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THE ROLE OF E-GOVERNMENT IN COMBATING CORRUPTION IN TRANSITION COUNTRIES

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ABSTRACT

Improving the enforcement of rules is clearly the best way to combat corruption. The introduction of e-Government can play a major role in this context as it automates several processes. 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. In addition, almost every post-Soviet country has inherited systemic corruption that is built in to the 'modus operandi' of both the public and private sectors. Without some method of categorization, assessment and modification of existing administrative processes, the formation of good policy and planning capable of leveraging the current capacity of institutions to deliver public service in a more transparent and efficient way is simply not feasible. Automating existing bureaucratic processes that are defective will not yield results. In this paper, we propose a methodology to combat corruption using information and communication technologies (ICT) that entails process restructuring.

Keywords: e-Government, Information and Communication Technologies, Post-Communist Transition, Process Restructuring, Public Sector Corruption.

INTRODUCTION

Post-communist transitioning countries such as Armenia have inherited endemic corruption. Recent innovations in information and communication technologies (ICT) have given hope to the idea that new technologies in the form of e-government systems can be used to combat corruption in the public sector. Most governments across the world desire their citizens and businesses to interface with them through electronic means for the obvious reasons of efficiency in cost-saving and effectiveness. However, whether the transparency in process and information-sharing that this presupposes is also an equally important social and cultural objective for all leaders is a less obvious assertion. As Jane Fountain states in her work, there is a certain element of the 'perversity of incentives' to acknowledge here; Kedzie calls this the "Dictator's Dilemma" in the state [1, 7] – where increased efficiency and political efficacy (brought about by ICTs) are positively related to each other, and negatively related to authoritarian and highly centralized control. This is especially true in transition countries where the newly emerging bureaucracies (after the Soviet collapse) are hesitant to give way to automated systems [18].

The rest of this paper is organized as follows. The next section briefly describes the concept of public sector corruption. Post-communist transition and its effects on system integrity are narrated in Section 3. Section 4 explains the concepts of e-governance and bureaucracy. Process restructuring as a necessary precursor to automating government to citizen' (G2C) interactions is explained in Section 5 with the help of an example. Conclusions and future research directions are presented in the last section.

PUBLIC SECTOR CORRUPTION

Corruption is the misuse of public power, office or authority for private benefit. This misuse manifests 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 [9] 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 [2, 3]. 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 [11]. 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.

POST-COMMUNIST TRANSITION

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 [14, 15]. 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 [20, 21]. 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 [19]. 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. To a large extent this 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 [4, 19]. 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 [8, 13]. 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 [17]. 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 a rule.

E-GOVERNANCE AND BUREACRACY

One of the ways to combat corruption is by automating G2C interactions that lie at the heart of e-society. A critical component of e-society refers to the digital content that users can access. User interactions with digital or electronic means have been grouped in a number of ways [10, 15]. In the present analysis, it will be useful to categorize them in the following way: information services, communication services, and transaction services. A more inclusive e-society has to provide more useful digital interactions to a larger segment of society, especially in the third category of transaction services [5, 6].

All segments of society have to be included in e-governance if it is to be an effective tool in combating corruption. This is often referred to as e-inclusion. In order to build a more inclusive e-society, we must ask the following questions:

- 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 model proposed by Ramaswamy and Selian [16], suggesting the formation of a 3-dimensional 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 as shown in Appendix I. These parameters are based on the principles that define quality of information.

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 able to make inferences on the potential of that transaction for its ease of conversion to e-governance. This naturally opens up 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 view point, the processes that are valued

high on the z-axis (perceived value) need to be addressed first, if there is to be any momentum to drive the 'return on investment' on instituting an e-government system to begin with.

In the e-Governance cube, government-to-constituent interactions are categorized into three groups: government-to-government (G2G), government-to-business (G2B), and government-to-citizen (G2C). This categorization is useful for analyzing differences in the types of information needs typically necessary for the successful execution of specific types of service delivery. The entity type is represented on the x-axis.

Processing complexity is represented on the y-axis. The processing complexity of an interaction is a function of the information available as to how to execute that task, as indicated in Appendix II. Focusing on the information required for processing an e-governance transaction, we can combine *relevance*, *accuracy* and *precision*, and define 'correctness' as an attribute that refers to the accuracy and relevance of the information provided, while adding in some way to the successful execution of a task. In addition to 'correctness', we find that the following three attributes are necessary and sufficient to capture its utility: 'completeness', 'clarity', and 'ease of accessibility'. The adequacy of available information to process a task is captured by the term 'completeness'. 'Clarity' is the expectation that the information provided is in a form and language that is easy to understand. 'Ease of accessibility' indicates the ease with which people who need it can find and access that information. Each attribute is measured in turn on the binary basis of values set between 0 and 1, 0 referring to the absence of these attributes, and 1 referring to their presence.

Users' or constituents' perceptions of the value of e-governance interactions play a key role in assessing the level of resistance in government to restructuring, and the subsequent automation of bureaucratic procedures already in place. This dimension of perceived value is represented on the z-axis. The range of this axis is divided into three simple parts: low (L), medium (M) and high (H). Thus, the interactions towards the top of the cube have a higher perceived value. Accordingly, the volume of government-to-constituent interactions will increase when the perceived value of such interactions is deemed higher, or more 'valuable'. This model is designed to capture and action the highly subjective element of 'perceived value', which differentiates it from other frameworks of analysis. Defining these ranges for the axes in this way enables the division of the e-governance cube into 27 sub-cubes. Appendix III indicates a government-to-citizen interaction of processing complexity β, and of perceived value of medium range (C, β, M) being transformed to an interaction of lesser processing complexity α.

The e-governance cube is an analytical framework that 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 an e-governance system. This opens up a wide arena of analysis, particularly for others who wish to specialize and focus specifically on the dynamics and characteristics of highly specific e-governance transactions.

PROCESS RESTRUCTURING

Clearly, e-Governance can play a critical role in combating corruption by automating government to citizen (G2C) interactions. Automating existing bureaucratic procedures, *per se*, will not yield transparency. As Michael Hammer, 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. This is especially true in the case of a transition country like Armenia. In this section, we provide a typical interaction and explain how it can be restructured. Our case study for task analysis and process restructuring pertains to a G2C interaction, viz., acquiring registration for a car.

This is typical of a transaction that is amenable for corruption in a transition country such as Armenia. Appendix III indicates the details of this case study where the procedure to register a car took six steps. In Step A, the user went to the wrong place. The complexity of this subtask in terms of correctness, completeness, clarity, and ease of access of information is (0, 0, 0, 0) resulting in a complexity value of 1. The percentage of task completion at this point is thus accordingly zero. Steps B and C similarly do not contribute towards the completion of this task. The complexity value of Step C is considered a full "1", again since all four information parameters are zero or unhelpful for users to

complete the business of transaction. Only in Step D, where correct information is gathered, does 50% of the task get accomplished. The other half of the task gets completed in Step F. The overall complexity of the task as conducted (status quo) is 3.5. It should be noted here that variation in assigning the complexity values that can occur due to factors of subjectivity do not affect our analysis as long as similar, consistent standards are adhered to throughout the analysis.

Appendix IV indicates the time required for each of the steps (subtasks). As Step F takes place on the next day, we find the total time taken increased even though Step E does not contribute towards the completion of the overall task. 'Task Completion Status Quo' illustrates the frustration of citizens who have to deal with dysfunctional bureaucracy in a post-communist transitioning country like Armenia, which is in fact what some would call a 'pre-bureaucratic' state even today, well over a fifteen years after the fall of the Soviet Union. This analysis demonstrates in practical terms the dire need to modify the course and nature of subtasks in this process before contemplating steps toward automation using ICT tools.

Appendix V illustrates a hypothetical scheme to restructure the process indicated earlier in Appendix III and Appendix IV. As a necessary first step towards automation, we simplify the process by requiring that only three steps be allocated for this transaction. In Step A, the user gets directed to the appropriate person and office and 30% of task completion occurs at this step. In Step B, correct information on procedure is provided which amounts to 10% of task completion. And finally in Step C, payment is made and registration papers are received (30% of task completion). The overall complexity with the restructured procedure becomes 0.25, compared to a value of 3.5 in the earlier procedure.

Now the restructured interaction is ready for automation, and can be considered as an example of technological change, which is essentially executed in one step. Here the user first acquires information regarding the procedure for registration of cars by accessing the appropriate web site of the Department of Motor Vehicles. Then the rest of the activities such as filling in the application, and payment of registration fee are completed online, rendering the whole process more likely to be completed within the time frame of one hour. Appendix VI presents a comparison of the three processes: 'status quo' that takes six steps in about 30 hours, the 're-structured process' that takes three steps in six hours and finally, the optimized 'e-interaction' that requires one step - taking about one hour for the completion of the entire activity. The significance of the above example simply illustrates the need to restructure or reengineer the existing business processes before any automating efforts are attempted.

The main objective of restructuring various processes before transforming them into e-government interactions is to improve the effectiveness of e-governance as a system and make it more transparent. 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, and will not help in any way to combat corruption or perceptions of it.

An analysis of the above case indicates two areas that need attention. The first pertains to the availability of information regarding governmental procedures to the general public. Acquiring such information is quite simple in most western societies. But in the post-communist context, 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. During the Soviet era, several layers of authority were embedded in the bureaucratic system. After the fall of the Communist regime, no congruous system emerged to replace it. This gave an opportunity for government officials to use the system to their advantage. Clearly, the simplification and clarification of procedures has not been their priority. 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.

We propose a two-stage framework to leverage e-governance to combat public sector corruption. In the first stage, we examine the existing range of government-constituent interactions. This is indeed very large as evidenced by the three stakeholder groups of constituents (citizen, business, and government). The gamut of interactions is also very diverse. It is critical that these interactions are properly restructured, as described in the case study

above, before being automated [8, 12]. During the stage of restructuring, the e-Governance Cube can be used to prioritize the restructuring process. A task that is at a distance from the x-axis (higher complexity as well as perceived value) requires far more attention than a process that is less complex and that possesses lower perceived value.

The second stage consists of the actual implementation of e-government. Combating corruption has to be an evolutionary process, characterized by both top down and bottom up 'buy in', so that it can be accepted with minimum resistance by the bureaucracy as a whole. It is more pragmatic to start with smaller steps of automated procedures that are less controversial (as in the case of the very successful e-visa in Armenia, launched by the Ministry of Foreign Affairs) and succeed, than to be more ambitious and fail at the start. Prioritization of transactions can be done in the G2C part of the e-governance cube as these activities have the most impact on reducing public sector corruption.

CONCLUSION

The basic building blocks of e-government are interactions between the government and its constituents. In this paper, we have presented a practical tool that can in one small way combat corruption in dealings of the public with the types of government structures prevalent in post-Soviet transitioning states by means of e-governance. Changing the bureaucratic methods and human attitudes of those 'running the system' in post-soviet transition countries is doubly challenging. These countries suffered the first shock during the total collapse of public administration when the Soviet Union disintegrated. Now, the nascent bureaucracy considers automating G2C interactions as a second shock. Restructuring the bureaucratic procedures and then automating them in a systematic way as suggested in this paper affords a practical approach to combating public sector corruption.

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 automated first to combat corruption and 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.

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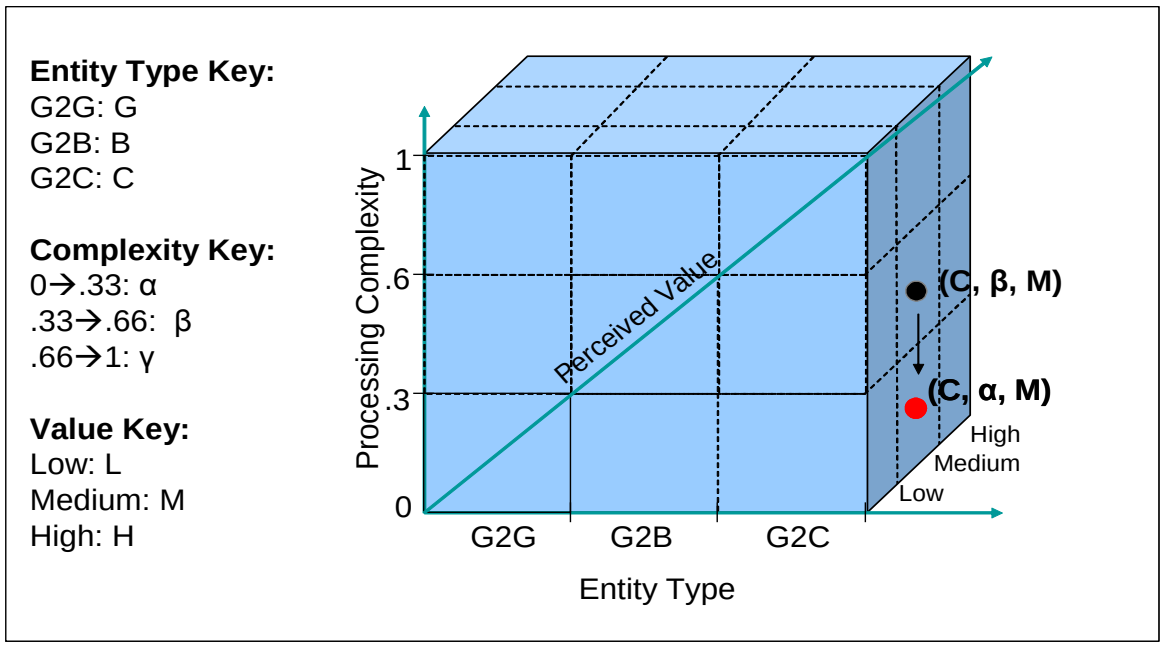
APPENDIX I. e-Governance cube



APPENDIX II. Processing complexities

Assumptions

- Task complexity is = 1 if correctness is 0, irrespective of other dimensions
- Other dimensions are weighted according to their importance to the completion of the task

$C_S = f(A,B,C,D)$

A Correctness	B Completeness	C Clarity	D Ease of Access	SubTask Complexity
0	0	0	0	1
1	0	0	0	.75
1	0	0	1	.50
1	0	1	0	.50
1	1	0	0	.50
1	1	0	1	.25
1	0	1	1	.25
1	1	1	0	.25
1	1	1	1	0

APPENDIX III. Case study of acquiring registration for a car

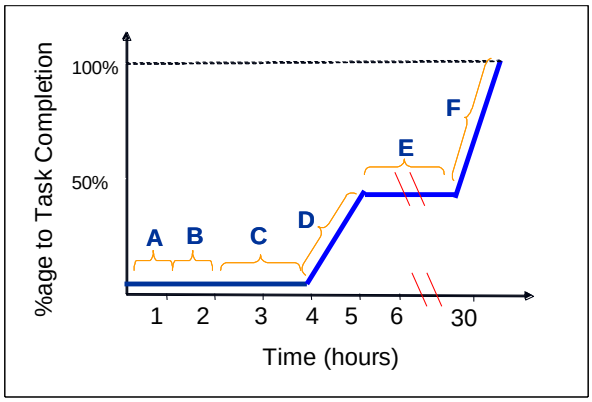
Case Study

Description: Acquiring Registration for a Car $C_S = f(A,B,C,D)$

Step	Description	Time	%age to Completion	Complexity of Subtask
A	Visit to usual JEK office, told to go to a different office to get car registration associated with a temporary address	1 hr	0%	0,0,0,0=1
B	Visit to 2nd JEK office, no information available	1 hr	0%	1,0,0,1=.50
C	Sent to Mayor's office with inquiry on correct procedure for the civil servant (who refuses to place a phone call). Appropriate person is not there and he waits	2 hr	0%	0,0,0,0=1
D	Person arrives, but again, he/she does not know; He is sent to Ministry of Interior Affairs. Visit to Head of Dept., who gives correct information	1 hr	50%	1,0,0,0=.75
E	Visit back to 2nd JEK office with correct information on procedure prior to closing time, but person is gone	1 hr	0%	1,1,1,0=.25
F	Visit back again to 2nd JEK to clarify and resolve the matter (involving small official payment).	Next day	50%	1,1,1,1=0
	TOTAL $C_T = \sum_{i=1}^{n} (C_S)$	30 hr	100%	**3.5**

APPENDIX IV. Task Decomposition for the case study in Appendix III

Task Completion Status Quo



APPENDIX V. Three steps after effecting structural changes

Implementing Structural Change

Description: Acquiring Registration for a Car

Step	Description	Time	%age to Completion	Complexity of Subtask
A	Visit to the JEK office, and get directed to the appropriate person and office	1 hr	30%	1,1,1,1=0
B	Find office/bldg, acquire correct information on procedure	1 hr	10%	1,1,1,1= 0
C	Make required payment and acquire registration	1 hr	60%	1,1,1,0=.25
	TOTAL $C_T = \sum_{i=1}^{n} (C_S)$	3 hr	100%	**.25**

Lower level of complexity does not necessarily imply faster execution of task

APPENDIX VI. Status quo, structural change, and technological change