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Institutional Interplay and Improvisations in E-government Projects

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Abstract

This paper examines the process and outcomes of an e-government project in Dubai. The case study is of a public sector organization that has been engaged in the implementation of e-government systems for almost a decade. Using the Technology Enactment Framework, the paper explores the ways in which the e-government project exposed and resolved institutional contradictions. The paper then explains the implications of this for the ICT staff working there, the organization and the e-government project itself.

The case presented here shows that that the institutionalization of e-government (its achievement of a 'taken-for granted' and 'how we do it here' status within the public sector) is more than a product of conformity to powerful managerial discourses and regulative forces. Rather it is also a product of the actions of ICT staff (their agency) as they work on the systems, and respond to competing institutions they are embedded within. Thus, the paper argues that there is a need to conceptualize the process of e-government implementation, and the ICT staff's actions, as central to the institutionalization of e-government.

Key words: E-government projects, implementation, institutionalization processes, institutional logics.

1. Introduction

The developers I met were working busily on the development of the systems. The room they were in was quite simple, with grey partitions that acted as a divider between the developers, systems analysts and IT manager. Yet, that did not stand in the way of their constant interactions to support and manage the online systems and their socialization with each other.

The snapshot provided above is from researcher field notes and gives impressions and observations during a field visit to a government office in Dubai. An initial reading of this probably supports the view of e-government implementation as a largely technical process. Yet, taking that image and overlaying it on the larger context of Dubai, a city that is rapidly developing and modernizing its public sector, which has achieved the status of a 'global city' transcending in some ways its geography, and is embedded in multiple global discourses on the transformative potential of ICTs, presents us perhaps with another story to tell.

This paper is based on an exploratory study on the unfolding process of implementation of a set of e-government projects in Dubai. The interpretivist approach adopted emphasizes the link between global discourse of e-government, conceptions of linear change, and the local improvisations that occur during the implementation of e-government systems. This brings us to the research question for this study, which is: *To what extent do the ICT professionals' actions contribute to the institutionalization of the e-government project?*

The aim is to show that the development and implementation of e-government systems is far more than a technical and managerial endeavor, and is rather an intrinsic (and often overlooked) part of the institutionalization of e-government within the public sector. The main argument developed here is that the ICT staff, whose actions are conditioned by competing institutional influences, create improvisations at work that contribute to localizing and hence institutionalizing e-government systems.

The paper is divided into four sections. The first section presents a literature review on e-government institutionalization and an overview of the theoretical framework used, drawing on institutional theory and Fountain's technology enactment framework (TEF). The second section presents the case study and the research methodology. The third section discusses the institutional interplay between the managerial, bureaucratic and professional, socio-cultural institutional logics and how they relate to e-government in Dubai. The paper then discusses how these institutional logics inform actions during the implementation of e-government, producing both tensions and resolutions. The paper concludes with a discussion of the implementation of e-government as a performative process that contributes to its institutionalization.

2. Literature Review

For at least four decades there have been significant investments made to develop ICT projects in the public sector with aspirations to transform and modernize through the adoption of such technologies (Pitt et al. 1984). One question which is at times asked is the extent to which, and the processes that occurred, as e-government systems become institutionalized, that is taken for granted and achieving a status as 'just the way we do things here'. An institutionalized system is embedded, is part of the organizational routine, and is un-questioned. The question is important

given the history of encountering diverse problems in e-government projects that include breakdowns in the systems, systems functions that are incompatible with organizational processes, resistance of staff, and low take up by clients. We find these outcomes in the developed world, but also in ICT projects in the Middle East since at least the 1980's (Ibrahim 1985; Atiyah 1988; Atiyah 1989).

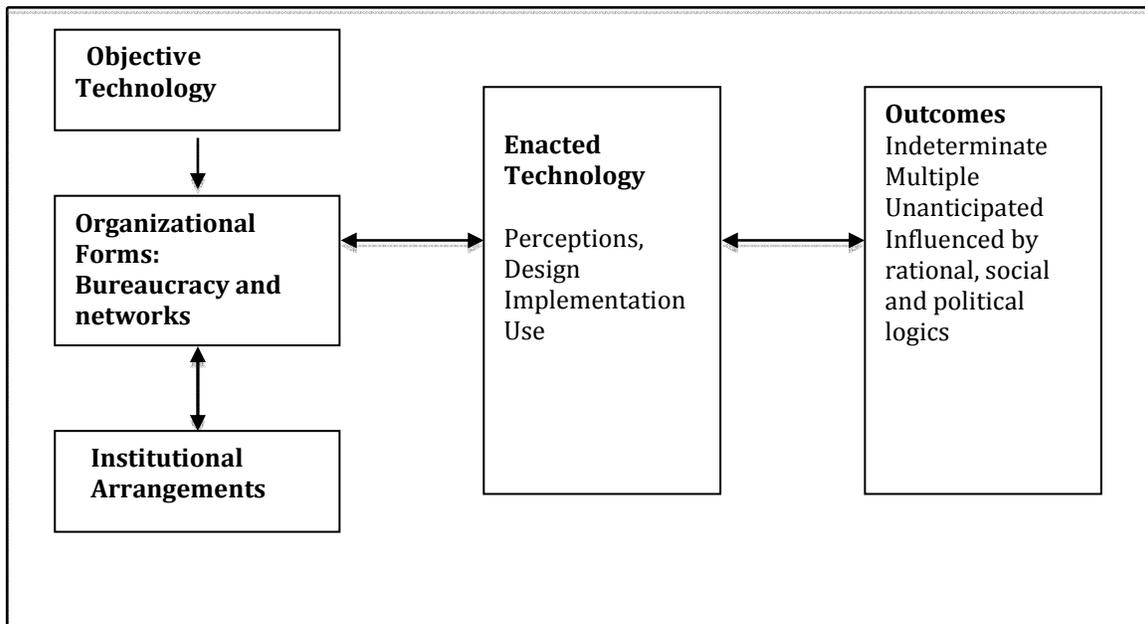
As Heeks (2005) notes, the problems with e-government projects are often an issue of a design-actuality-gap as technologies are developed applied to real problems, but come with an inscribed set of values and assumptions that are incompatible with the context in which they are to be deployed and used. The result is failure...or more analytically, an inability to become institutionalized or to resolve the institutional forces embedded in technology with those of the local context. As such, contextual dimensions matter and e-government it is not merely an issue of following the global technical and managerial models of best practice, or putting faith in some stages of growth model to chart a course to the technological and systems uplands.

There are a number of studies that discuss the extent to which e-government systems are institutionalized or not (Fountain 2001; Luna-Reyes et al. 2005; Azad & Faraj 2009). This, for example, is the main focus of Fountain (2001) who is concerned with the role of institutional arrangements and organizational forms in shaping the enactment of e-government technologies and systems. In her book, *Building the Virtual State: Information Technology and Institutional Change*, she illustrates that enactments of technology in public sector settings are more likely to reproduce and reinforce existing institutions rather than transform them. This suggests that, in her domain of the US federal government, the institution is more powerful than the technology.

Yet, there are still not enough studies that examine the processes of institutionalization in other contexts, and in particular the role of micro level interactions around development and implementation. Of course, the relationship between actions of IT developers and users, and structures of organizations has been extensively explored in the wider field of information systems, often using Structuration Theory (Barley 1986; Orlikowski 1992). We argue that such a perspective can be insightful to research e-government projects. One recent study by Azad and Faraj (2009) pursues this theme employing Actor Network Theory to examine the role of practices of public sector staff in institutionalizing e-government. It is however Fountain's (2001) Technology Enactment Framework (TEF), which has informed this research and the discussion, presented here. The TEF is based on institutional theory, and we elaborate briefly on the framework here using some concepts from Scott's (2001) work on institutional pillars.

The technology enactment framework is snapshot model of technology led change that emphasizes the performative nature of ICT development and use in the public sector. The framework captures the discursive relationship between actions of managers and staff who develop and interact with ICTs, institutional arrangements and the organizational forms of the public sector. The TEF consists of five main constructs: objective technology, enacted technology, institutional arrangements, organizational forms and outcomes. Objective technology refers to the technology in its material form and functions. Enacted technology refers to the performative character of ICTs and the constructed meanings that they acquire every time and as ongoing shaping takes place through their development and use (Orlikowski 2008).

Figure 1: The Technology Enactment Framework (Fountain 2001)



Central to TEF is the notion of institutional arrangements. Scott (2001) elaborates on what is meant by institutions, presenting them as durable structures that are supported by social activity and material resources. He describes institutions as supported and held together in particular by three institutional pillars – regulative, normative and socio-cultural pillars. These are the institutional forces (pillars) that inform the actions of local actors.

Fountain's (2001) technology enactment framework was selected as a theoretical lens for this study since it depicts the ongoing process of e-government system implementation with a focus on the role of agency. The construct of enacted technology in the TEF emphasizes that technology development and use varies across contexts depending on history and social structures that people are embedded within. The ICT staff who work on and use e-government in ways that are conditioned by institutional arrangements. These actions include improvisations during day-to-day activities that are not only a response to breakdowns but also a reflection of institutional interplay. The TEF is used here as a way to discuss how competing institutional influences inform the actions of ICT staff while they work at planning and developing the e-government systems. The shaping of technology, and the reflected shifts in other institutional aspects, shows the relationship between institutional influences, actions and the institutionalization of e-government.

3. Case Study

The objective of the national e-government initiative in Dubai, as first proposed in 2000, was to set up integrated e-government systems across the entire public sector and to offer 70% of services over the Internet. The aim was stated as to create convenience when transacting with the government and to support the positioning of Dubai as the economic hub in the region. This was to be achieved within a timeframe of a year and a half, though this changed over time. There was an IT management consultancy hired to assist in the planning of the initiative, given that at the time this was the earliest project of its kind in the region.

The e-government initiative, with elements to be implemented within the 21 public sector organizations, was supported by the three newly formed institutional structures for e-government, which centralized to a large extent the planning of these projects. Shortly after their establishment, the institutional structures replaced the IT consultancy's management activities. The three institutional structures included the Executive Office, Dubai E-government (DeG) and the Government Information Resource Planning Department (GIRP).

The executive office consisted of a team of 14 managers from the public sector, and nearly half of them had IT backgrounds. The main tasks of the executive office were to plan and monitor the progress of the e-government initiative across the public sector. Second, there was the GIRP department which was responsible for the technical infrastructure that spanned the public sector to support the e-government systems. The department also provided shared resources for public sector organizations to use. Third, there was DeG that had a managerial role in planning the web portal, particularly the content of the web portal to ensure that they are of standardized quality across the public sector. DeG provided standards and key performance indicators for the public sector organizations to follow. DeG also offered shared applications (referred to as synergistic services) to public sector organizations such as a payment portal.

The public sector in Dubai has structural and socio-cultural attributes that are common in the Middle East region. People who visit public sector offices to conduct their transactions often encounter delays and time-consuming procedures. At the same time, many of them value the visit and consider it as an opportunity to meet up with each other and socialize or an opportunity to enquire about problems with services on offer or even to catch up on the latest developments in the city. This gave the public sector visit a symbolic value.

According to the overall plan, the public services were to be developed after consulting with managers from each department. Online applications, for example, were required to conform to existing workflows and bureaucratic procedures. The 'no-objection certificate service', which issues certificates required for infrastructure related projects, involves conducting transactions with several public sector organizations such as the water and electricity authority and the municipality. The planners of this project thus had to design the systems to take into account these procedures and regulatory requirements and needed to consult with many stakeholders.

At the organizational level of the public sector organization that we label here as The Public Office (TPO) – the city council body studied – where e-government systems were planned and developed under the guidance of international management consultants. These consultants employed a number of best practice models derived from other countries experience with e-government systems, academic sources and international organizations. During this case study's fieldwork, the TPO e-government systems were in the fourth year of implementation and some systems had been developed and set in use. At the time of fieldwork, there were plans to make

significant changes in the technical infrastructure for future systems that would be more flexible and able to accommodate changes.

For TPO the objective was to meet the state mandate on time and to create operable e-government systems that create convenience to the public. The conception of ICT-led linear change underpinned the development of the systems during the four phases and were reflected in the following activities:

- Developing Online Applications based on a Service Prioritization Model
- Collecting Requirements from Public Managers
- Providing Support to Users of the System
- Conforming to Key Performance Indicators
- Providing Quarterly Reports to the Central Agency DeG
- Promoting the Use of the Systems by the Public

A team of management consultants was hired to help plan the project. Based on their conceptualization, the online applications for the e-government systems were to be developed over four phases. Each phase specified a number of public services to be developed by the end of each phase. The planning of the systems was based on a service prioritization model that suggested focusing on the simple services first and then progressing towards more complex ones that require integration across public sector organizations. There was also an IT service provider team that was hired to assist in the coding and development of these online applications. The plan was that the internal ICT team gets to learn from the IT service providers over time so that they can take up more development activities once they gain experience and as the project progresses. The systems were developed on time and as planned. However, there were a few bugs reported in the systems mainly during the second stage of the project. In an effort to resolve the issue of the bugs in the system, the internal ICT staff developed a coding template and checklist to introduce a standardized approach to coding. The template was adopted and there was a noticed improvement in the online applications that were developed from that point onwards.

Systems were developed based on the notions of ICT led linear change and of expectations of transforming the public sector's operation and the practices of its staff. Thus, these systems were expected to create cooperation amongst public sector departments as well shift the relationship between citizens, non-national residents (a large percentage of the Dubai labor force) and the state. There was an assumption that these systems would modernize the public sector and change prevalent practices and attitudes, as well as reduce the number of visits made to the public sector. These changes were, in turn, seen as contributing to social and economic development.

3.1 Methodology

The fieldwork in Dubai took place over the period of nearly eight months and began in October 2006 until May 2007. Initially a pilot study was undertaken to gain an initial understanding of the e-government initiative as a whole, in terms of its objectives, the institutional structures in place for the initiative and to identify a research project to focus on. Interviews were conducted with managers from DeG, one of the central government agencies that managed the e-government initiative, managers from a number of public sector organizations and a researcher from one of the academic institutions. During this period several secondary data sources were reviewed that included magazine publications by DeG, conference proceedings in the region and various public sector organizations' websites. The initial study provided a historical understanding of the project and key developments that took place before the initiation of the e-government project.

After the initial visit, TPO was selected as the case study and there were several visits made to Dubai that lasted up to a week. The fieldwork took place after the systems have been running for almost five years and the majority of the services were already being offered through the new systems. There were various data collection methods that included semi-structured interviews, on site observations of the work environment and tasks undertaken and reviewing secondary sources of data. At TPO, the interviews were mainly with the ICT professionals within the e-government section, which included IT managers, system analysts, support service officers and developers. There were also interviews conducted with a member of the IT service provider team. Interviews were either tape-recorded or involved extensive note taking, depending on the interviewees' preference. In the early stages, the interviews were based on a list of questions. With time, there was less reliance of the list of questions, and the researcher followed up on themes that were of interest or that needed more elaboration.

The data collection centered on a number of themes:

- the historical development of the project
- the ICT staff's initial perceptions and expectations of the e-government systems
- obstacles and challenges encountered in the project
- new work practices in the public sector
- the role of the e-government systems in the relationship with the public

From the outset, the intention was to examine how the implementation process is shaped by the involvement of local actors in particular the ICT professionals employed by the public sector, but also by the involvement of other global actors such as management consultancies and IT companies. Initially the data analysis involved creating tables that categorized the data based on different groups of actors, such as developers, systems analysts and members from the private sector. ATLAS.ti software was employed as a tool to organize and categorize large sets of data. For example, the software was used to code the data based on concepts from theory as well as important historical milestones in the national initiative. Later analysis involved iterating between narrative construction and tabular analysis. There were two significant narratives created. One was a descriptive and historical narrative of the e-government initiative. The second narrative was a detailed description of events and actions taken within the organization by the ICT staff working on the project. At a later stage there were tables formed to analyze the links between local actions (enactments) and the broader socio-political and economic context.

3.2 Findings

Our study and the analysis of the collected data were predicated on a view that focused on the relationship between ICT staff and the institutionalization of systems. Rather than asking how the inscribing of systems with certain values does or does not take place, and where these values come from, we focused on how local improvisations made by the technical cadres served to carry both new and old ideas and norms into the resulting systems. Drawing on the TEF and the concept of enacted technology, this section presents instances of improvisations that the ICT staff took in response to events and how these actions were conditioned by institutional arrangements. First we present the improvisations related to adopting managerial practices and approaches from the private sector. We then present another form of improvisations that reflect workarounds in the system in response to disruptive events, which reflects a tension between the managerial logic and the logic of the public sector.

These improvisations emerged from the local sensemaking processes of ICT staff as they encountered project events and ideas, and were conditioned by both external and local institutional influences. We came to see improvising as central to their ability to appropriate (some) new ideas and concepts, as well as their ability to serve the needs for localizing systems and thus to acknowledge and reflect extant institutional arrangements. Thus, the developers served to provide an ongoing facility for negotiation and action, an important, even central response to the existence of competing institutions. In this manner the ICT workers at TPO served as an important, if overlooked actor.

There were new institutional elements introduced with the e-government project, mainly managerial concepts and practices that are adopted in the private sector. The ICT staff adopted notions of the customer and were following best practice models and key performance indicators, since this represented the appropriate way to plan, develop and manage these projects and how to frame the outcomes of success and failure. The e-government project and the managerial logic were supported by Dubai's public sector which was experiencing pressures associated with the high influx of people to the city, as well as excessive bureaucratic procedures and delays in the processing of transactions. This legitimized the adoption of these managerial concepts and approaches, which informed the process of implementation by setting standards and milestones to reach. The ICT staff conformed to these concepts to a large extent. The ICT staff's improvisations during their work on the systems reflected part of the ongoing institutionalization of e-government, in particular their negotiation with new ideas and norms from the private sector ranging from best practice models for project management to appropriate attire to come to work in, and the idea of 'the customer' as a focal concern.

However, there were instances when the best practice models competed with institutionalized dimensions of the public sector in ways that the ICT staff had to resolve through negotiations and workarounds. An example is the action of developing a coding template and checklist by the ICT staff to ensure that the systems are developed in a standardized way. The improvisation was a response to the poor quality of code being written by the IT service supplier, and hence the problems the ICT faced in its maintenance. The introduction of the template was mainly to avoid disruptions in the operation of the system. Even though the IT service provider team followed the best practice models and standards from the private sector, the bugs in the system posed problems in the delivery of services to the public and an alternative bureaucratic logic began to take precedence in informing their actions. The ICT staffs' improvisation was not only an act to resolve a technical problem. Their actions were also being informed by their institutionalized roles as public servants who wanted to ensure that the public obtained the online services on time and to ensure the success of a high profile project that they were now a part of. The actions also reflect the tensions between the managerial institutional logic and the existing bureaucratic and socio-cultural logics that are present in the public sector

The improvisation of the coding template represents the ongoing institutionalization of e-government. The new template they developed embodied a number of institutional achievements. It improved the operation of the system (its quality and maintainability), and thus encouraged promotion of the online services by other staff and in turn use by the public. The mandated use of the template also carried significance through its symbolic meaning by asserting both the local needs and local competencies. The development of the template in this way contributed to shifting power relationships within the organization and creating a sense of ownership of the systems by the internal team. Finally, this improvisation supported their identities as public servants who are contributors to city development through their delivery of quality systems for both citizens and residents, and for the business community.

4. Discussion

We argue for conceptualizing the process of e-government systems development and implementation as being a core part of the institutionalization of e-government. We further propose that public sector ICT staff is at the center of this process notwithstanding the many services that are contracted out to service companies. This view turns our attention to detailed consideration of e-government implementation processes, which are often seen narrowly and in almost exclusively technical and managerial terms. To elaborate on this theme, we begin by describing conventional technical models of implementation and then move to discuss processes of institutionalization as seen through institutional theory and the technology enactment framework.

Most case studies of e-government implementation are analyzed and discussed from a technical perspective (Baum & Di Maio 2000; Layne & Lee 2001). In such accounts planning and project management is seen as paramount and considered as embodying a rational process based on notions of a strategic alignment between the organization and the capabilities of these technologies and systems (Henderson & Venkatraman 1993; Davison et al. 2005). For example, plans often start with functional ambitions (a system able to....) and go on to encompass targeted organizational change programs and formal redesign of work processes to fit with the technology. Development processes are then often underpinned by implicit or explicit stages of growth models, themselves a narrow account of adoption of a hierarchy of technical functionalities. The development and implementation process according to the categories of these models begin with simple web publishing of information and by acquiring and mastering more technology moves towards the development of integrated transactional systems that span organizational boundaries.

But in this study we are not directly or simply concerned with design, development and implementation *per se*, though TPO and its service partners were tolerably effective in this aspect. We are rather concerned with e-government as the establishment of an enduring change in what is done and how - what we refer to as institutionalization of a new system. It is widely accepted that this institutionalization of information systems is a long-term process that draws in large part on sedimented historical developments. As Scott (2001) explains institutions are durable structures that consist of symbolically accepted goals, social activities and are supported by material resources. They do not usually change capriciously or swiftly.

Our perspective on e-government systems implementation starts with a similar understanding that these systems have to be designed (indeed they do), but not just as strategic interventions, technology showcases or a-contextual change programmes. Rather their design has to be undertaken in ways that take into account current workflows, established bureaucratic regulations and the extended and understood status of the public sector as serving the community, an idea which takes us well beyond an exclusive concern for managerial efficiency. The implementation process is socially embedded and conditioned by contextual features that include institutional influences, events and local responses of actors.

In similar terms, Fountain (2001) conceptualizes the development of e-government systems and their use in public organizations in terms of actions taken by actors within the public sector that are conditioned by existing institutional arrangements. A number of studies have adopted this view of e-government implementation over the years (Fountain 2001; Devadoss et al. 2003; Luna-Reyes et al. 2005; Meijer & Zouridis 2004; Azad & Faraj 2009; Cordella & Iannacci 2010). For example, the role of institutional influences in the development of these projects is illustrated in Cordella and Iannacci's (2010) study of e-government in England and Wales' justice system.

They argue that e-government projects are shaped by public sector policies that are inscribed into the technology, which in turn become an institutional carrier of these public sector policies. As the authors explain, these technologies, and the values they are inscribed with, may exist for years even as public sector policies shift. The values inscribed into these technologies that are different from the new policies can influence the way current e-government systems are developed and used.

As we have shown, the institutional dynamics associated with implementation of e-government systems leads to improvisations (sensemaking and action) by ICT staff. In most case studies, the initiation of e-government projects introduces with it a managerial institutional logic as best practice models from the private sector are adopted. This often competes with the existing bureaucratic and socio-cultural institutional logics of the public sector, which can lead to contradictions at work and responses to resolve them (improvisations). These acts of improvisations are common in most IS development projects, and the case study findings could be understood as a contribution to the localization of a more global model – essentially akin to the configuration work seen in any package software implementation. But taking on the technology enactment lens, leads us to consider that beyond such work to make the system ‘fit’, there is a deeper task being undertaken, the discovery of a new work practice and associated roles and attitudes to appropriate e-government and managerial logics with institutionalized dimensions of the public sector. As such, the technology enactment framework enables us to see how these global models of best practice and artifacts are part of the institutional dynamics that actually trigger a series of micro-interactions that contribute in localizing the e-government systems, particularly in terms of the artifact, practices and roles of people who engage with them.

The employment of the technology enactment framework enables us to see the relationship between institutional dynamics and local perceptions and actions of people who interact with the systems in their work. The study also draws our attention to the need to extend the TEF to accommodate two important aspects. First, the TEF's construct of enacted technology needs to be elaborated. The framework in its current form clearly makes a distinction between objective technology (the material artifact that carries many functionalities) and enacted technology which refers to a performative notion of e-government systems that are shaped through design and use by people who interact with it. The question that arises is who are the people who ‘enact’ and how do their actions contribute to the institutionalization of e-government?

In this paper we have shown that the developers, people who are often invisible and behind the scenes actually contribute to this process. Addressing the question of institutionalization often brings to mind the role of users of the system who may accept the systems and use them as part of their daily organizational routines, or in some cases ignore and resist their use. As we have shown earlier, the developers and IT managers who work on these systems play an important role in shaping the implementation process. As they plan, develop and manage these systems they also appropriate new ideas with existing procedures, socio-cultural norms and institutionalized roles of public sector staff. Their improvisations contributed to localizing the systems, appropriating new concepts into work practices and asserting roles of the ICT staff in the project.

The second aspect that the TEF needs to elaborate on is the construct of outcomes. In our paper we have focused on the ongoing process of institutionalizing e-government. The TEF's employment by Fountain (2001) emphasizes institutional continuity and the development and use of these systems to retain and reproduce existing institutional arrangements. As noted by Norris (2003), Fountain's framework is essentially capturing how institutionalization of technology takes place. This is a theme that needs to be articulated more in the framework to show how these enactments by local actors contribute to a larger longer-term process of institutionalization of e-

government. Our study focused on how appropriation of new concepts and practices takes place through the improvisations of ICT staff in ways that shape the systems, practices and roles. It is these acts of appropriation that contribute to the institutionalization of these systems.

5. Conclusion

In summary this paper calls for conceptualizing the implementation of e-government systems and the actions of the ICT staff as part of the institutionalization process. The paper discussed the current status of studies on e-government projects that tend to focus on technical and managerial models to guide development and evaluation. These perspectives focus on meeting the criteria specified in best practices models when examining the outcomes of these projects and tend to overlook institutional consequences.

We find that even studies that are exploratory in nature which adopt an institutional lens focus on examining the extent in which change happens or not, i.e. to see whether the institutionalization of the e-government systems took place or not. This paper argues that there is a value in considering the role of micro level actions in shaping the process of institutionalizing e-government.

This paper has illustrated the value in accounting for the micro-level actions of ICT staff as part of this institutionalization process. These actors were embedded in competing institutional influences. There were many new ideas, norms and practices that arrived with the e-government project that competed with local traditions of bureaucracy and socio-cultural norms. As illustrated in the case study, these institutional contradictions can generate actions and improvisations that localize these systems and contribute to the process of institutionalization.

We have come accustomed to think of the institutionalization of information systems as an outcome of on the one hand broader institutional influences, in particular regulative and normative influences. For example, these influences may carry into the e-government project some 'business best practice' for project management (normative), or some internationally sanctioned standard (regulative). On the other hand we may see institutionalization in the becoming of some system as 'taken for granted' by their 'users', both organizational actors and external clients. Our argument is that there is not enough emphasis on the role of the ICT developers themselves in supporting and shaping institutionalization. They engage with the technology through development and use, and appropriate competing institutions. The Technology Enactment Framework enables us to capture the emergent actions of public sector staff, and the framework could be extended to elaborate on who are the actors that do the enactment and how they contribute to processes of institutionalization of e-government.

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