforms initiated by the IE in the UK healthcare (Lockett et al. 2012). Yet, the major thrust of extant literature has been on cases in developed countries or of organizations that originate from developed nations. Recently, some studies have focused on changing scenarios in EE, but these studies are few and far in between (Child et al. 2007; Khan et al. 2007). Indeed, we find a gap in literature when we venture to uncover how the IE process can take place in the context of an EE, where political, economic and social contexts are substantively different from that of a developed country.

***Institutional voids in emerging economies and institutional entrepreneurship***

Authors have highlighted the role of institutional voids in creating operational liabilities for businesses and entrepreneurs in EE (Khanna and Palepu 2000; Khanna et al. 2005; Mair and Marti 2009; Mair et al. 2011; Puffer et al. 2010). These institutional voids can exist along three main pillars as described by Scott (1995) – regulatory, normative and cultural-cognitive. The formal, regulatory pillar links to laws and regulations as well as enforcement mechanisms that are sanctioned by the state and normative pillar links to institutions like professional societies (Scott 1995). The cultural-cognitive pillar relates to accepted beliefs and values within a society (Jepperson 1991). The voids along these three pillars can impede market functioning, market development and market participation (Mair and Marti 2009).

The institutional voids, when considered in the context of public organizations and public infrastructure projects, could impede timely completion of projects due to lack of efficient regulatory and legal mechanisms to implement projects, resolve conflicts, and limited access to resources such as human capital, latest technology (George et al., 2014). Yet, while investigating at entrepreneurship in EE, authors have observed that individual entrepreneurs learn to work in and around institutional voids (Mair and Marti, 2009). And, it can be argued that IE in EE might need to engender changes in a wider setting than usual to bring about expected results. Hence, IE will need to engage with a wider set of actors in the business environment. Also, recent studies have shown that collective IE developed on the shoulders of several network actors (organizations, individuals) are more likely to generate dispersed institutional change in the field than that initiated by a sole actor (Wijen and Ansari 2007). This type of entrepreneurship developed by actors is embedded in the collaboration medium through structures and processes and its affects are prevalent on all organizations in that field (Lawrence and Suddaby 2006; Wijen and Ansari 2007). These studies also suggest that actors need incentives and motivations to collaborate and bring together their respective resources to bear upon a problem (Westley and Vredenburg 1997; Wijen and Ansari 2007). Similarly, IE needs to grapple with the issues of “actor apathy” (Wijen and Ansari 2007) where the network



members might not share the vision of the institutional entrepreneur or be inactive, and thus, impeded the institutional change required within their organization to co-evolve with the IE and changes in the organizational field. Authors have suggested that under certain conditions IE might have to stretch their reach and influence other fields (Durand and McGuire 2005). Therefore, this study addresses the gap in extant literature and explores institutional theory in a longitudinal case study approach in an EE (Scott and Christensen 1995; Shenkar and Von Glinow 1994) and examines how IE can help overcome the institutional voids in EE.

### ***Towards an initial conceptual framework***

Placing our work in the ambit of IE theory, we explore how IE mitigates the institutional voids observed in EE. Authors have argued that in spite of extant constraints, IE are resourceful in organizing diverse institutional logics to meet their needs including those dependent on external actors (Friedland and Alford 1991), thus, they have a capability to influence other actors in their networks.

In summary, typically, organizations will have to redesign or rethink their existing organizational structure and authors have suggested certain processes that could achieve this – *capability alignment* (Bryson et al. 2006; Dorado 2005; Greenwood and Hinings 1996; van Dijk et al. 2011) which helps mobilize resources and alter systemic inertia, *change adoption* (Bryson et al. 2006; Lounsbury 2002; Markard and Truffer 2006; Miozzo and Dewick 2002; Oliver 1992) which implies that favorable circumstances are created to facilitate widespread adoption of new and/or changed norms, and *network interface management* which involves generating inter-organizational and intra- and inter-sectoral processes which help transmit changes beyond one organization and one industry thus providing impetus for collective IE (Bryson et al. 2006; Durand and McGuire 2005; Greenwood and Suddaby 2006). These processes need to be developed in a manner such that they help overcome the institutional voids in the system that is regulatory, normative and cultural-cognitive in nature.

*Capability Alignment.* Capability alignment through IE is essential to establish institutional norms to deal with issues like resource management, legitimacy and organizational politics (Greenwood and Suddaby 2006; Maguire et al. 2004; Oliver 1992). Suitable alignment of capabilities, which other authors have termed as resource mobilization (Dorado 2005), within an organization can introduce appropriate transformation to break the systemic inertia (van Dijk et al. 2011) , i.e., they can create new institutions or transform existing ones. The alignment of organizational capabilities by an IE may help to generate avenues for goal convergence in face of adversity or uncertainty (Bryson et al. 2006; Greenwood and Hinings 1996). It has also been defined broadly as a process involving various actors, which can include individuals, groups or social movements, who are able to mobilize resources to produce collective action (Fligstein 1997; Hinings and Greenwood 2002; Lawrence 1999; Scott and Christensen 1995).

*Change Adoption.* In her study on deinstitutionalization, Oliver (1992) explores large-scale, discontinuous institutional transitions. Deinstitutionalization refers to the wearing away or discontinuity of an institutionalized organizational practice. Oliver suggests that in our focus on institutional conformity in the previous strands of research on IE we have missed out on the churning and change that deinstitutionalization can introduce in an organization. It might be interesting to note here that sometimes the redundancy and inertia observed in public organizations are insurmountable without deinstitutionalization. Private organizations are exposed to market elements and unless they are endowed with some supernatural survival potency, they are forced to change, innovate and introduce strategies that keep them competitive (Bryson et al. 2006; Lounsbury 2002; Markard and Truffer 2006; Miozzo and Dewick 2002; Oliver 1992). Thus, in the context of public organizations, deinstitutionalization through introduction of new processes and resources are critical for institutional entrepreneur who has to also ensure that the change is well adopted and managed within their organization.

*Network Interface Management.* If the IE are successful they are likely to create positive externalities for other organizations in the organizational field (Bryson et al. 2006). Authors have

suggested that this is extremely important in the context of EE and in pioneering economic progress (Li et al. 2006). Also, most of the studies on IE are related to understanding the process of institutional change in an organizational field, but these studies tend to look at practices, norms, values, beliefs and roles that change over time. One gap in this research is the effect of temporal pressures on the IE and how it affects the agency in the incumbent organization and other organizations that work with the institutional entrepreneur.

To summarize, we would expect to find an iterative process of capability alignment within a public organization which is engaged in establishing changes both in the intra- and inter-organizational context to mitigate institutional voids which are of regulatory, normative and cultural-cognitive nature. Figure 1 illustrates the initial conceptual framework.

**<Insert Figure 1 here>**

## **Methods**

### *Research approach*

In order to grasp the complexity and temporal aspects of IE, we adopted the longitudinal case study approach (Langley 1999). This approach facilitated the discovery of temporal order, pattern and sequence of events, investigating how and why they progress as they do by shaping a historical narrative (Van de Ven and Poole 2005). The research is based on a single, in-depth longitudinal case study of the Delhi Metro construction and involved several sub-units of analysis – DMRC, external contractors and financiers. We used this embedded, single case design to explore the occurrence of IE in a public organization involved in an urban infrastructure development project over time. A single, in-depth case study approach is useful when the case represents an extreme case or when a case can shed light on some interesting phenomenon (Yin 2008). This approach is also helpful to probe deeply into processes by collecting fine-grained data of complex real-time and retrospective interpretations of events and organizational contexts (Pettigrew 1990). In-depth stories were constructed from comprehensive

primary and secondary datasets collected to achieve meanings and mechanisms over time (Langley 1999).

#### *Data collection*

The investigated case had a number of unique qualities that made it a logical candidate for in-depth, empirical investigation (Eisenhardt and Graebner 2007). First, primary and secondary datasets were collected by following intra- and inter-organizational developments over extended periods of time. Our fieldwork was conducted while the case study was a “live development”, allowing us to capture rich real-time data on decisions and retrospective case data. Second, due to the public nature the case under investigation enjoyed comprehensive press coverage, providing a myriad of secondary data sources which helped to triangulate our findings. Secondary documents included reports and presentations from various sources, and newspaper and trade press articles. Third, the study offered rare opportunities to observe in fine detail the organizational life of on-going developments in a public organization and we accessed managers involved at different stages of the development.

The data generation was split over several stages. In the initial stage, we undertook detailed investigation and analysis of official promotional materials as well as over 200 articles pertaining to the Delhi Metro construction in several independent English and Hindi-language newspapers and TV news channel websites like The Times of India, The New Indian Express, Hindustan Times, New Delhi Television Limited (NDTV), Telegraph, Businessweek, Zee news. This also included information on financiers and external contractors. We used Google search engine to locate articles related to DMRC. We found over 200 articles which were written during the earlier stages of Delhi Metro construction and using the facility provided by google we limited our search from 1990 till 2005, when the first phase of the Delhi metro project was completed. Our cumulative evidence included 30 interviews with key stakeholders within DMRC and the wider network of external stakeholders such as contractors and financiers. Interviews, lasting between 60 to 120 minutes, were conducted with various stakeholders to capture the

myriad of perspectives. Interviews were conducted over a period of four years from 2008 to 2011. Interviewees were also drawn from multiple levels of the organizational hierarchy, different functional areas and across different points in the relationship's history. The questions were framed so as to gather information on DMRC as well as the Delhi Metro from the interviewees. In 2011, we collected more articles from the media outlets. We again used the facility provided by google and limited our search from 2005 till 2011, when the evidence collection for this project was finally completed.

Additionally, in 2010, one of the authors conducted three observational visits to the Delhi Metro construction sites. The visit provided an opportunity to observe how the day-to-day activities were carried out on all the construction sites. The author observed in detail the interactions between project managers, engineers, and construction workers. During these field trips, five interviews were conducted with the on-site engineers and construction workers. We also interviewed five DMRC employees. At this stage, additional in-depth interviews with other stakeholders in the project were conducted. For instance, we interviewed a member of Japan International Cooperation Agency (JICA) who was involved on the Delhi Metro project from its inception. In 2011, the final round of data collection was undertaken. We interviewed contractors involved in this project. These contractors had repeated contact with DMRC over last decade. We interviewed seven engineers a contracting company. We also interviewed seven DMRC employees from lower and middle managerial level. For this study, we interviewed, in total, two top managers, nine middle managers and 19 other employees involved directly on this project.

### *Data analysis*

After initial analysis, we were able to triangulate information from interviews, secondary sources and extant literature, obtaining a more coherent set of codes. We checked inter-coder reliability and achieved an over 90% score. In a few cases on which we differed, it transpired mostly due to idiosyncratic divergences in coding rather than any disagreement in the underlying theoretical grounding (Fetterman 2009). The findings were written up in an 30+-page

in-depth case study report, forming the basis for discussions with interviewees to verify accuracy of our empirical findings. The data analysis process consisted of three steps - data reduction, data display, and conclusion drawing and verification - to simplify and make sense of complex data (Pettigrew, 1990). Axial coding was used to focus on one category at a time in order to consider the relationships between core concepts under investigation (Miles and Huberman 1994). The repetition of information and consistent verification of understanding during data collection and interviews was an indication that saturation was reached. We identify the multi-level and issue-organized analytical chronology as the most suitable way to display the data and start to uncover key structures and processes of the IE development. The analytical chronology is also considered as central to the generation of insights needed to build theory (Pettigrew, 1990).

## **Findings**

### ***Case background***

In a 1990s survey in Delhi, it was observed that 75% of commuters found the bus service grossly inadequate (Chopra 1994). Yet, there was no rail network in Delhi to manage the paucity of MRTS. The idea of a metro for Delhi was first suggested by the Central Road Research Institute in the late 1960s (Siemiatycki 2006). The timeline of events during the Delhi Metro construction is presented in Table 1.

***<Insert Table 1 about here>***

In the following part, we present the findings from our interviews and secondary data and link it to the conceptual framework presented earlier. We draw on these materials to discuss how various institutional voids, regulatory, normative and cultural-cognitive, were addressed by DMRC during their construction of Delhi metro. The key findings are outlined in Table 2.

***<Insert Table 2 about here>***

### ***IE and Capability Alignment***

The DMRC engendered to align capabilities of private actors with those of public institutions and of various intra-governmental organizations. Given the nature of polity in India where parties from different political spectrum exist, it leads to situations where projects run by state governments compete against those executed by the central government, and regulatory problems are created due to conflicting interests between the two parties. For Kolkata metro the state had not provided subsidies for the metro operations because it was a central government project which made the project expensive. However, the state government provided a subsidy for electric power to the tram service. Thus, Kolkata metro faced low ridership as it was expensive to travel by the metro instead of subsidized trams. To avoid such problems for the Delhi Metro, it was imperative to create a new organization that would impel the State and Central governments to cooperate and collaborate. The DMRC, created in 1995, is owned by both Central and Delhi State Government which at that time belong to two different parties, and in 1997, the 30% of the 1st phase of the funding for this project was generated by 50:50 equity partnership between the Central and State government. Among the 14 Directors of DMRC, five are nominees of the Government of India and five belong to the state government. As a JICA Project Development Specialist points out: *“This creates balance and power sharing and everything is well managed here. [...] From state government, there are subordinate debts like providing land, estate tax and so on. The Government of India has some provisions like customs duty relaxation.”* This was echoed by a DMRC Manager: *“Delhi Metro has managed to make a profit without being a burden on the government while maintaining one of the lowest fare structures in India.”*

Since 2002, the ‘Delhi Metro Railway Operation and Maintenance Act 2002’ gives DMRC unencumbered right to acquire land. The DMRC officials attribute its success to the fact that professionals were given freedom to take decisions independently of political considerations, and regulatory and legal provisions were also made to provide easy access to land for construction. As one DMRC manager explained: *“It has been a good example for the*

*politicians of what the professionals can do if they are given a free hand"*. On the other hand, critics of DMRC have pointed out that this law was mostly used in poor shanty areas (The Hindu 2002). Nevertheless, having this wider power over resource acquisition and allocation meant that DMRC could better plan its project cycle.

DMRC introduced normative changes within its organization to generate wider acceptance of professional and ethical norms. In 1997, the person chosen to lead DMRC had an illustrious career with the Indian Railways and had a record of unimpeachable integrity. This acts as a signaling mechanism to outsiders that this organization would adopt different normative behavior than traditional public organizations in India. DMRC achieved International Standardization Organization (ISO) 14000 certification in 2002 which takes into account environmental management system. In 2007, the United Kingdom Accreditation Service conducted a surveillance witness audit of Delhi metro. As a DMRC Manager mentions: *"The auditor said in a media report that the fact that DMRC included occupational health and safety in an integrated management system is good. [...] DMRC's efforts on water harvesting and energy saving are a model for other organizations."* DMRC's sustainability credential was highlighted by another DMRC employee who said that since 1997: *"DMRC encouraged green movement in their offices; waste is not good and never encouraged."* Thus, DMRC was able to establish new normative and cultural-cognitive expectations among its employees and other stakeholders. These examples indicate the importance of linking capability alignment with change adoption.

### ***IE and Change Adoption***

In order to effectively align the resources within DMRC, IE also had to efficiently manage the change adoption process within its organization as well as across its networks.

One of the reasons for long delays in infrastructure projects is the problem of getting necessary approvals from different government departments. In 1997, DMRC introduced an original regulatory sanctioning model which consisted of two committees. The first one was called the empowering committee and headed by the Cabinet Secretary (CS). The CS is the



head of the bureaucracy and was able to bring proposal to closure by passing them on to right secretaries. The second group called the Group of Ministers (GOM) was responsible for all cabinet level decisions. The GOM was headed by a cabinet minister and had been given the authority to take decisions and approve proposals without referring them to the cabinet.

The urgency was also reflected in getting the government permission and meeting project targets. An external contractor affirmed to these stringent deadlines and targets. The contractor stated that: *“Managing Director is very particular about meeting deadlines and time management..., they want their requests for being granted land in certain places and permission to cut trees processed immediately. The DMRC has been pushing for their requests to be dealt with speedily.”* The managing director realized that the governmental style of decision-making could not be inherited by DMRC as it would be impossible to meet the time and budget targets. One DMRC employee discussed this issue: *“The decision making on this project was quick independent and transparent.”* DMRC, therefore, in 1997, convinced the authorities that regulatory arrangement for approval would have to be completely different from the government’s normal style of decision making (The Hindu 2007). The Managing Director said: *“We finalize deals in 24 hours. The average duration of major tenders was 19 days, compared with the three to nine months that is the average in Indian public organizations.”*

The other regulatory change related to customs duty, the central government reduced the customs duty on imports which meant that foreign technology could be easily and cheaply imported into the country. In 2000, Korea's Rotem and Japan's Mitsubishi supplied coaches, while France's Alstom led the consortium that designed the automatic train control system.

Once the new organization was set up, the Managing Director initiated the change process which included both normative as well as cultural-cognitive change. From 1997, the new Managing Director of DMRC selected his people with great urgency yet with measured caution. People were selected from Indian Railways who had a record of unimpeachable integrity. Another external development partner revealed that: *“DMRC Managing Director will*

*not take anyone; he looked for certain quality in his people.*” As an external engineering mentioned: *“In very complicated projects, you cannot put a generalist at the top [...] The most competent person has to be found, empowered and trusted.”* Indeed, these new normative and cultural–cognitive processes could not be implemented without infusing new talent into the system. In 2000, Pacific Consultants International, a Japanese consulting company was hired to provide advice on engineering matters. Innovative ideas were encouraged from employees and suitable ideas were implemented rapidly. This was underlined by the statement provided by the person who runs Metro's Training Institute (NDTV 2010): *“In the Metro even the lowliest employees' ideas are taken seriously. [...] When suggested staggering lunch times in the cafeteria to ease crowding, we made the change that very day.”*

Also, new performance-related incentives were introduced by the IE. The structure of DMRC did not permit financial incentives such as bonuses as it had to follow government's pay model, but, as one DMRC manager mentions, *“to most employees the responsibility of handling a national level project with enough freedom proved to be a very rewarding task”*. As another DMRC manager puts it, *“There is no better organization than DMRC. I am paid less here than in my previous organization but it is the work culture that is driving me, I can take decisions quite fast here and that has ensured job satisfaction. DMRC's management is 100 per cent committed to its employees.”* DMRC also found ways to incentivize its employees. In 2008, top performing employees were sent on postgraduate diploma in Metro Technology and Management – at IIT Delhi (Business Today 2010). As a manager of DMRC says, *“The University of Tokyo takes three DMRC officers for a course on transport engineering with a scholarship for three months every year.”* DMRC also provides housing loans to its employees.

DMRC also introduced several new cultural-cognitive changes to foster professionalism. Since 1997, a lean organizational model was chosen, and according to DMRC, it is amongst the leanest public organizations in the world; it has 38 employees per km compared to a world average of 45 employees. As a DMRC manager says *“Unproductive layers of peons, clerks,*

*stenographers etc were avoided.*” Another DMRC manager indicates, *“DMRC has a paperless work culture unlike other Indian public bodies.”*

Thus, intra- and inter-organizational changes are indispensable for espousal of IE across the organization; especially temporal pressures are needed to provide stimuli to organizational change. As one DMRC employee mentions: *“Clocks were installed around offices.”* and as an external contractor substantiates, clocks were also on *“work sites that counted down the seconds until the end of project”*. Introduced in 1998, this method set a dynamic target for employees. Workers were educated to be punctual at work; and list of latecomers was sent to managing director’s office every day. The contactless computerized systems were introduced that monitored the entry and exit of employees. There was a constant sense of urgency in DMRC that impelled the employees and contractors to meet deadlines. The author themselves experienced this sense of urgency during the field visits and observed the clocks placed strategically in each office to highlight the impending deadline. As one DMRC manager points out: *“Corporate objectives needed to be implemented with development of corporate culture in DMRC.”* There were penalties if the deadlines were not met and, in case of contractors, they faced payment penalties, whereas, the employees were subjected to disciplinary actions.

It is one thing to introduce temporal pressures in a system, but, it requires a major overhauling of the existing system to provide for results pursuant to this time bound activity. IE advocated resource accountability and introduced processes that addressed corruption in places where it is a hindrance to the effective and efficient organizational change. The JICA project development specialist highlights the close monitoring of the funding provided by JICA and its utilization in the Delhi metro project. He stated that: *“There are quarterly reports. There are monthly expenditure plans and contractors and project management has to meet these spending targets. If these are not met we ask project in-charge why the money was not spent. So they can release the funds, the funds have to be released on time. We examine cases of under-spending. There are also Ministry of Urban Development reviews of this project.”* Thus,

the IE had to align its resources and initiate and manage change. In the next part, we discuss how the IE managed to transfer its capabilities and learning across the organizational silos.

### ***IE and Network Interface Management***

The JICA project development specialist mentions that DMRC demonstrated both leadership qualities as well as persuasiveness not only within his organization, but also, in the dealings with different alliance partners. DMRC set the agenda in partnerships and devised strategies to attract best infrastructure development and engineering companies to this project. Regulatory changes were made such that project development was compressed from 10 years to 7 years to make this project enticing for engineering and construction companies.

Also, we focus on the problems that emerge from professional “cultural differences”, namely, litigation and conflict between the organization and its contractors. DMRC achieved low downtime by using freelance consultants as buffers in the network interface between the DMRC and the contractors. For example, DMRC had set rules in the contract for ways in which the project had to be implemented. The contractor concentrated on results and completed the work without being concerned about the rules. Due to this, the contractors were denied payments. In these cases, freelancers intervened to enforce the power of the IE. The freelancers would negotiate between DMRC and its contractor. Also, when the DMRC’s managers asked the contractors to implement things that were outside the contract it would often lead to an impasse. The freelancers at the senior level escalated the issues to the DMRC management. Sometimes the freelancers would postpone the impasse and convince both sides to continue work.

The lack of funding leads to contractors defaulting on their deadlines, this leads to penalties in payments, which generates a cycle of fund paucity. DMRC introduced a process by which the 10% of funds are mobilized as advances and subcontractors paid within 24 hours of completion of projects. One subcontractor described this as follows: *“Normally, contractors have to run behind contracting organization after project completion for money. DMRC went to*

*contractors asking them to clear their money 1 or 2 days after completion of work, this does not happen usually in projects. This gives contractors good supply of funds.”*

An average Indian construction worker has no hospitalization insurance, but on this project, it was built into contracts with engineering companies. Similarly, DMRC organized other social welfare schemes. For example, taking into consideration high incidence of HIV infection among migrant workers in India, JICA and DMRC organized AIDS awareness programs for migrant workers on their construction sites. One DMRC manager mentioned: *“This program has been very popular and important. Now this has been made into a work place policy. It is in the contract.”* As JICA project development specialist points out these worker-focused initiatives introduced in 1998 into contracts were driven by DMRC with workers’ welfare in mind.

In EE, power is an extremely important precursor to IE as it can promote widespread institutional change in the organizational field. The Managing Director of DMRC, recruited in 1997, had a record of unimpeachable integrity and he discussed the nature of Indian polity which is inclined to be corrupt: *“Politicians tried to interfere; they wanted to milk the project. Later when they found that this is not possible, they started respecting it. [...] I would say that I stand firm in my convictions. I do not budge just to please somebody else. That is the main thing.”* A DMRC senior manager described IE’s strategy as: *“If the top official is working and showing the way, others follow. The top did its job and lower officials were doing their job, contractors too. [...] If the top official is innovative [...] down the line, the team will work.”*

As JICA project development specialist points out - *“Contractors were always paid on time. They were very motivated because of this. Contractors were considered as ‘Development Partners’ [...] It is about understanding that contractors have grievances. It is important that DMRC people understand this. Delhi metro people will talk to their contractors. There is mutual trust between contractors and DMRC. [...] Contractors feel like they belong to the Delhi metro family.”* Thus, DMRC motivated its contractors and partners effectively for goal convergence. For example, JICA and DMRC worked in close cooperation on this project. An Executive from

JICA highlighted the profound working relationship shared between DMRC and JICA - *“JICA gave high priority to Delhi metro project as DMRC gave high priority to Delhi metro. There was agreement on how important this project was. [...] We are proud to be part of this. This Delhi metro project is a showcase for Japan-India cooperation.”* A shared vision can drive effectively the project execution. An Executive at JICA identified this as ‘becoming a robot’: *“If the working culture is so structured, everything is working, you become a robot, you just fall into line and follow”*. Another subcontractor discussed the award conferred by DMRC: *“Contractors are appreciated when they do good work. For example, contractors are given recognition in public events. In the public event opening of a metro station or completion of a phase milestone in the public program names of contractors are read and mentioned so and so completed project within deadline within so many days, before so many days of deadline. Contractors feel like they belong to the Delhi metro family.”*

Our case study empirically investigated the development of public infrastructure by a public organization and we investigated IE that drives changes in public sector organizations in EE to help overcome the institutional voids, namely regulatory, normative and cultural-cognitive. Also, imaginative processes were established to align resources and capabilities within the public organization and negate effects of organizational inertia. Findings illustrate that novel structure of public organization, pertinent to the EE context, was important for change within the organization as well as the organizational field. We observed the temporal process of IE within this organization and across the field, and described the distinctive process of capability alignment, change adoption and network interface management within and outside this organization as the core components of IE process. We found that the iterative nature of policy and process development to overcome institutional voids is clearly linked to close and repeated engagement between various stakeholders, as indicated in Figure 1.

## **Discussion**

Prior studies have suggested that longitudinal studies need to be more than just few years to capture the complexity of changes within an organization and shorter time frame assigns higher importance to current frictions without taking into account the future probable changes (Bejerot and Hasselbladh 2013). In our study, we have studied DMRC and construction of Delhi metro over several years both during the construction of the focal case project as well as during the extension phase. This provides a rather valuable insight into the project development process within this organization as well as its interfacing process with other firms. Table 3 presents the temporal nature of IE's activities.

***<Insert Table 3 about here>***

We observed that the major proponent of change in this organizational field was the incumbent himself. Some of the changes made the system more efficient; some others introduced a social welfare facet to the projects. This result has far-reaching impact on inclusive development in EE and our results are similar to those observed by other authors (Ray and Ray 2010). Also, this form of IE ties in with the emergent discourse of leaderism reflected on by several authors (O'Reilly and Reed 2011). On one hand, the IE has to assert itself through a strong and clear linkage to a singular managerialist imaginary of control and outcomes, and at the same time, the IE has to balance its linkages to a quasi-pluralist imaginary of networked professional, consumer and public stakeholder co-production and involvement.

### ***IE and capability alignment***

India has history of political opposition deeply impacting the success of private and public projects. We observe that close cooperation between competing political interests can generate positive outcome in large infrastructure projects (DiMaggio 1983). Legitimacy can act as a hindrance or catalyst for a successful infrastructure project. In our case, legitimacy for DMRC was two-fold. First, the governments engaged in this project provided the legitimacy (Mahoney et al. 2009). Second, the leadership was strong and incorruptible. Public

organizations in EE are riddled with officials who are corrupt and their performance is not regularly monitored. But, by introducing merit in system, leadership of DMRC answered the conundrum of legitimacy and effectiveness. This finding is similar to propositions developed by other authors (Greenwood and Suddaby 2006; Seo and Creed 2002). In EE, the infrastructure projects are plagued with technological and procedural problems. There are few, if any, efficient and independent certification processes and the marked absence of independent observers who could articulate limitations and highlight the solutions. The deadlines were habitually missed with limited penalty on the contractors and subcontractors. Also, there was widespread bureaucracy, and moreover, public organizations had slow decision making process.

### ***IE and change adoption***

In the Indian public organizations leadership tends to be directive rather than empowering (Brewer and Walker 2013; Graffy 2013). The employees at the base of the organizational pyramid are entrusted with minimal decision-making powers. Also, the roles of people and departments tend to be loosely defined leading to transfer of responsibility (Brewer and Walker 2013). Thus, large and top heavy organization needed to be replaced by an organization that was lean and flexible and could implement decisions quickly. Our results are consistent with other observations in large infrastructure development projects in India (Ray and Ray 2010). One of the challenges facing the institutional change in public organizations is the lack of urgency. In order to alter the perception of deadlines among the employees, time-based mechanisms were put into place in DMRC that mobilized people to acknowledge institutional change (Henfridsson and Youngjin 2014; Orlikowski and Yates 2002). Thus, resource optimization was achieved by efficient alignment, allocation and accountability of resources.

### ***IE and network interface management***

The cultural change introduced in DMRC if left isolated within the confines of the organizational boundary could create problems with its contractors and partners (Mahoney et al. 2009). Thus, another factor important for sector wide impact of institutional change was the



development of effective network interface between the institutional entrepreneur and the network partners. The introduction of freelance foreign consultants in network interface imparted efficiency in project management and effectiveness in litigation management. By avoiding the deadlock between DMRC and contractors due to misaligned objectives, freelance consultants managed to keep the project on schedule. The well-organized network interface was also essential in generating positive externalities in the ecosystem (David et al. 2013). The freelancers were able to oversee that the contractors were paid on time. The welfare of workers was also built into contracts with partnering organizations. Thus, the positive impact generated by this project was not limited within DMRC, but it also percolated into the social system (Lawrence et al. 2002; Maguire et al. 2004; Wijen and Ansari 2007). As a Delhi commuter says, “When I sat in the Metro, it felt like I had stepped in to another country. You expect countries like Japan to have such technology and efficiency but this just keeps getting better” (Times of India 2003).

### **Conclusions and implications**

This article contributes to the study of institutional entrepreneurship and institutional voids. In doing so, this addresses a gap in literature on how public organizations can undergo transformation in EE to overcome institutional voids. Our case analysis shows how DMRC has been able to become an exemplar of project development that took a holistic approach to partnership execution and worker welfare management. Theoretically, we contribute to several strands of conversations. First, our case underscored how organizations can accomplish goal convergence with capability building. Secondly, our case underlined the importance one neglected aspect institutional change - temporal pressures. Thirdly, our case emphasized the role played by the institutional entrepreneur in driving the alliances and developing mechanisms that overcame strong inertial and cultural barriers to change in its partnering organizations.

### ***Managerial implications***

It has been pointed out time and again that the great hindrance to growth in EE is the investment towards public infrastructure development and various bottlenecks in developing processes for sustainable practice. This is compounded with the fact that the public organizations leading these projects are inefficient and lack advanced technology and organizational skills to manage large infrastructure projects. Our case study highlights the importance of IE in introducing change in an organizational field. This has implication for practice. Our results also draw attention to the importance of foreign consultants in developing new organizational models. This provides opportunities for managers and companies from the developed markets to engage with EE. Also, the learning from these large public infrastructure developments can be applied back in developed countries or in other EE which experience regulatory, normative and cultural-cognitive voids similar to India.

#### ***Limitations and further research***

This study is not without limitations. One caveat that follows here is that though we spoke to numerous stakeholders and collected extensive data on DMRC, it is a single case study. Also, the underpinnings of institutional entrepreneurs might be different in other sectors. We believe that detailed studies in other sectors combined with the results of our study will provide broader lessons for managers and academics. Although, our outcomes can be generalized to other EE with managerial inertia, we hasten to add the importance of national characteristics on public infrastructure development. We argue that our work provides an exploratory avenue to look at institutional voids under the lens of institutional entrepreneurship. In so doing, this study provides a rich narrative of DMRC's organizational design.

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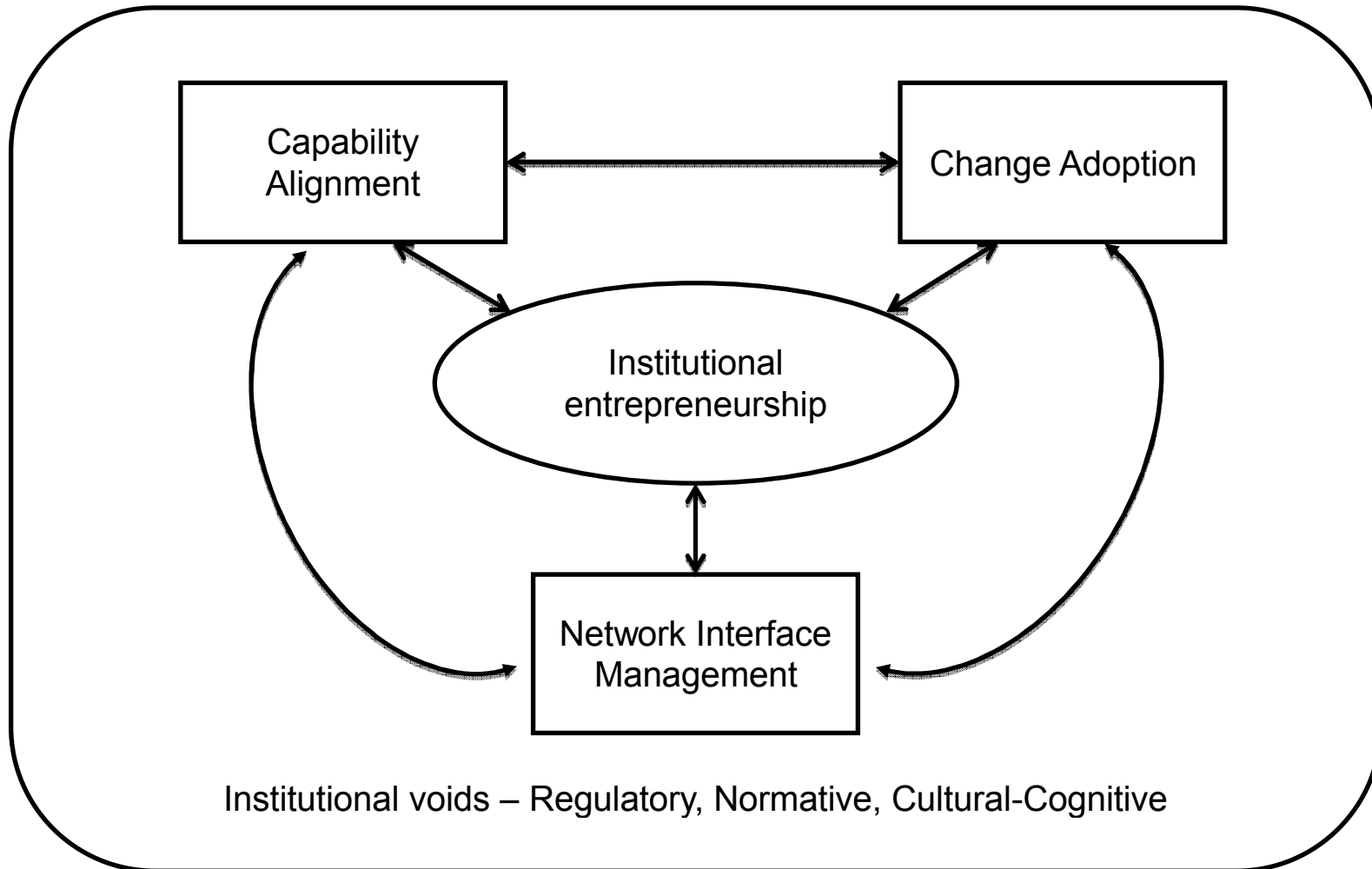
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**Figure 1: Initial conceptual framework**



**Table 1. Timeline of events related to Delhi Metro Project**

<b>Time period</b>	<b>Key events</b>
1960s	The concept of a metro for Delhi was first formalized in the Delhi Master Plan Central Road Research Institute recommends a MRTS for Delhi
1970s	Metropolitan Transport Project recommends a MRTS network comprising of 36km of underground and 97km of surface-cum-elevated corridors Legal framework was laid out in the Metro Railways (Construction of Works) Act
1984	The Delhi Development Authority's 'Master Plan Delhi – 2001' recommends the construction of 200 km of Light Railway Transit, 10 km of Tramway and extension to surface rails and roads
1987	A task force was appointed to assess the choice of an exact construction technology
1990	Rail India Technical and Economic Services' feasibility report recommends a network of 198.5 km
1995	DMRC was established as a special purpose vehicle for implementation of the Delhi metro project
1996	Union Cabinet approves Delhi metro, Central Government gives \$1.4 billion (in 1996 \$s)
1997	Dr. E Sreedharan takes charge as the managing director of DMRC, Planning of works begin
1998	Physical construction work started
1999	Metro Rail launches website
2000	Order for 240 coaches placed with Mitsubishi, ROTEM and Mitsubishi Electric Corporation The DRMC agreeing to the broad gauge decision of the Ministry of Railways
2001	DMRC appointed consultants for equipment procurement process for Delhi Fire Service Delhi Metro asked to advice Bangalore, Hyderabad, and Mumbai metros First coach from the Mitsubishi consortium arrives in India Education program launched in colonies schools and colleges on the Delhi Metro route
2002	Delhi Metro Railway (O&M) Bill was passed by the parliament First line opened : inaugurated by Prime Minister of India Delhi metro achieves a ridership of 1 million on the first day itself OECD and the Japanese bank (Japan International Cooperation Agency) fund phase II Tax waivers from the central government and tax rebate from the state government
2005	Phase I of the project was completed
2010	Phase II of the project was completed
2011	According to a study conducted by the Central Road Research Institute (CRRI), in the year 2011, Delhi Metro has helped in removing about 1.17 millions vehicles from the streets of Delhi

**Table 2. Institutional voids and Institutional Entrepreneurship in Delhi Metro Railway Corporation (DMRC)**

<b><i>Institutional Voids</i></b>	<b><i>Capability Alignment</i></b>	<b><i>Change Adoption</i></b>	<b><i>Network Interface Management</i></b>
<b><i>Regulatory</i></b>	<ul style="list-style-type: none"> <li>▪ DMRC created with equal equity participation from the state and central government organizations</li> <li>▪ State government provided land for this project and central government reduced customs duty rates on imported items required for this project</li> <li>▪ Special legal processes to facilitate efficiency in project delivery - 'Delhi Metro Railway Operation and Maintenance Act 2002'</li> </ul>	<ul style="list-style-type: none"> <li>▪ Importing trains made easy with reduced customs duty - Order for 240 coaches placed with Mitsubishi, ROTEM and Mitsubishi Electric Corporation</li> <li>▪ Quick implementation of the tendering process (19 days) and deals (24 hours)</li> <li>▪ Approvals required were expedited by using two-level sanctioning authority</li> <li>▪ Corruption mitigating processes were introduced at every level in the organization</li> </ul>	<ul style="list-style-type: none"> <li>▪ Foreign consultants were hired in areas where no local experts were available</li> <li>▪ Speedy payment to the contractors</li> <li>▪ Under spending was monitored and addressed periodically by DMRC</li> <li>▪ Strategic employment of freelancers helped in timely resolution of issues</li> <li>▪ Non-compliances with the deadlines resulted in payment penalties for the contractors</li> <li>▪ Viability of project - development time reduced from 10 to 7 years</li> <li>▪ Inclusion of worker welfare into the contracts led to change in worker management by external actors</li> <li>▪ Creation of a litigation and conflict resolution mechanism</li> </ul>
<b><i>Normative</i></b>	<ul style="list-style-type: none"> <li>▪ Managing director with impeccable record was appointed to head the DMRC</li> <li>▪ ISO 14000 certification for environmental management system in DMRC</li> <li>▪ United Kingdom Accreditation Service conducted a surveillance witness audit of Delhi metro</li> </ul>	<ul style="list-style-type: none"> <li>▪ Managing Director select his team without political pressures</li> <li>▪ Pacific consultants were hired to provide advice on this project</li> <li>▪ DMRC Employees were offered a free place on one-year full-time programme - postgraduate diploma in Metro Technology and Management</li> <li>▪ DMRC also sent three of its employees to University of Tokyo for a course on transport engineering</li> </ul>	<ul style="list-style-type: none"> <li>▪ Inclusion of worker welfare into the contracts led to change in worker management by external actors</li> </ul>
<b><i>Cultural-Cognitive</i></b>	<ul style="list-style-type: none"> <li>▪ Waste Management introduced to reduce wastage and create a paperless workspace</li> </ul>	<ul style="list-style-type: none"> <li>▪ Lean organization with few layers of decision making</li> <li>▪ Clocks installed in offices and work sites that counted towards the deadline</li> <li>▪ Missed deadlines resulted in disciplinary actions for the employees</li> <li>▪ Employees were introduced to time management principles and corporate culture via courses</li> <li>▪ DMRC managers were encouraged to make quick and independent decisions</li> <li>▪ Employees were encouraged to share innovative ideas for change</li> </ul>	<ul style="list-style-type: none"> <li>▪ Quick tendering process reflected in the external actor's satisfaction with DMRC</li> <li>▪ High priority to key partners resulted in high priority being given by the partners to DMRC</li> <li>▪ External organizations and DMRC developed shared vision for project delivery</li> <li>▪ Created a corruption free and transparent environment for external actors</li> <li>▪ Contractors treated as development partners</li> <li>▪ Managing director with impeccable record was respected by contractors</li> <li>▪ Education program launched in colonies schools and colleges on the Delhi Metro route</li> </ul>

**Table 3. Timeline of introduction of various changes within Delhi Metro Railway Corporation (DMRC) and organizational field**

	1995	1997	1998	2000	2001	2002	2007	2008
<b>Capability Alignment - Regulatory</b>	DMRC created	State government and central government work together				'Delhi Metro Railway Operation and Maintenance Act 2002'		
<b>Capability Alignment - Normative</b>		Managing director appointed				ISO 14000 certification	UKAS audit	
<b>Capability Alignment - Cultural-Cognitive</b>		Waste Management process						
<b>Change Adoption - Regulatory</b>		Short tendering process, Approvals expedited by two-level sanctioning authority, used Anti-corruption processes		Importing trains easier with reduced customs duty – Ordered Mitsubishi and ROTEM trains				
<b>Change Adoption - Normative</b>		Managing Director select his team without political pressures		Pacific consultants were hired to provide advice on this project				Employees sent on Metro Technology and Management and transport engineering course
<b>Change Adoption - Cultural-Cognitive</b>		Lean organization with few layers of decision making	Clocks installed in offices and work sites, Missed deadlines implied disciplinary actions, Employees learned time management and corporate culture via courses, managers made quick and independent decisions, Employees shared innovative ideas for change					
<b>Network Interface Management - Regulatory</b>			Speedy payment to contractors, Under spending monitored, development time reduced by 3 years, Included worker welfare in contracts, Created litigation and conflict resolution mechanism	Foreign consultants were hired in areas where no local experts were available				
<b>Network Interface Management - Normative</b>			Change in worker management by external actors					
<b>Network Interface Management - Cultural-Cognitive</b>		Created a corruption free and transparent environment for external actors	Priority to key partners resulted in priority being given by the partners to DMRC, Contractors treated as development partners		Education courses in schools and colleges			