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E-GOVERNMENT

EXPLORING THE DYNAMICS OF CHANGE IN EUROPEAN MUNICIPAL SETTINGS: A CASE STUDY OF TWO RESEARCH AND DEVELOPMENT PROJECTS

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Abstract

Transformational initiatives concerning electronic forms of governance occur increasingly often in our time. However most of them are characterised by lack of deeper understanding of the dynamics and possibilities of organizational and technological change in governmental settings. This paper endeavours an investigation of the undercurrent processes of organizational and technological change in the field of electronic governance. We base our research on the interpretive analysis of research data that were gathered through participant observation of two European research and development e-Government projects. In addition some more general implications are offered, based on our case studies, concerning the transformation of business processes, the changes in analysis, design and implementation of IS for e-Government, and electronic governance strategies. We believe that these implications can prove useful in both analyses and implementations of electronic governance.

Keywords: *Technological change, Organizational change, Information System Development, Electronic Governance*

7 INTRODUCTION

Considerations about the prospect of electronic governance can be traced back for two decades. People originating from various disciplines have contributed numerous concerns and proposals as to how such a goal can be approached and accomplished. Research on electronic governance was coupled with the study of advanced information and communication technologies (ICTs) in general and the internet in particular. Since the early 1990s the internet has sparked many discussions and inspired numerous futuristic predictions about its impact on social and political life. Internet optimists have regarded it as a promising opportunity for positive change in political participation schemes, an opportunity to transform the diffusion mechanisms of political protest across the planet (Ayres 1999). Others saw it as a platform that by overcoming time and space boundaries could support the deterritorialization of the science system by helping people overcome the conceptual limits that are created when regarding the nation-state as the core social entity on a global level (Kaase 2000), or as a reliable democratic tool (Silcock 2001; Tolbert & McNeal 2003).

On the other end, internet critics have argued “that the more time people spend using the Internet, the more they lose contact with their social environment” (Nie & Erbring 2000). Researchers have argued that the internet alone cannot spark transformational procedures in governance since its “democratic potential cannot be realized without a guiding hand from government” (Rethemeyer 2007, p. 212) or even suggest that in order to achieve democratic gains of high impact it is essential that “a radical redesign of institutions is carried out and ICTs are connected to these reorganized processes” (Anttiroiko 2003, p. 126). However optimistically researchers face the phenomenon of advanced ICTs the majority agrees on their transformative potential, and especially when it comes to issues concerning public governance (Ayres 1999; Dimaggio & Hargittai & Neuman & Robinson 2001; Kool & Wamelen 2008;

Robinson & Crenshaw 2002; Silcock 2001). It is evident that the concept of ICTs is closely connected to the transformation of the form of public governance in the minds of all involved stakeholders.

Yet advancements of a transformational character in electronic governance are not solely related to the introduction or appropriation of advanced ICTs in organizational settings. It is by all means clear that technology plays a significant if not catalytic role; however in itself it is not the sole activating device of change. In other words change is the combined effect of stimuli originating from both social and technological sources. By analogy it is expected that in settings of public organizations a complex set of influences will kindle procedures of evolution and transformation. In this work we study the dynamics of transformational processes in the field of information systems design and implementation for electronic governance. Firstly, through literature review we conceptualize the dimensions upon which changes occur in public organizational settings whenever ICTs are implicated. We then apply these dimensions to the analysis of how they could work together towards change. We posit that change is identified in a technological, a social, and an organizational level and in order to support our position and analyse the dynamics of this change we have conducted a field study within two European research and development e-Government projects which were used as the primary sources of our research data. Our research has exposed insights to processes of change concerning business processes of municipal organizations, analysis and design of IS for e-Government, user acceptance of municipal initiatives and conceptualization of electronic forms of governance.

In the remaining of this paper we present the review of related literature and describe the path that we have followed to form the three dimensions that were used to study the practical instantiations of transformations in electronic governance. We then dedicate some space on the description of the methodology that we have followed in order to gather our research data and continue to present the findings of our research in terms of the identified three dimensions. In the final part of this paper we provide some implications of our study and close by suggesting possible extensions to it.

8 DIMENSIONS OF CHANGE PROGRAMMES

In the area of organization theory extensive research is being done on the way that ICTs can affect organizational settings. Early works examine the role of ICTs as a trigger for organizational change (Barley 1986; Barley 1990; Orlikowski 1993). These works regard ICTs as triggering devices of change in institutions, practices and relationships between stakeholders in organizations. A view from this point enables a better understanding of the complicated relationship between technology and organizations, but does not avoid providing an account of influence that is extending in one direction (from technology to the organization). Departing from this position of unidirectional influence, scholars have supported the reciprocal interaction of ICTs and organizational structures (Orlikowski 1992; Orlikowski 2000; Orlikowski & Robey 1991; Walsham 2002), an interaction that leads to change in both the institutional and the technological domains affecting organizational settings as well as technological artifacts. Discussions on this reciprocity have led to the creation of models of technology in organizations (Desanctis & Poole 1994; Meneklis & Douligeris 2008; Orlikowski 2000) as well as evaluative frameworks for triggered changes (Markus & Robey 1988; Pozzebon & Pinsonneault 2005). The common foci of all these works is the inspection of the transformational potential and the reciprocal character of the relationship between technology and organizational structures and the attempt to identify what entities, processes and structures are changed and how this change is manifest in the organization's every day practice. In other words the authors of these papers asked "What is changed?" and "How is change carried out?" when technological artifacts and organizational structures interact.

The study of the articles concerning ICTs and organizations has enabled us to construe the mutuality of technology and organizational structures. On the other hand, the study of articles related to public administration and electronic forms of governance have proved an opportune source of interesting findings about transformational processes in electronic governance. Transformations are expected to happen on the institutional domain affecting the way governmental organizations function or the way

they implement their business through electronic means (Chen & Gant 2001; Kool & Wamelen 2008; Traunmuller 2004; West 2004; Zysman & Weber 2001). Some scholars support the reform of the administrative models of electronic governance, in order to become centred on the citizen and not on the efficiency of workflows (Bertot & Jaeger & McClure 2008; Irani & Elliman & Jackson 2007; Silcock 2001) while others the rethinking of decision making techniques (Layne & Lee 2001). Social structures such as the concept of societal boundaries (Kool & Wamelen 2008) or public attributes (Meneklis & Douligeris 2007; West 2004) are expected to change as well as technological artifacts be transformed (Dimaggio & Hargittai & Neuman & Robinson 2001; Meneklis & Douligeris 2007).

These changes are expected to be realised through institutional reform (Anttiroiko 2003), reciprocal interaction of technology and social structures (Irani & Elliman & Jackson 2007; Markus 1983; Meneklis & Douligeris 2008), addressing of the problem of the digital divide (Belanger & Carter 2006), outsourcing a number of services and functionalities to the private sector (Chen & Gant 2001), or through reforms of the political participation schemes (Ayres 1999). Changes are expected to take time (West 2004) or evolve quickly during times of crisis (Harrison & Pardo & Gil-Garcia & Thompson & Juraga 2007) and focus more specifically on human requirements (Irani & Love & Jones 2008). Again on one hand researchers investigate “What is changed?” and on the other they are concerned with “How is change carried out?” when the point of focus is the function of governmental organizations.

The studied articles however contributed to the identification of one more issue, namely “How is one governed (electronically)?” Against this question we discovered various stances from the researchers. Some scholars focus specifically on e-democracy. A certain position (Anttiroiko 2003) suggests that we must move beyond the one-dimensionality of both representative and direct democracy and reform the concept of democracy itself. To achieve this, the author posits that technology plays a secondary role while the primary role is attributed to decision makers in administrative positions. He explicitly states that of all the parameters that are examined in his paper “technology – or that magical “e” in e-democracy – is needed primarily when addressing the technical dimension of the question “how?” The added value of technology will ultimately be proven through democratic objectives and gains.” (Anttiroiko 2003, p. 125). The issue of e-democracy is studied in another work (Wright 2006) where it is presented as consisting mainly of e-participation and e-voting procedures. The author uses this model to investigate e-democracy initiatives in the United Kingdom and he eventually concludes that “the most noticeable finding from the analysis of practical experiences with e-democracy was how fast change occurred.” (Wright 2006, p. 247)

Regarding electronic forms of governance in general, our opinion is that it concerns interrelated issues of service delivery, political participation, administrative decision making, policy enforcement, and citizen satisfaction. Among the reviewed papers there were positions supporting a multi-disciplinary form of governance (Jansen 2005, Leitner & Traunmuller 2007). Surprisingly enough, some researchers chose to focus only on service delivery functionalities of e-Governance and build their work upon this simple yet flexible conceptualization (Belanger & Carter 2006; Bertot & Jaeger & McClure 2008; Conklin & White 2006; Liu & Chen & Zhou 2006; Salhofer & Ferbas 2007). This fact made us more conscious of the diversity of conceptualizations of e-Governance across stakeholders. We saw that our preconceptions should be re-evaluated in order to examine matters in more depth¹⁵.

The completion of our review found us with a set of three dimensions at hand, “What is changed?”, “How is change carried out?” and “How is one governed (electronically)?” These dimensions were used to classify the findings of our research and present them in a structured manner.

¹⁵ The extensive and exhaustive study of the conceptual domain of electronic governance is not the aim of this paper. This goal has been addressed in various other works (Borins 2002, Janowski & Pardo 2007, Janowski & Pardo 2008, Okot-Uma 2000, Snellen 2002, Saxena 2005) in adequate detail. The present study is concerned with the investigation of the specific conceptualizations of electronic governance in the studied cases.

9 RESEARCH METHOD AND BACKGROUND

The research methodology followed is based on the interpretive tradition (Grubs 2001; Myers 1994; Orlikowski 1991; Prasad 2002; Walsham 1995; Walsham & Waema 1994). The events that comprised the projects' realisation as well as all interactions between the participants are viewed as a text-analogue that can be interpreted and "read" in a manner similar to what is used for actual texts (Prasad 2002). The aim of this process is to reach deep understanding of the cases. The research data was gathered through participant observation (Nandhakumar & Jones 1997; Nandhakumar & Jones 2002) and analysis of the projects' documentation (meeting minutes, progress reports and project deliverables). The combination of participant observation (for a first person experience of the case under investigation) and an interpretive analysis to approach the situated intersubjective positions of all involved project participants was influenced by our epistemological alignment with the propositions of the "experientialist myth" as this is proposed by Lakoff and Johnson (1980). Lakoff and Johnson posit that "within the experientialist myth, understanding emerges from interaction, from constant negotiation with the environment and other people" (p. 230). In that respect we do feel that our personal involvement in the projects' work procedures enabled us to take notice of the subtle details of interpersonal interaction and professional cooperation that would have otherwise passed unnoticed. On the other hand our participant observation can be said to have constrained us from viewing the larger picture of the structured interactions. Therefore we endeavour to identify our initial preconceptions, acknowledging that "prejudgement, or prior knowledge plays an important part in our understanding" (Klein & Myers 1999) in order to minimise bias in our interpretation and maintain a rather creative level of "interpretive awareness" (Sandberg 2005). Our interpretive awareness guided us in numerous occasions to re-evaluate our prejudgements based on the findings of our research.

The research investigated the realisation of two research and development European projects on e-Government, namely eMayor (European Commission 2004) and SWEB (European Commission 2007). The processes for software development in both the projects were based on a combination of in-house development and outsourcing. This led to software that satisfied the business needs of the municipalities as they were expressed in the projects' deliverables. In the words of one of the municipalities that participated in both projects (SWEB Consortium 2007):

"During eMayor we have learnt that a serious and careful process of analysis leads to a prototype that simply works, and that a product born by the instances given by the same people who will use it, is undoubtedly successful" (p. 14)

eMayor implemented a service for issuing electronic residence certifications and a service for management of taxes payment, while SWEB implemented a service for issuing mobile residence certifications and a service for issuing electronic and mobile invoices. The developed information systems were prototypes and were meant to be installed as add-ons to the existing legacy systems of the municipal organizations.

10 WHAT IS CHANGED

10.1 Systems design and implementation techniques

In both projects the requirements analysis was clearly influenced by the service-oriented paradigm in regarding the concept of a service as the most fundamental in the analysis procedure. The primary goal of this stage was to select the most appropriate services to implement. This fact witnessed that the paradigm of service-oriented analysis had been silently chosen by the analysts before even the analysis commenced. Quoting a phrase from eMayor's requirements analysis deliverable (eMayor Consortium 2004b):

"The selection of e-Government services is one of the major tasks during the analysis and research phase of the project" (p. 23)

Although requirements analysis was based on service-oriented concepts, the design of the platforms was accomplished using an ISO reference model (ISO/IEC 1998) that is based on the object-oriented paradigm. Interestingly, the final implementation of both platforms is based on a combination of object and service orientation since on one hand the information systems are developed as nodes of computational objects that are interacting with each other via software interfaces, yet all their functionality was realised using the BPEL (OASIS 2002) standard which is based on coordination and composition of services by using smaller sub-processes (a notion characteristic of Service-Oriented Architectures). Specifically in eMayor there is a dedicated application server responsible for “managing the choreography of the main platform services in order to implement the business logic of eMayor” (eMayor Consortium 2005a p. 19) while in SWEB there is a “second enterprise tier (Node D) containing the business services” (SWEB Consortium 2008, p. 44).

In the situated cases of the two studied projects a transformation was realised that affected the practices of the analysis and the design of both the developed information systems. An integrated approach was structured that combined notions, methods and ideas from the service-oriented and the object-oriented paradigms. These two paradigms being the most influential of the period at which the implementation of both projects was taking place. This transformation witnesses a more general trend to extend the existing design methodologies by incorporating the most efficient attributes (in regard to specific architectural purposes) of established concepts such as components and services (Broy & Kruger & Meisinger 2007).

10.2 Business processes

It was not surprising that all four of the services that were implemented electronically (two for each project) required evident transformations in their workflows. This was due to two reasons. First, since both projects focused on implementing services with strong cross-border characteristics it was expected that in order to provide a common enterprise service that could satisfy all involved municipalities some critical transformations had to occur. In all four services that were implemented the first part of their workflow comprised the steps that were more or less already followed in their paper-based form (select a service; provide the user’s cryptographic credentials to the platform for authentication; fill in the corresponding request for the service; digitally sign the request by the user; store the request to the platform).

In the second part of the services’ workflow however, specific modifications were necessary. These mainly concerned the control whether the request could be processed locally or not (cross-border scenario) and in cases of cross-border scenarios the propagation of the request to the corresponding municipality through security enabled electronic means of communication (Web Services protocols with WS-Security (OASIS 2006) implemented). This was somewhat different than the way in which requests were propagated traditionally (a civil servant of the originating municipality would contact in person a civil servant in the municipality at which the request could be served). The consideration of cross-border characteristics in the implemented services required changes in their workflows pertaining to secure and reliable communication between platforms of different municipalities.

Second, there were identified changes in the business processes of all four services that would have happened regardless of the consideration of any cross-border characteristics. These changes were mainly related to security and privacy aspects. In the paper-based scenario the user would have to visit the municipalities’ premises and provide a token of authentication to the civil servant before submitting the request. In some of the municipalities (two out of the eight in total) no form of authentication was required whatsoever in order to submit a request, while the rest required that the citizen presented an identification card which was checked by the civil servant. The implemented electronic forms enabled strong authentication mechanisms for these processes based on smartcards and cryptographic credentials. These mechanisms required the introduction of further steps in the process to submit a request, having mainly to do with authentication and identity management.

Another modification to the business processes that was introduced was the notification of the requesting citizen upon critical points of the service's life cycle (upon storing of the request to the platform, in case the request was propagated to another municipality and upon successful or unsuccessful completion of the request's servicing). This feature was easily integrated in the workflow of the service due to its electronic implementation. Although it was not explicitly requested by the users in the requirements analysis, it was nevertheless, regarded as useful in the final assessment by both citizens and civil servants.

From the above, it is evident that the electronic implementations of these services resulted in alterations to the established workflows which the municipalities' employees had grown accustomed to. Further, the explicit consideration of cross-border matters and the realization of strong authentication mechanisms in cases where previously there existed weaker or none at all, required corresponding changes to the everyday practices and the culture of the municipalities' employees in order for the newly implemented IS to produce fruitful results.

10.3 Strategic goals for implementation

Another aspect that was exposed through our analysis concerned the question of what to aim for when starting an e-Government project. The consortia of both projects chose to implement the more simple paper-based services that were offered albeit with significant intricacies themselves in order to develop simple, but flexible pilot IS that could be implemented in time without any major shortcomings. High organizational complexity was a knock out criterion for services in both projects because the goal was to develop information systems that addressed realistically the identified requirements. To achieve that would require sufficiently more effort and time were the services more complicated both in organizational and technological particularities. The consortia chose to set goals that were realistic and quite simple rather than complicated and possibly unattainable. One of the municipalities that participated in both projects comments (SWEB Consortium 2007):

if the solution is simple it will be a hard competitor to beat: eMayor was simple and yet powerful, with infinite possible evolutions; a huge national project like PEOPLE is far from being simple, it aims to do "everything" but it needs an incredible amount of connections with providers, legacy systems, local teams etc. This is why eMayor (2004-2006) is available today, PEOPLE (2002-?) still needs work and refinements to become the one and only eGov application for Italian P.A.s (p. 15) *(edited by the authors: the PEOPLE project is an e-Government project that the municipality participated in and which was still under development at the time of the deliverable's writing mainly because of the overcomplicated goals that were set for its functionality)*

This insight was not anticipated in the first place since the majority of scholars support the usefulness of complex information systems that provide the functionality of a "one-stop-shop" for citizens, businesses and governmental bodies. Real life experiences of two projects have shown that the goals which are set for implementations of e-Government IS are often not compatible with the directions of researchers. The intriguing functionality of a one-stop-shop notwithstanding, simpler and more flexible implementations seem to be preferred when delivery of an operational IS is the intention.

11 HOW IS CHANGE CARRIED OUT

11.1 Administrative initiatives

In eMayor one of the municipalities did not set up the platform at all and another set it up quite hastily while performing the operation and trial tests on a minimal level. These unexpected events led us to re-evaluate our initial judgement about the uniformly high level of acceptance of the platforms among municipalities. Having reflected on and reread the deliverables of requirements analysis of the first municipality in order to redraw this obvious controversy in interpretations, we came to the conclusion

that the governmental officials chose not to use the platform since they already had a municipal site in operation and had not the inclination or the desire to engage in reconfiguration of their organizational practices and technological infrastructures. This was further highlighted by the fact that the municipality's officials chose not to participate in the design and development phases of the projects, a fact that on first consideration was attributed to the limited technological expertise that the municipal officials had. In the light of their decision to not also participate in the platforms' test and operation however, it was evident that the municipal officials realizing that the installation of the platform would bring major organizational and cultural changes in the municipality refrained from any interaction with its development, evaluation and operation.

The latter municipality got involved in the operation and trial of the platform, but on a rather superficial level, and it reported in the deliverable of the platform's operation and trial that (eMayor Consortium 2005b, p. 175):

“the city experienced organizational difficulties setting up a server at the Municipality. Anyway, a test server was installed in a temporary site and the platform was compiled from the sources, installed and tested with the help of the other cities and technical support partners. During the tests <name of municipality> was in permanent contact with the other cities using Skype, and <name of municipality>'s eMayor platform was even searchable as a relevant eGovernment site through Google. All evaluation results for <name of municipality> are based upon demonstrations given with the test server.”

Another point of interest concerning the second municipality is that its stakeholders were strongly pursuing the implementation of at least one service concerning municipal taxes payment and administration. In eMayor a taxes related service was eventually implemented, yet it did not follow the exact steps that were described in the analysis of the paper-based services by the municipality in question. This was due to process interoperability reasons across all the municipalities. This course of events led the municipality to adopt a rather disinterested position on the matter of the platform's implementation, a position which also led to delays in their delivering corresponding material (progress reports and parts of deliverables).

The analysis showed that, even though the information systems were developed in time, some municipalities due to lack of willingness to reform organizational practices avoided their installation and operation in their premises. This fact brings to the fore the importance of consistent administrative decisions in e-Government projects. Even though all technological tasks may be completed successfully, the whole endeavour can be undermined by lack of insightful and daring administration.

11.2 User satisfaction

In both projects there was an operation and trial phase as well as an assessment phase. Participants in both consortia were eager to find out the reactions of the end users concerning the platforms' functionality, usefulness and ease of use. After all numerous works have shown that user satisfaction is an essential parameter in the measurement of an information system's success (Bhattacharjee 2001; Nevo & Wade 2007) and user-analyst relationships and interactions can shape the outcome of IS development (Newman & Robey 1992), even more so when the information system in question is a governmental one.

User satisfaction concerning e-Government IS is closely related to trust in government in general (Welch & Hinnant & Moon 2004) a relationship that affects the acceptance of change programmes. In eMayor the assessment of the platform led to considerable improvements in its functionality and efficiency. A whole work-package was concerned with the trial and evaluation tests. The evaluation was made against technological, financial, legal and user acceptance criteria and was based on the end users' opinions concerning the platform. These opinions were expressed following the users' trials of the platform in three out of five municipalities through answering questionnaires that were made for this purpose. The inquired users not only provided their input with eagerness, but they also returned to

reuse the platform after the bug fixes and improvements were concluded. Through this procedure, the eMayor project achieved a high level of end user satisfaction (eMayor Consortium 2006)

“The results of the evaluation in all cities show a great deal of consistency. The overall appreciation of the platform across Europe is positive. In Germany the users are most positive on the positive impact the platform would have on the city’s image and efficiency” (p. 99)

This positive appreciation was in great part due to the fact that the user's perception of the platform was explicitly considered as an important factor of success by the designers and developers.

11.3 Small steps

Both projects chose to develop platforms that were as simple as possible to implement, would initially require the minimum amount of organizational changes in the municipalities, the least level of user training and achieve the greatest level of software and business interoperability between municipalities of different countries. Once more this came to opposite terms with the concept of an all encompassing platform that is evangelised by the majority of researchers. Our practical experiences from both projects and the assessment and evaluation results of eMayor have shown that effective changes can be better achieved through small steps. Simple implementations are flexible in that they can be configured to deal with a greater variety of problems in various situations.

12 HOW IS ONE GOVERNED (ELECTORNICALLY)

The commonly supported position for valid electronic governance practice focuses equally on service provision, citizen participation and administration of public resources of all kinds. Contrary to this position the functionality of both platforms was limited to service provision and coordination. There was no identified concern for the support of either citizen participation or resource administration. The final products of both projects offer no information to the citizen about matters concerning the municipality, no decision support mechanisms, no tools for communication of protests or other democratic claims from the citizens to the municipalities. Both platforms are clearly service provisioning platforms. This controversy which at first glance strikes as rather odd can be clarified by considering the specificities of both the projects.

First in eMayor the primary goal was to have by the end of the project a fully implemented platform that would incorporate advanced security, communication and integration technologies of its time. A proof of concept was needed to be made. EMayor was innovative for its time since it was one of the first implemented e-Government platforms that utilised Web Services technologies along with advanced security features (advanced digital signatures (Cruellas & Karlinger & Pinkas & Ross 2003), web services trust functions (OASIS 2005)) and sub-process orchestration protocols (OASIS 2002) to form a complete platform for service implementation, choreography and provision. This was a significant goal to achieve already on its own without the consideration for other factors such as electronic democracy, electronic participation or decision support.

Moreover the role of the project’s manager was held by a consulting company that was active in the commercial field of IT and therefore was more concerned by efficiency and goal completion rather than the theoretical underpinnings of electronic governance itself. The research institutes and the technological providers were also not interested in other dimensions of electronic governance apart from service delivery since these other dimensions were completely outside of their field of expertise. The involved municipalities were in concord with the rest of the project participants since their first objective was to modify their functionality, lighten the workload of their employees and satisfy their citizens by implementing electronic forms of their services. It is thus expected that under these circumstances the consortium would chose to follow the road that it did.

Since the SWEB project was based on the eMayor platform and four of its participants were also members of the eMayor team it was only natural that the same approach to electronic governance

would be adopted too. One more thing can be said concerning the consortium of SWEB. The four members who had participated in eMayor formed an informal kernel of technologically experienced participants that were at many times responsible for the critical decisions concerning SWEB's evolution. The rest of the participants who were interested in acquiring the know-how of advanced e-Government technologies usually agreed with the technologically knowledgeable members and supported their propositions.

It is clear that in both projects a focused perspective was preferred over a more inclusive one due to strictly situated reasons having to do mainly with the timely development of the information systems and the teams that were formed in both of the consortia. As a result of this decision both projects achieved the initially defined goals and delivered operational information systems that could be integrated with the legacy systems of the municipalities with minimal effort.

13 IMPLICATIONS ON INITIATIVES OF E-GOVERNANCE

13.1 Implication concerning transformation of business processes

The introduction of an IS into an organization's practice is certain to not only bring changes to the existing business process, but also to create new processes that are enabled by the opportunities presented by advanced ICTs. If the organizational stakeholders and the designers and developers of the IS aim their innovative attempts at transforming a specific organizational domain then their efforts are more focused and the results more useful. On the other hand, they run the risk of developing an information system that is limited in scope and functionality. To minimize this effect, stakeholders can select the focus of transformation based on users' opinions so as to eventually implement the most useful functionality, even though at the cost of downplaying the importance of others. An efficiency driven perspective can at some times prove useful in setting realisable goals and seeing them through in the scope of a specific project. However, researchers and practitioners should also be mindful of the appeal of short term success which may reify narrow-focused perceptions and lead to their institutionalization. To avoid this, willingness on the administrative officials' part to support tasks of organizational reform is catalytic.

13.2 Implication concerning changes in IS analysis and design

The integration of cutting edge technologies for IS development can lead to innovative implementations both on an operational and on a methodological level. The success factor of a project can be considerably increased if this combination is built on a solid basis such as an existing methodology or standard. In the cases where a number of different organizations are involved in the analysis and design of the IS the common understanding of tools and concepts as well as the presence of an expert can greatly enhance the efficiency of the produced work. However matters concerning business and software interoperability can greatly limit the available possibilities.

13.3 Implication concerning changes in electronic governance strategies

When forming a strategy for electronic governance small or medium sized municipal organizations will face better results if their focus is on small flexible steps rather than on groundbreaking innovations. Essential in this attempt is the input from the end users (citizens, civil servants and municipal officials). This input can be gathered through trial evaluation or questionnaires and used to upgrade the products of each step before moving on to the next. Of course the continuous enquiry of users about their opinion is probable to result in repeating opinions and tired enquiry subjects; an enquiry of two or at most three stages is empirically the best solution. The consideration of matters that may not be critical at the time, but may prove important in the future (like cross-border aspects in Central Europe), albeit increasing the complexity of the strategy and not coinciding with every stakeholder's needs, can easily make the difference between a successful and an unsuccessful attempt in the long run.

13.4 Implication concerning distributed teams

A project consortium with organizations from different countries and of diversified technological and financial backgrounds can help towards a more solid conceptualization of the problem at hand. Every member can contribute useful considerations and solutions to problems. The diversity of opinions from different backgrounds will most probably highlight aspects that would have passed unnoticed in cases of fewer and less diverse participants. On the other hand, if the project team focuses primarily on the incompatibilities of the differential opinions this can greatly slow down progress. The task of satisfying a great array of needs is not trivial and at many points compromises must be made in order for things to move on.

14 CONCLUDING REMARKS

This paper offers insights on the dynamics of change in municipal organization settings as they were investigated in two European projects. We have studied related literature concerning organizational change, electronic forms of governance and IS implementation and decided to build our field research around three dimensions, namely “What is it changed?”, “How is change carried out?” and “How is one governed (electronically)?” The answers to these questions highlighted transformational occurrences in municipal business processes, techniques for design and implementation of IS for e-Government, strategic goals of municipal organizations and the conceptualization of electronic governance by various stakeholders. These transformations are expected to be realised with the aid of administrative initiatives from municipal officials, by explicitly taking into consideration the specific needs and opinions of the end users and through incremental changes.

The paper presents a more complete perspective on the dynamics of change in governmental organization settings than commonly found in the literature which typically focus on one or two of the specified dimensions. In addition, even though the cases studied concern two specific European research and development projects, we derived some more general inferences concerning transformation of business processes, changes in IS for e-Government analysis and design, electronic governance strategies and diverse contributors in implementations of IS for e-Government. We believe that these inferences can be used to frame an interesting conversation in any setting of municipal or governmental organization.

We feel that this paper can be of use to practitioners by providing a detailed investigation of the intricacies surrounding the analysis, design and implementation of IS for the field, the modification of organizational practices for more efficient appropriation of advanced technologies and finally changes in the organizational culture of governments and municipalities towards a more fruitful co-evolution of social structures and technological features. We believe that our implications can prove useful in trying to incorporate identified transformations in the broader scope of efficient governance.

Further we also feel that this paper can be of interest to researchers. The implications provided in the previous section can be used to develop more intricate considerations in the context of governmental organizations and transformational initiatives. The expansion of the investigation of our implications in various contexts can provide more inclusive results. Understanding and interpreting the dynamics of technological and organizational change is of great importance, since the contemporary model of organizational life is based on constant evolution. This evolution is realised through intentional and unintentional occurrences of change.

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