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Using digital technologies to combat corruption in transition countries

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Abstract

Digital technologies can play a major role in combating corruption. Improving the enforcement of rules is clearly the best way to combat corruption. However, in the case of post-communist transitioning countries such as Armenia, the challenges are unique. These countries are struggling with the transformation of their legacy bureaucratic and administrative processes. Automating government to citizen interactions will help to achieve transparency and reduce corruption. The process of automating these interactions using digital technologies needs to be analyzed as a socio-technical information processing system. Automating existing bureaucratic processes that are defective will not yield results. In this paper, we present a multi-stage framework to combat corruption. After prioritizing the critical processes to be restructured, we identify the appropriate digital technology that is suited for the task and complete the automation process.

Keywords: bureaucracy, corruption, digital technologies, e-governance, transition countries

Introduction

The nature and quality of government-to-constituent transactions all over the world have been dramatically influenced by recent innovations in digital technologies. E-Government initiatives have been around for quite a while in developed and developing countries. The benefits of computerizing existing bureaucratic systems have been well researched. However, the literature is sparse on the underlying structural, organizational, and institutional components upon which technological innovation is superimposed. These factors are as widely divergent as the cultures from which they derive. As a result, the successes of such implementations are widely divergent, and how their effectiveness can be assessed are yet in nascent form. Electronic government (E-Government) can be defined as the use of digital technologies by government to deliver information and services to its constituents. Gronlund (2005) states that while government organizations have succeeded in achieving more efficient operations and better services at the national level, progress is slow to emerge at the local level. Despite the considerable literature on digital or e-government, there is no general agreement on good measures for digital government or what we should be measuring (Carbo, 2004). Usable knowledge can be harnessed more effectively and efficiently by automated systems to yield better alternatives to decision makers. In this paper, we study those features of e-governance that go beyond automating citizen-government interactions. We analyse how reengineering the bureaucracy can improve the effectiveness of e-governance regarding citizen-centric decisions for complex problems.

Some studies have focused on availability, cost, and quality of information and communication technology (ICT) networks and equipment. Another stream of research looks at digital government as a special case of ICT-enabled business process change (Scholl, 2003). Factors such as societal readiness for e-government have also to be considered in tandem with countless assessments of e-readiness as undertaken by various international organizations specialized in “ICT for development” work (Moon, 2005). In addition to the

above, a clearer understanding of the organizational and structural changes that precede the transformation to e-governance is necessary; such analysis is heretofore largely lacking. With this as a main objective, we take a bottom-up approach and analyse the actual transactions that occur between entities in an e-governance context. Much has been written about the potential of information technology to ‘revolutionize’ society, particularly in the context of their role as catalysts of the ‘Information Revolution’. This ‘revolution’ is often juxtaposed with its predecessor, the Industrial Revolution, usually for the purpose accentuating the idea that communication networks are as integral to the process of development as was the birth and development of industry in the 19th century. While it is the question of access that has risen to the forefront of development agendas in the context of the digital exclusion, much work remains to be done in analyzing and understanding how these technologies are utilized and *applied* to bring about expected revolutionary societal and economic changes and improvements. An equally important point to be considered is the influence of information technology on transforming bureaucracy.

The term ‘e-government’ refers to the application of Information and Communication Technology (ICT) by government agencies. In this paper, we prefer to use the term “e-governance” in a broader sense to include a deeper understanding of the way ICTs impact the existing (and potential future) interactions between a government and its constituents. In other words, e-governance goes beyond the ‘what’ of an e-government interaction that presumably delivers service to a constituent - and includes rather an analysis of the ‘how’ and ‘why’.

Sometimes the terms ‘digitization’ and ‘digitalization’ are used interchangeably. But there is a critical difference between the two. Digitization describes the pure analog-to-digital conversion of existing data and documents. Digitalization moves beyond digitization, leveraging digital information technology to entirely transform a business’ processes — evaluating, reengineering, and reimagining the way you do business. In the context of digital government, digitization refers to making the government documents easily available to citizens by appropriate automating of citizen to government interactions. There is a considerable amount of literature on this topic. Digitalization goes further and seeks to leverage innovations in digital information technology to improve and reengineer the administrative process. This paper is organized as follows. First, we briefly describe the post-communist corruption in transition countries. Next, we examine how digital technologies can be used in bureaucratic systems. Then we propose a holistic framework to reengineer bureaucracy to combat corruption. The concluding remarks are presented in the last section.

Corruption is the misuse of public power, office, or authority for private benefit. This misuse manifests itself in many ways: bribery, extortion, influence peddling, nepotism, fraud, or speed money. Petty corruption is frequently found where public servants who may be grossly underpaid depend upon small kickbacks from the public to pad their pockets and feed their families. Grand corruption involves high officials who make decisions on large public contracts for their personal benefit, or to the benefit of organized, informal groups with highly aligned self-interest as the driver of their cohesion.

In many parts of the world, a major part of the problem in dealing with public sector or government bodies is corruption. No doubt, corruption has been around since time immemorial and indeed, may well be an engrained trait of human nature; nevertheless, most governments and technologists are interested in figuring out what means may be created to combat it. In this context, ‘Panoptic Vision’ as proposed by Heeks (2006) affords a way to analyze this critical problem. The concept of Panoptic Vision is based on the construct that sees information technology (IT) as a key enabler of management control. Public corruption can be largely attributed to government intervention in the economy. Therefore, policies aimed at liberalization, stabilization, deregulation, and privatization can sharply reduce the opportunities for corruption (Anechiarico, 1994; Bardhan, 1997). Where government regulations are pervasive, onerous or imprecise,

and when government officials have discretion in applying them, individuals are often willing to offer bribes to officials to circumvent rules.

High levels of corruption are present where institutional mechanisms to combat corruption are weak or not used, and where a system of simple internal checks and balances does not exist. In such cases, entrenched political elite dominates and exploits economic opportunities, manipulating them in return for personal gains (Karklins, 2005). The significance and impact of corruption varies greatly across the world. Even though people may tolerate demands for small payments in return for official services such as the issuing of permits and licenses, they do not necessarily approve. They perceive it simply as the most painless, quick and workable way of obtaining things they want or need.

A destructive legacy of Soviet rule for most successor states of the former Soviet Union has been widespread corruption. In the case of Armenia, the smooth transition of power in the early 1990s has allowed its political leaders to use corruption to consolidate firm control over the state apparatus (Olson, 2000; Ramasoota, 1998). However, Armenia's economy has fared relatively well under a more centralized form of endemic corruption, albeit its concentration on largely donor driven projects. To derive a more comprehensive perspective of the context in which the e-governance transformation in Armenia is being attempted, it is necessary to undertake a brief analysis of the period of Soviet domination. This period was characterized by a highly centralized political culture and a well-defined bureaucracy driven by elite (Wang, 2001; Wimmer, 2001). There was minimal government to citizen (G2C) interaction and hardly any effective mass political participation or a demand for it. All of this changed after the collapse of the Soviet Union in 1991.

The post-independence or transition period of Armenia started with the disruption of institutional stability and resulted in a deterioration of existing bureaucratic procedures. This has resulted in an environment of ill-defined and poorly adhered to protocols for government-to-constituent interactions (Stefes, 2006). The provision of clear information for the public, and moreover the public's right to it, are heretofore newly explored concepts. Before we can identify areas suitable for e-governance implementation, it is vital to ensure that a clearly defined and understandable procedure for reform is in place. Process restructuring becomes critical in this context.

Barriers to change are identified in the following four areas: Organizational Characteristics, Human Capacity, Financial Capacity, and Technical Infrastructure. Organizational characteristics such as the existence of local information technology (IT) departments that address questions of automation and efficiency, and the existence of collaboration between IT and public relations (PR) departments which results in the availability of streamlined public information are vital to the transformation process. This primarily presumes that the realization of coherent public diplomacy is contingent upon a state's ability to build itself a back-end capable of effectuating its own communication systems. Data-intensive collaborations at some point involve the issue of data ownership (Bremmer, 1997; Stefes, 2006). Such issues in a fledgling bureaucracy can be a potential stumbling block especially in government to government (G2G) transactions. In the same way that intelligence agencies in the United States post 9/11 discovered the major flaws in the ability of their respective vast systems to dovetail and cooperate effectively, so too do the various branches of government and their respective ministries face a challenge of interoperability. In addition, it is important to determine whether there are any institutionalized means of process review or opportunities for constituents to address their grievances. By developing the infrastructure and capacity to provide local service and service delivery, e-government can become a mechanism for spurring community involvement and thus become a catalyst for direct political interaction and/or e-participation (Heeks, 2003; Moore, 1997). Naturally, this may be viewed with skepticism by various parts of the bureaucracy. In the

context of post-communist societies, this is further exacerbated by the subservience of bureaucracy to political authority and the ‘strongmen’ that are frequently its human face.

The human capacity component in an institution is critical to the ability and capacity of that institution to evolve. For the purposes of this analysis, this component can be used interchangeably with the notion of social capital – even in the limited parameters of a single institution. Social capital refers to the ‘stock’ that is created when a group of departments or divisions develop the ability to work together and create linkages for mutually productive gain. Agents in a collaborative network, even within one institution, learn of new technologies, opportunities, challenges, and the outcome of transactions more quickly because of the density of interaction within the network (Scholl, 2003). Vertically organized networks, like the kind we find in the case of Armenia, tend toward characteristics that adversely affect this sort of ‘mesh’ learning about information processing capacity by virtue of a lack of density and ‘flatness’ in the nodes of the social networks that drives the political apparatus. This is an interesting point to consider because whereas complexity in networks may traditionally be associated with building up a sclerosis of sorts in an institutional body in terms of its ability to act, it can be suggested that a lack of complexity in an overly simple hierarchical network structure can equally result in a lack of clear action and effectiveness.

The financial barrier also is a critical one to the emergence of innovation and institutional transformation. This is largely about the creation of incentives for people to innovate. As it stands, the average salaries in IT departments of ministries in Armenia are quite low compared to the comparable private sector jobs, and do not create an environment conducive to innovation. The most critical element here is a lack of commitment from the top – strategic and financial – to the objectives of institutional transformation. The status quo suits the purposes of many.

Barriers posed by technical infrastructure refer to problems of depreciating equipment, lack of standardization and interoperability, an overall disregard for licenses, and an unwillingness to capitalize on telecommunication infrastructure even when it is present (i.e. as in the case of the purported ‘dark’ fiber running through most major government buildings). This creates an environment where change is not a priority, and where complacency becomes the rule.

Digital Technologies and Bureaucracy

Bureaucracy as a means of implementing public administration is undergoing momentous changes due to innovations in Information and Communication Technologies (ICTs). These changes must be examined with reference to political, managerial, and professional domains responsible for policy, administration, and service (Cordella, 2007). Typically, in a bureaucracy, discretion is structured by rules and standard operating procedures, and it does allow civil servants to take into consideration contextual variations and act according to other norms (Grimsley, 2005). It must be ensured that the uniquely human ability to act on broader societal norms is retained after ICT intervention in bureaucratic practices. The real challenge is to figure out how to modify practices that work in Western countries, so that they can work in transition/developing countries where there is no culture of accountability and transparency in any type of constituent-government interactions.

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Cucciniello (2012) describes a framework to monitor the degree of transparency based on four dimensions: institutional, political, financial, and service delivery. This model was designed to measure government transparency based on the information published on their institutional websites. The institutional dimension aims to capture the degree of transparency regarding the government's mission and operations, its institutional activities and the information it is obliged to publish by law. The political dimension aims to capture the degree of accessibility of information on political representatives, their political mandate and activities and other information, such as absenteeism at council meetings and salary. The financial dimension aims to assess the degree of transparency about the use of financial resources, the solvability of governments and other financial issues. The service delivery dimension aims to assess the degree of transparency concerning the performance of governments in the delivery of services to citizens and businesses. Each dimension of the assessment framework is divided into different variables and assessed using specific measurements and checklists.

Each of the variables of the different dimensions is evaluated with reference to two factors: accessibility and interactivity. Three different types of information are relevant in this context: static information, dynamic information, and feedback information. Static information is information about the public agency and its mission, how it functions, and what it offers. This type of information does not change frequently and some of this information needs to be published to comply with existing regulations. Dynamic information consists of information about performance for each of the four dimensions stated above. Feedback information comprises performance-related feedback information.

A Framework for Reengineering Bureaucracy

Digital technologies can play a critical role in improving bureaucracy resulting in better user experience. Automating existing bureaucratic procedures *per se* will not yield the expected results. As Michael Hammer (1990), a well-known business consultant who championed business process reengineering, wrote an article in *Harvard Business Review* titled "Don't Automate, Obliterate." He stresses the importance of simplifying

processes, eliminating non-value-added tasks, and innovating to improve speed, quality, and service. No meaningful improvements can be expected by simply automating the existing inefficient processes.

In this section, we propose a framework to improve bureaucracy and render transparency. This framework consists of five stages. In the first stage, existing government-constituent interactions are examined. The number of interactions is indeed very large as evidenced by the three stakeholder groups of constituents (citizen, business, and government). In the second stage, processes are made free from accountability dysfunctions. In the third stage, processes are restructured to make them more effective and efficient. In the fourth stage, the hierarchical structure is converted into a network structure. In the fifth and final stage, restructured interactions (processes) are automated in the modules of the networked bureaucracy.

Stage I

In the first stage, we select the processes that need to be reengineered so that the citizen will have a better interaction with the government. We need better models of the processes used to plan, fund, develop, implement, operate, and evaluate successful e-Government in various political and social, cultural, and economic contexts (Allison, 2002). To reengineer bureaucracy, we need to address these questions (Ramaswamy and Selian, 2007):

- How can we make e-Government truly citizen-centric?
- Do we have objectives that are correct and realistic?
- How well are we achieving these objectives fully and cost effectively?
- Are these objectives jointly determined and agreed upon by the citizens and the government agencies?

Some of the above concerns are addressed by the e-Governance cube. Ramaswamy and Selian (2007) propose the formation of an e-Governance cube with the following three axes: *entity type* on the x-axis, *processing complexity* on the y-axis, and *perceived value* on the z-axis. The e-governance cube provides a means of evaluating an extensive (if not comprehensive) series of government-constituent interactions. Depending upon which of the 27 sub-cubes contains the given transaction of interest, we are now able to make inferences on the potential of that transaction for its ease of conversion to e-governance. This naturally opens a wide arena of analysis, particularly for others who wish to specialize and focus specifically on the dynamics and characteristics of specific e-governance transactions. In the context of the e-governance cube model, the further one moves away from the origin, the more resistance one encounters. From the e-inclusion viewpoint, the processes that are valued high on the z-axis (perceived value) need to be addresses first. At the end of the first stage, we will have a prioritized list of processes that have to be restructured.

Stage II

In the second stage, socio-technical factors are considered. Sociotechnical factors pertain to exacerbated accountability dysfunctions that can occur because of automation. According to Bovens (2005) the major categories of dysfunctions are: Rule-obsession, Proceduralism, Rigidity, and Scapegoating. Before manual procedures are automated, it must be ensured that there are no problems such as rule-obsession and proceduralism. Not only will this help towards efficiency and effectiveness, but it will also make acceptance by constituents easier. Rule-obsession refers to the focus on outcomes over process. This focus on outcomes over process takes the rule-obsession dysfunction and transmutes into an equally dysfunctional outcome-obsession where the outcome of the computer process cannot be questioned (Smith, 2010). ‘Proceduralism’ refers to increased emphasis on procedures to avoid responsibility and accountability. Strict adherence to

procedures can lead to the bureaucracy to lose the ability to balance procedures with public values. Relying heavily on encoded computer procedures can undermine the effectiveness of public sector organizations. Bureaucracy defines roles and positions with assigned responsibilities and practices, including discretion. As the operating procedures are embedded in the system, they can become more rigid than supervisors could be (Fountain, 2001).

The ability to take contextual variations into account is affected by the encoding of procedures which results in encoding rigidity. After developing a system, the embedded rigidity can make it difficult to modify as part of organizational learning. As a result of the introduction of ICTs in the public sector, there has been a displacement of accountability from bureaucrat to software engineer. When things go wrong, the tendency is to use the computer as a scapegoat. It is important to consider these socio-technical factors while building e-government systems in order that the citizens can have confidence in automated systems. At the end of the second stage, we will have a set of modified processes that do not exhibit exacerbated accountability dysfunctions.

Stage III

In the third stage, the selected processes are restructured. Automating legacy procedures that afforded plenty of opportunities for inefficiency will not yield results. At this stage, the results of data analytics are used to modify processes (Passerini, 2012). The main objective of restructuring various processes before transforming them into digital interactions is to improve the effectiveness as a system. It is to be noted that placing an IT layer over and automating a faulty bureaucratic system may yield a more efficient system but will certainly not be one desired by or responsive to its core constituents.

Business process reengineering (BPR) has now become a well-established approach in the restructuring efforts of public sector organizations. Frederick Taylor suggested in the 1880s that managers use process reengineering methods to discover the best processes for performing work, and these processes be reengineered for optimal performance. Hammer and Champy (1993) define BPR as ‘the fundamental rethinking and radical design of business processes to achieve dramatic improvement in critical measures of performance such as cost, quality, service and speed.’ Davenport (1993) describes ‘business process redesign’ as the analysis and design of workflows and processes within and between organizations.

Redesign, retooling, and re-orchestrating form the key components of Business Process Reengineering (BPR) that are essential for an organization to focus on the outcome that it needs to achieve. In the first stage, the focus is on redesigning the processes. At this stage, we must look at simplifying and standardizing the existing processes. If there is any need for reorganization, it is done at this stage. The metrics to measure the effectiveness of the process is also determined at this stage. The retooling stage of the available IT infrastructure such as networks, intranets, and extranets is examined. In addition, the workflow of the processes is accurately mapped. In the final stage, re-orchestration of the processes is implemented.

The entire technological, human, and organizational dimensions can be changed by using the BPR technique. Information technology plays a major role in business process reengineering as it provides office automation, it allows the business to be conducted in different locations, provides flexibility in manufacturing, permits quicker delivery to customers and supports rapid and paperless transactions (Bogdanoiu, 2014; Wu, 2005). The concept of ‘Business Process Engineering’ can be successfully applied to improve the decision-making aspect of bureaucracy, which in turn results in better outcome to citizens. The BPR technique implements organizational change based on rapid change, employee empowerment, and training and support by information technology. To implement BPR to public administration, the

following key actions need to take place:

- Selection of the strategic processes for redesign,
- Simplify new processes – minimize steps – optimize efficiency – modeling,
- Organize a team of employees for each process,
- Organize the workflow – document transfer and control,
- Assign responsibilities and roles for each process,
- Automate processes using information technology,
- Train the process team to efficiently operate the new process,
- Introduce the redesigned process into the new organizational structure.

Martin (2006) proposes ‘One-Stop Government’ to improve e-governance. Here, the front-office corresponds to the web portal the citizen accesses. Back-office refers to the database that links with various governmental authorities. In such a setup, BPR can play an important role in both horizontal and vertical integration of processes. Consider a scenario where there are ‘m’ processes in each authority and ‘n’ such authorities. In horizontal integration, the different processes in each authority are redesigned. In vertical integration, many authorities participate in the same process. In this way, from the perspective of the citizen there is no fragmentation of workflow even if any request involves multiple processes in different departments.

The need for effective and efficient governance calls for automated systems. But in developing countries, where there is no culture of established bureaucracy, there is also a concomitant need for accommodating socio-cultural factors. An analysis of the existing bureaucratic practices in transition countries indicates two areas that need attention. The first pertains to the availability of information regarding governmental procedures to the public. Acquiring such information is quite simple in most western societies. But in some developing countries government officials, especially at the lower levels, make it harder for the public to execute these transactions so their reliance on the officials who “sell” this information and “facilitate” the required transaction is not diminished. The roots of public sector corruption are found in such opportunities. The second area of concern is the convoluted way in which governmental procedures in general are laid out. In many countries, several layers of authority are embedded in the bureaucratic system. Efforts to build a congruous system to replace it have yet to emerge. This gives an opportunity for government officials to use the system to their advantage. Clearly, the simplification and clarification of procedures has not been their priority (Homburg and Bekkers, 2002). This elucidates the point that process restructuring should also accompany a concomitant improvement in the work and incentive conditions of the government employees delivering public service. This necessitates the emergence of an environment in which all participants have a share in the benefits of modern technology.

The need for integrating business processes and systems increases in one-stop governance. The difficulties can be technical, political, or integration related. Technical difficulties can arise due to the existence of independent systems. Political difficulties refer to the lack of involvement by the authorities. In order to successfully implement both horizontal and vertical integration, the structure of public agencies has to be agile. The existence of many participants in various processes can add to the complexity. At the end of the third stage, we will have all the processes restructured for better efficiency and better effectiveness.

Stage IV

After completion of the restructuring stage, we are ready to implement in the fourth stage. In this critical stage, we attempt to change the hierarchical structure of bureaucracy to a more agile matrix structure. The importance of networking, coordination, and collaboration among different departments of the government

cannot be overemphasized (Centeno, 2005). The network administration has technological and organizational aspects which are closely related. In addition, the interoperability of systems and standardization of systems is only possible if the administrative compartmentalization is changed. In order to successfully execute this stage, the top management support is critical. As Hurbean (2008) suggests, an approach based on enterprise resource planning (ERP) will be helpful. Both horizontal and vertical integrations of processes are made so that the way communications occur both internally and with external entities are integrated.

In the context of public administration, the term 'network' refers to the online network among government, citizens and business. A bureaucracy based on this type of network will result in a more transparent, cooperative and beneficial relationship. Further, this has the potential of yielding better technological integration and organizational connectivity. The traditional bureaucratic model described by Weberian theory emerged with the rise of the industrial society that resulted in the growth and expansion of the administrative tasks of the modern State (Welp 2007).

The main objective of Weberian bureaucracy was to seek efficiency and rationality in executing its functions. It was ensured by unified management and the uniformity and the predictability of routines and processes. This model's rigid hierarchy and the inflexibility of the processes and regulations did not permit the possibility of appropriate responses to the new problems encountered in our current complex environment. The concept of 'New Public Management' was put forward by the Anglo-Saxon countries – United States, United Kingdom, Australia, and New Zealand – as an alternative model to Weberian Bureaucracy (Welp, 2007). This alternative model, referred to as 'New Public Management' (NPM) seeks to create smaller administrative structures that are decentralized and enable a degree of flexibility. Less hierarchical models were sought, with emphasis being placed on efficiency and effectiveness, and on an orientation towards the citizen (Hughes, 2001). NPM seeks to create an entrepreneurial government that puts service providers in competition with each other and displaces control from bureaucracy to the community.

The increasing number of public, private, and social actors and intermediaries at national, regional, and local levels in the implementation of e-Governance indicates the need for a networked e-Governance (Centeno, 2005). Governments can create considerable amount of public value just by reproducing themselves as networks. The utility of a network depends on the different systems connected to it and the subsequent interoperability. Interoperability can be defined as the ability of two or more systems to exchange information and to use the information that has been exchanged. Cross-boundary information sharing is dependent on collaborative governance and interoperability. Collaborative governance provides an inter-organizational structure to make decisions and coordinate efforts across organizational boundaries (Gil-Garcia, 2016). In the current type of bureaucracy that is widely practiced today, the structure is still hierarchical. Even though the orientation is essentially administrative, information dissemination is also given importance. Using the web, many forms can be obtained, and some transactions can be executed by citizens. The level of decision-making is at the top and middle levels. The degree of operational ease is medium and there are few intermediaries between citizens and decision-making authority.

In the networked bureaucracy, the structure will be matrix, and the orientation of this bureaucracy is the user. The web services mirror all the services provided in person, by mail, and by telephone. There are no intermediaries, and the degree of operational use is high. At the end of the fourth stage, we will have the entire bureaucracy reengineered for optimal utilization.

Stage V

In the fifth and final stage, restructured processes are automated in the modules of the networked bureaucracy. When automated processes result in disintermediation, it is necessary that the relevant entities are on board with new procedures. The degree of automation can vary across a wide range. Smith (2010) introduces a scale of nine degrees of automation starting from the first level where the computer offers no assistance to the ninth level where the computer decides everything. In between these extremes, there are several levels where a varying degree human-computer interaction occurs. The appropriate level of intervention using digital technologies depends on the interaction that has to be automated.

Discussion and Conclusion

As this research is conceptual, we propose to do an empirical study the actual implementation of digital technologies in countries such as Armenia in the future. Sangki (2018) suggests a new e-government development model called as “E-Government Maturity Model based on Socio-political Development” that incorporates the level of social maturity based on e-democracy and the maturity level of civic society with statistical model. The new model classifies e-Government development into four stages: “Bureaucratic model”, “Information management model”, “Participatory model”, and “Governance model.” In the context of this paper, we are examining the critical factors that affect the transformation to governance model from bureaucratic model. Our proposed model is different from the ‘E-Government Maturity Model’ (EGMM) in the following way. EGMM takes an incremental approach whereas our model attempts to change bureaucracy in a more comprehensive way. By our stage wise approach, we attempt to restructure the processes as well as reengineer the hierarchical structure into a network structure.

During the last few decades, countries all over the world have attempted to improve the efficiency and effectiveness of their bureaucracies by leveraging digital technologies. While there has been much success regarding achieving efficiency, there is still a lot of scope regarding the effectiveness aspect. The basic building blocks of e-governance in public sector bureaucracy consist of digitized versions of interactions between the government and its constituents. In this paper, we have discussed various aspects of bureaucracy and e-governance. The importance of decentralizing the decision-making process by horizontal and vertical integration of the various processes that affect citizens has been analyzed.

Restructuring the bureaucratic procedures and then automating them in a systematic way as suggested in this paper affords a practical approach to render transparency and accountability to public sector in addition to making bureaucracies more efficient and effective. Future work in this area focuses on developing a comprehensive framework that will enable policy makers and researchers to point out the potential priority areas that need to be restructured both process wise and integration wise. This will also yield a realistic estimate of resources needed to achieve such transformation. In addition, such an approach will also help in giving a better insight into process restructuring. The practical implications of this research include a guideline for the preparation of critical processes that require immediate attention as well as template that indicates the appropriate digital technology that is most suitable for automating such critical processes.

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