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Reducing Corruption through E-Governance: Rhetoric or Reality? An Empirical Inquiry

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List of Abbreviations and Acronyms

A2I	Access to Information
ACO	Assistant Commercial Officer
ADC	Additional Deputy Commissioner
ADG	Additional Director General
ANOVA	Analysis of Variance
ASPA	American Society for Public Administration
BR	Bangladesh Railway
BDT	Bangladeshi Taka (Currency)
C-ticketing	Computerized-ticketing
CC	Control of Corruption
CCM	Chief Commercial Manager
CPI	Corruption Perception Index
DC	Deputy Commissioner
DCO	Divisional Commercial Officer
DD	Deputy Director
DESC	District E-Service Center
DFID	Department for International Development
DI	Democratic Index
DRM	Divisional Railway Manager
EGDI	E-Government Development Index
E-ticketing	Electronic Ticketing
GNI	Gross National Income
GDP	Gross Domestic Product
ICT	Information and Communication Technology
JDG	Joint Director General

JTI	Junior Traffic Inspector
M-ticketing	Mobile-ticketing
NESS	National E-Service System
OECD	Organisation for Economic Co-operation and Development
OSI	Online Service Index
PD	Power Distance
RDC	Revenue Deputy Collectors
RK	Record Keeper
SIM	Subscriber Identification Module
SPSS	Statistical Package for the Social Sciences
TI	Transparency International
TIB	Transparency International, Bangladesh
TrI	Traffic Inspector
UN	United Nations
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNPAN	United Nations Public Administration Network
USD	U.S. Dollar
WB	World Bank

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Glossary of the Terms

Bakshish (tips)	*Bakshish* comes from a Persian word '*bakhshesh'* which is synonymous to "tip" in the conventional western sense (Wiki). In this study, it indicates a kind of "tip" which is given to the lower level officials to maintain a good rapport for the continuation of the favor/support in future.
Dalal (broker)	The persons who are involved with the processes of persuasion for a service, generally in exchange of money. They act like a middleman. In Bangladesh, there is no legal/formal existence for these *Dalal* as they are not registered for doing so.
Kalobazar (black market)	*Kalobazar* is an informal market for the trade of illegal goods and illegal transactions. The people who are involved with this market are known as *Kalobazari* (blackmarketeers/scalpers) and the system is also known as *Kalobazari* (black marketing/scalping).
Tadbir (lobbying)	*Tadbir* is a kind of lobbying to manage a decision taken or to be taken by an authority overruling, breaking, or bending existing norms and practices. It is a tradition of highly personal lobbying designed to secure individual benefits (Jamil and Haque, 2005:175-178).
Upodhoukon (Gift)	*Upodhoukon* is synonymous to gift which are given to someone for the future anticipated gain from the respective person.

Dedications

This work is dedicated to my beloved parents, who have always been a source of inspiration for me.

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"Every mountain top is within reach if you just keep climbing."

— Barry Finlay, Kilimanjaro and Beyond

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Abstract

Corruption has been considered as one of the most prevalent and persistent challenges in enhancing economic growth and improving the quality of life of the citizens across the globe. Amidst the negative consequences of corruption and the limited successes in controlling corruption in many countries, the potentials to combat corruption by using E-governance is gaining popularity in the public policy discourse. This increased enthusiasm demands further inquiry to understand the degree of effectiveness. The present study is an attempt to explore this potential of E-governance through the use of global level data as well as micro level cases. The global data are collected from the two databases: Corruption Perception Index (CPI) by Transparency International and Online Service Index (OSI) by United Nation; while the micro level cases are taken from a country (Bangladesh) where the intensity of corruption is comparatively higher and the system of E-governance is emerging. The findings of the current research reaffirm the potential of E-governance as a means to curb corruption with some observations and conditions. The findings based on the state level data indicate that E-governance can explain most of the variations of the level of corruption in the different countries i.e. support the main argument of the study that E-governance may have positive impacts in reducing corruption. The findings seem to be robust and more consistent in the developing countries though some of the developed countries, particularly the OECD countries show inconsistent trends. These findings are also consistent with other studies, e.g. the study of Andrew (2009) who conducted the research by WB's 'Control of Corruption Index'. The patterns of corruption may provide an explanation of the variations of the effectiveness of E-governance in the different countries. It may be more effective on certain types of corruption (like petty corruption done by street level bureaucrats) by changing the service delivery channels and by eliminating the provisions for the direct human interaction as it can increase the bargaining power of the respective officials. In contrast, E-governance may not be effective for the policy level or the strategic corruption as E-governance itself is dependent on those policy inputs; like the tailor-made specifications to favor someone in the bidding. E-governance is just a tool to select the best bidder based on those policy decisions and if the policies are flawed or biased then it may play a limited role to curb corruption.

From the micro level cases, it appears that the mere introduction of E-governance is not sufficient to control corruption, its nature and maturity levels are also important. As part of the natural experimental design, the study includes different levels of E-governance to understand the dynamics between E-governance and corruption. The dynamics that emerged from the different levels of E-governance provide some understandings about the nature of E-governance which can have greater impacts on corruption and some insights on explaining the limited successes of the different E-governance initiatives/projects. From the sample cases, it appears that E-governance may have larger impacts when it can affect power relations in an organization. This power can be affected when E-governance can provide an alternative service delivery channel through the electronic platform. In such a case, officials lose their power to influence, as the respective process may entirely be decided automatically through the electronic platform. The discretionary power of the officials can also be affected if the accountability system can be improved. In the sample cases, though there are indications for the improvement of the monitoring and the investigation capacities due to higher traceability by E-governance; but such development fails to achieve the desired success due to lack of 'enforcement of the law' and some other implementation related challenges. E-governance as a tool can detect corrupt activities and can expose the corrupt persons, but after that, the key to control corruption is to take necessary actions based on the detections. If these conditions are fulfilled, then an E-governance initiative may demonstrate more effectiveness in curbing corruption.

CHAPTER 1: INTRODUCTION

1.0 Background

Corruption, in its many guises, is a global phenomenon which is deeply embedded in the very fabric of a society (Carr and Outhwaite, 2013:3). It undermines good governance and rule of law, negatively impacts service quality and efficiency, and poses threats to the principles of democracy, justice and the economy (Graycar and Sidebottom, 2012: 384). Corruption has been considered as one of the most prevalent and persistent challenges in enhancing economic growth and improving the quality of life of the citizens across the globe (Mistry and Jalal, 2012: 147). Most of the empirical studies find that corruption is detrimental to the economic growth and the development of a country. Studies that supports this view include Akaiet al. (2005), Blackburn et al.(2006), Lambsdorff (2003), Li et al. (2000), Mauro (1997), Shaw et al. (2006), Svendsen (2003), Temple (2000) and Welsch (2004) (cited in Paul, 2010: 247). Though some researchers supported that corruption might be desirable (like Leff, 1964; Huntington, 1968; Acemoglu and Verdier, 1998; cited in Mo, 2001:66). They argue that corruption works like piece-rate pay for bureaucrats, which induces a more efficient provision of government services, and provides a leeway for entrepreneurs to bypass the rigid rules and regulations (Ibid, 66). In contrasts, the studies like Mauro (1995), Ades and De Tella (1997) and Kaufmann and Wei (1999) rejected the *'efficiency effects'* of corruption (Me´on and Weill, 2010: 244); Kaufmann and Wei (1999:15) found that the multinationals that pay more bribes also tend to spend more time in negotiating with the foreign countries' officials. Corruption also undermines growth and development of a country especially in the developing countries by diverting resources away from the development programs and thus increasing poverty, inequality and underdevelopment[1] (Moleketi, 2009: 334). It can become threat to the very security of many states when, in alliance with trans-state criminal organizations (Collier, 2002:2). Amidst the negative consequences and the limited successes to control

[1]For example, twelve hundred new primary schools can be established in Bangladesh by the financial loss of corruption in a year (Iqbal, 2010:84).

corruption in many countries, the potentials to increase transparency and to combat corruption by using E-governance is gaining popularity in the communities of E-government practitioners and researchers (Wescott, 2003; APDIP, 2006; cited in Kim et.al. 2009: 42). This increased enthusiasm demands further inquiry to understand the degree of effectiveness to control corruption by E-governance. Present study is an attempt to explore this potential of E-governance based on the empirical evidences.

1.1 Problem Statement and Rationales of the Study

Different case studies like Iqbal & Seo (2008), Bhatnagaret al. (2007), NeGP Report, (2007), Pathak and Prasad (2006), Csáki & Gelléri (2005) and Cho & Choi (2004) (cited in Ojha et.al, 2008:163) showed that E-government can play a significant role in reducing corruption in the different countries. However, these studies are mostly project related studies and each project is distinct and unique and may have some contextual factors for the successes. That is why those studies suffer in terms of the *'external validity'*. Their findings cannot be generalized fully and one cannot expect to produce the same results in other contexts (Kim, 2013: 2). Though, these studies have narrow and limited scopes but at the same time, generated the enthusiasm for curbing corruption by adopting E-governance. In addition, through the logics of the '*general equilibrium effects';* these findings can also be challenged (Rodrik, 2008, cited in Andersen, 2009: 202). It indicates that due to anti-corruption drive 'corruption' may transfer from one domain to other domains of an economic system. The introduction of E-governance may be successful to eliminate or to reduce corruption in one area (partial equilibrium) but at the aggregated level (general equilibrium level), it may not be proved successful as corruption may shift to other domains and starts to grow. To capture this probable shifting of arena or displacement of corruption, a macro level analysis may produce more comprehensive understanding. Because, then it will be possible to measure the overall impacts of E-governance on corruption in a country. Anderson (2009) conducted such type of macro level studies by using World Bank's database of corruption (Control of Corruption Index). However, there is another important and comprehensive database on corruption (Corruption Perception Index) by Transparency International. Based on this index, another study can be conducted to confirm the extent of the validity of the earlier studies. However, this macro level study can only produce the statistical trends between E-governance and corruption; not the processes. For better understanding of the processes, the analysis of micro level cases can be an effective approach as it can generate details of the effect of the different factors

and their causal relations. It also can help to enhance further effectiveness of E-governance initiatives/projects by identifying the limitations of the existing approaches. Therefore, the rationale that stems from these discussions is for the need of a combined study at both 'Macro' and 'Micro' level.

1.2 Research Question

Based on the problem statement and the rationales of the study, the research question can be put as:

RQ: What E-governance does and how it reduces corruption?

This research question can be divided into two parts: first part is about the probable effects of E-governance on corruption while the second part is related with the processes of effecting corruption by E-governance.

1.3 Objectives of the Study

1.3.1 Overall Objective

The major objective of the research is to analyze the effectiveness of E-governance in reducing corruption.

1.3.2 Specific Objectives

The specific objectives of the research are:

- To explore the probable effects of E-governance on corruption in the different countries based on the longitudinal data analyses.
- To identify the probable variations of the effectiveness of E-governance on corruption based on the nature of the countries (like developing/developed countries).
- To explore the probable causal relations between E-governance and corruption based on the 'Micro level' case studies.
- To understand the processes through which E-governance may reduce corruption.

1.4 Delimitation

In the 'Macro level', the study needs to be confined between the year 2010 and 2012 due to the change of the calculation method of the Corruption Perception Index (CPI) after the year 2010. Because, any comparison of the data after 2010 with the earlier data may generate wrong readings

of the data. As CPI is the combination of both the private and the public sector corruption, the study covers both types of corruption in the macro level analyses. However, in the 'micro level' cases; the study mainly concentrate on the public sector corruption, though it covers the nexus between the public and the private sector where the interests of the respective actors intersect but individually the private sector is not considered for the study. The public sector analysis is based on two public organizations which are selected on certain rationales, like intensity of corruption, existence of E-governance and their maturity level, accessibility to data of the researcher etc. At the Macro level, the study only considers the economic nature of the countries (e.g. low income, middle income, high income etc.) to understand the probable variations of the effectiveness of E-governance on corruption; but it does not explore the impacts of other important determinants of corruption like culture, governance system, regional variations, religion, education etc. due to limited time and resources.

1.5 Structure of the Thesis

The **first chapter** is a brief outline of the entire manuscript along with the rationales, research questions, objectives and the scope of the study**.** ***Chapter two*** depicts briefly the earlier literature with the relevant theoretical underpinnings. The chapter continued in detailing the hypotheses and the variables of the study and their operationalizations. ***Third chapter*** is an illustration of the methodology and the estimation processes for the study. ***Fourth chapter*** provides a brief description of the background information of the two sample cases. ***Fifth chapter*** presents the findings based on the macro level statistics and then goes for testing the hypothesis of the study. ***Sixth chapter*** shares the findings and the test results of the hypotheses based on the micro level cases. The ***seventh chapter*** draws all the trends that emerged from both the macro and the micro level findings together not in a conclusion but in some closing statements along with their probable implications for the policy interventions as well as their theoretical relevance. It is evident that the research probably left many questions unexplored like the implications of the cultural or the regional varieties (the variation in Africa, Asia or in Europe). All those unexplored questions are left as the scopes of further research for the future researchers.

CHAPTER 2: LITERATURE REVIEW AND THEORETICAL FOUNDATION

2.0 Introduction

"A social science theory is a reasoned and precise speculation about the answer to a research question, including a statement about why the proposed answer is correct" (King et al. 1995:19). These speculations can generate both the descriptive and the causal hypotheses, which need to be tested through empirical evidences. This chapter of the research paper focuses on the theoretical answers of the research question and tries to understand the dynamics that exists between E-governance and corruption. Before analyzing the theoretical arguments, the chapter starts with the conceptual discussions and the operational definitions to clarify the key terms. Then it proceeds with a brief literature review on the previous studies depicting the probable effects of E-governance on corruption. In the next section, the study concentrates on the discussions of the logics, which can set the rules of the game for corruption and their associated theoretical underpinnings. From these theoretical arguments, the study derives the hypotheses to test the validity of the assumed nature of relations between E-governance and corruption. The chapter concludes with the descriptions and the operationalization of the variables of the study.

2.1 Corruption and E-governance: Conceptual Foundations

2.1.1 Corruption

The search for a definition of corruption has long been a feature of conceptual and political analysis. Traditional conceptions of corruption that focused on the 'moral vitality' of whole societies have given way to the definitions based on 'behavior classification', in which specific actions of a nation are measured against a variety of standards (Pillay and Dorasamy, 2010: 363). Me´on and Weill (2010: 254) identified two perspectives of corruption: *'Moralistic'* and *'Functionalistic'*. From the *'Moralistic'* perspective, Moleketi (2009: 332) defines corruption as the process that "undermines the value system, the norms and the very cohesion of society". The

'*Functionalistic'* perspective reflects the relationships between the individuals and the institutions, which is rooted in the operation of market forces, the pursuit of individual prosperity as opposed to the common good (Moleketi, 2009: 332). In between these two perspectives of the society and the market; there is another perspective which can be labeled as the *'legalistic perspective'* (Heidenheimer et al. 1999: 166). It is based on '*Public-office-centered'* definitions which can be illustrated by the work of Nye who defined corruption as "behavior which deviates from the normal duties of a public role because of private-regarding (close family, personal, private clique), pecuniary or status gains; or violates rules against the exercise of certain types of private-regarding influence" (cited in Heidenheimer and et al. 1999: 165).These definitions can be argued as the explanations of corruption rather than the definitions which explain how it happens rather than what constitutes corruption. In *social perspective (moral approach),* the institutions set certain standards of norms and values which need to be complied by its members. In the *functionalistic perspective (market approach),* institution can generate individualism that can lead to the rise of the rampant pursuit of individual gain. Under such situation, everyone is profit maximizing selfish agent who tries to attain individual gain by undermining the goals and the objectives of the national and the community level development (Moleketi, 2009: 332). The last perspective, legalistic *approach* is about the deviation from the existing rules and regulations. This perspective is different from the social perspective as it is mainly based on the established formal rules which can be different from the social norms and values. Though, the social norms and values can have significant impacts in the formulation of the formal rules and regulations and from that point of view both of the perspectives may have many common grounds. In addition, both of the approaches can have strong influence to determine the degree of the 'functionalistic' nature of an individual as both are designed to regulate the selfish profit maximizing nature of a person.

Now, to understand what constitute corruption; the definition by Waldman (1974) can be useful; he defined corruption as "(1) a public official, (2) who misuses his authority, position, or power, and as a result, (3) violates some existing, legal norm in his or her particular country. The corrupt act is (4) usually done in secret and (5) is for personal gain in wealth or status or in preferment of family, friends, ethnic or religious groups. In collusive forms of corruption, (6) an outside party is involved (e.g. foreign businessmen)" (cited in Doin, 2010:45). In the current discourse of corruption, the definition by World Bank and International Monetary Fund (IMF) as "the abuse of public office for private gains", has received much attention from both the policymakers and the

researchers (Elbahnasawy and Revier, 2012: 311). Though, this definition indicates that corruption is something related with the public offices but it is self-evident that the main arena and the agents of corruption is not always a public official. Similar nature of definition is also given by Transparency International's (TI) in slightly different way which may be more comprehensive. It defines corruption as "the abuse of entrusted power for private gain" (Website: TI). This definition has two key components: entrusted power and the private gain. Here 'entrusted power' can be understood as the assigned responsibilities for the specific task/s. The exercise of this power can be treated as corruption when someone capitalizes the power for the personal benefits/interests. Thus, the combination of both the components can lead to the corrupt activities. This definition is more comprehensive in a sense that it can cover the corruption from both the private and the public sectors and their nexus (Website: U4). Here, misuse of power from any sector for the private gain is treated as corruption. This study considers the TI's definition of corruption as the operational definition because of this comprehensiveness and the consistency with the purposes of the study.

2.1.2 E-governance

With the advancement of ICT (Information and Communication Technology), the words like E-government and E-governance have come into prominence (Godse and Garg, 2006:13). In fact, in many cases, both of these terms are used synonymously although they are quite different and have different audiences to cater to and different objectives to achieve (Ibid, 13). The definitions of E-governance range from "the use of information technology to free movement of information to overcome the physical bounds of traditional paper and physical based systems" to "the use of technology to enhance the access to and delivery of government services to benefit citizens, business partners and employees" (Pathak and et al., 2007: 197). The basic premise for introducing E-governance is that the citizens can communicate with the public officials and avail the public services via online and/or other information technologies. Such introduction entails streamlining operational processes, transcribing information held by government agencies into electronic form, linking disparate databases, and improving ease of access to the services for the public (Singh et.al. 2010:256). The desired goal is streamlined sharing of information between government agencies to conduct government-to-government (G2G) transactions in order to simplify the navigation of government-to-citizen (G2C) and government-to-business (G2B) transactions (Ibid, 256). Thus, E-governance operates through its three components: G2G, G2B and G2C. Generally, G2G is considered as *E-government* and is limited within the boundary of the public organizations only.

However when it goes beyond that i.e. covers G2B and G2C then it becomes *E-governance*, but in many cases they are used synonymously to have more comprehensive coverage (Godse and Garg, 2006:13). As the study is trying to understand the overall impacts of the electronic system, it does not differentiate between the two terms and both the words are used interchangeably. For the purpose of this study, E-governance is "an information-age model of governance that seeks to realize processes and structures for harnessing the potentialities of information and communication technologies (ICTs) at various levels of government and the public sector and beyond, for the purpose of enhancing good governance" (Bedi et al, 2001; Holmes, 2001; Okot-Uma, 2000; cited in Saxena, 2005: 500).

The United Nations (UN) and the American Society for Public Administration (ASPA) introduced a model of E-governance in 2002. The UN model has five-stages which described the various stages of E-governance: *emerging, enhanced, interactive, transactional and seamless stage.* Later on, the stages are reduced to four: *emerging, enhanced, transactional and connected stage* (UN, 2010: 95). The first stage is '*emerging'* stage where the basic presence is ensured through electronic platform. Second stage is '*enhanced'* in which the system can deliver enhanced one-way or simple two-way e-communication between government and citizen, such as downloadable forms for government services and applications. The next stage is '*transactional'* stage when the users have the ability to make online payments for transactions like filing taxes online or applying for certificates, licenses, permits etc. The final stage is known as '*connected'* stage where electronic services are integrated across agencies. Governments have moved from a government-centric to a citizen-centric approach, where e-services are targeted to citizens through life cycle events and are provided 24/7 i.e. the services are available throughout the day - not limited within the office hour only. This is the most sophisticated level of E-government initiatives and is characterized by: a) Horizontal connections (among government agencies), b) Vertical connections (central and local government agencies), c) Infrastructure connections (interoperability issues), d) Connections between governments and citizens and e) Connections among stakeholders (government, private sector, academic institutions, NGOs and civil society) (UN, 2008:16).

2.3 Corruption and E-governance: A Search for Interrelations in Retrospect

Empirical research shows that the presence of high corruption negatively affects economic development (Mauro, 1998), significantly hinders the inflow of foreign direct investment (FDI)

(Zhao et al., 2003), reduces the level of human capital, and destroys confidence in both public and private institutions (Husted, 2002) (cited in Selim and Bontis, 2009: 165). Though, there are opposite views and research findings as well (like Leff, 1964; Leys, 1965; and Huntington, 1968; cited in Me´on and Weill, 2010: 244). They describe about the beneficial effects of corruption and put it as "Corruption grease the wheels". Thus, we can get two contrasting opinions on corruption. Though; maximum study findings go against "the grease the wheels" hypothesis and mentioned about the ''sand the wheels" effects of corruption (Me´on and Weill, 2010: 245).

Tapscott and Caston (1993) argue that ICT causes a "paradigm shift" by introducing "the age of network intelligence", reinventing businesses, governments and individuals (cited in Ndou, 2004:3). The traditional bureaucratic paradigm, characterized by internal productive efficiency, functional rationality, departmentalization, hierarchical control and rule-based management (Kaufman, 1977), is being replaced by E-government paradigm which emphasizes on competitive, knowledge based economy requirements, such as: flexibility, network organization, vertical/horizontal integration, innovative entrepreneurship, organization learning, speed up in service delivery, and a customer driven strategy (Ho, 2002; cited in Ndou, 2004: 2). In the traditional model of public service delivery, the procedures are long, time consuming and lack transparency which often helps to create an environment leading to corrupt practices (Kabir and Baniamin, 2011:37). Now, E-governance is considered as an effective tool to radically change the face of government. Because, a mature and effective e-government has the capacity to create new methods and avenues for participation in government, acting as an endless wire, electronically threading together citizens, businesses, and all levels of government in a nation (Jaeger, 2003:328).

Table 1 : Paradigm Shifts in Public Service Delivery

Criteria	Bureaucratic Paradigm	E-Government Paradigm
Orientation	Production cost-efficiency	User satisfaction and control, flexibility
Process Organization	Functional rationality, departmentalization, vertical hierarchy of control	Horizontal hierarchy, network organization, information sharing
Management Principle	Management by rule and mandate	Flexible management, interdepartmental team work with central coordination
Leadership Style	Command and control	Facilitation and coordination, innovative entrepreneurship
Internal Communication	Top down, Hierarchical	Multidirectional network with central coordination, direct communication

Criteria	Bureaucratic Paradigm	E-Government Paradigm
External Communication	Centralized, formal, limited channels	Formal and informal direct and fast feedback, multiple channels
Mode of Service Delivery	Documentary mode and interpersonal interaction	Electronic exchange, non face to face interaction
Principles of Service Delivery	Standardization, impartiality, equity	User customization, personalization

(**Source**: Ho, 2002: 437)

An impressive and well-known example of controlling corruption by E-government is the case of the *Bhoomi* (meaning land) system from *Karnataka*, India, where the introduction of an electronic land record system serving about 7 million farmers has saved clients some 1.32 million work days in waiting time and Rs.[2] 806 million in bribes (World Bank, 2004:87). The main function of the *Bhoomi* system is to maintain records of rights, tenancy, and cultivation, which are crucial for transferring or inheriting land and obtaining loans. Under the old system an accountant, serving three or four villages, maintained land records. Accountants were not easily accessible and farmers faced long delays; two out of three paid bribes, and over two-thirds paid more than Rs. 100, compared to the official service fee of Rs. 2[3] (Andersen, 2009: 202). A snap shot of the earlier works on E-governance and corruption may be useful to have a quick idea on the probable effects of E-governance on corruption:

Table 2: Different Study Findings on the E-government Projects' Impacts on Corruption

Author(s)	Study Context and Key Findings
Iqbal, & Seo (2008)	Two cases i.e. Seoul Metropolitan Government's 'OPEN' (online procedures enhancement for civil applications) project; and S. Korea's Government e-Procurement System (GePS) have been discussed as instances of E-government as an anti-corruption tool and indicated its successes in controlling corruption.
Bhatnagar, Rao, Singh, Vaidya, & Mandal (2007)	Impact assessment of five E-government projects of India was carried out. Percentage of transactions involving bribes was reduced in all the cases. However, in two cases, number of transactions involving bribe (even after reduction) remained at levels which were high.
NeGP Report, (2007)	This pertains to India's National E-governance Plan impact assessment. In case of passport services computerization, bribes continued; the police take higher bribes (for verification), while passport office staff take lower bribes. The ministry of corporate affairs' computerization reduced corruption in a significant manner. In case of income tax, individual filers reported a marginal reduction in bribes, while corruption data could not be collected in respect of businesses, due to non-disclosure.

[2]Rs is Indian currency, according to the exchange rate in 2004, 45Rs = 1 USD

[3]For details of the case, please see Chawla and Bhatnagar (2004) at: http://info.worldbank.org/etools/docs/reducingpoverty/case/96/fullcase/India%20Bhoomi%20Full%20Case.pdf

Author(s)	Study Context and Key Findings
Pathak, & Prasad (2006)	The authors analyze nine E-government initiatives undertaken in India and conclude that E-government can be effective in reducing corruption or eliminating it altogether.
Csáki, & Gelléri (2005)	Use of Decision Support Systems in public procurement can limit the possible damaging effects of corruption.
Cho, & Choi (2004)	Seoul Metropolitan Government's 'OPEN' (online procedures enhancement for civil applications) project succeeded in controlling corruption.
Heeks (1999)	Through five cases (the exact case context i.e. country, organization, etc. has been kept confidential), it is shown that even after implementation of ICT, corruption can persist.

Source: Compiled from Ojha et.al, 2008:163

The snap shot in Table 2 on some of the earlier works on E-governance and corruption, indicates that, in most of the cases E-governance helped to reduce or eliminate corruption. Nevertheless, these studies are mostly project based studies. Each project is distinct and unique and may have some contextual factors for the success. That is why those studies suffer in terms of 'external validity'. Because, these findings cannot be generalized fully in other context and one cannot expect to produce the same results in other contexts. In addition, the logic of *'general equilibrium effects'* (Rodrik, 2008) indicates that due to E-governance or for other factors, corruption may migrate to one domain to other domain of an economic system. So, there is a need for 'Macro' level analysis to measure the aggregate level effects of E-governance on corruption.

Anderson (2009) conducted such type of macro level studies by using World Bank's database of corruption (Control of Corruption Index) during the period of 1996-2006. There is another important and comprehensive database on corruption (Corruption Perception Index) by Transparency International. Based on this index, another study can be conducted to confirm the extent of the validity of the earlier studies. It can also ensure the consistencies of the findings over different time period. However, this macro level study can indicate the statistical trends between E-governance and corruption, not the processes. For this, a 'Micro' level analysis can be helpful where there is the prevalence of corruption and at the same time, E-governance is developing. Because, then it can be possible to capture the extent of changes of corruption and the mechanisms due to E-governance. The rationales that stems from these discussions are for the need for a comprehensive and a combined analysis at both the 'Macro' and 'Micro' level to understand the probable effects of E-governance on corruption.

2.4 Theoretical Arguments

Corruption, in one form or another, has been found in all human societies throughout the human history (Mbaku, 2008: 427). This persistence of corruption throughout the ages has forced some researchers and policymakers to consider corruption as an unavoidable part of the human civilization. Though, many societies (e.g. northern European countries) have successfully designed their institutional arrangements and have taken public policy measures in a way that have minimized corruption and its deleterious effects on their economic, social, and political systems (Ibid, 427). Now, if we try to explore the probable factors for the successes or the failures of the respective countries then a proper understanding on the 'institutions' of the respective country may usher us. Because, most of the theories about the causes of corruption have focused on the institutions that harbor corrupt officials and give emphasis on the importance of institutional reforms (Shen and Williamson, 2005: 327). Such strengths of the institutions have emerged because of their nature as they set the rules of the game in a society, which shapes the human interactions (Vall and Ebben, 2011:108). "Institutions are here conceived as both patterns of human activity and symbolic systems, cognitive constructions and normative rules through which actors categorize that activity and infuse it with meaning and value" (Friedland and Alfrod, 1991:232; cited in Hanf and Jansen,1998:4).

The '**Institutional Analysis framework**' which combines the use of rational choice theory and game theory explanations for social behavior with the ideas that agent's choice is bounded by both the decision-making capacities of an individual agent and a surrounding structure of political, economic, and cultural rules (Collier, 2002:3). Hall and Taylor (1996: 945) illustrate that strategic interactions among the actors determine the outcome. An actor's behavior is likely to be driven by strategic calculus, which is affected by institutional arrangement. Institution's structures mediate such interactions, by affecting the range and sequence of alternatives on the choice-agenda or by providing information and enforcement mechanisms. Thus, the institutionalism illustrates the influences of institutions that can affect individual's actions. Because of these powerful roles, institutions matter for the quality of governance in a country (Goel, 2012:64). The well-functioning institutions with the probability of the detection and the punishment are sufficiently effective to deter most of the decision makers from choosing to act corruptly (Saha and et al., 2014:1).

Now the next question is what are the main institutional factors which can be the key to determine the corruption level of a country. For this, the findings of Treisman (2000) can be indicative for us, he identified a number of factors like nature of the state, level of democracy, religion, past history, level of development which showed significant empirical relationships with the level of corruption in a country (Treisman, 2000: 399). Various other empirical studies also supported the importance of these factors, especially the importance of the factor 'democratic governance' and the 'level of economic development'. The findings of Campbell and Saha (2013:290); Kolstad and Wiig (2011: 1-25); Rock (2008: 55) and (2007:1-18); and Shen and Williamson (2005: 327); supported the importance of the 'democratic governance' while the findings of Saha and Gounder (2013: 70); Bai et al. (2013:1-53); Gaeff and Mehlkop (2003:605); and Treisman (2000:399) supported the importance of the 'level of economic development' in determining the level of corruption. Though, some other studies like Sung (2004:179) indicated about the 'nonlinear relationship' of democracy with corruption while some observed about the necessities of some conditions like 'press freedom' (Kalenborn and Lessmann, 2013:857) and the maturity level where there are probabilities of being getting caught (Saha, 2008:1) or passing a 'threshold level' (Montinola and Jackman, 2002:147). The main argument in favor of 'democracy' is because of its strength to have different kinds of institutions and mechanisms which can discover and disclose a corrupt incidence and also can allow the citizens and political oppositions to make an issue and ultimately to punish the accused persons (Sun and Johnston, 2009:1). The 'economic development' can also have a positive impact on corruption as it increases the opportunities to create more functioning institutes to solve the problem of corruption. Like Leys (1965) argued that civil servants in low income countries receive insufficient wages, the existence of bribes may constitute a complement that may attract able civil servants to being corrupt (cited in Saha and Gounder 2013: 71).

According to Robert Klitgaard (1998) (cited in Balboa and Medalla, 2006:4), "monopoly of power, when combined with discretion and absence of accountability, will result to corruption". From this equation, it can be inferred that the power distribution in an institutional setup, degree of monopoly and the process of accountability determine the level of corruption. Power is necessary to manage and coordinate an organization (Pfeffer, 1992) but at the same time power also allows the dominant actors to reallocate organizational resources for their own benefits (Ja´vor, 1988) (cited in Jancsics and Jávor, 2012: 65). The people who are in power are able to control the critical organizational

resources, regulate allocation of those resources, make rules and strategic decisions, influence organizational controls, and manipulate the information and responsibility structure (Ibid, 65). If the institutional arrangement can be changed in a way so that the discretionary power can be curtailed then there is a possibility to reduce corruption. Theoretical logics indicate that, E-governance also has the capacity to change the institutional arrangements in a direction which may also have a positive impact on the level of corruption. Because, Shim and Eom (2008:305) indicated that E-government can reduce the opportunities for the arbitrary actions by taking away employees' discretionary power which is the key for conducting corruption. Thus, E-governance may lead to certain types of changes in the institutional arrangements which may reduce the level of corruption. As this study is about the assessment of the impacts of E-governance on corruption, the later sections will mainly focus on the probable relations between E-governance and corruption though it also considers two other important variables of corruption: quality of democracy and level of economic development; to assess the relative strengths in explaining the variation of corruption in a country.

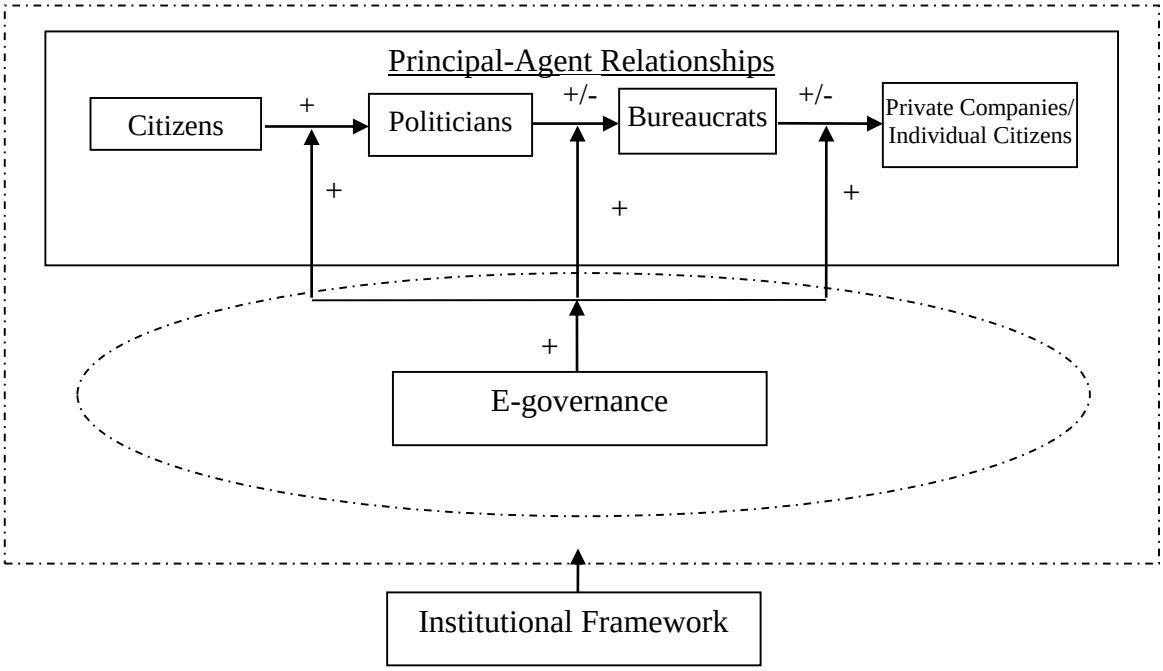
In the early 1960s, Gordon Tullock and James M. Buchanan, who had been analyzing the political dimension of wealth creation and economic growth, introduced the **'Public Choice Model'** as a more effective and intellectually satisfying paradigm. In public choice theory, the individual is assumed as egoistic, rational and utility maximizer (Mbaku, 2008: 429). It assumes that a civil servant acts the same way at work as he or she would in the market place. This assumption indicates about the possible opportunist nature of the public officials as well as their possibilities to get involved with the corruption. The **'Principal-Agent'** theory explains that if the principals are given sufficient opportunities to monitor the agents by setting favorable rules and situations, then the principals will be in a better position to make the agents accountable. In this backdrop, principals need effective tools to stop the unethical profit maximization tendencies of the agents. For this, E-governance can be an effective tool which can enable principals to monitor agents' work processes (Shim and Eom, 2008: 305; Nasr, 2014: 115). Such monitoring power can help to make the agents accountable as it increases the chance to get caught. This detection power is a significant determinant of the 'net utility of corruption' as indicated by Jain (2001:8):

{Net Utility of Corruption} = f {Income from corruption,
Legitimate income (or fair wages),
Strength of political institutions,
Moral and political values of the society,
Probability of being caught and punished}(Jain, 2001:81)

From this equation, it is evident that the higher probability of getting caught can reduce the utility of corruption. As E-governance enables principals to investigate a case more efficiently and reliably, it can lead to the reduction of corruption. According to the *Public Choice theory*, every individual is treated as an opportunist and profit maximizer. From this perspective, a principal himself can become opportunist; there is no guarantee that a principal himself will not be corrupted. In addition, according to the principal-agent theory, there is no fixed rule for defining the relationships between the principals and the agents. It changes on the basis of institutional context. Like, within the government, the politicians are generally considered as the principals and the bureaucrats are considered as the agents. However, the bureaucrats can also become principals when they execute any contracts/agreements with the private sector. For example, when a bureaucrat oversights a service provided by the private companies based on certain agreements then the bureaucrat will become the principal and the company will be treated as an agent. Again, in a democratic environment, the politicians can turn into agents while the citizens can become principals. Through the democratic practices, the citizens can evaluate the agent's performances. When the relationship of the principal-agent is considered within the government; i.e. between the politicians and the bureaucrats, then the level of corruption mainly depends on the ethical standards of the politicians who are the principals. On the other hand, when the bureaucrats become principal then the level of corruption depends on their ethical standards. As there are always possibilities that principals themselves can become corrupted at any time; just based on ethical approach, an anti-corruption drive may not be sustainable. However, if the citizens can become principals and truly able to exercise their power (in ideal democracy), then the model for curbing corruption may be sustainable. Because, then the citizens are in a position to evaluate their agent's performances.

The corruption by the politicians is generally treated as the '*Grand'* corruption while the street level bureaucratic corruption is considered as the '*Petty'* corruption. Politicians exploit their power to make policies to favor interest group/s and thus they get involved in large-scale corruption. During these policy formulation processes, the higher level bureaucrats may also get involved with the 'grand' corruption. In bureaucratic corruption, the citizens may need to bribe bureaucrats, particularly to the street level bureaucrats either to receive a service to which they are entitled or to speed up a bureaucratic procedure. In some cases, a bribe may even provide a service which is not supposed to be available (Jain, 2001:73-75). E-governance can have effects on each type of principal-agent relationships and can restructure the relationships by reducing discretion and can

enhance the accountability by increasing the monitoring capacity (Nasr, 2014: 115). These processes can be manifested in the form of the internal use of the electronic platform to detect the anomalies in an organization or in the form of the external uses, like social networking platforms (like facebook, twitter etc.) to expose corruption and building public opinions.



(Note: +/- signs indicate the possible nature of impacts)

Figure 1: Possible Effects of E-governance in Principal-Agent Relationships

Source: Researcher's Synthesis

In a principal-agent relation, when the corruption is triggered by the willingness of the principals themselves then it can be labeled as the *'demand driven'* corruption. Generally, the principal's positions are comparatively in an advantageous position to do so and this act as the *'push factor'* for the agents. There is another dimension of corruption, i.e. the *'supply side'* of corruption. The predictable benefits from a transaction can indicate about the agent's degree of willingness to spend for a transaction. Higher the level of benefits, higher the level of willingness to spend can be expected from the agents. **Transaction-cost theory** is in better position to explain the supply side of corruption. It is a Neo-institutional approach to study corruption which indicates the cost of carrying out a transaction (Collins and Fabozzi, 1991:28). He proposed a generic model for Transaction-cost:

Transaction costs = Fixed costs + Variable costs; (Ibid, 28)

In this equation, *'fixed cost'* is associated with costs like commissions, transfer fees, taxes etc. which are formally required for every transactions of a service. However, the *'variable cost'* is not fixed. Among other costs, corrupt transaction is embedded in the 'variable costs'. If the predictable benefits are higher, then an agent is most likely to spend more in the 'variable costs' to avail the opportunities. This willingness from the supply side can create the *'pull factor'* for the principals. By combining the supply and the demand side of corruption, we will be in a better position to understand the dynamics of corruption. It shows the dynamic nature among the relationships, and indicates about the game like situations of corruption.

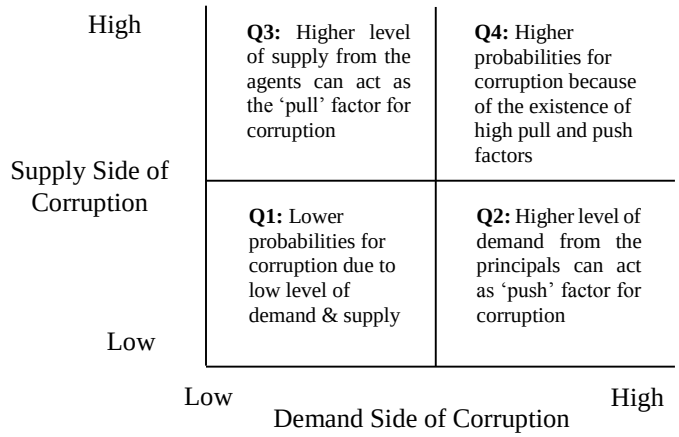


Figure 2: Determination of the Level of Corruption by the Mechanisms of Demand and Supply of Corruption

Source: Researcher's Synthesis

From the Figure 2, it can be said that except Q1, in all the other three situations, there can be possibilities for corruption due to the existence of high pull and/or push factors. E-governance can help to curb corrupt incidences in all these three situations by reducing discretionary power and increasing accountability. By reducing the discretionary power, E-government can control the bargaining power of the demand side. This discretionary power can be reduced, because E-governance can provide a complete alternative channel for the service delivery instead of the traditional counter based services where the street level bureaucrats may have little influence as everything is decided automatically. The places where there are online service delivery systems along with the traditional counter system; the citizen can have a better option if they face any problem in the traditional counter system. According to the public choice theory, such alternative options are important for the better functioning of a market. Another factor of E-governance can

also reduce the discretionary power- the increased level of risks to get caught after the corruption due to the comprehensive power of E-governance to trace a work process through electronic platform. E-governance can increase the chances to expose corruption by maintaining detailed data on transactions, making possible to track and link the corrupt with their wrongful acts. By making a system more simpler and more transparent, E-government emboldens citizens and businesses to question unreasonable procedures and their arbitrary application (Bhatnagar, 2003: 30).This traceability also can help to increase the accountably of the respective organizations. These changing factors can help to control the 'push' factors which ultimately can also affect the 'pull' factors. The inability of the public officials to provide illegal favors may restrain the people who like to take the undue favors from them as well as it can increase the risk for the officials to get caught after the corrupt activities. Thus, E-governance can affect both the 'pull' and the 'push' factors of corruption. These discussions on corruption mainly indicate the 'functionalistic' nature of corruption where an individual tries to optimize his personal benefits and to control that opportunist nature of an individual, E-governance can demonstrate its strength by detecting the deviation from the established rules and regulations. This controlling approach is related with the 'legalistic perspective' of corruption. Though, the impacts of E-governance can also be traced in the 'moralistic' perspective of corruption as well. By providing ethical teaching through online, people's ethical standards can also be influenced. Social networking platforms (like Facebook, twitter) and blogs are increasingly emerging as a powerful tool to define people's psyche. Though, the main strength of E-governance is in its effectiveness on 'legalistic perspective' to control the 'functionalistic' nature of an individual as the 'moralistic' perspective is contingent on too many factors and may be time consuming.

2.5 Hypotheses Development for the Study

2.5.1 E-governance and Corruption

From the foregoing theoretical discussions and the empirical research findings, it can be conferred that E-governance may play a significant role in reducing corruption. The 'Public Policy' theory expresses that each individual is a rational and profit maximizer, so when they get the opportunities, they may become corrupt. However, the 'principal-agent' theory indicates that the control of corruption depends on the principal's ability to monitor the agents and E-governance can be an effective tool for the principal to monitor. By increasing the monitoring capacity through tracking a work process, E-governance can reduce the discretionary power significantly and can

increase the cost of corruption which ultimately may help to reduce corruption. Thus, the abilities to keep the detail records of a task process and the power to track and retrieve those information easily (Grönlund, 2010: 15), E-governance can make the cost of corruption higher. It can also offer an alternative channel for the service delivery instead of the traditional counter based system which may help a service seeker to avoid human interactions. This interaction in the traditional system can enable the service providers to have better position to negotiate for illegal benefits. E-governance can also help to control corruption by removing the opportunities for discretion, raising awareness and enhancing knowledge about the rules and regulations and promoting ethical attitudes through online campaigns and discussions (Ibid, 15). From these theoretical analyses and the empirical findings, the hypothesis of the study can be put as:

H1: E-governance may reduce the level of corruption.

2.5.2 E-governance, Corruption and the Intervening Variables

The test of Hypothesis 1 can provide the answer for the first part of the research question of the study but it cannot answer the last part i.e. the possible mechanisms to affect corruption by E-governance. In this context, the equation of Robert Klitgaard's (1998) can be useful where he indicated about the factors of corruption. He mentions that C=D+M-A, where C is corruption, D is discretion, M is monopoly, and A is accountability (cited in Balboa and Medalla, 2006:4). This means, any attempt to change the level of corruption or the patterns of corruption, it may need to change these factors as the corruption of an organization is dependent on them. That is why; these factors demand a detailed discussion in relation with E-governance.

Power and E-governance

"Power is an ever-present feature of organizational life, indeed all areas of life" (Foucault, 1977; cited in Miller and Wilson, 2006: 471). Under the principal-agent framework, when the principal has the discretionary power without proper check and balance, then he can impose the power on the agents for his own interest which may lead to corruption. By changing the discretionary power level of the public officials, it is possible to develop a new power relation among the actors which may lead to the reduction of corruption. Here power means, "participating in decision making" (Lasswell and Kaplan; cited in Bacharach and Baratz, 1962:948) which is also related with the process of domination (Dowding, 2006:137). E-governance can reduce the discretionary power of the principals by eliminating the officials from a work process as it can offer a service directly

through electronic platform. In some cases, E-governance may not be able to eliminate the 'human interface' completely but can reduce the level of 'human interface'. Higher level of 'human interface' increases the probabilities of corruption. Because, higher the necessity to interact with the public officials by the service recipients may enable more people for the arbitrary actions. By eliminating or reducing the 'human interface', E-governance may help to reduce the exercise of power which may contribute in reducing corruption. Following this line of reasoning, the hypothesis of the study can be put as:

H2: E-governance may change power relations, which may help to reduce the level of corruption.

Accountability and E-governance

The formula of corruption by Klitgaard (1998) also indicates that the accountability level of an organization does have a significant level of impacts in determining the level of corruption. The central idea of accountability is when decision-making power is transferred from a principal to an agent, there must be a mechanism in place for holding the agent to account for their decisions (Lindberg, 2009:1). Public choice theory defines people as a rational profit maximizer whose rent seeking/corrupt behaviors depend on the *'net utility'* achieved from the corrupt practices. However, the *'principal-agent model'* indicates that E-governance can reduce this utility by enhancing the accountability system through empowering the principals to oversight the agents. It can increase the principals' ability by enhancing the traceability of a task process. Because, E-governance has comprehensive ability to preserve records and easy and cost effective way to retrieve those information. Thus, E-governance makes the principals more equipped to monitor the agents which can help to reduce the corruption. So, from this perspective, the hypothesis can be considered as:

H3: E-governance may change the patterns of accountability, which may contribute to reduce the level of corruption.

Monopoly and E-governance

State monopoly on a specific service can breed the corruption. In 1995, Ades and Di Tella conducted a research and concluded that the less competitive a market environment, the higher will be the amount of corruption by giving public servants the incentive to extract some of the monopoly rents through bribes (cited in Lambsdorff, 1999:4). Yang (2005: 173) demonstrates that the robustness of bribery is a direct result of the monopolistic powers enjoyed by the bureaucrats.

He showed that if there are provisions for overlapping jurisdictions, the resulting bureaucratic competition would completely eliminate bribery in some cases and greatly reduce bribe sizes in other cases (Ibid, 173). Though, there are some exceptions, like the Nordic countries show that the monopoly may not necessarily lead to corruption. However in general, in a monopoly system, due to lack of alternatives, people are forced to take the services from one single source. This enables the public officials to gain more bargaining power and engage in corrupt practices. In contrast, if such monopoly can be broken by injecting competition then people will get more access to alternatives to decide. By providing alternative platforms to provide services or by disintegrating state monopoly, E-governance can help to reduce corruption. Because, using electronic services means introducing competition by providing alternative delivery channels (Grönlund: 2010:12). For example, in a traditional system, a person has to buy tickets for a train journey from the designated counter or the selling points. In that case, the person responsible for selling the tickets may seeks extra money as 'tips' for selling the ticket to him (a culture which exists in some developing countries) but if there is any alternative provisions like online ticketing then one need not to go to that counter and can easily avoid those corrupt practices. This way, users can choose to avoid the officials who are corrupt (Bhatanagar, 2001; cited in Grönlund, 2010: 12). Thus, E-governance can help to eliminate these types of corruption. Hence, the logics suggest the following hypothesis:

H4: By reducing the monopoly in the service delivery system, E-governance may help to reduce corruption.

2.6 Operationalization of the Variables of the Study

2.6.1 Macro Level

Independent Variable

For the Macro level analysis, the independent variable is E-governance which is measured through the *Online Service Index*[4] *(OSI)* by United Nations (UN). This index is calculated through four different indicators: degree of emerging, enhanced, transactional and connected e-government services in a country (UN, 2010: 110). These indicators are derived from the 'stages of the E-governance model' described by UN (United States) and ASPA (American Society for Public Administration). First indicator is the '*Degree of Emerging Information*' which indicates the

[4] An index is a composite measure of variables, or a way of measuring a construct using more than one data item (Babbie, 2001: 162).

degree of available basic electronic presence (UN, 2012: 124). Second indicator is the *'Degree of Enhanced Information Services'* which measures one-way or simple two-way e-communication (use of online platform) (Ibid, 124). The next indicator is the *'Degree of Transactional Services'* which indicates about the degree of engagement of the government in two-way communication with their citizens through online. It measures both the financial and the non-financial transactions through online (Ibid, 124). The last indicator *'Degree of Connected Service'* measures the degree of integration across the agencies to provide government services. Maximum of the survey questions related with these indicators call for a binary response of yes or no, with "yes" assigned one and "no" zero. Based on the responses, a country's OSI (Online Service Index) value is measured. The value for a given country is equal to the total number of points scored by that country less the lowest score for any country divided by the range of values for all countries in the survey (UN, 2010: 110). Mathematically, Whitemore (2012:69) put this process as:

$$\text{Online Service Index (OSI)(Country X)} = \frac{(\Sigma \text{ points for each category (Country x)} - \text{MIN } \Sigma \text{ points for each category (All Countries)})}{(\text{MAX } \Sigma \text{ points for each category (All Countries)} - \text{ MIN } \Sigma \text{ points for each category (All Countries)})}$$

Dependent Variable

At the Macro level, the dependent variable is the 'level of corruption' which means the magnitude or the volume of corruption in a country. This magnitude/volume of corruption is measured through the Corruption Perception Index (CPI) by Transparency International (TI). TI conducts annual surveys to capture the abuse of entrusted power for private gain on a scale of 0 to 10, with lower values indicating greater corruption. For most of the countries, the index is based on 14 different annual expert and business surveys (For details: Appendix- 3). As a result, the measurements encompass a diverse array of issues related to corruption (Mistry and Jalal, 2012: 156). Nonetheless, CPI only measures the volume of corruption which does not describe about the patterns in details or the process of corruption. It only indicates about the degree of corruption. That is why from the 'Macro' perspective; it is only possible to determine the level of corruption and its changes but not the patterns and the processes.

Table 3: Relations between Independent and Dependent Variables (Macro Perspective)

Level	Independent Variables	Indicators for Independent Variables	Dependent Variable	Indicators for Dependent Variables	Objective
Macro Level Analysis	**E-governance**	Online Service Index: • Level of emerging services • Level of enhanced services • Level of transaction services • Level of connected Services	Corruption	• Level of Corruption	To Determine the trends between E-governance and corruption over a specific period

2.6.2 Micro Level

Independent Variables

At the 'Micro level', the independent variable is E-governance which is measured by four stages of E-governance described by UN and ASPA[5]. The position of the selected organizations are determined based on these stages and are ranked within the scale of 1- 4 (1 = emerging and 4 = connected). To understand the probable effects of E-governance on corruption, the study depends on a number of intervening variables (discretionary power, monopoly, and accountability) derived from the Klitggard's (1998) equation of corruption (cited in Balboa and Medalla, 2006:4). According to the theoretical arguments, any attempt to change the corruption level, may need to change these variables as the corruption in an organization is dependent on them.

Intervening Variables

Power

Power can be defined as the ability to participate in decision making process (Lasswell and Kaplan, 1950, cited in Bacharach and Bartaz, 1962:948). However, when the power becomes discretionary then it may open the windows for corruption. Because, 'discretion' is the liberty or power of a person to decide or act on the basis of his or her own judgment (Schultz, 2003: 5). Under the *'Principal-Agent framework'*, when the principal has the discretionary power without proper check and balance then he can impose the power on the agents for his own interest which may lead to corruption. Such imposition can easily be possible in an organization where *'Power Distance'* (PD) exist. PD refers to the extent to which less powerful members of organizations and institutions accept that power will be distributed unequally (Website: The Hofstede Center). It is an important factor for corruption because significant PD implies fewer checks and balances against the abuse of power (Hofstede and Hofstede, 2005; cited in Pillay and Dorasamy, 2010:368). However, E-

[5] The model is explained in details in the section 'conceptual foundation'.

governance can limit the 'application of power' by disintermediating a work process (Rumel, 2004; cited in Grönlund, 2010: 13). Disintermediation means the removal of intermediaries or "cutting out the middleman" (Website: Wiki (a)). This indicates the 'bounded nature' of power which stems from the 'organizational constraints' (Miller and Wilson, 2006: 471). E-governance helps to eliminate or to reduce 'human interactions' which may have positive effects on corruption as higher levels of human interactions can create higher provisions and probabilities for corruption. All these changes in power game in an organization can be better understood by the *'dimensions of power'* described by Bacharach and Bartaz (1962) and Luke (1974). The first dimension of power is 'overt' which is about 'decision making'. The second dimension is 'covert' in nature which leads to influencing the decision making process (Bacharach and Bartaz, 1962:950-52). This indicates the 'restrictive face' of power. The last dimension is 'latent' in nature where the dominated willingly accepted the dominance of others. The values and norms in a society or in an organization help to develop the third dimension of power (Dowding, 2006:137). By indicating Marx's concept, Miller and Wilson (2006:473) labeled it as 'false consciousness'. Thus, through the power game, an organization turns to 'mobilization of bias' where some issues are organized and others are organized out (Bacharach and Bartaz, 1962: 949).

Accountability

The central idea of accountability is when the decision-making power is transferred from the principal to an agent; there must be a mechanism in place for holding an agent to account for their decisions (Lindberg, 2009:1). For this study, accountability is directed to the obligation of a person to another person, according to which the former must give account of, explain and justify his actions or decisions in an appropriate way (Weber, 2011:133) and if the former fails then the later can impose sanctions (Lindberg, 2009:1). The accountability mechanism of an organization can be divided into two dimensions: horizontal and vertical (Schillemans, 2011:390). Traditional accountability mechanisms are very often 'vertical' forms of accountability where the agencies are accountable to the upper echelon within its jurisdiction. In a democratic system, voters are the ultimate source of power to make the public organizations accountable (DFID, 2008:7), but for this study, vertical accountability is limited within the organizational boundary i.e. the agency itself and the department/Ministry under which the agency operates. 'Horizontal' accountability is the forms of accountability where the accountee is not hierarchically superior to the accountor. Parallel agencies (e.g. audit department), independent evaluators, boards of stakeholders or,

journalists, interest groups, and clients can all act as the horizontal accountees (Schillemans, 2011:390). There are certain factors which may affect both the vertical and the horizontal accountability system in an organization like: rules and regulations, working procedures, oversight capacity (monitoring), enforcement etc. The quality of accountability is depended on the *'working procedures'* of an organization, because if it is open and transparent, then can ensure higher accountability by increasing the probability that corruption or wrongdoing can easily be detected (Bac, 2001:87). To ensure the accountability in an organization, *'rules and regulations'* are also important because they set the *modus operandi*, put the expected standard and define the boundary. To identify any breach of these standards, an accountability system has three elements: *monitoring/oversight; investigation and the enforcement*. Monitoring is associated with the overseeing activities to ensure whether everything in an organization is performed based on the established rules and regulations. If any deviation is observed in the monitoring stage, then it may lead to 'investigation' for more detail information. The last component is associated with the enforcement of the rules and regulations. *'Enforcement'* of the rules and regulations are very important to curb corruption, because the exercise of accountability that expose misdeeds but do not impose sanctions, will appear as toothless and 'diminished' the effectiveness of accountability (Schedler et al. 1999: 15). This will be regarded as the act of 'window dressing' (Ibid, 16) rather than controlling corruption. This lack of enforcement may also encourage other people to get involved with the corrupt activities.

Monopoly

Monopoly exists when a specific person or organization is the only supplier of a particular commodity (Friedman, 2002: 120). It is characterized by lack of competition to produce the good or service and a lack of viable substitute goods (Baumol and Blinder, 2012: 220). A lack of competition may breed corruption. In general, monopoly limits the *'degree of choices'* and may increase the *'transaction cost'*. Here, *'degree of choice'* means the provisions for alternatives for a specific service or commodity. Higher level of choices may lead to reduced level of corruption. Because, if a person is not satisfied or faces any problem for a service of an organization; then he can switch to other alternatives.

Table 4: Relations between Independent, Intervening and Dependent Variables (Micro Perspective)

Level	Independent Variables	Intervening Variables	Indicators for Intervening Variables	Dependent Variable	Indicators for Dependent Variables	Objectives
Micro Level Analysis	**E-governance**	**Degree of Accountability**	• **Vertical Accountability** o Working Procedures o Rules and Regulations o Oversight Capacity (Internal Mechanisms) o Investigation o Enforcement • **Horizontal Accountability** o Working Procedures o Rules and Regulations o Oversight Capacity (External Mechanisms) o Investigation o Enforcement	Corruption	• Level of Corruption • Patterns of Corruption	To explore how E-governance is affecting corruption
		Degree of Power	• Dimensions of Power • Accessibility to Services	Corruption	• Level of Corruption • Patterns of Corruption	
		Degree of Monopoly	• Degree of Choices • Transaction Cost	Corruption	• Level of Corruption • Patterns of Corruption	

Dependent Variable

At the Micro level, the dependent variable is corruption and it covers both the *'level of corruption'* and the *'patterns of corruption'*. The *'level of corruption'* means the magnitude/volume of corruption in an organization and the *'patterns of corruption'* indicates about the different forms and types of corruption determined by the characteristics. Based on the use of power and nature of transactions, corruption can be divided into different types; like, bribe, embezzlement, fraud, extortion, favoritism etc. (Andvig et al. 2000: 15). In terms of involvement of the public officials, corruption can be divided into two: *political corruption* and *bureaucratic corruption*. On the basis of the volume, it can be divided as: *grand and petty corruption*. Generally, in '*grand corruption*', high-level public officials and politicians are involved when they make decisions on large public

contracts or projects. *'Petty corruption'* is smaller in volume which is performed by the lower level public officials (especially street level officials) (Langseth, 1999:5).

Variables of the Study: Quest for Interrelations

From the operational definitions of the intervening variables, a number of factors are emerged as the indicators for those variables which can be grouped into three broader umbrellas. First group of indicators are mainly related with the 'organizational capacity' i.e. fall within the boundary of an organization. E-governance may enhance the '*organizational capacity*' through the increased level of oversight and investigation capacity, enhanced accessibility to the services, dissemination of the information about the various rules and regulations, and the reduced level of transaction-cost. Due to all these changes, an organization may have an enhanced capacity to curb corruption. Because, such enhancement can lead to higher level of *'vertical accountability'* for an organization. The effects of E-governance may not be limited within the *'organizational boundary'*. In an organization, the stakeholders from both inside and outside of an organization may try to exercise their power to manipulate a decision or a task process. This influence may depend on the degree of the accessibility of the respective actors, the nature and the extent of power which they have and their wiliness to exercise. The theoretical framework indicates that E-governance enables a person to bypass the corrupt 'human interactions' and thus can help to overcome the problem of discretionary power and the problems of the middleman. It may also stifle the exercise of power from outside of an organization. For example, in India, the traditional tendering process suffers due to the problem of lobbying and peddling of influence through political interventions or due to the manipulation by the officials themselves as the system lacks transparency (GoAP, 2001:71). E-procurement system can make such exercise of power or manipulation difficult as due to automation, everything is supposed to be decided electronically and can easily be traced. Thus, E-governance can limit the exercise of power which may contribute in reducing the corruption of an organization.

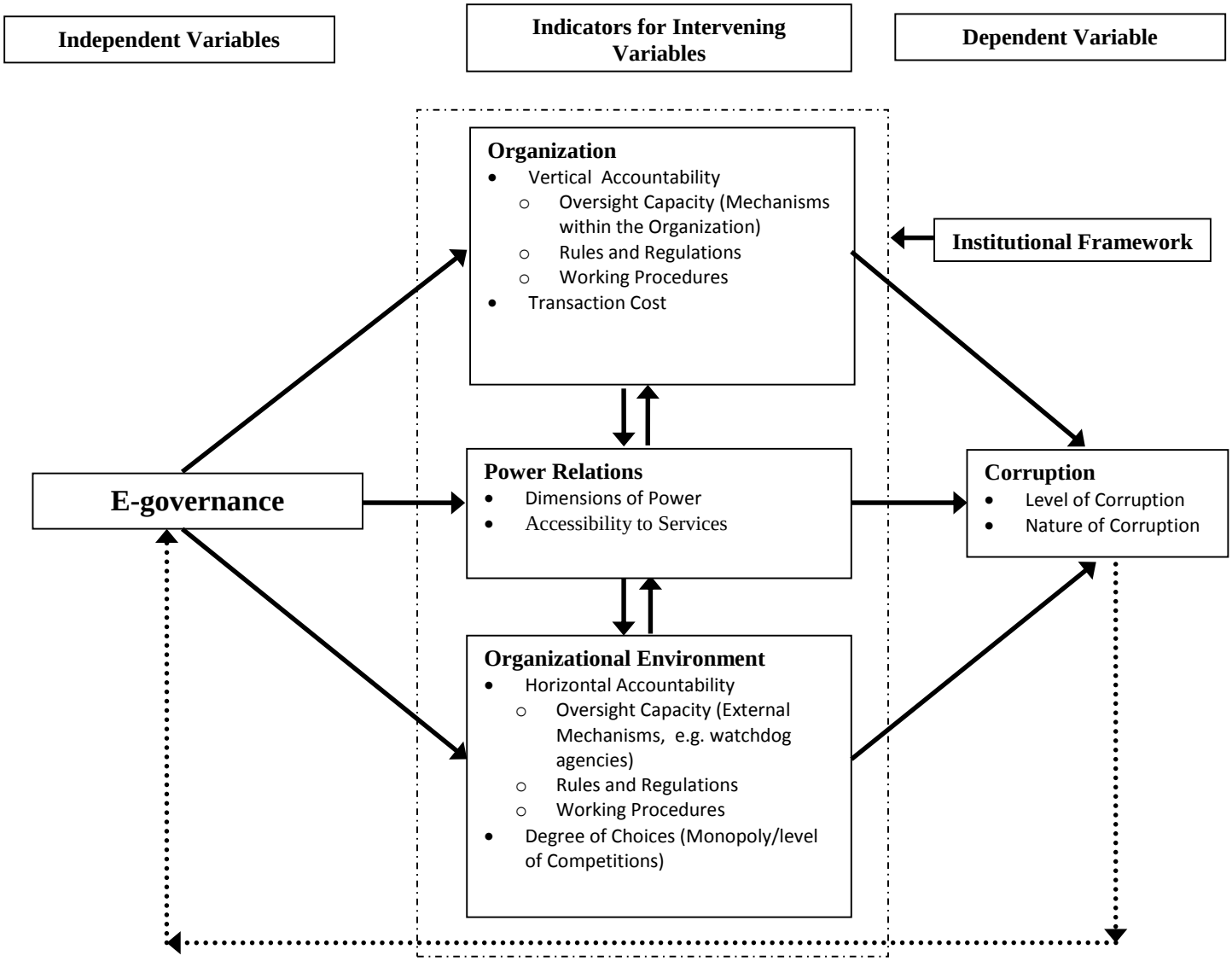


Figure 3: Relations between Independent, Intervening and Dependent Variables

Source: Researcher's Synthesis

The exercise of power from outside of an organization's boundary indicates about the effect of the *'organizational environment'*. Here *'organizational environment'* is defined as the set of forces surrounding an organization. There are a number of factors like the role of external watchdog agencies and their capacities, existing legal provisions and the working procedures, the degree of choices for the citizens etc. through which E-governance may have an effect on determining both the level and the patterns of corruption. Thus, E-governance can reengineer the work process of an organization which also change the 'relationship patterns' of an organization with its environment. It enables the watchdog agencies as well as the citizens with more power to monitor which can help to increase the *'horizontal accountability'* of an organization. These changing

patterns can be reflected in the power relations as well as in the mode of providing services. For example, a citizen can pay utility bills or a company can apply for a license or can bid for a contract through online without visiting the respective offices. Such provisions for electronic payment or electronic bidding may reduce the scopes of the 'street level' bureaucrats and the stakeholders from outside of that organization to interfere a work process. Because, all the processes are recorded and decided electronically and are difficult to influence but not impossible. Thus, the analyses of the impacts of E-governance on corruption indicates that E-governance may bring changes in the organizational settings in a way which may help to reduce corruption. However, there are caveats as well that corruption itself can affect the processes and the development of E-governance. Corrupt or vested group of people can create impediments to the adoption of the automation process or can manipulate the software/system or can hack the automated system for their own benefits. This manipulation or the hacking of the automated system may breed the scopes for further corruption as well.

2.7 Conclusion

This theoretical chapter briefly discusses different theories to develop a theoretical framework, which can explain the probable relations between E-governance and corruption. The *public choice* theory considers each individual as the profit maximizing opportunist agent, but the *principal-agent* theory indicates that such opportunist nature of the individual can be controlled by the use of E-governance. The chapter also highlights other major studies and their findings along with the theoretical arguments to increase the understating on the dynamics between E-governance and corruption. Based on the theoretical arguments and the empirical findings, the study develops four hypotheses to test the validity through the empirical evidences. For testing the hypotheses, this chapter also clearly identifies the variables and provides their operational definitions applicable for this study.

CHAPTER 3: METHODS OF INQUIRY

3.0 Introduction

This methodology chapter is a detailed illustration of how this research is conducted. The chapter starts with the description of the rationales for selecting the areas for the study. Then it outlines the method of data collection from those sample areas. The descriptions of the data collection methods are divided into two different segments: macro and micro, based on the structure of the research. The socio-economic profiles of the respondents for the micro level study are depicted briefly in this chapter. It also illustrates how these collected data are estimated and analyzed to link with the proposed hypotheses of the study. The chapter does not confine within the illustrations of the methodology only but also casts light on the quality issues of the research approaches by the reliability and the validity tests.

3.1 Area of the Study

The study areas for this research are selected based on the research question that prompted the study. Generally, the study areas are selected to have sufficient information or data where one either has enough answers to the questions or has enough data to test the propositions for the research. The first part of the research question is about the probable effects of E-governance in reducing corruption. For the answer of this part of the research question, 'quantitative approach' is followed based on the macro level data of the different countries. However, such 'quantitative approach' is not able to explain the second part of the question i.e. how E-governance is affecting corruption (if there is any). To explore the answer of the second part, a 'qualitative approach' along with the 'quantitative approach' is adopted for the micro level analysis. For this, the study selected a place where there is higher prevalence of corruption and at the same time, E-governance is introduced. Because, this can help to understand the changing dynamics of corruption due to E-governance.

3.1.1 Selection of the Sample Area for the Micro Level Cases

Bangladesh positioned at the bottom in both the corruption and the governance indexes. Transparency International (TI) ranked Bangladesh as the most corrupt country in the world for five consecutive years (2001-2005). The statistical figure of TI demonstrates that the score of Bangladesh is still below 3 which reflects that still there is higher level of corruption in the country as '0' indicates the most corrupted countries and '10' indicates the inverse. In terms of the degree of the presence of E-governance, the Government of Bangladesh (GoB) has taken initiatives to introduce E-governance. In line with this policy directive, the public service system in Bangladesh is gradually transforming and adopting E-governance. In the year 2004, the position of Bangladesh was 159 in e-readiness index among 191 countries (UN, 2004:129) and in 2012, the position improved to 150 among 190 countries (UN, 2012:127). Therefore, based on the existence of both of these attributes, Bangladesh can fulfill the inclusion criteria and can be a good place to understand the dynamics between E-governance and corruption.

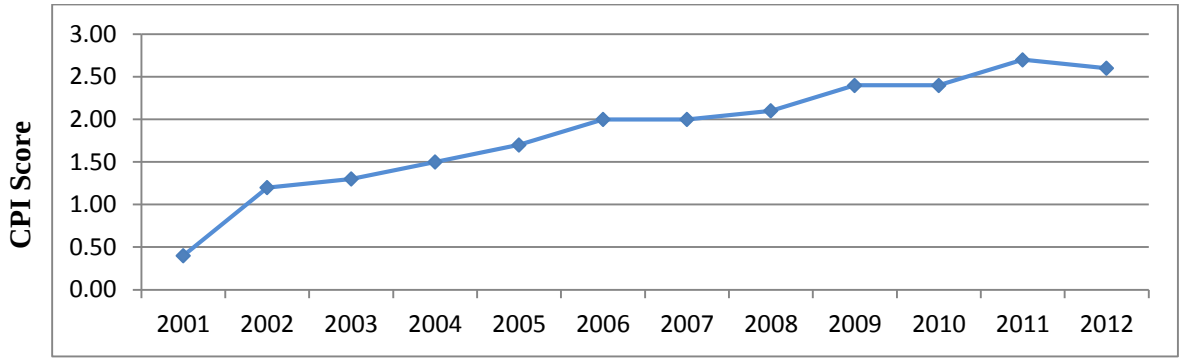


Figure 4: Corruption Trends of Bangladesh in the different Years based on the Data of Transparency International

Source: The graph is calculated by the researcher based on CPI of Transparency International

3.1.2 Selection of the Cases: Development of a 'Natural Experimental' Research Design

This research work tries to follow the natural experiment approach[6] to assess the impacts of E-governance on corruption. To achieve this objective, the study tries to explore the cases where there are variations of E-governance level through which the probable variable impacts of E-

[6] Natural experiments are observational studies which are undertaken to assess the outcomes and the impacts of an intervention (Website: McKenna and Morrison). This is undertaken in the natural settings where the researchers do not have the ability to assign 'treatment' and 'control' groups for the general experiment. For this type of experiment, the cases are selected where one has received the intervention while the other has not. The divergences of the innervations can provide the opportunities of the general experiment like situations to assess the probable impacts on the depended variable (Ibid).

governance on corruption can be understood. First, the study likes to consider the district[7] land administration of Bangladesh as land has a constitutive role in the formation of a nation-state (Bleiklie, 2006:9) and at the same time, it is also treated as one of the significant area for corruption. A household study in 2012, showed that 54.8 percent of the surveyed respondents have to pay bribe for receiving services from the land administration (TIB, 2012:13). Recently, the government has taken decision to digitalize (introduction of E-governance) the land administration. The government has introduced 'District e-Service Center' (DESC) which is an E-governance facilitated one-stop service point at the Districts. The DESC was first piloted at *Jessore* district and later on replicated in all other 63 districts from August, 2011 (Daily Star, 2011). On March, 2013; the government launched more upgraded version and renamed as National e-Service System (NESS). So, the district land administration can be a good area to study on the effect of E-governance on corruption as there is higher level of corruption and at the same time E-governance is introduced. The study selected two districts: one from the urban and another one is from the rural area. For this study, the districts outside the main metropolitan areas are treated as the rural districts.

However, the automation of the 'land administration' does not have any variation of the level of E-governance as all the district headquarters have the same level of E-governance. For this, the ticketing system of Bangladesh Railway (BR) can be a better alternative where there has been automation for quite a long period of time (the automating process started from 1994) and have various levels of E-governance. Due to the huge demand of the tickets, especially in the weekend and in the holidays; and the limited supply (mainly due to lack of capacity), there are windows for corruption which are exploited by the different sections of people. There are consistent allegations for the corrupt practices with the tickets of Bangladesh Railway. Though, there are lacks of any systematic study regarding these corrupt practices, but the persistent news of such bad practices in the local newspapers can be indicative regarding the intensity of the problem. Earlier, BR has paper based ticketing system which is sold manually from the counter. Now, it has the provisions for Electronic-ticketing (E-ticketing) and Mobile-ticketing (M-ticketing). For E-ticketing, tickets are

[7]District is an administrative unit in Bangladesh which is considered as one of the significant hub for providing different government services. Around 37 types of services are provided by the District administration like providing license and certificates, land acquisitions, census, education and public examinations etc. At present, Bangladesh is divided into 64 districts which are clustered under 7 divisions. There are two tiers bellow the district administration: *Upazila* (Sub-district) and Union. The hierarchical structure of these administrative units can be put as: Central Government→ Division→ District→ *Upazila* (Sub-district) →Union.

sold through internet and the payments are taken through the online banking while for M-ticketing; tickets are sold through mobile phone platform and the payments are taken through its usual billing system. Based on this direct transactional nature, both of the ticketing system can be considered as higher level of E-governance. There is another kind of ticketing system in Bangladesh Railway which can be labeled as Computerized ticketing or C-ticketing. Under this system, tickets are sold from the counter by using the computer system, but this is not 'direct transactional' like E/M-ticketing. Here, all the activities like seat allocation, accounts, production of selling report etc. are maintained through the computer. This C-ticketing can again be divided based on the connectivity with the central servers. In the sample urban station, C-ticketing system is connected with the central servers which enable the official to monitor the activities from the other places through internet. In contrast, the sample rural area does not have such option as the computers are not connected to the central servers, and hence the E-governance system is working there independently. This variation can also lead to the variation of the level of E-governance.

Table 5: Levels of E-governance in the Sample Areas (within the scale of 1-4)

Study Areas	Offices	E-governance Level	Rationales
Bangladesh Railway	Urban Station which has E/M-ticketing	3.5	• Have provisions for online transactions and is connected with the other organizations. • Connected with the central server and can be monitored from any places through internet.
	Urban Station which has computerized ticketing (C-ticketing) and connected with the central server	2	• Connected with the central server and can be monitored from any places through internet.
	Rural Station which has computerized ticketing (C-ticketing) but not connected with the central server	1	• Not connected with the central server and cannot be monitored from other places.
District Land Administration	District Land Administration (Urban) (DESC/NESS)	2.5	• Connected with the central server and can be monitored from other places. • Citizen has limited provision to apply for the service, still they need to visit the office to complete the application. • No provision for online payment; still traditional mode of payment is followed.
	District Land Administration (Rural) (DESC/NESS)	2.5	• Same as the Urban area

Source: Researcher's Estimation based on the model of E-governance by United Nations (UN) and American Society for Public Administration (ASPA)

Based on the model of United Nations (UN) and ASPA (American Society for Public Administration), all these sample areas' E-governance level can be mapped within the ranges between 1- 4. These variations of the levels of E-governance within and across the cases enable this research to have 'natural experiment' like situation to understand the probable variable effects of E-governance on corruption. Thus, the study dovetailed the research areas to generate robust understanding about the relations between E-governance and corruption. Table 5 briefly illustrates of the sample areas' E-governance level along with the rationales. The analyses of the variations of the level of E-governance in BR and its probable impacts on corruption may generate important insights to explore the answer of the research question of this study in the real life settings. As most of the contextual factors for these sample areas are more or less same; drawing the causality between E-governance and corruption can be comparatively easier, especially within the same service. Though, there can be variations of some of the factors; like in Bangladesh Railway, the demand of the tickets may vary based on the destinations and the quality of the services (variations between train services) and these can have effects on the extent of corruption of the respective places. These problems may create some challenges for drawing causalities. The comparative analysis of two types of services (railway and district land administration) also helped to understand the effectiveness of E-governance on corruption across two different types of services in two different settings (urban and rural). Thus, through the *'cross-case synthesis'*, the study is likely to produce more robust picture on the propositions of the study.

3.2 Research Approaches and Estimations

3.2.1 Macro Level

The 'Macro level' study is an attempt to examine the impacts of E-governance on corruption using national level data. This longitudinal data analysis can help to comprehend the global trends and scenarios. The study relays on two well-known indexes: Corruption Perception Index (CPI) by TI (Transparency International) and E-government Development Index (EGDI) by UN (United Nations) which help to understand the effects of E-governance on Corruption from the 'Macro' perspective. The data of CPI is obtained from the database of TI. The index is an average of various indices which ranges from 0 (highly corrupt) to 10 (highly clean) (Me´on and Well, 2009: 248). The dependent variable for this study, '*corruption'* is measured by the changes of CPI values between the year 2010 and 2012. The validity of the CPI has been tested by the several researchers;

like: Husted (1999) and Wilhelm (2002) (cited in Shim and Eom, 2008:306). Husted's (1999) study demonstrates that CPI has higher level of construct validity and reliability (Ibid, 306).

EGDI is a scoring of the willingness and the capacity of national administrations to use online and mobile technology in the execution of government functions (UN, 2010: 109). The index faces some criticisms especially for the 'construct validity' from some of the researchers (like Points and Pardo, 2011; Whitmore, 2012). Points and Pardo (2011:358) raised the question about the relevance of the 'Human Capital Index' built on the literacy rate and the gross enrolment ration which not necessarily reflect the citizen's capacity to operate E-governance. In spite of these criticisms, it is widely used for the assessment of the level of E-governance in the different countries. This study only considers the Online Service Index (OSI) to calculate the impact of E-governance; because EGDI is a composite index[8]; and other indexes (like human capital) may mislead the observations of the study. The variable E-governance is measured by the changes of OSI value between the year 2012 and 2010. OSI value ranges from 0 (low level of online services) to 1 (high level of online services). According to the Hypothesis 1 of the study, if the level of E-governance increases then the level of corruption decreases i.e. when the value of OSI increases or decreases then the value of CPI will increase or decrease respectively (here increase of CPI value means the reduction of corruption as 0 = highly corrupted and 10 = highly clean or less corrupt). These changes can be better understood by the following grid:

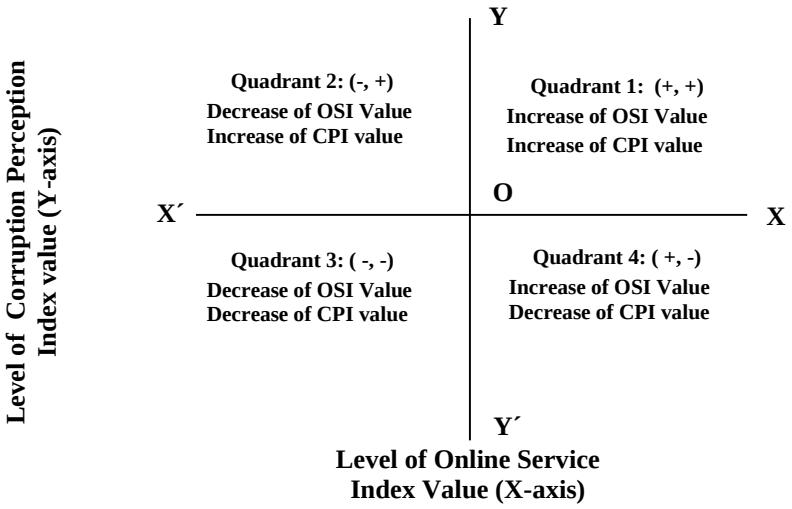


Figure 5: Relations between E-governance and Corruption

Source: Researcher's Synthesis

[8] Composed of online service index, telecommunication index and human capital index. Mathematically, EGDI = (0.34 × online service index) + (0.33 × telecommunication index) + (0.33 × human capital index)

In this grid (Figure 5), the data which can be found in Quadrant 1 and 3, support the Hypothesis 1 of the study. Because, Quadrant 1 shows both the increase of OSI values and CPI values while Quadrant 3, indicates the inverse situation i.e. decrease of both OSI and CPI. This means, with the increase of E-governance, corruption reduces and alternatively with the reduction of E-governance, corruption increases. The data which can be found in Quadrant 2 and 4, are not consistent with the proposition of the study, because, here both data go to the opposite direction i.e. when the OSI value increases then CPI value decreases and vice versa. This means, with the increase of E-governance, corruption increases and similarly with the decrease of E-governance, corruption decreases.

The effects of E-governance on corruption may vary on the basis of various attributes like culture, governance system, geography, level of development etc. Like in an autocratic system, a country may have a high level of E-governance but may not use this as a tool to detect the corruption of the ruling party or the powerful people who are connected with the ruling party. Even if someone is detected then there can be possibilities that the respective authority may not take any action against him. Similarly, other factors can have an effect on the effectiveness of E-governance on corruption. This study only considers the distinctions of the countries based on the level of economic development due to the time constraint and the limited scope of the research. For this, the study relies on the classifications of the countries based on their economic capacities determined by World Bank. For measuring the level of economic development, it uses GNI per capita and categories the countries as: low income, lower middle income, upper middle income and high income countries. In this study, high-income countries i.e. which have per capita income equivalent to $ 12,476 or more are treated as developed countries and the rest is treated as developing countries. Based on these categories of the countries, the study analyzes the variation of the effectiveness of E-governance on corruption.

Table 6: Classifications of the Countries based on GNI per capita (year 2011)

World Bank's Category of the Countries	GNI per capita (year 2011)
Low Income	$1,025 or less
Lower Middle Income	$1,026 to $4,035
Upper Middle Income	$4,036 to $12,475
High Income (OECD/Non OECD)	$12,476 or more

Source: Website of Global Finance, accessed on April 20, 2013

From the literature review in the theoretical chapter, it appears that with the improvement of the economic condition and the democratic values of a country, the level of corruption can significantly be influenced and improved. To understand the relative strengths of all these explanatory variables of corruption, the 'multiple regression analysis' can be an effective statistical tool. Because, it is a statistical tool which can help to understand the effects of the different explanatory variables on the dependent variables together. Through this tool, it is possible to know the magnitude of the impacts of the variables along with the explanatory power of the tested model. This study measures the economic development through the change of GDP in a country. The data for the change of GDP within the time frame of 2012 to 2010, are obtained from World Bank's database. The degree of democratic governance is measured through the Democratic Index (DI) by the Economic Intelligence Unit (2012 and 2010). Based on the aforementioned three explanatory variables (OSI, GDP and DI), a model can be developed to measure the magnitude of the impacts of these variables on the level of corruption. Based on the principle of the liner regression model, the equation for corruption can be put as:

$$\textit{Corruption}_i = \alpha_i + \beta_{1i}\text{OSI}_i + \beta_{2i}\,DI_i + \beta_{3i}GDP_i + \beta_{4i}\,X_i + \beta_{5i}\,Z_i + \text{Ɛ}_i \ldots\ldots\ldots \textbf{(1)}$$

(here, i = initial, , α = period-specific intercept, β = Coefficients and Ɛ = estimate of error)

In this equation, 'X_i' is a *'time varying'* variables which may have effect on the dependent variable and 'Z_i' is a *'time invariant'* variables which have fixed effects on the dependent variable. After 't' time, the time invariant variables are omitted as it has constant value and the equation can be put as:

$$\Delta\ \textit{Corruption} = \Delta\alpha + \Delta\beta_1\text{OSI} + \Delta\beta_2 DI + \Delta\,\beta_3 GDP + \Delta\,\beta_4 X + \Delta\ \text{Ɛ} \ldots\ldots\ldots \textbf{(2)}$$

By considering the other 'time-varying' factors as *'control variable'*[9], which means, except the three explanatory/intervening variables, everything is assumed as constant, i.e. CV[10](Δ X, ΔƐ) =0; then the model can be put as:

$$\Delta\ \textit{Corruption} = \Delta\alpha + \Delta\beta_1\text{OSI} + \Delta\beta_2 DI + \Delta\,\beta_3 GDP \ldots\ldots\ldots \textbf{(3)}$$

Now, by this model, we can try to understand the magnitude of change of the dependent variable with the change of the explanatory variables. The percentage of change which this model failed to

[9]The control variable is something that is constant and unchanged in an experiment.
[10] CV is Coefficient of variation

explain (measured through the 'Adjusted R^2' in the Multiple Regression Analysis), may be due to the other explanatory variables which are not included in the model.

Table 7: Explanations of the Variables and their Sources

Variables	Explanations	Sources
Dependent Variable		
Corruption	• The level of corruption in a country i.e. the magnitude or the volume of corruption in a country. • Scaled between 0-10 (0-high corruption and 10- low corruption).	• Corruption Perception Index (CPI) by Transparency International.
Explanatory Variables		
Democracy	• Measure the quality of the democracy based on 0-10 scale. • Full democracies: 8-10; Flawed democracies: 6-7.9; Hybrid regimes: 4-5.9 and Authoritarian regimes: below 4.	• Democratic Index (DI) by Economic Intelligence Unit.
GDP per capita	• GDP per capita is the gross domestic product divided by midyear population. • It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars (Website: World Bank).	• GDP per capita from World Banks' database.
E-governance	• Measure the level of online service of a country by a scale 0-1. • 0 is low level of online service while 1 is high level of online services.	• Online Service Index (OSI) by United Nations.

Source: Researcher's compilations

3.2.2 Micro Level

The study used a number of tools to collect data from the sample two cases: Bangladesh Railway and the district land administrations. At first, the study used the '*document review'* method to have an idea about the contexts of the respective organizations. This review helped to understand the associated government directives, rules and regulations and the actual legal processes for providing the services. The types of document that the study consults during the field data collection are:

Table 8: Consulted Documents during the Field Data Collection

Organizations → / **Types of Documents** ↓	**District Land Administration**	**Bangladesh Railway**
Hard Copy	Court Fee Acts, CS (Cadastral Survey) and RS (Revisional/review Survey) records, file for the citizen's applications, citizen charter, monthly statements of the provided services etc.	Manuals, government orders, official files, citizen charter, monthly statements etc.
Soft Copy	Instructions for a service, online application and number of application, distributed number of *Parchas* (land records) etc.	Allocation of seats, manuals for providing the services etc.

Source: Researcher's compilation

These archival documentations offer not only the insights on the service delivery system but also help to *triangulate* what the research finds from other sources (Yin, 2003: 87). After this initial overview of the respective organizations, the study then goes for *'observation method'* to have an impression about the probable impacts of E-governance on corruption in an organization. At the beginning, it followed *'direct observation'* method under which the researcher just passively observed the behavior and the activities of the officials and the service recipients. At this stage, the researcher identified the existence of the brokers (locally known as *Dalal*) in the district land administration and tried to understand their activities. Under the existing legally framework, there should not have the existence of these *Dalal* (brokers), but in practice they exist and considered to be most efficient to obtain a service. In the case of Railway, the people who are involved with these types of illegal activities from outside of the organizations are known as *Kalobazari* (black marketeer/scalper).To have more precise idea about the processes of the service delivery and the 'corruption chain'; the researcher then used the *'participant observation'* method. As part of this process, the researcher took part actively and approached as a 'service recipient' and talked with both the lower level officials and the brokers about the details to have the service; like probable amount of bribe or how long it may take to get the services if extra amount of money is paid etc.

The observation method and the document review gave the researcher an overall impression about the procedures and the ground level scenario for the service in the sample offices. Then the researcher conducted the *'interviews'* to have more in-depth understanding about the situations. Here, both the officials and the service recipients were interviewed to have a balanced view from both sides. To interview the respondents, the study tries to follow the 'interview guide' (For details: Appendix 13) which is mainly prepared based on the variables and the indicators of the study. This interview guide also incorporates the key facts which are observed during the observation method and the document review; and the gap between the legal procedures and the practices.

To ensure the validity and the reliability of the data collected through interview method, the study tires to follow the principles of the *'Delphi Method*[11] *'*. In social research, Focus Group Discussion

[11] Under this method, at first, opinions of the respondents are sought individually and then their opinions are compiled and send back anonymously for further opinions. In this system, people can get the opportunities to know other people's opinions without the identity and can give their opinions on those facts. Thus a complete picture may emerge which may contain less biased data as the facts are verified by all the respondents. For more about Delphi Method: http://is.njit.edu/pubs/delphibook/delphibook.pdf or in audio format: http://www.youtube.com/watch?v=FFfKOSTftcs

(FGD) is extensively used (Khan, 1991:145) and highly applauded because of its purposeful use of social interactions in generating data (Merton et al., 1990, Morgan, 1996; cited in Boateng, 2012:54). It offers qualitative researchers the opportunity to interview several respondents systematically and simultaneously (Babbie, 2011, cited in Boateng, 2012:54). It is considered as one of the most effective method to collect data as it provides the opportunities to cross check the data in front of all the respondents which helps to increase the reliability and the validity of data. However, to follow this method for a sensitive issue like corruption is challenging. Because, the respondents may not feel comfortable or even may not agree to participate. To overcome these limitations but to achieve the same objectives, the 'Delphi Method' seems to be effective. It helps to crosscheck the validity of the data anonymously. Under this approach, the extraction of the facts is more important rather than knowing the person. That is why, the study uses the 'Delphi Method' to get the opinions of the public officials. However, the research cannot follow the method strictly. The civil servants specially the senior civil servants were very busy and it was very difficult to get back to them for the second or third time. In addition, they were not even willing to write anything on corruption of their organization due to fear and the culture of victimization. That is why *Delphi technique* cannot be strictly followed for this study; but from the lower and the mid-level officials, data were cross checked through the verbal conversations.

Table 9: Different Methods of the Study and their Rationales

Methods	Rationales
Document Review	To examine various kinds of documents to understand the contexts and the procedures for providing a service in the sample organization.
Observation	***Direct Observation:*** To understand the activities of the officials, the service seekers and the brokers passively. ***Participant Observation:*** To take active part as a 'service recipient' to understand the 'corruption chain'.
Interview	To understand the effects of E-governance on corruption dynamics more precisely.
Delphi Technique	To crosscheck the validity and the reliability of the collected information.
Questionnaire	To map the perception of the target population in both quantitative and qualitative format.

The opinions of the 'service recipients' and the 'public officials' are also obtained through 'questionnaire'. This method helped to gather both the quantitative and qualitative data in a standardized way. This method gives the opportunity to analyze the collected data more scientifically and objectively. The data are quantified through this method to compare and to measure the changes; and to test the hypotheses. This study captures the change of the different

variables of the study through the use of *'Likert scale'* in the questionnaire. After capturing the perception of the respondents, the study analyzed the data through the statistical software. Along with this quantitative data, the study also collected qualitative data to analyze the relations between the variables. Thus, the study tried to follow different methods to triangulate and to overcome the shortcomings of each method and tried to complement one method by other to have more comprehensive, reliable and valid data.

3.3 Target Population and Sampling

The size of the sample for a research is determined by the optimum number necessary to enable valid inferences (Marshal, 1996: 522). Inappropriate and inadequate sample size can affect the quality and the accuracy of a research (Bartlett, et al, 2001:43). For this study, at the 'Micro level', the respondents and their numbers (N) are determined by the principles of the *'representative sampling'* i.e. the samples are selected from the population[12] which covers all the potentially relevant and significant areas so that the study does not miss any important perceptions. The study identifies the service recipients, the public officials and the ICT experts as the key informants for the study because of their involvements with the procedures of the sample organizations. The public officials from the different organizations are selected based on the combination of *'representative sampling'* and *'convenience sampling'* techniques; so that the researcher can have the opinions from the different levels of officials who are involved with the processes of the service delivery system as well as to have the access to the respective officials. Thus, the 'sample officials' are selected based on the 'non-probability sampling' method. The *'sample frame'* for the 'service recipients' are selected based on the *'random method'* considering their involvement with the organizations. Then it follows the *'stratified approach'* based on the 'nature of services' they receive from the organizations. For the selection of ICT experts, the study follows the *'purposive sampling'* technique. It is a non-probability sampling method which is based on some predefined features and processes (Neuman, 2000: 220).The main feature which is considered during the selection of the ICT experts is their expertise with the relevant field to have technical explanation on E-governance and corruption.

[12] A 'population' consists of all the subjects that one wants to study while 'sampling' is the process of selecting a group of subjects for a study in such a way that the individuals represent the larger group from which they were selected (Yount, 2006: 1).

Table 10: Target Population and the Sample Size for the Research

S/N	District Land Administration		Bangladesh Railway		Total
	Category	Respondents	Category	Respondents	
1.	Service Recipients	5	Service Recipients	6	11
2.	Public Officials	18*	Public Officials	15*	33
3.	ICT Experts	1	ICT Experts	1	2
	Total	**24**		**22**	**46**

* Details breakdowns are given in Appendix 4 and 5

According to the directives of NSD (Norwegian Data Protection Official for Research), as it is necessary to keep the anonymity of the identity of the respondents, this research design clusters all the public officials into three groups (higher, mid-level and lower lever officials) rather than using their names or designations, so that they cannot be identified. Accordingly, the names of the places are also renamed based on their attributes like the district land administrations are labelled as 'rural or urban district land administration' rather than using the name of the respective places. The same principle is also followed for Bangladesh Railway. From these respondents, the study also collects data through questionnaire from 31 respondents; the details breakdown of the respondents for the questionnaire is given in Appendix 6.

3.4 Socio-Economic Profile of the Respondents

The socio-economic profile of the respondents can provide opportunities to understand the nature of the respondents. That is why; the study collected data on the different aspects of the respondents; like gender, age, education, occupation and nature of relations with the respective services (i.e. service provider/service recipients). In terms of ***gender***, the sample is biased to male gender. Because, it is difficult to find the female as the service recipient or service providers. Even if anyone was found then it was difficult to convince her to talk on corruption. Generally, the male are found to come in the district land administration for the services. If any female comes, then usually she comes with another male relatives. Thus, all the respondents in the district land administration eventually turn out as male respondents. Though, in the rail station, there are visibilities of women as the service recipients, but they were reluctant to talk about corruption. They just want to leave the station right after purchasing the tickets. Therefore, the study ended up with one female as the respondent. There is wide variation of the ***age*** ranges of the respondents. The respondents' age varies from 21-30 age group to 51 and above. In Bangladesh railway, most

of the respondents are from 31-50 age group (87.4 percent cumulatively); the same is also applicable for the district land administration (86.9 percent cumulatively). The respondents of this study have at least higher secondary ***education***. This happened because the illiterate people or the people who have lower level of education may not use the online service, as they may not be capable to do so. The majority of the respondents from the district land administration has either Master/higher degree (60 percent) or higher secondary degree (26.7 percent). In case of Bangladesh Railway, most of the respondents come from either Master/higher degree or graduate degree streams (37.5 percent and 43.8 percent respectively).

Table 11: Socio-Economic Profile of the Respondents

	Bangladesh Railway		District Land Administration	
	Frequency	**Percent**	**Frequency**	**Percent**
Gender				
Male	15	93.8	15	100
Female	1	6.3	-	0
Total	16	100.0	15	100.0
Age				
21-30	1	6.3	2	13.3
31-40	7	43.7	6	40.3
41-50	7	43.7	7	46.6
51 and above	1	6.3	-	-
Total	16	100.0	15	100.0
Education Level				
Higher Secondary (HSC)	3	18.8	4	26.7
Graduate	7	43.8	2	13.3
Master's or Higher	6	37.5	9	60.0
Total	16	100.0	15	100.0
Occupation				
Service/Working	12	75.0	12	80.0
Self-employed	2	12.5	3	20.0
Unemployed	1	6.3	-	-
House Wife	1	6.3	-	-
Total	16	100.0	15	100

In terms of **occupation**, there are wide variations among the respondents from Bangladesh Railway, like - self-employed, service/working, unemployed and housewife. However, most of the respondents belong to the 'working' category (75 percent). For the district land administration, the respondents are confined within two categories only- working (80 percent) and self-employed (20

percent). In both cases of the study, the respondents belong to either service providers or service recipient's categories. In Bangladesh Railway, 37.5 percent respondents are service recipients and the rest (62.5 percent) are service providers (Figure 6). For the district land administration, 33.3 percent is service recipients while 66.7 percent is service providers.

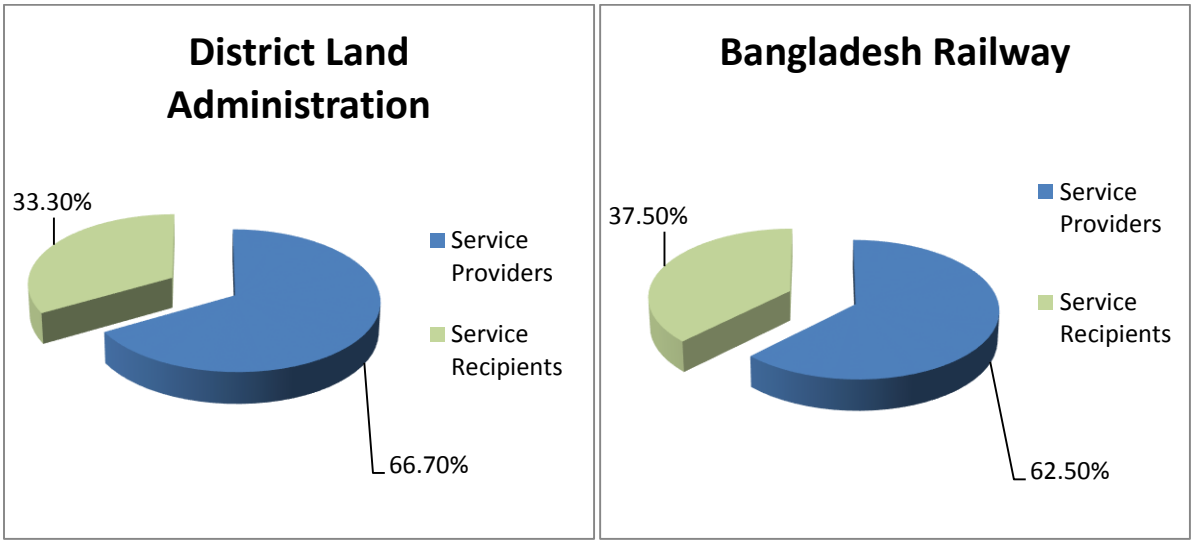


Figure 6: Nature of the Respondents based on the Relation with the Services

3.5 Unit of Analysis

The research design considers two different levels (Macro and Micro) of study as the response of the research question. The 'Macro level' analysis is based on the longitudinal data analysis at the state level. So, for the *'Macro level'*, the *'Unit of Analysis'* is the *'States/Countries'*. This longitudinal data at the state level helps to understand the changing patterns of the dynamics between E-governance and corruption across the globe. The 'Micro level' analysis of the study is designed to understand the mechanisms of E-governance i.e. what aspects and in what measures of E-governance is affecting the corruption. To understand these mechanisms, the research design of the study selected two public organizations from Bangladesh as the cases based on certain rationales, like level of E-governance, extent of corruption, importance of the service, accessibility etc. So, at the *'Micro level'*, the *'Unit of Analysis'* is *'Organization'*.

3.6 Analytic Strategy

3.6.1 Coding for Software and Data Analysis

The collected data for the study is categorized and tabulated based on the variables of the study to examine the Hypotheses of the study. The process involves the sequential activities described by Miles and Huberman (1994: 10): data reduction, display and conclusion drawing. For the *data reduction* of the 'qualitative data' (extracted by Delphi method, interview and open ended questionnaire), the research follows the 'thematic approach'[13]'. This process involves the identification of the themes through "careful reading and re-reading of the data" (Rice and Ezzy, 1999: 258). By this thematic approach, data are reduced to certain patterns and those patterns are analyzed in line with the hypotheses of the study. For the *data reduction,* the 'quantitative data' are coded[14] to simplify and to transform for the entry in the statistical software. Then reduced data are analyzed to draw conclusions. The research uses IBM SPSS (Statistical Package for the Social Sciences) 21.0 and Microsoft Excel to extract descriptive and inferential statistics. In Macro level, at first, through the *'descriptive statistics'*, the main features of the collected data are identified. Then in the second step, the quantitative data are analyzed to examine the nature of relationships that exists between the independent and the dependent variables through *'correlation-coefficient'*. *'Multiple regression analysis'* is used to understand the nature and the magnitude of the impacts of the explanatory variables over the dependent variable. At last, by using *'cross-tabulation',* the study tries to understand the variations of the effectiveness of E-governance on corruption in the different countries based on the economic nature (like low income, high income countries etc.).

Table 12: Approaches for the Statistical Analyses and their Objectives

Level	Statistical Methods	Objectives
Macro Level	Descriptive Statistics	To explore the main features of the collected data.
	Correlation Coefficient	To measure the strength and the direction of the linear relationship between the two variables of the study
	Multiple Regression Analysis	To understand the nature and the magnitude of the impacts of the explanatory variables over the dependent variable.
	Cross-tabulation	To identify the variations of the effectiveness of E-governance on corruption based on the economic nature of the countries (like low income, high income countries etc.).

[13] Thematic approach is a search for the themes that emerge as being important to the description of a phenomenon (Daly, Kellehear, and Gliksman, 1997; cited in Fereday and Cochrane, 2006: 82).
[14] Coding is the symbols (codes) which summarize the meaning or implications of the units of data (Layder, 1998:48).

Level	Statistical Methods	Objectives
Micro Level	Descriptive Statistics	To explore the main features of the collected data.
	Ranking	To measure the extent of the variations of the dependent and the intervening variables after the introduction of E-governance.
	Correlation Coefficient	To explore the strength and the direction of the linear relationships between the independent, intervening and the dependent variables.

Source: Researcher's Synthesis

In Micro level, at first, through the *'descriptive statistics'*, the main features like the demographic profile of the respondents and their nature of the involvement with the respective services are identified. Then, through the *'ranking'* processes, the extent of the variations of the dependent and the intervening variables are measured after the introduction of E-governance. Based on the quantitative data from the 'questionnaire', the research also likes to go for cross-case synthesis to understand the variable impacts of the level of E-governance on corruption. For this, the study uses 'correlation coefficient' to measure the changing trends and directions among the variables.

3.6.2 Adaptive Approach

The research strategy of this study starts with the 'deductive approach' as the deduction involves using a set of general assumptions in order to formulate empirically testable propositions about a phenomenon (Layder, 1998: 134). The study has different 'hypotheses' developed from the different theories of corruption and the model of E-governance. Based on the empirical findings, the study tries to test those hypotheses. From this perspective, the study follows *'casual inferences*[15]'. The research also follows the '*descriptive inferences*[16]' along with the *'casual inferences'* in the micro level analysis to understand the mechanisms of E-governance through which it can affect corruption. On the other hand, the study gets new understanding and dimensions with the progress of the analysis of the data. This nature of research is known as 'inductive process'. Layder (1998:134) defined it as the process which relies more on the initial gathering of empirical data as a means of developing a more general (theoretical) understanding. The current study also likes to consider this process to generate generalized understanding on the relationships between E-governance and corruption. However, when a theory both shapes and is shaped by the empirical data that emerges from research is known as *'adaptive theory'* (Ibid, 133). It allows the dual influence of extant theory as well as those that unfold from (and unfolded in) the research

[15] Inference is the process of using the facts we know to learn about facts we do not know (King et al, 1994:58) and '.causal inference' is the learning about causal effects from the data observed (Ibid, :8).
[16]Descriptive inference is using observations from the world to learn about other unobserved facts (Ibid, 20)

(Ibid, 133). That is why this approach is also known as the *'middle range'* theory. By analyzing the nature of the research approach of this study, it can be put as 'adaptive' as it combines both the *'deductive'* and *'inductive'* natures.

3.7 Reliability and Validity of the Study

3.7.1 Construct Validity

Construct Validity is the process of establishing correct operational measure for the concepts being studied (Yin, 2003: 34). To meet the test of the construct validity, an investigator needs to cover two steps: select the specific types of changes that are to be studied and demonstrate that the selected measures of these changes do indeed reflect the specific types of change that have been selected (Yin, 2003: 35). For this study, the dependent variable is corruption and the independent variable is E-governance. Both the concepts are operationalized through their working definitions and tried to develop proper measures to gauge them. In 'Macro level' analysis, the corruption is measured by one of the renowned database of corruption: CPI from TI . Various studies like Husted (1999) and Wilhelm (2002) (cited in Shim and Eom, 2008:306) and Cavazzini and Nevado (2013: 18), confirms the robustness of the database in measuring corruption. Comparing with the other corruption indexes developed by World Competitiveness Report and Political and Economic Risk Consultancy, Husted indicated that the construct of CPI is not only similar to other indexes but also more comprehensive (Shim and Eom, 2008: 306). Similarly, the development of E-governance is measured through OSI by UN which is among the few databases having such comprehensive measures (in terms of coverage and robustness) of E-governance. The 'Micro level' analysis of the study is designed to understand the processes that how E-governance can have an effect on corruption. To explore these processes, the study uses a widely acceptable equation of corruption by Klitgaard (1998) which indicates about the factors of corruption like power, accountability and monopoly. If E-governance has any effect on corruption then most likely it operates through the changes of these factors. Therefore, the study considers these factors of corruption as the intervening variables.

3.7.2 Internal Validity

Internal validity concerns about the causal relationships, whereby certain conditions are shown to lead to other. This type of validity test is mainly related with explanatory or casual studies and not for descriptive or exploratory studies (Yin, 2003: 34). There are two different types of causal

relationships: *causal description and causal explanation* (Johnson and Christensen, 2012: website). The *'causal description'* involves showing that the changes in one variable causes changes in the other variable (Ibid). The aim of this study is to explore the casual relationships between E-governance and corruption. At the 'Macro level', the study is designed to identify the trends between these two variables. However, there can be one weakness - a problem for which many social science researches suffers as it is almost impossible to control the impacts of other variables (problem of extraneous variables). That is why; there are chances that the changes of the dependent variable (corruption) may be affected due to other variables and not necessarily because of only E-governance. So, from this 'Macro level' study findings, it cannot be conclusively said that the changes of the dependent variable is only due to the changes of the independent variable. The *'causal explanation'* involves more than just showing causal relations. It involves explaining the mechanisms through which and the conditions under which a causal relationship holds (Ibid). The 'Micro level' analysis of the study is designed in line with this principle to understand the mechanisms and conditions through which the independent variable (E-governance) of the study can affect the dependent variable (corruption).

3.7.3 External Validity

External validity occurs when the researchers can establish the domain to which a study's findings can be generalized (Yin, 2003: 34). External validity verifies the degree to which that research results can be generalized to other conditions, participants, times, and places (Marczyk, et al. 2005: 67). This generalization can be drawn by two ways: *statistical generalization and analytical generalization*. Statistical generalization comes from the sample survey data whereas the analytical one comes from the case studies and the experiments (Yin, 2003: 37). The 'Macro level' analysis of this study can be treated as the *'statistical generalization'* category, since it uses the statistical data. As, the statistical analysis is based on the data of almost all the countries, then it can be said that, the findings of the research have higher level of external validity. The 'Micro level' study is based on both the *'analytical generalization'* and *'statistical generalization'*. These generalizations at the 'Micro level' are drawn based on two different organizations from Bangladesh. The effectiveness of E-governance and the nature and the level of corruption may vary based on various factors like culture, economic conditions, administrative procedures etc. So, the findings at the 'Micro Level' based on two organizations from Bangladesh may have lower level of external validity.

3.7.4 Reliability

Reliability is the process of demonstrating the operation of a study, such as the data collection procedures which can be repeated, with the same results (Yin, 2003: 34). Actually, reliability is the degree to which a measure is free of measurement error. The robustness of data can vary based on the time when data were collected, people who were involved in the data collection process and the setting from which the data were collected (Begley, 1996; cited in Hussein, 2009: 3). At the 'Macro level', the study depends on two world renowned databases on corruption (CPI by TI) and E-governance (OSI by UN). Many studies already showed the higher authenticity of these datasets. For example, Husted (1999) and Wilhelm (2002) found that CPI shows higher level of construct validity and reliability. The CPI database shows higher level of correlation coefficients with the similar indexes like Control of Corruption (CC) by World Bank and Accountability Index by Ibrahim (Cavazzini and Nevado, 2013: 18); which means the measures of corruption by TI is consistence and the data is comparatively reliable.

Table 13: Correlation Coefficients between Different Corruption Indexes

	CPI	Accountability	Control of Corruption
CPI	1		
Accountability	0.891	1	
Control of Corruption (CC)	0.948	0.935	1

Source: Cavazzini and Nevado, 2013: 18.

From the Table 13, it is evident that, the Correlation Coefficient between CPI and CC is 0.948 which means they have higher level of correlation. Similarly, CPI has higher correlation (0.891) with Ibrahim Index (Accountability). At the 'Micro level', to get more reliable data, the study is designed for interviewing the public officials individually by following the process of 'Delphi method' as the study topic is very sensitive in nature and people may not want to speak in front of others. Generally, the interview process may promote to speak the respondents but does not necessarily yield authentic information. To increase the authenticity of those data, the key information are crosschecked by the multiple sources (e.g. from the different persons by Delphi method and interviews; and the different documents by 'document review'). Thus, the study tries to increase the reliability of the 'micro level' data.

3.8 Ethical Considerations in the Research

The study tires to comply strictly the directives of NSD (Norwegian Data Protection Official for Research) and the ethical issues in social research; like: informed consent, maintaining confidentiality, personal integrity, and anonymity etc. The participation in this research was voluntary and every individual had the right to refuse to participate or to stop participation at any time. The research does not preserve any personal (e.g. name, email, phone no etc.) and sensitive (like health related information) data. If the respondents provide any such information, those were deleted from the notes and the transcripts. The research also tries to follow the 'scientific honesty' and refrains from any manipulation of data for the study.

3.9 Challenges for the Study

To understand the nature of the impacts of E-governance on corruption, the study goes for longitudinal data analysis. However, the study need to confine the analyses within the period of two years (2012-10). Because, TI has changed the methodology as well as the weights for the different indicators in 2010. If the research compares the present data with the data before 2010, then that may give improper readings. For the micro level cases, research on sensitive issues like corruption is always problematic because of the challenges to have valid and reliable data. The Delphi method is followed for this study along with other methods to reduce the biasness of data and to make the respondents comfortable to response. For the respondents of the study, the samples are gender biased; almost all the respondents are male. Getting female respondents to talk about corruption is very difficult. In terms of the education qualification, the respondents are biased to educated people. Illiterate people or the people who have lower level of education do not use the online service as they may not capable to do so and that is why they are not included in the sample. Another challenge for the study was related with the language of the questionnaire. The questionnaire was in English, it should be in local language (in Bengali) to have more quality data. To overcome this problem, the enumerator himself explains the questionnaire and collects the data by filling up the questionnaire. The details challenges of the research and their strategic responses are given in Table 14:

Table 14: Challenges for the Research (Risk Log)

Types	Descriptions	Strategic Responses
Operational (Macro Level)	• TI has changed the methodology as well as the weights for the different indicators in 2010. If the research compares the present data with the data before 2010, then that may give improper readings.	• At the 'Macro level', the study is only confined within the period of 2 years (2012-2010).
Operational (Micro Level)	• Access to the sensitive documents and information. • Getting authentic data on corruption from the key informants. • Culture of secrecy in the public sector.	• Use of informal and personal connections to get access.
Political	• As the election period was approaching in Bangladesh, there was unrest in the country which created some kinds of disturbances in the process of data collection.	• Selected convenient places for the study. • Tried to avoid potentially troublesome places and periods.
Organizational	• In land administration, the introduction of E-governance is still in embryonic stage and there are no variations of the levels of E-governance.	• Selected alternative organization simultaneously.
Psychological	• As the researcher himself is a civil servant, it is difficult for him to criticize the public organizations or other civil servants. • The predispositions of the researcher as a civil servant may lead to pro-bureaucratic interpretations of the data.	• Try to depersonalize the data. • Try to avoid the preconceived ideas during the interpretations of the data.

CHAPTER 4: UNDERSTANDING THE MILIEU OF THE SAMPLE CASES - A DESCRIPTIVE NOTE

4.0 Introduction

The purpose of this research is to investigate whether the introduction of E-governance can affect the level of corruption. To understand this effectiveness of E-governance, the study selected two organizations from Bangladesh. The organizations are selected to have different levels of E-governance as part of the 'experimental research design' to understand the possible variable effects on corruption. This chapter is a brief sketch of these organizations to accustom the reader with the contexts of the selected cases. It starts with the service delivery systems of the sample organizations and then tries to explore the corruption dynamics associated with the services. This brief illustrations of the two sample organizations can help to understand the backdrops associated with the E-governance system and the corruption dynamics of the respective cases.

4.1 Case 1: District Administration

4.1.1 Service Delivery System in the District Administration

During the British colonial period over 200 years before, the District Administration (popularly known as DC office or Deputy Collector's office) emerged as the key center for administering the respective areas in the Indian Subcontinent. The legacy of this administrative unit continues in the independent Bangladesh and still it is considered as the hub for providing different government services to the citizens in Bangladesh. Now, it is entrusted to provide around 37 different types of useful services to the citizens; like control and supervision of revenue, maintenance of public order and security, license and certificates, land acquisitions, census, relief and rehabilitation, social welfare, pension matters, education and public examinations, public complaints and enquiries etc. (Chowdhury, 2011). In the absence of an effective local government system for providing these services, DC offices are playing important roles and are representing the Central Government at the grassroots. In spite of this importance, *"the service delivery system of the DC offices is still backdated and largely traditional paper-based system, which is time consuming and labor intensive. Furthermore, it is often inflexible, causes frequent delays, prone to abuse or corruption, and can prohibit access by the poor,*

marginalized and vulnerable people. Due to the shortage of manpower and infrastructure, DC offices are also unable to provide the high demand for services from the growing population" (Ibid). To start the process reengineering within the public service to overhaul this backdated-time-consuming system, Bangladesh government has launched an E-governance system with the collaboration of UNDP on November 14, 2011. The system is known as the District E-Service Center (DESC) which is an ICT (Information Communication Technology) facilitated one-stop service point and has been designed to improve the accessibility and the transparency of the public service delivery system at the district level (Ibid). Based on the initial learning, the government took new initiatives to upgrade the service delivery system further. On March, 2013; the government launched more upgraded version which is renamed as National E-Service System (NESS).

District Land Administration

Bangladesh, as an agrarian country, land management is considered as one of the most important tasks for the DC office as a lot of people's livelihood is related with the land. The DC office preserves the land records, manages *Khas land* (State land under administration), conducts land acquisition based on the government orders, and oversights the revenue collections under the jurisdiction. Copy of the land records (locally known as *Parchas*) is required to the citizen for the different purposes, like: for *Dewani* Cases (Civil Cases), transfer /sell of land and for taking loan. The land records are preserved in the record room of the DC office which were prepared during the British colonial period (the survey started in 1888 and finished in the year 1940). These records are now in very poor condition. Without any immediate initiative to preserve these records, many of these records may lost forever. This poor condition even helping the corrupt practices as in many cases the corrupt officials can mention that the respective document is missing or damaged. Such poor record keeping is also affecting the efficiency of the service delivery, as the officials need time to trace the documents physically. Digitalization of such records with searchable option may help to increase the efficiency of the land related services of the respective offices as they can easily be traced electronically. Present initiative of the digital service through DESC/NESS is yet to be like that.

The introduction of DESC/NESS leads to two significant changes in the service delivery system: introduction of a counter and the launch of an online based service delivery system. The counter is established with the intention to provide the necessary information and the services to the citizens and to receive various applications for the various services. The

information is also provided through the online platform as well, but this provision by online is not interactive i.e. the citizen cannot communicate with the officials through online if they have any further query (like by E-mail). After the introduction of DESC/NESS, a citizen can apply for *Parchas* (land records) by two procedures: through internet or directly from the counter. For the online application, a service seeker gets a tracking number after applying successfully. He can have the tracking number by E-mail or mobile SMS. The tracking number can be used to track the progress of the application. However, as the entire process is not completely online based, the citizens are yet to get the benefits of a complete electronic service delivery system. Present system uses the Information and Communication Technologies (ICT) discretely for the different purposes in the entire service delivery chain. After the initial application through online, one needs to print that online application and puts a revenue stamp on it. Then one needs to go physically to the counter to submit the application.

DESC/NESS brings two major changes in the internal working procedures of the service delivery: the use of computer to compose the document and the use of the databases to store data. Under the present arrangement if once a document is composed through the electronic platform then the information of such document is preserved in the database. So, when anyone asked for that document again, then that specific documents can easily be retrieved by just few clicks. This reduces the time significantly required for providing a *Porcha* (land record). Because, tracing every document among a huge number of documents with very small working force is a difficult task. From the field study, it is observed that in the rural district, there was only 4 people who were responsible to trace out the document, to compose the document (around 80-100 documents each day) and then to handover the documents. Similarly, the number of staff is also very inadequate in the urban district (around 10 people). They also have to face more or less similar kind of workload each day. In terms of the steps of the service delivery, except the addition of the provisions for the counter, all the steps remain same as before (For details: Appendix 7 and 8). Thus, the present system is composed of both the manual and the electronic system. So, it can also be labeled as the 'hybrid system' where still there are different limitations; like the citizens cannot apply directly, need to go to the office physically to submit the document, cannot pay the fees through online and the land records are yet to be digitalized.

4.1.2 Corruption Dynamics in the District Administration

The persons who need land records can be considered as comparatively more solvent people. Because, one needs land records to sell/buy land or for *Dewani* cases (civil cases) or for taking

loans. This means the people who needs land record already has land or is going to have the ownership of land. Such ownership indicates their comparative affluence. The corrupt officials try to capitalize this opportunity by creating obstacles to increase their bargaining power for *Ghush* (bribe). Because, they know that if they can create some obstacles then they can be benefited. The most common technique for creating such obstacles is to mention that the document cannot be found or misplaced and as they are busy, it is difficult to manage time for searching the documents. Thus, the corrupt officials seesaw with the service seekers and make the entire process complicated. Interestingly, now most of the cases, the officials do not need to do anything as everyone has a perception that one has to pay extra money for having a service from the land record office. The service seekers themselves offer *Ghush* (bribe) willingly. The perception of the probable harassments and the delay to receive the records are creating the 'demonstrative effects' on the service seekers to pay bribe. Sometimes the *Dalal* (broker) are also helping to circulate such fear, even sometimes with exaggerations. This is how a 'culture of automatic acceptance' for corrupt practices already has developed in the offices. Though, if anyone does not pay *Ghush* (bribe) then s/he may face the harassments and may have difficulties to get the records timely.

Sometimes to avoid these problems, many people also depend on the *Dalal* (broker) and make a deal with them about the delivery of the service. They are treated as the troubleshooters who can solve the "bureaucratic mazes'. Because, the *Dalal* (broker) manages all the officials in exchange of the *Dalali* money (broker's fee). However, they do not have any legal existence or they are not registered to do so. Generally, they are the people who have good connections with the officials. The average rate for the *Dalali* (broker) money is a bit higher than the *Ghush* (bribe). It is around BDT 1,000-1,500 (80 BDT = 1 USD) while *Ghush* (bribe) is around BDT 500- 1,000; but it can vary based on the urgency, importance of the document, the delivery time and the place of the office. Some people also depend on the *Dalal* (broker) as they do not know all the procedures for getting the services. The person who are influential or have networks with the influential people, they use *Tadbir* (lobbying) to have the record. As many people do not have such connections, maximum of the people rely on *Ghush* (bribe) or on *Dalal* (broker). There are other two forms of corruption which are known as *Bakshish* (tips) and *Opodhoukon* (gift). The people who deal the land related matters (like, land lawyers, housing companies, brokers involved with the selling and the buying land etc.); practice these two techniques to maintain a good rapport with the officials for the future benefits. Generally, *Bakshish* (tips) is given to the lower level officials whereas *Opodhoukon* (gift) is given to the

higher level officials. The officials who are mainly accused for the corrupt practices, they also have some logics in favor of their activities. Generally, every day the personnel of the record room work up to 7-8 p.m. (usual office hour is up to 5 p.m.), sometimes they work more and even work in the holidays. Such extra services from the employees are possible because of the kickbacks or the grease money in the form of *Ghush* (bribe). The employees receive very little amount of salary and officially there is very little provisions for 'over time' payment for these extra works. Under such situations, this extra payment of around BDT 500- 1,000 (80 BDT = 1 USD) work as a great motivating factors for them and is helping to increase their productivity. By supporting this, one of the employees said,

> *'We get very poor salary which is not sufficient to maintain our families. We take extra money but for this we have to work hard, even we have to work after the office hours and in the holidays. We take money for our hard works.'*

In many cases, these corrupt activities start with the logic of the need but it continues even when one does not need and eventually turn into 'greed based' corruption. Maximum time, one cannot enjoy the collected bribe by himself alone, he has to share with the associated people but still one can earn a good amount of money compare to his salary. The average salary for a lower level employee is around BDT 5,000 (80 BDT = 1 USD). However, they can earn such amount of money from around 10-20 cases and on an average the sample office from the urban area deliver 100-120 records each day. The number is a bit lower in the rural office. Most interestingly in this section of the office, many employees from the other sections come to work after the office hour and even in the holidays. The only motivation is to have the share of the corrupt money. The senior officials have to keep quiet in many occasions. Because, under the exiting organizational arrangements, they do have very few options. Recruiting extra work force is extremely difficult because of the strict and the complicated legal procedures; and providing direct monitory incentives is also difficult due to lack of resources. If the authority takes drastic action against these practices, then the service can be hampered and the citizen even may not get the services. Sometimes, the higher authorities themselves also become part of the 'corruption chain' and get benefits from such practices.

4.2 Case 2: Bangladesh Railway

4.2.1 Ticketing System in Bangladesh Railway System

Bangladesh Railway (BR) started its journey during the British colonial period on November 15, 1862 when 53.11 kilometers of line was opened for the traffic between *Dorshona* of *Chuadanga* district and *Jogotee* of *Kushtia* district in the Indian Subcontinent. Earlier, the

railway collected the fare for traveling by issuing tickets or tokens. Under this system; generally, the paper tickets or the tokens were issued manually but no seats were allotted against the tickets/tokens. Later on, the authority decided to allot seats against a ticket but this made the entire ticketing system more complicated and time consuming as all the activities were to be done manually. To modernize the ticketing system, BR introduced the computerized system in 1994. Though, a long time has already been elapsed after the starting of the computerized ticketing system but it yet to have full coverage of the computerized ticketing system in all over the country. Still, there are stations where paper tickets are issued manually. Even in the same station, it has different types of ticketing systems (both paper based and computerized) for the different destinations.

To modernize and to ensure hassle free purchasing, in the year 2010, Bangladesh railway introduced M-ticketing (Mobile- ticketing) in collaboration with two mobile phone operators by using the platform of the mobile phone (text messages). Later on, Bangladesh railway also introduced Electronic-ticketing (E-ticketing) by using the internet platform. Twenty-five percent of the tickets for certain trains (train with high demand and better service quality) are allotted for these two types of ticketing (together can be labeled as E/M-ticketing). Due to the provision of these arrangements for purchasing tickets, many people are getting hassle free services and also can save a lot of time for traveling and standing in the queue to have a ticket. In Bangladesh, where the problem of traffic jam is very high as it is a densely populated country (45,000/km^2 in the capital city[17]), such option comes as a great relief to the citizen. However, the provision for such E/M-ticketing is very limited, confined within the few destinations and only twenty-five percent tickets are allotted of the whole amount of ticket. The allotment for ticketing in the sample stations are:

Table 15: Allocation of the Ticketing in the Sample Stations (in %)

Criteria	Urban Station With E/M-Ticketing Facilities (E-Governance Level 3.5)	Urban Station Without E/M-Ticketing Facilities (E-Governance Level 2)	Rural Station (E-Governance Level 1)
Counter Selling	65	90	90
Online Ticketing (E/M-ticketing)	25	-	-
VIP Allotment	5	5	5
Reservation for the Employees	5	5	5
Total	**100**	**100**	**100**

The main rationale for keeping the counter based system are to ensure the equity and the accessibility of the marginalized people, like the poor and the illiterate; and also for the

[17] Source: Wikipedia, available at http://en.wikipedia.org/wiki/Dhaka, accessed on February 2, 2014.

convenience of the regular passengers who may face difficulties without the provision of the counter system. Because, many people do not have the access to the ICT facilities or the knowledge to avail the opportunities of M/E-ticketing. Even, if all the tickets are given to sell from the online, then there could have a chance for another problem - the 'black marketeer/scalper (locally known as *Kalobazari*) may buy all the tickets and can sell in higher prices. Recently around 6,500 mobile SIM cards were officially switched off, because of the allegation of the corrupt practices (The Daily Star-newspaper, March 27, 2012). So, the officials are also facing problems to increase the quota for the online ticketing. One of the officials informed:

> *"Even within the limited quota for online ticketing (25 percent), there are evidences of Kalobazari (black marketing). People are buying the tickets by using the online platform and are selling in the higher prices, especially during the rush hours or the high season."*

4.2.2 Corruption Dynamics in the Ticketing System in Bangladesh Railway: Demand and Supply Perspectives

The corruption opportunities related with the ticketing system of Bangladesh railway can be attributed to the mismatch between the demand and the supply. The huge fare difference between the two modes of transport (the bus and the train) prompted the travelers to choose train as their preferred mode of transport. Apart from this factor, the hassles in the roads due to traffic jam, comparatively better safety record of the railway and due to relative comfort in the train; most of the people like to prefer train as their mode of transport, especially to travel to the divisional cities like *Chittagong*, *Sylhet*, *Rajshahi*, *Khulna* etc. Because, the trains which are running to these divisional cities are comparatively better than other trains. Table 16 may provide a quick overview on the comparative pictures between the bus and the train based on the cost and the time:

Table 16: Comparative Pictures between Two Modes of Transportation in *Dhaka-Chittagong* Route in Bangladesh

Sr. No.	Types of Transport / Types of Tickets	Bus		Train	
		Fare (in BDT)	Travel Time	Fare (in BDT)	Travel Time
1.	Air-conditioned Sleeping Berth	-	-	1,093	7- 10 hrs
2.	Air-conditioned Seats	1,250	10-12 hrs	673	7- 10 hrs
3.	Non Air-conditioned Seats	450	10-14 hrs	320	7- 10 hrs

(Note: 80 BDT= 1 USD)

Table 16 indicates that one needs to spend less money as fare for train then bus and can reach to the destinations more quickly. This is more or less true for most of the divisions and the districts. If even one pays bribe (100-200 BDT) to have a train ticket, still s/he does not need to pay much more than the bus fare. The price of the train fare is adjusted in 2012 after a long period. It is adjusted after around 20 years (last adjusted in 1992). In between, the operating cost increases significantly due to price hiking. For example, per liter diesel was BDT 13 at that time which is now increased to BDT 61 (80 BDT= 1 USD). Still, the adjusted prices are less than the operating cost and cheaper than the other modes of transport. Before the adjustment, the gap between the bus and the train was almost double or even more. During the holidays, a huge number of people travel though all modes of transports. Due to this heavy movement of the people, there are huge traffic jams in the roads. These obstacles motivate the people to have the train as their mode of transport at any cost. Thus, there is a huge pressure from the **'demand side'**.

On the other hand, from the **'supply side'** the provision for transportation through railway is limited and not sufficient to meet this huge demand. For a long time period, the government of Bangladesh was reluctant to invest in railway sector. The railway cannot do its regular maintenance and capacity enhancement works due to lack of the government's approval. Some statistics may reflect government's negligence more precisely. In 1970, total railway track length was 4,448 km. while in 2011, it was reduced to around 3,873 km. The total number of coaches was 1,633 in 1970 while in 2011, it was 1,509. Similarly, the number of locomotive (railway engine) was 484 in 1970 but in 2011; it reduced to 296. Many of these locomotives' 'economic lifetime' (generally 20 years) already expired but still they are used on the track (The Daily Stay-newspaper, March 31, 2013). Meanwhile the population of the country has increased more than double (from around 75 million to 165 million). Instead of enhancing the capacity of BR with the increasing demand, the key indicators indicate that the capacity of BR has reduced significantly over the last four decades (1971-2011). Even up till now, the situation does not change that much in terms of the capacity of BR. These discrepancies between the demand and the supply open the opportunities for corruption for the different sections of the peoples both from inside and outside of the railway. Sometimes, there is a nexus between the outsider and the railway employees. The outsiders act as the broker and build a network with the corrupt railway employees and share a certain percentage of money with the employees of railway for each ticket sells in *Kalobazar* (black market). When the citizens do not get tickets from the counters, they may get tickets from the *Kalobazar* (black market). This market does

not have any formal place or specific person to sell tickets. For getting tickets from *Kalobazar* (black market), someone needs to spend extra money, generally double of the usual price for a ticket or even more. Though, it can fluctuate based on the demand. Some regular traveler builds some kinds of understanding with the people from *Kalobazar* (black market). The blackmarketeers/scalpers keep tickets after getting phone call from them and handover the tickets just before the journey. Sometimes, the corrupt booking clerks (people who sell tickets from the counters) directly claim *Ghush* (bribe) for selling tickets to the citizen. However, most of the cases they do not claim *Ghush* (bribe) directly. Rather, they create an environment where people are compelled to pay *Ghush* (bribe) or *Bakshish* (tips) for getting the ticket/s. Generally, they tell that all the tickets are sold or show the display monitor which may indicate that no tickets are left for selling. If anyone offers extra money as *Ghush* (bribe) or *Bakshish* (tips), then they may say that they will try to manage or they have some personal tickets which they can sell. Usually the business people pay *Bakshish* (tips) to maintain a good rapport with the lower level officials to have the tickets regularly. The people who are influential or have connection with the influential people from railway, use *Tadbir* (lobbying) to have the tickets. Generally, the politicians, the bureaucrats (civil, military and the judicial) and the journalists use this *Tadbir* (lobbying) to have their tickets.

4.3 Conclusion

The study selected two cases for more precise and better understanding on the dynamics between E-governance and corruption, especially the probable processes to effect corruption by E-governance. First case of the study is about the service delivered by the district land administration in Bangladesh and the second case is on the ticketing system from Bangladesh Railway. This chapter provides a brief note to familiarize the reader with the contexts of the cases and the corruption dynamics in those areas. It tries to give an overview of the conventional service delivery system along with the changes after the introduction of E-governance in the sample organizations. This brief overview can quickly accustomed one with the sample cases.

CHAPTER 5: FINDINGS AND DISCUSSIONS OF THE MACRO LEVEL TRENDS: AN EMPIRICAL GAZE

5.0 Introduction

This chapter is a detailed illustration of the statistical trends between E-governance and corruption based on the macro level statistics. The macro level data are extracted from the different renowned databases; like, Corruption Perception Index (CPI) by Transparency International (TI) and Online Service Index (OSI) by United Nations (UN). The study first tires to test the Hypothesis 1 of the study by analyzing the global trends and then tries to explore the probable variations of the effectiveness of E-governance based on the nature of the countries. One of the main challenges of these statistical analyses is to draw the causality, because such inference is difficult in social science as the variables can be connected with each other. The study tries to optimize the output based on the available data and the methodological rigor to explore the possible causalities and at the same time, it also indicates the possible limitations for such inferences.

5.1 Mapping the Trends between Corruption and the Explanatory Variables

5.1.1 Correlation Coefficients: Exploring the Trends between the Variables

Correlation coefficient is used as a statistical tool to explore the strength of the relationship between two continuous variables (Pallant, 2010: 103). Based on this statistical tool, the study tries to understand the strength and the nature of the relationships between corruption and its major explanatory variables identified through the theoretical arguments and from the various empirical studies. Table 17, indicates that there is a strong correlation between the level of corruption and E-governance at the country level. The 'r' value is 0.686 *($p < 0.01$)* between CPI value and OSI value. This means both the variables move to the same direction together i.e. with the increase of CPI value, OSI value also increases. Increase of CPI value means the reduction of corruption as 1 indicates low level of corruption and 10 indicates high level of corruption. The dependent variable corruption also shows strong level of correlation with the economic development (measured through GDP per capita of a country from the World Bank's data) and the degree of the democratic governance (measured through the democratic index by Economic Intelligence Unit). Table 17 shows that r = 0.661*($p < 0.01$)* between the economic

development (GDP) and the corruption (CPI) and r = 0.741*(p < 0.01)* between democratic governance (DI) and the corruption (CPI). This means, the more a country is developed and become democratic, the country is less likely to be corrupted.

Table 17 : Pearson Correlation among the Variables in Macro Level (N=150)

	CPI	OSI	GDP	DI
CPI	1			
OSI	.686**	1		
GDP	.661**	.517**	1	
DI	.741**	.581**	.594**	1

**. Correlation is significant at the 0.01 level (2-tailed).

(Note: CPI- Corruption Perception Index, OSI- Online Service Index, GDP- Gross Domestic Product and DI- Democratic Index)

Source: Researcher's calculation based on different databases

If we compare the relative effectiveness of the three explanatory variables (E-governance, economic development and democratic governance) on the dependent variable (corruption), then we can see that democratic governance can demonstrate stronger level of effectiveness in controlling corruption compared to other two variables as its r = 0.741 *(p < 0.01)*, which is higher than the 'r' values of the other two variables; then the next one is E-governance. Though, the correlation coefficients are indicating about the higher level of correlation between the independent and the explanatory variables but we should not forget that it provides only an indication that there can be a relationship between the two variables; it does not, however, indicate that one variable causes the other (Pallant, 2010: 124).

The correlation of Table 17 is based on 150 countries; if we add the countries that are excluded in this correlation coefficient due to unavailability of the data of GDP and the democratic index; then we can get a total of 161 countries for analysis. In that case, the 'r' value drops slightly between CPI and OSI from 0.686 *(p < 0.01)* (in Table 17) to 0.676 *(p < 0.01)* (in Table 18). Still, both the variables of the study indicate that there is a strong positive correlation. Thus, from the correlation coefficient test of the study, we can get the trend between the dependent (corruption) and the independent variable (E-governance); which support the **Hypothesis 1** of the study. This means with the increase of the E-governance level (measured through OSI value), the level of CPI value also increases i.e. corruption reduces (as high level CPI value indicates less corruption).

Table 18 : Correlation between E-governance and Corruption Level in the Different Countries (N=161)

	Change of CPI Value	Change of OSI Value
Change of CPI Value	1	
Change of OSI Value	.676**	1

**. Correlation is significant at the 0.01 level (2-tailed).

5.1.2 Multiple Regression Models: Understanding the Effects of the Explanatory Variables

'Multiple regression' is a more sophisticated extension of the correlation and is used to explore the predictive ability of a set of independent variables on one continuous dependent variable (Pallant, 2010: 103). Through this statistical tool, the study likes to explore the predictive ability of the explanatory variables (E-governance, Democratic Governance and Economic Development) in explaining the dependent variable (Corruption). Based on the explanatory variables, the study develops different models to assess how far these explanatory variables can explain the changes in the dependent variables. The main model (Model 4) of the study includes all the three explanatory models and the study mainly discusses this model elaborately.

Overall Model Fit

The model summary table (Table 19) is about the overall fit of the model 4. This indicates how far the variation of the explanatory variables, which are included in the model, can explain the variations of the dependent variables. Table 19 indicates about the predictors, which are used in the model to explain the changes of the dependent variable. Here, one of the significant value is **R-square (R^2)** (also known as coefficient of determination). R is the coefficient of the multiple correlations, which ranges from 0 to 1 (Elite Research, 2013: 6). Higher the value of R-square, the better the predictive power of a regression model. Because, it tells how much of the variation of the dependent variable is explained by the regression model (Pallant, 2007: 158). When a small sample is involved, the R-square value in the sample tends to be rather optimistic observation of the true value in the population. The Adjusted R-square statistics 'corrects' this value to provide a better estimate of the data (Ibid, 6).

Table 19: Summary of the Model 4

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.829[a]	.687	.681	1.046

a. Predictors: (Constant), DI, GDP, OSI

For this study, the value for R-square is 0.687. This means 68.7 percent variation of the dependent variable i.e. changes of corruption (CPI value) can be explained by the model. For more conservative estimation, adjusted R-square can be considered. This value is 0.681, which indicates that though the predictive power slightly decline but still it can explain maximum of the changes (68.1 percent). The **'standard error of the estimate'** is an estimate of the accuracy of the predictions made by the regression model - smaller the standard error of estimate, the better the prediction. In this study, as the value is around 1, it can be said that the standard error of the regression model is comparatively low.

ANOVA Test

To assess the statistical significance of the explanatory power of a model, it is necessary to have ANOVA (Analysis of variance) test (Pallant, 2010: 161). This test can help to understand whether the predictive power of a model appears really or randomly. In ANOVA test, the variance of the dependent variable is divided into two parts: one part is about the 'Regression', which indicate the predictable portion by the regression model, and the other part is the 'Residual or error' which cannot be predicted by the model (Kirkpatrick and Feeney, 2011:85). Table 20 indicates that F (3, 146[18]) = 106.815 and the model is statistically significant with $p < 0.01$. This lower level of the *'p'* value indicates that the model is statistically significant to explain the changes in the dependent variable.

Table 20: ANOVA Test Results for Model 4

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	350.694	3	116.898	106.815	.000[a]
	Residual	159.782	146	1.094		
	Total	510.475	149			

a. Predictors: (Constant), DI, GDP, OSI

b. Dependent Variable: CPI

Coefficients of the Regression Models

The ANOVA test is mainly to understand the statistical significance of the model but it does not explain which parts of the model contribute to explain the variation of the dependent variable. For this, the coefficients of the regression model can help us. The Coefficients of the regression model can help to know which of the independent variables contributed to the prediction of the dependent variable (Pallant, 2010: 161). The model can provide two types of coefficients: unstandardized and standardized. Standardized means that the values for each of the different variables have been converted to the same scale so that they can be comparable

[18] 3 and 35 are the degree of freedom (df) for the regression and residual respectively.

(Ibid, 161). By analyzing the beta value (β), we can compare the contribution of each of the explanatory variable. The statistical significances of the variable's contribution can be measured by the *'p'* values. Table 21 indicates that for all the variables; the '*p*' value is less than .01 i.e. they are showing statistically significant coefficients**. Model 4** in the Table 21 indicates that the largest beta coefficient is 0.403, which is for DI (measure of the democratic governance). This means, DI makes the largest contribution to explain the dependent variable. The next variable which contributes in explaining the changes in the dependent variable is OSI (measure of E-governance) as $\beta = 0.320$ ($p < 0.01$).

Table 21: Multiple Linear Regression Analysis

Model 4	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.(*p*)	Tolerance	VIF
(Constant)	.874	.288		3.037	.003		
OSI	2.413	.445	.320	5.425	.000	.617	1.621
GDP	2.292E-5	.000	.255	4.282	.000	.602	1.661
DI	.346	.054	.403	6.429	.000	.545	1.836

a. Dependent Variable: CPI

Table 22 presents the summary of all the regression models. In model 1, 2 and 3 (Table 22); each of the independent variables (GDP, OSI and DI) is controlled by turn and then the explaining power of the models are measured through the Adjusted R^2. These models can explain 64.3 percent, 62.4 percent and 59.8 percent changes of the dependent variables respectively. Among the comparisons of the models (Model 1, 2 and 3), model 1 can explain most of the changes in the dependent variable. It indicates that when GDP is controlled in Model 1, the model still can explain 64.3 percent of the changes of the dependent variable (corruption measured by CPI). This means these two variables (OSI and DI) can explain most of the variations of the dependent variable.

Table 22: Summary of the Linear Regression Models (N=150)

Explanatory Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**
OSI	.386*		.470*	.320*
DI	.517*	.538*		.255*
GDP		.341*	.417*	.403*
Constant	.310	1..471*	2.049*	.874*
Adjusted R^2	.643	.624	.598	.687
F for change in R^2	135.125	121.932	109.507	106.815

*p < .01

(**Note**: CPI- Corruption Perception Index, OSI- Online Service Index, GDP- Gross Domestic Product and DI- Democratic Index)

The most interesting and the relevant findings for this study can be identified if we compare Model 2 and Model 4. When the model (Model 2) is composed of the variables DI and GDP, then it can explain 62.4 percent of the variation of the dependent variable (CPI value) as the Adjusted R^2 is .624. Such explaining power of the model can increase significantly if the variable OSI is added (Model 4). The explaining power of the model increases from 62.4 percent (Model 2) to 68.7 percent (Model 4) as the Adjusted R^2 is increased from .624 to .687. This increased explaining power of the model 4 can be attributed to the 'OSI' as there is only variation of this variable among the explaining variables between the two models. All the three models (model 1, 3 and 4) indicate that OSI can have significant positive impacts on CPI, as β = .386 and $p < .01$; β = .470 and $p < .01$ and β = .320 and $p < .01$ respectively. 'β' values indicate the unit of changes of the dependent variable due to one unit change of the respective explanatory variables. Like, in model 4, this means with the increase of one unit of OSI value, there is a change for the increase of 0.320 unit in CPI value and the increase of CPI value means the improvement of the corruption situation. Similarly, other two models (model 1 and 3) also indicate that E-governance can have positive impacts due to positive β values. Thus, the regression models indicate that OSI can explain significant amount of the variations of the dependent variable and accordingly support **Hypothesis 1** of the study.

5.2 E-governance and Corruption: Exploring the Variations of the Effectiveness of E-governance in the different Countries

The Correlation coefficient and the regression models can provide the indications of the aggregate level trends between the variables. To understand the effectiveness of E-governance on corruption in the different countries, it is also necessary to analyze the trends more elaborately. Based on the changing trends of the index values of both the dependent and the independent variables, a graph can be derived (Figure **7**) which can help us to understand the trends between the variables more clearly. In this graph, the independent variable (OSI) is plotted in the 'X' axis while the dependent variable (CPI) is plotted in 'Y' axis. The first Quadrant (Q1) denotes a situation where the index values of CPI increase with the increase of OSI value. The graph shows that most of the countries' data support this trend (118 countries out of 161 countries). This means, the corruption level is reduced (as 0 = high level corruption and 10 = low level of corruption) with the increase of E-governance level in those countries. These countries constitute 73.29 percent of the sample countries (for details: Table 23). Inversely the Quadrant 3 (Q3) indicates a situation where both the variables' values decrease. This means with the decrease of E-governance level, the corruption situation also deteriorate

(decrease of CPI value). Here, we can find the data of only one country which CPI value drops with the decreases of OSI value. Thus, the data in these two quadrants show the consistent trends with the proposition of Hypothesis **1**. The data which fit in these two quadrants (together 73.91 percent of the sample countries) demonstrate consistent trends with the assumption of **Hypothesis 1** i.e. the level of corruption decreases or increases with the increases or decreases of the E-governance level respectively.

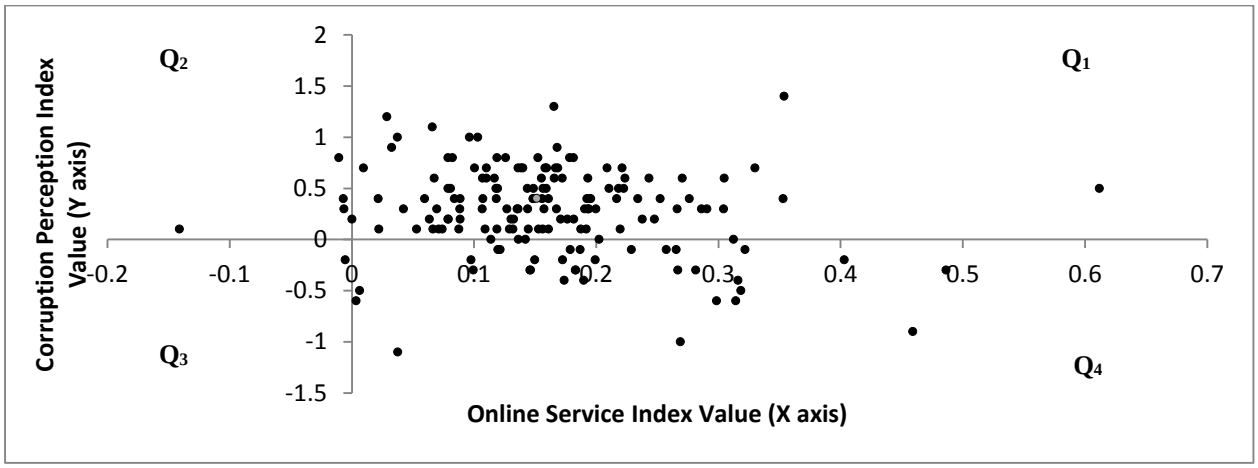


Figure 7: Changing Trends between Corruption Perception Index (CPI) and Online Service Index (OSI)

Source: Develop by the researcher based on the data from CPI and OSI

The data in the other two quadrants (Q2 and Q4) are showing trends, which are inconsistent with the proposition of the Hypothesis 1 of the study. Because in Q2, in spite of the decrease of E-governance level, the CPI value improved i.e. corruption level is reduced. Four countries show such trends as the corruption scenario improved in spite of the deterioration of the level of E-governance. One country's (South Korea) corruption level reduces without the change of the value of OSI. Similarly in Q4, the level of E-governance increases but the CPI value decreases. Altogether 32 countries show such trend among the sample 161 countries. The countries which data are found in Q4, indicates that with the improvement of the E-governance level, the corruption situations do not improve rather deteriorated (deteriorates in 32 countries). Five countries show stable corruption level though there are improvements in the level of E-governance. Table 23 provides the summary of all the countries' trends based on the relation between the dependent and the independent variables of the study.

Table 23 : Patterns of Change between Corruption Perception Index (CPI) and Online Service Index (OSI)

Trends	Number of countries	In %
Increase of both OSI and CPI Values	118	73.29
Decrease of both OSI and CPI Values	1	0.62
Increase of OSI Value but Decrease of CPI Value	32	19.88
Decrease of OSI Value but Increase of CPI Value	4	2.48
Stable OSI Value and Increase of CPI Value	1	0.62
Increase OSI Value and Stable CPI Value	5	3.11
Total	**161**	**100**

(Note: Increase of OSI means increase of E-governance and the increase of CPI means the reduction of corruption; and the decrease of the respective variables indicate the reverse relationships)

Now, if we summarize the changing patterns (Table 24) that exist between CPI and OSI, it appears that maximum of the countries, 119 countries out of 161 countries i.e. 73.91 percent support **Hypothesis 1** of the study i.e. corruption reduces with the increase of E-governance. At the same time, a significant number of the countries, 42 countries out of 161 countries i.e. 26.09 percent countries' CPI value does not changes in the same direction with the change of OSI. This means an opposite scenario of the assumption of **Hypothesis 1** exists between these two variables in those countries.

Table 24 : Changing Patterns between CPI and OSI

Trends	Number of countries	In %	Comments
CPI Values Increase or Decrease with the Increase or Decrease of the OSI value Respectively	119	73.91	Consistent with the Hypothesis 1
CPI Values do not Increase or Decrease with the Increase or Decrease of the OSI value Respectively	42	26.09	Not Consistent with the Hypothesis 1
Total	**161**	**100**	

5.2.1 Variation of the Effectiveness of E-governance based on the Nature of the Countries

From the statistical trends of the study, it appears that a significant number of the countries are showing inconsistent trends of the main proposition of the study (Hypothesis 1). This demands further inquiry on the probable variations of the effectiveness of E-governance based on the nature of the countries. This can generate a better understanding on the dynamics between the variables. The effectiveness of E-governance may vary based on the different attributes of a country like culture, system of governance, level of development etc. This study only considers

the distinctions of the countries based on the level of the economic development due to the time constraint and the limited scope of the research. For this, the study considers the World Bank's categories of the countries, which are constructed based on GNI per capita.

Table 25: Distribution of the Countries which Shows Inconsistent Trends with the Hypothesis 1 of the Study based on the Economic Nature of the Countries (Measured through GNI per capita)

Trends	Number of countries	High Income Countries: $12,476 or more	Upper Middle Income Countries: $4,036 to $12,475	Lower Middle Income Countries: $1,026 to $4,035	Low Income Countries: $1,025 or less
Increase of OSI Value but Decrease of CPI Value	32	24 (18 are OECD Countries)	4	0	4
Decrease of OSI Value but Increase of CPI Value	4	1 (OECD Country)	2	0	1
Stable OSI Value and Increase of CPI Value	1	1(OECD Country)	0	0	0
Increase of OSI Value and Stable CPI Value	5	2 (1 OECD Country)	1	2	0
Total	**42 (100%)**	**28 (67%)**	**7 (16%)**	**2 (5%)**	**5 (12%)**

Note: The classifications of the countries are based on World Bank

Table 25 indicates that the countries which shows inconsistent trends with the Hypothesis 1; are mostly from the high income countries. The number is 28 out of 42 countries i.e. 67% countries are from high income countries. Most interestingly, among these high-income countries, 21 countries are from OECD countries (for details: Appendix 10). In general, the OECD countries have less corruption (based on CPI values by TI) and higher level of E-governance (based on OSI by UN) compared to other countries in the world. In spite of higher-level presence of E-governance, there are indications from the Corruption Perception Index (CPI) that the magnitude of corruption is increasing in many high income countries, especially in the OECD countries. Because of the format of the CPI data, it is also not possible to say that which kinds of corruption are increasing (like petty or grand corruption), as CPI only provides the aggregate perception on the corruption of a country. It is also not possible to say concretely about the possible roles of E-governance in such increasing trend. From the existing data, simply we can say that E-governance is failing to control the increasing trend of corruption in spite of higher presence in those countries. A total 21 countries out of 34 OECD countries show inconsistent trends with the proposition of Hypothesis 1. Oppositely, it is evident from the statistics that E-governance is showing more effectiveness in the developing countries (countries other than the high-income countries). From the lower middle-income group, only 2 countries show inconsistent trends with the **Hypothesis 1** of the study while the number is 5

and 7 respectively for the low income and the upper income countries. The rest of the developing countries are showing the trends which indicate about the possible effectiveness of E-governance on corruption. These findings are consistent with the findings of Anderson (2009: 209) who also found that E-government had led to reductions of corruption over the decade 1996-2006 in the Non-OECD countries, but it showed insignificant trends for the OECD countries. He tested the proposition by another important database of corruption: 'Control of Corruption Index' by World Bank.

5.2.2 Triangulation through the other Studies: Patterns of Corruption - a Possible Explanation of the Variation?

By combining the trends of both the developed and the developing countries, it can be said that E-governance is showing more effectiveness in controlling corruption in the developing countries compared to the developed countries. One of the possible explanations can be about the effectiveness of E-governance on certain patterns of corruption, which exist in the developing countries, and the possible successes on those patterns may contribute in the improved perception on corruption in the developing countries. If this is true then the problem of the 'petty' corruption may provide a possible explanation. Petty corruption is mostly done by the lower/street level bureaucrats in exchange of the provided services (Anderson, 2009: 2008). E-governance may be more effective on this type of corruption by changing the service delivery channels and by eliminating the provision for direct human interaction. The direct human interaction can increase the bargaining power of the respective officials who is providing the services. The change of the service delivery channel to the electronic platform can reduce or completely eliminate such options. It also can enhance the monitoring capacities to track the work processes and can increase the probabilities to be detected after the corrupt activities. This changing dynamics may help to reduce the corruption; especially the petty corruption in the developing countries. In contrast, in the OECD countries, the problem of such petty corruption (like bribe) is not significant (EU Anti-Corruption Report, 2014: 5-6, 16 and Mungiu-Pippidi, 2013:3, Anderson, 2009: 208). EU Anti-Corruption Report by European Parliament (2014: 16) indicates about low experience of the problem of bribery in the different member countries. Mungiu-Pippidi (2013:3) from Hertie School of Governance also indicated about similar trends. Her policy paper indicates that on an average more than 90 percent of Europeans in the 27 EU member states were not asked for bribe. However, 79 percent fully or partially agree that corruption exists in their countries. Even all most half of the respondents (47 percent) think that the level of corruption has increased in their countries over the past three

years (Ibid, 3). This trend may by indicative for the OECD countries as OECD is mostly composed by the EU member countries.

EU Antic-Corruption Report (2014:27) identified construction, energy, transport, defense and the health sector, which are most vulnerable to corruption, especially during the procurement processes. The report also mentioned about other studies which indicated that the costs added to a contract as a result of corrupt practices may amount to between 20% to 25%, and in some cases even 50 percent of the total cost of the contract (Ibid, 21). Approximately one fifth of the EU's GDP is spent every year by the public authorities and by the entities governed by the public law in procuring goods, works and services (Ibid, 21). Different forms of corruption can be found in these procurement processes like drafting of tailor-made specifications to favor certain bidders, splitting of public tenders in smaller bids to avoid competitive procedures, disproportionate and unjustified selection criteria, unjustified exclusion of bidders, unjustified use of emergency procedures, inadequate analysis of situations where the bid prices were too low, excessive reliance on the lowest price as the most important criterion, unjustified exceptions from publication of bids etc. (Ibid: 26). If we analyze these corruption patterns then we can put many of these into strategic or policy level corruption. Because, for executing many of these corruption, someone first need to set the policy level decisions to create favorable grounds, like the tailor-made specifications to favor certain bidders. E-governance may have limited effectiveness when any such policy level decisions are taken to favor some interest groups in exchange of the corrupt benefits; because E-governance operates based on those inputs (the policy decisions). Like, in a tendering process, the 'criteria' for selecting the best bidder are very important. The authority may set some criteria to favor some interest groups. In that case, Electronic Tendering (E-tendering) may have limited role to control those corruption but to select the best bidder based on those preset criteria. This type of policy level corruption may provide an explanation of the variation of the success of E-governance. However, from the present data, it is difficult to say anything conclusively about the nature of corruption; all these are possibilities. Because, Transparency International's data just indicates about the overall perception of corruption, but not the elaborate descriptions of the patterns of corruption.

5.3 The Statistical Challenges and the Caveats on the Macro Level Trends and Inferences

5.3.1 Multicollinearity Problem

"The term 'multicollinearity' is used to describe the problem when an approximate linear relationship among the explanatory variables leads to unreliable regression estimates"

(Verbeek, 2008: 43). It indicates a situation when two or more explanatory variables are highly correlated. Highly correlated independent variables may make the inclusion of the redundant variable and make it difficult to discern the effects of a specific independent variable on the dependent variable, as they tend to offset each other. The most easiest and convenient way to check the problem of the multicollinearity is by checking the ***correlation matrix***. When two independent variable shows correlation value 0.7 or more, then may need to ponder the probable problem of multicollinearity (Pallant, 2010: 158). In this study, all the three independent variables show the correlation less than 0.7 with the other variables (Table 17).

For more precise estimation and understanding of the problem of multicollinearity, the 'Collinearity Diagnostics' can be more effective. ***Collinearity Diagnostics*** can pick up on the problems with multicollinearity that may not be evident from the correlation matrix (Pallant, 2010: 158). For this, two popular tests are: **Tolerance** and **VIF (Variance Inflation Factor)** (Ibid, 158). If the value for Tolerance is very small (less than 0.1) then it indicates that the multiple correlation with other variable is high, suggesting the possibility of the problem multicollinearity (Ibid, 158). Table 21 specifies the tolerance level of the three independent variables of this study. None of the value is less than 0.1. Another test for multicollinearity is the analysis of the **variance inflation factor (VIF)**. VIF values above 10 can be a matter of concern for a model, indicating the probable problem of multicollinearity (Pallant, 2010: 158). In this study, none of the VIF value is close to 10. The highest value is 1.836 (Table 21). Therefore, it can be said that the values of the independent variables have not violated the multicollinearity assumption.

5.3.2 Endogeneity Problem

Endogeneity is a term that is used to describe the presence of an endogenous explanatory variable in a regression model (Wooldrige, 2013:848). It is an explanatory variable which is correlated with the error term, either because of an ***omitted variable, measurement error or reverse causality*** (Verbeek, 2008:133). Each of these sources of endogeneity bias can lead to questionable causal inferences. This can cause the coefficient estimators to be inconsistent. A coefficient may adequately reflect the hypothesized relationship in a model but in the presence of endogeneity, it can become inconsistent (Antonakis, 2012:2). ***Omitted variables*** bias arises if a relevant explanatory variable that is correlated with the depended variable is omitted from a model (Verbeek, 2008:137). For the regression models of the study, only three key independent variables (E-governance, economic development and level of democratic governance) are included. Some of the important determinants of corruption like culture, role

of the civil society and the watchdog agencies, freedom of media etc. are not included in the model. ***Measurement error*** is defined as the error resulting from an imperfect observation or measurement of a variable (Wooldrige, 2010:55). It is another situation where the regression model can become inconsistent. The dependent variable of the study (corruption) is measured based on the peoples' perception- mainly from the opinions of the business people. Such technique may not be able to capture the actual level of corruption in a country. Because, the perceptions on corruption may vary based on the background of the respondents and the opinions of the business people may be different from the other people. ***Reverse causality*** refers to the possibility that not only independent variable has an impact on the dependent variable but at the same time dependent variable has an impact on one or more independent variables (Verbeek, 2008:137). The reverse causality happens when the relationship between the independent variable and the depended variable is either backwards or circular. Such tendencies may also exist between the dependent and the independent variables of this study. The establishment of infrastructure for E-governance can be effected by the corruption; because the corrupt people may try to get the contract to install the system in illegal way. After getting the contract, they may install cheap instruments which may not be durable and may hamper the development of E-governance.

5.4 Conclusion

The trends between E-governance and corruption in most of the countries support **Hypothesis 1** of the study i.e. E-governance can help to reduce corruption. The empirical evidences show a declining trend of corruption in many countries around the world with the increase of E-governance level. In addition, the research also observed an inconsistent trend of E-governance with corruption in some of the countries, particularly in some of the OECD countries. Now the question is how far E-governance is contributing to these changing trends of corruption. In the study, the macro level statistical data only shows the trends but it is difficult to establish the causality between the variables. So, it cannot be said conclusively that those changes of corruption are only due to the changes of the E-governance level of the respective country. In general, these changes can be attributed to the overall institutional quality of a country. E-governance may play a part with the other factors to these changes by changing the rules of the game for corruption. For more precise understanding and drawing causality; the research design considers two cases for analyses at the micro level.

CHAPTER 6: FINDINGS AND DISCUSSIONS OF THE MICRO LEVEL CASE STUDIES- MAPPING THE EFFECTS OF E-GOVERNANCE ON CORRUPTION

6.0 Introduction

This chapter is an effort to test the hypotheses of the study based on the micro level data collected from the sample cases. To understand the probable effects of E-governance on the corruption, first, the study tries to test the hypothesis 1 of the study. In the macro level analysis, the study only test this hypothesis to explore the degree of effect on the corruption level by E-governance, but in the micro level, the research also tries to understand the processes to effect corruption by E-governance. For this, the study tries to test three hypotheses which can be associated with the processes of effecting corruption by E-governance. The chapter concludes with the 'cross-case syntheses' to have more robust understanding of the effects of E-governance on corruption.

6.1 Mapping the Corruption Dynamics in the Sample Cases

The theoretical logics of this study indicate that E-governance may have a positive impact in curbing corruption and higher level of E-governance may have more effective impacts compared to lower level E-governance. To capture these probable variations of the effectiveness of E-governance, the study design of this research includes two different cases with four different levels of E-governance. This enables the research to assess the probable variable effects of the independent variable on the dependent variable in natural settings. The variations of the dependent and the intervening variables are measured through the ranking by the respondents' perceptions. For this, the respondents were asked to rank the level of corruption both before and after the introduction of E-governance. Based on the variation of the perceptions of the respondents, the study tries to understand the effects of E-governance.

6.1.1 Case 1: District Land Administration - Test of Hypothesis 1

The first case of the study is from the district land administration in Bangladesh. In the district land administration, as the level of E-governance is same in every district, it is not possible to understand the variations of the effectiveness of E-governance on corruption due to variations

of its levels. However, this case can provide the feedback on the effects of E-governance. So, for this case, the study only tries to understand the effects of E-governance, not its variable impacts due to the variations of the levels. From the feedback of the respondents, it appears that there were higher level of corruption before the introduction of E-governance and the level of corruption remains more or less the same even after the introduction of E-governance. Table 26 indicates that in the urban areas, it remains same while in the rural district, there is indication for slight improvement of the corruption scenario as the level drops from 5.29 to 5.14. However, with the very small sample size, this variation may not be that much significant. Thus, the feedback of the respondents indicates that only the introduction of E-governance is not sufficient enough to control corruption in the district land administration.

Table 26: Levels of Corruption Before and After the Introduction of E-governance in the District Land Administration (Scale 1-6)

Study Areas	Level of E-governance	Before the Introduction of DESC/NESS	After the Introduction of DESC/NESS
Rural Area	2.5	5.29	5.14
Urban Area	2.5	4.63	4.63

Questions were asked: 1) How do you rank the 'magnitude of corruption' **before** the introduction of DESC/NESS? (Low =1 and 6 = High)
2) How do you rank the 'magnitude of corruption' **after** the introduction of DESC/NESS? (Low =1 and 6 = High)

To understand the corruption dynamics more elaborately, the respondents were also asked about the patterns of corruption in the district land administration. Before the introduction of E-governance in the district land administration, the most prevalent problems were *Ghush* (bribe) and the existence of *Dalal* (broker). They are ranked in the top positions by the respondents (Table 27). For this case, all the respondents mentioned about the problem of *Ghush* (bribe) while 75 percent mentioned about the problem of *Dalal* (broker). There were also the existence of the problem of *Tadbir* (lobbying) but it was only confined within the powerful people or with those people who had some kinds of networks with the powerful people (like political leaders, bureaucrats or renowned persons). Those persons, who do not have such connections or power are more prone to face the problem of *Ghush* (bribe) and *Dalal* (broker) for getting the services. Some of the people, especially the people who were involved with the land related business, also maintained some kinds of relations through providing *Upodhoukon* (gifts) to the higher level officials or *Bakshish* (tips) to the lower level employees. Most of the cases, they maintain the relations with the lower level officials, as the higher level officials are frequently transferred and the lower level officials sometimes act as the brokers to collect *Ghush* (bribe) for the higher level officials. So for them, it is better to maintain a long term relationships with the lower level officials. This rapport building mechanisms were done

with the intention to have the anticipated future benefits from them. The respondents also mentioned about other kinds of problems, like intentional delay, breaking serial etc. Sometimes, these are used as the instruments to force the service seekers to pay *Ghush* (bribe).

Table 27: Patterns of Corruption in the District Land Administration based on the Respondents Opinions (in %)

Patterns of Corruption	Urban Area		Rural Area	
	Level of E-governance : 2.5		Level of E-governance : 2.5	
	Before	After	Before	After
Ghush (Bribe)	100	100	100	100
Dalal (Broker)	75	62	71	71
Tadbir (Lobbying)	63	75	72	86
Bakshish (Tips)	25	25	14	14
Others (Delay, Breaking Serials etc.)	25	25	14	14

Questions were asked: 1) If there was corruption **before** the introduction of DESC/NESS, then which types of corruption were dominant? (Low =1 and 6 = High)
2) If there is corruption **after** the introduction of DESC/NESS, then which types of corruption were dominant? (Low =1 and 6 = High)

(**Note**: Respondents have multiple responses)

From the Table 27, there are indications of the changes of certain patterns of corruption like *Dalali* (broker) and *Tadbir* (lobbying). In the urban district, the problem of *Dalali* (broker) reduces from 75 percent to 62 percent while in the rural district it remains the same. Such reduction in the urban district is attributed to a number of reasons by the respondents; like the introduction of the 'counter system' which is helping to provide information for a service and the provision for online system through which one even can get the desired information without visiting the office. Both of the provisions are playing significant role to empower the people by providing information. As one of the respondent said:

> *"Most of the general people do not have any idea about the exact location and the detail procedures for a service. When they were roaming around the district offices for such information then the brokers take that opportunity and approach them in the name of helping them. Now, one can get such information easily from the 'front desk' and the 'district web portal'."*

From the respondents' feedback, it appears that the problem of the broker reduces slightly as a specific counter is designated for the services. Now, the people can find the service providing points easily and the details of the procedures for a service. Earlier, a person struggles to find the place for the services as there were no clear information and the broker took this opportunity. The respondents also indicated about other reasons, like the introduction of the citizen charter, raising level of awareness due to increasing education level etc. Apart from this slight improvement, the way the E-governance is introduced in the district land administration;

it is yet to bring any significant improvement in reducing the level of corruption. Now, in many cases, the front desk officials directly negotiates with the service recipients about the amount of *Ghush* (bribe), which earlier was done by the brokers. Because, the provision of the counter enabled them to directly communicate with the service seekers. The interesting trend which is observed from the patterns of corruption is the increased use of *Tadbir* (lobbying) in both the rural and the urban areas. Such trends are attributed to the increasing number of the influential people, especially the increase of the politically connected people. Earlier most of the *Tadbir* (lobbying) came from the senior bureaucrats, renowned businessmen and other local elites. Now, the numbers of the politically influential and the connected people are increasing significantly who are trying to influence the system through *Tadbir* (lobbying) and the present provision of E-governance has failed to show its effectiveness to prevent such kinds of interferences from outside. One of the officials said about the ineffectiveness of the present form of E-governance as:

> *"We have started the system of E-governance, but still there are loopholes which made it ineffective to control corruption. If all the land records can be digitalized with searchable options and the system can be connected with the different organizations, like with the court and the banks; then even the citizens do not need to have Parchas (land records) as the respective organizations can directly check the ownership of the land. If any person needs the record then he can also have the record by himself through online system where he will not be required to visit the respective office physically. He can have everything through the online system. In that case, all sorts of associated corrupt practices may be curbed, since one does not need to visit the office and everything is supposed to be decided automatically through the electronic platform and the officials may not have the chance to interfere the system. Though, the present level of E-governance can bring some efficiency but cannot affect that much on the dynamics of corruption".*

This view of the respondent indicates about the deficiencies of the present E-governance system and the need for higher level of E-governance in controlling corruption. Because, when all the organizations are in a position to communicate with each other through online to share the information then it indicates about the 'connected stage' as described by the model of E-governance by UN and ASPA. At this stage, even one will not need the traditional paper based *Parcha* (land record), because other organizations can easily check the claim of the ownership and the authenticity of the land record directly through the internal network with the land administration. For example, for providing loan, a bank can check the ownership of a person if it has direct network with the land administration. Nevertheless, the system is yet to be like this, and still people even need to visit to the office physically for the service which enables the officials to claim *Ghush* (bribe). Thus, the corruption dynamics remain more or less same

in the district land administration, even after the introduction of E-governance. So, from these statistical and analytical trends, it can be conferred that Case 1 is not supporting **Hypothesis 1** of the study. It indicates that just the introduction of E-governance is not sufficient to control corruption, its level and nature may also be important to have significant effect on corruption.

6.1.2 Case 2: Bangladesh Railway - Test of Hypothesis 1

To capture the probable variances of the effectiveness of E-governance, the study includes those places which have different levels of E-governance. This enables the research to assess the probable variations of the effectiveness of the different levels of E-governance. From Table 28, it appears that except the E-governance level of 3.5, the corruption levels do not change that much in other two levels (level of 1 and 2), as at level 2, it reduces from 5 to 4.75 and in the rural area (level 1), it remains same. At the level 3.5 of E-governance, there is indication for better improvement of the corruption scenario as it drops from 4.83 to 3.50. In the urban station, where there is provision for E/M-ticketing and those people who can buy the tickets by using these two platforms, do not encounter corruption, as they can buy tickets directly. So, such kind of direct transactional arrangement by the use of E-governance is beneficial to avoid corruption. According to UN and ASPA model of E-governance, this transactional arrangement can be put as the third stage of E-governance. However, as only 25 percent tickets are sold through this platform, its overall impacts are not that much significant. Most of the people are still facing harassments like before as majority of the tickets is sold through the conventional counter system (75 percent). Interestingly, there are number of challenges which is also restraining the increase of the quota for E/M-ticketing. As explained by one official:

> *"Increase of the quota for E/M-ticketing may shift the actors of corruption. Because, there are indications that many people are buying the tickets from online and selling them in higher prices to others. So, the complete transformation to the online system based on the present arrangements may not be effective to reduce the corruption and the harassments of the citizens. In addition, for the equity purpose, there is a necessity to keep the tickets in the counter as many people do not have access to the internet and the online banking facilities, even many of them do not have the knowledge to buy the tickets by using the online platform".*

Thus, some of the respondents indicate about the challenges for the expansion of the online ticketing services and the possibilities to open new windows for corruption as well, as some people are now buying the tickets ahead of the journey and selling them in higher prices. This trend indicates about the changing techniques of an older type of corruption which is locally known as *Kalobazari* (black marketing/scalping).

Table 28: Levels of Corruption Before and After the Introduction of E-governance in Bangladesh Railway (Scale 1-6)

Study Areas	Level of E-governance	Before the Introduction of E/M/C-ticketing	After the Introduction of E/M/C-ticketing
Urban Area	3.5	4.83	3.50
	2	5.00	4.75
Rural Area	1	4.83	4.83

Questions were asked: 1) How do you rank the 'magnitude of corruption' **before** the introduction of E/M/C-ticketing in Railway? (Low =1 and 6 = High)
2) How do you rank the 'magnitude of corruption' **after** the introduction of E/M/C-ticketing in Railway? (Low =1 and 6 = High)

In case of the patterns of corruption in Bangladesh railway, the respondents indicate about the existence of different kinds of corruptions before the introduction of E-governance; like *Ghush* (bribe), *Kalobazari* (black-marketing/scalping), *Tadbir* (lobbying) and *Bakshish* (tips). From their responses, it also appears that E-governance has varying impacts on the level of corruption. For E-governance level 1 and 2, there are almost no changes of the different patterns of corruption while in the case of level 3.5; there is significant improvement as indicated by the respondents' feedback (Table 28). This improvement in level 3.5 and the failure in the other two levels of E-governance may provide some important insights to understand about the dynamics between E-governance and corruption. The main explanation of the successes of the E-governance level 3.5 can be found in one of the respondent's opinion:

> *"Due to online ticketing, one does not need to depend on anybody for the tickets. One can buy tickets directly from any places through online. So, under this platform, we do not face any corruption".*

This statement can be indicative in explaining the factors of the success of E-governance at level 3.5. It is successful because it can become an alternative service delivery channel for which one does not need to have human interaction. This elimination of 'human interaction' reduces the intensity of corruption done by the corrupt officials. Usually, the corrupt officials take extra money in the form of *Ghush* (bribe) or *Bakshish* (tips) by creating different obstacles when someone comes for services; and people have little options but to comply to their demands to get any service. There can be corruption from the citizen side as well. The influential peoples or those who have the right connections, try to interfere through *Tadbir* (lobbying) to obtain ticket. They use *Tadbir* (lobbying) to avoid harassment of the corrupt officials or to get undue favors like having large number of higher class tickets. In contrast, when the ticketing system shifted to online platform then it becomes difficult to interfere by the officials or by the outsiders. Interestingly, under the online system, the problem of

Kalobazari (black marketing) has widen because now anyone can buy the tickets through online and can sell in higher prices. Thus, it widens the opportunities of *Kalobazari* (black marketing), because earlier one has to have a good rapport with the officials to have tickets but now s/he can buy without any such relations.

Table 29: Patterns of Corruption in the Ticketing System of Bangladesh Railway based on the Respondents Opinions (in %)

Patterns of Corruption	Urban Area				Rural Area	
	Level of E-governance : 3.5		Level of E-governance : 2		Level of E-governance : 1	
	Before	After	Before	After	Before	After
Ghush (Bribe)	100	0	100	100	100	100
Kalobazari (black marketing/scalping)	75	0	83	83	67	67
Tadbir (Lobbying)	50	0	50	50	50	33
Bakshish (Tips)	50	0	33	33	33	33
Other (harassment, delay)	25	0	50	33	25	25

Questions were asked: 1) If there was corruption **before** the introduction of E/M/C-ticketing, then which types of corruption were dominant? (Low =1 and 6 = High)
2) If there is corruption **after** the introduction of E/M/C-ticketing, then which types of corruption were dominant? (Low =1 and 6 = High)

(**Note**: Respondents have multiple responses)

Though, Table 29 indicates that the problem of *Kalobazari* (black marketing/scalping) is reduced to 0. It happens because of the nature of the question asked to them. They were asked to give their feedbacks on whether they face any corruption if they buy tickets through E/M/C-ticketing. In that case, they only indicate about the probable problem of buying tickets through the respective channels. During the interview with both the service providers and the service seekers, it was found that E-governance can also open the opportunities for *Kalobazari* (black marketing). Earlier, there were allegations of such kinds of corruptions by the employees of railway or someone who have some kinds of connections with the railway officials. In that case, they share the profits within themselves. Now, people who do not have any connections with the officials are also getting involved with the process. Some respondents also indicate that the people who are involved with the operation of the ticketing system are also getting involved with the corrupt practices by blocking or slowing down/jamming the system. Apart the tickets from the E/M-ticketing system (level 3.5); for rest of the tickets, the citizens are still facing difficulties that they used to face before the introduction of the automated ticketing system. Thus, there are indications that in the lower level E-governance (level 2 and 1), the dynamics of corruption are remained more or less same.

At the E-governance level 1, there are indications for another problem where the computerized system itself is used by the corrupt employees to trick the service seekers. By using the software

the employees sometimes change the composition of the ticket in the database and even sometime remove the tickets and show in the display that those tickets are not available or pretend that they are sold. They can do it easily as the respective place is not connected with the central server which disables the provision for remote monitoring. Thus, the different levels of E-governance have different levels of challenges. Even the higher level E-governance is not necessarily always help to control corruption or they may help to control some kinds of corruption (like controlling *Ghush* or *Tadbir)* but they may help to open the opportunities for new types of corruption (like deceiving tickets from the system) or may create favorable grounds for the existing patterns of corruption by changing the actors (like *Kalobazari*). The net impacts of the existing system is not satisfactory on corruption as still the citizens are suffering and facing the challenges to get the tickets. Thus, from the field evidences of the case 2, we can get mixed feedbacks on the proposition of **Hypothesis 1**. E-governance level 3.5 supports the hypothesis to some extent while the other two levels of E-governance do not support the hypothesis.

6.2 Understanding the Changing Dynamics between Corruption and E-governance

6.2.1 E-governance and Power Relations: the Test of Hypothesis 2

Case 1

The discretionary power of the officials can act as the 'veto point[19]' for the service recipients. Because, when a citizen applies for a land record (*Parcha*) then the officials can act as the 'veto point' by creating obstacles for having the services. In that case, the citizens become helpless as there are no effective mechanisms against such behavior. If anyone tries to take any steps against such behavior then s/he may face further troubles. That is why one service seekers told that:

> *"If we complain against the officials to the higher authorities, then there can be possibilities for further harassments and delay of getting the service. So, it is better to give some extra money to have hassle free services."*

Thus, the best alternative choice is to comply with those corrupt people and fulfill their demand or to do something which can make them satisfied. Someone who has power to counter such behavior (like by *Tadbir*); s/he can handle such problems without paying *Ghush* (bribe). General excuse for delaying the service is to mention that the respective document is missing or misplaced and as they are busy, they need extra time to trace it out. Present level of E-governance failed to bring any significant change in these dynamics. Still the corrupt officials

[19]Veto points means the creation of obstacles

can deny or make delay to a citizen by the same excuse. If all the land records can be digitalized, then such provision can easily be eliminated and the corruption by raising such excuse may not be possible.

Table 30: Perception on the Level of Power of the Officials in the District Land Administration

Study Areas	Level of E-governance	Before the Introduction of DESC/NESS	After the Introduction of DESC/NESS
Rural Area	2.5	5.43	5.29
Urban Area	2.5	5.25	5.25

Questions were asked: 1) How do you rank the level of **'discretionary power'** on the land related services **before** the introduction of DESC/NESS in the DC office? (Low =1 and 6 = High)
2) How do you rank the level of **'discretionary power'** on the land related services **after** the introduction of DESC/NESS in the DC office? (Low =1 and 6 = High)

From the Table 30, we can see that the level of power of the officials slightly reduces in the rural district as it drops from 5.43 to 5.29 but in the urban district, it remains same like before. This means, the discretionary power of the officials still remains more or less same in both of the places even after the introduction of E-governance. The slight improvement which is visible in the rural district is attributed by the respondents to the various factors, like the introduction of the counter system, the availability of the information through online and citizen charter, the raising education level etc. This unchanged power relation can provide one of the explanations for the continuation of the corrupt practices even after the introduction of E-governance. Because, the corrupt official still can exercise their discretionary power for the corrupt benefits. So, from the evidences of Case 1, it appears that this case is not supporting the proposition of **Hypothesis 2** of the study. It indicates that the mere introduction of E-governance does not lead to significant change in the power relations and accordingly the corruption dynamics remain more or less same.

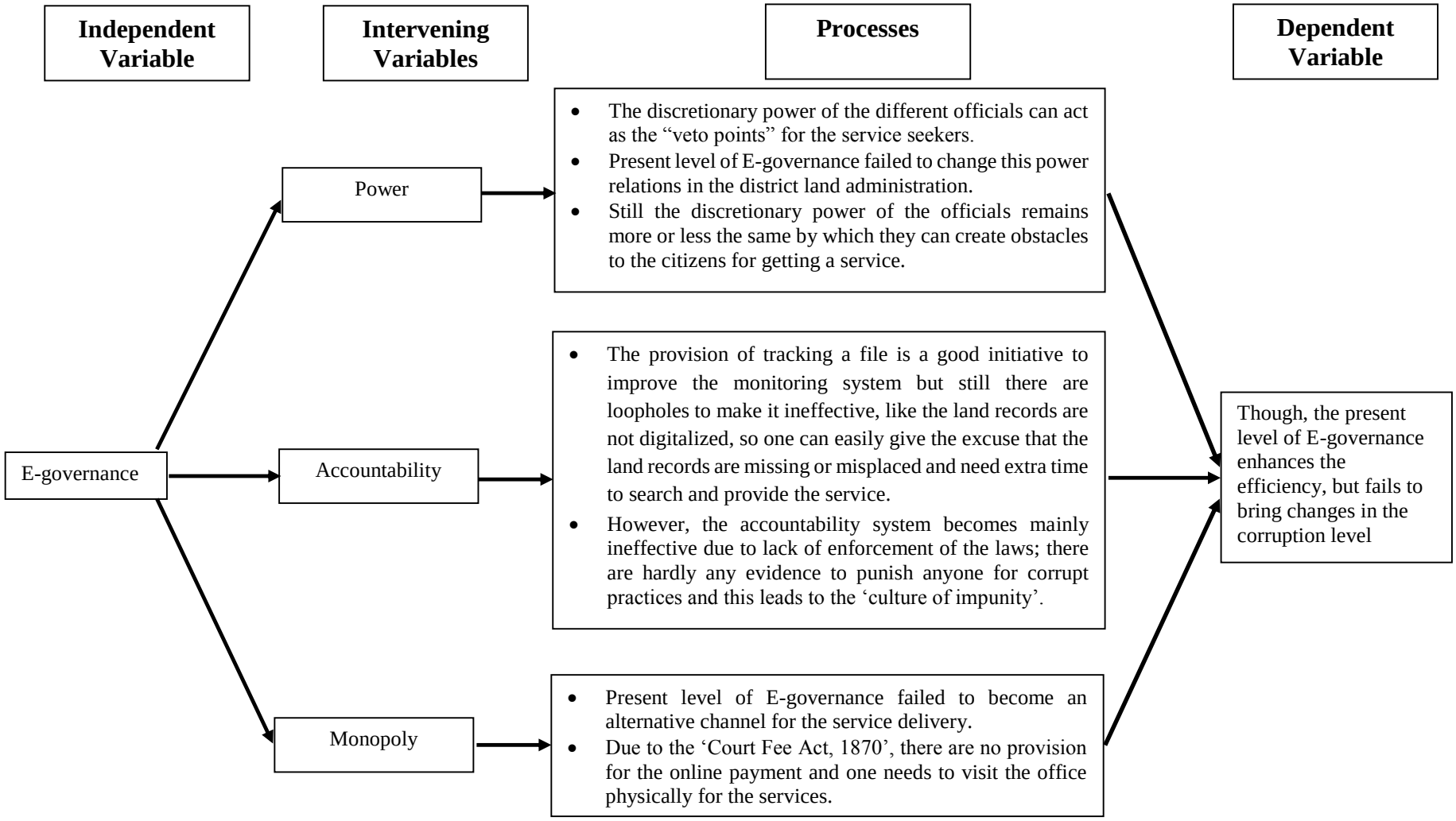


Figure 8: The Effects of E-governance on Corruption at the District Land Administration

Case 2

The discretionary power of the officials is one of the main factors that can enable a person with more opportunities for corruption. They use it as a bargaining tool to get *Ghush* (bribe) or for other benefits. In Bangladesh railway, earlier in the traditional manual system for the service delivery, the Booking Clerks (the person who are responsible to sell the ticket from the counter) had higher level of discretionary power as they can claim that all the tickets are sold in spite of having tickets in the counter. If anyone pays some extra money in the form of *Ghush* (bribe) then s/he may get those tickets. The Booking Clerks can capitalize their discretionary power because of the high demand for the tickets, Due to this demand, the citizens were compelled to enter into some kinds of understandings with these Booking Clerks to get the tickets in exchange of extra payments. Some influential people also use 'counter power' by using their influence or connections for the services which is popularly known as *Tadbir* (lobbying). The general perception on the power of the officials is reflected in Table 31. In the sample areas, the power level is ranked as 5 or more out of 6 and it continues even after the introduction of E-governance. Only for E-governance level 3.5, it drops from 5 to 2.83 whereas in other two places, it remains the same.

Table 31: Perception on the Level of Power of the Officials in Bangladesh Railway

Study Areas	Level of E-governance	Before the Introduction of E/M/C-ticketing	After the Introduction of E/M/C-ticketing
Urban Area	3.5	5.00	2.83
	2	5.75	5.75
Rural Area	1	5.00	5.00

Questions were asked: 1) How do you rank the level of the **'discretionary power'** for the officials related with selling of the tickets for Railway **before** the introduction of E/M/C-ticketing? (Low =1 and 6 = High) **2)** How do you rank the level of the **'discretionary power'** for the officials related with selling of the tickets for Railway **after** the introduction of E/M/C-ticketing? (Low =1 and 6 = High)

As Bangladesh Railway introduces different levels of E-governance at the different places, its impacts on the discretionary power of the officials are also contingent on the levels of E-governance. In level 1, there is no so much change of power compare to the manual system. Because, still the officials can keep the tickets to them either by printing out from the system or even by blocking or removing from the software. As at level 1, the local computers are not connected with the central servers, the local officials can do the tricks of blocking or removing tickets from the software; because they know that they cannot be monitored from outside. Only option to control such tendencies is by surprised field visit. However, the effectiveness of this system also reduces for a number of reasons; main two reasons are: firstly, there are limited number

of people- generally 1-2 persons have to cover 200-300 k.m. area and most of the cases they are also involved with other activities along with the inspection duty; and another reason is most of the cases the corrupt people has their agents in the train; so if anyone starts to go for the inspection by train then they alert all the stations in the respective directions. In the level 2, the discretionary power reduces as the higher authority can monitor from any places through the internet. If anyone blocks the tickets, then that can easily be detected. However, as still the corrupt officials can take the print out of the tickets and keep those tickets to them, they can continue with the corrupt practices by taking the corrupt activities outside of the electronic platform. Thus, these two levels of E-governance failed to bring changes in the discretionary power of the officials and accordingly failed to have qualitative impacts on reducing corruption. In case of level 3.5, E-governance can eliminate the discretionary power of the officials; it can change the power relations as the citizens do not need to interact with the officials to get their tickets. They can buy the tickets directly through the internet or the mobile phone. Such options make the traditional forms of corruption difficult; like seeking *Ghush* (bribe) by the official or getting tickets by *Tadbir* (lobbying). Because, a specific percentage (25 percent) of the tickets is allocated for these E/M-ticketing and the people from the counter have nothing to do with these 25 percent tickets since they do not have any control on them. Though, there are also allegations against the people who are maintaining these 25 percent tickets. This control mostly belongs to a private company to whom the system is outsourced to maintain. One of the respondents said,

> '*If you can have good relations with the people who are working for the companies and pay some extra money to them, then you can get tickets easily*."

This can be an indication for shifting of the actors of corruption. Earlier, the actor was mainly the employees from railway but now it is the persons from the private companies who are getting involved with the corrupt practices. Some of the respondents also said about their dissatisfaction about the mobile phone companies as they cannot get tickets through mobile SMS. It can be both for the scarcity of the tickets or the possible corrupt practices by the mobile operators. As an IT expert mentioned that technically it is possible to block the tickets. However, this study does not investigate further on the activities of the mobile phone operators but from the respondents' opinions, it appears that there can be possibilities of some anomalies. Other proved evidences indicate that these companies can also get involved with the corrupt practices like one of the mobile

operator paid a fine of BDT 2.5 billion (USD 37 million) for its corrupt practices in 2008[20]. To remove the allegation, the proper monitoring system need to be established.

The entrance of the new actors makes the entire corruption dynamics more fluid. Though, initially there are indications for the possible improvements of the corruption scenario at the level 3.5; but there are also indications of the inclusion of new actors which are making the 'corruption scenario' more volatile and complicated. These possibilities can lead to further increase of corruption rather than reducing corruption. Further success to curb corruption is heavily dependent on controlling these actors' corrupt practices. One of the challenges to stop these corrupt practices comes from the unregistered mobile SIM cards and these issues do not belong to Bangladesh Railway. Many people are using unregistered mobile SIM cards to buy tickets. Thus, from the Case 2, we can get variable results about the probable effects of E-governance on the power relations. It indicates that the level of E-governance is important to effect the power relations. Lower level E-governance, specially level 1, may not be effective for changing power. For level 2, there are provisions for the improvement by reducing discretionary power through 'monitoring', but still there are loopholes to deceive the monitoring system. In case of level 3.5, it shows its effectiveness by removing the possibilities of the interaction with the officials though it has more or less same problems like E-governance level 2. As the process is completed automatically in level 3.5, the lower level officials have nothing to do from the counter and thus their power is curtailed significantly.

The proposition of **Hypothesis 2** indicates that the introduction of E-governance may affect the power relations which may have an effect on the corruption level. From the case study 2, it appears that just the introduction of E-governance (like in level 1 and 2) is not sufficient to change the power relations in way which can have positive impacts on the corruption. However, if E-governance can change the power relations like in level 3.5, then there are possibilities to affect the corruption level of an organization by E-governance.

6.2.2 E-governance and Accountability: the Test of Hypothesis 3

Case 1

An effective monitoring system is the key to make the employees accountable for their activities in an organization. If anyone tries to exercise his positional power (like administrative or political

[20] For more of this: http://www.grameenphone.com/about-us/media-center/press-release/2008/212/grameenphone-pay-fine-bdt-2500-million

power) for the illegal benefits, then such activities can be prevented through an effective accountability system. From the theoretical logics, it is evident that E-governance can increase the monitoring capacity of the authority by providing enhanced tracing capacity of a work process. However, the way, the E-governance is implemented in the district land administration, it appears that the accountability system is not sufficiently improved so that the level of corruption can be affected significantly. Though, from the field data it is observed that there are slight improvements of the accountability level in both the rural and the urban district. Table 32 indicates that in the urban district; it improves from 1.57 to 2 while in the rural district, it improves from 1.75 to 2.13.

Table 32: Perception on the Level of Accountability in the District Land Administration (Scale 1-6)

Study Areas	Level of E-governance	Before the Introduction of DESC/NESS	After the Introduction of DESC/NESS
Rural Area	2.5	1.57	2
Urban Area	2.5	1.75	2.13

Questions were asked: 1) How do you rank the level of '**Accountability'** on the land related services **before** the introduction of DESC/NESS in the DC office? (Low =1 and 6 = High)
2) How do you rank the level of '**Accountability'** on the land related services **after** the introduction of DESC/NESS in the DC office? (Low =1 and 6 = High)

The improvement of the accountability system is attributed to the process of the tracking system through which one can detect the location of one's application. Nevertheless, there are quite a number of 'black holes' where the service providers can breach the formal monitoring system. It is observed that different activities are performed outside the platform of the E-governance system which cannot be traced through the electronic platform. The process is fragmented between the manual and the electronic platform. Through this fragmented level of E-governance, a proper monitoring system cannot be built to protect corruption. By capitalizing these loopholes, the corrupt peoples are continuing their bad practices. From the field experiences, it also appears that the problem of corruption in the district land administration is not only related with the monitoring and the investigation to detect a corrupt person; the problem is mainly associated with the 'enforcement' of the laws. Because, most of the cases, the authority more or less knows what is happening or who are involved with the corrupt activities. As one of the respondents mentioned:

> *"It is not matter of the detection rather the punishment can be the key to control corruption; everyone more or less knows who are involved with the corrupt practices. The problem is to punish them."*

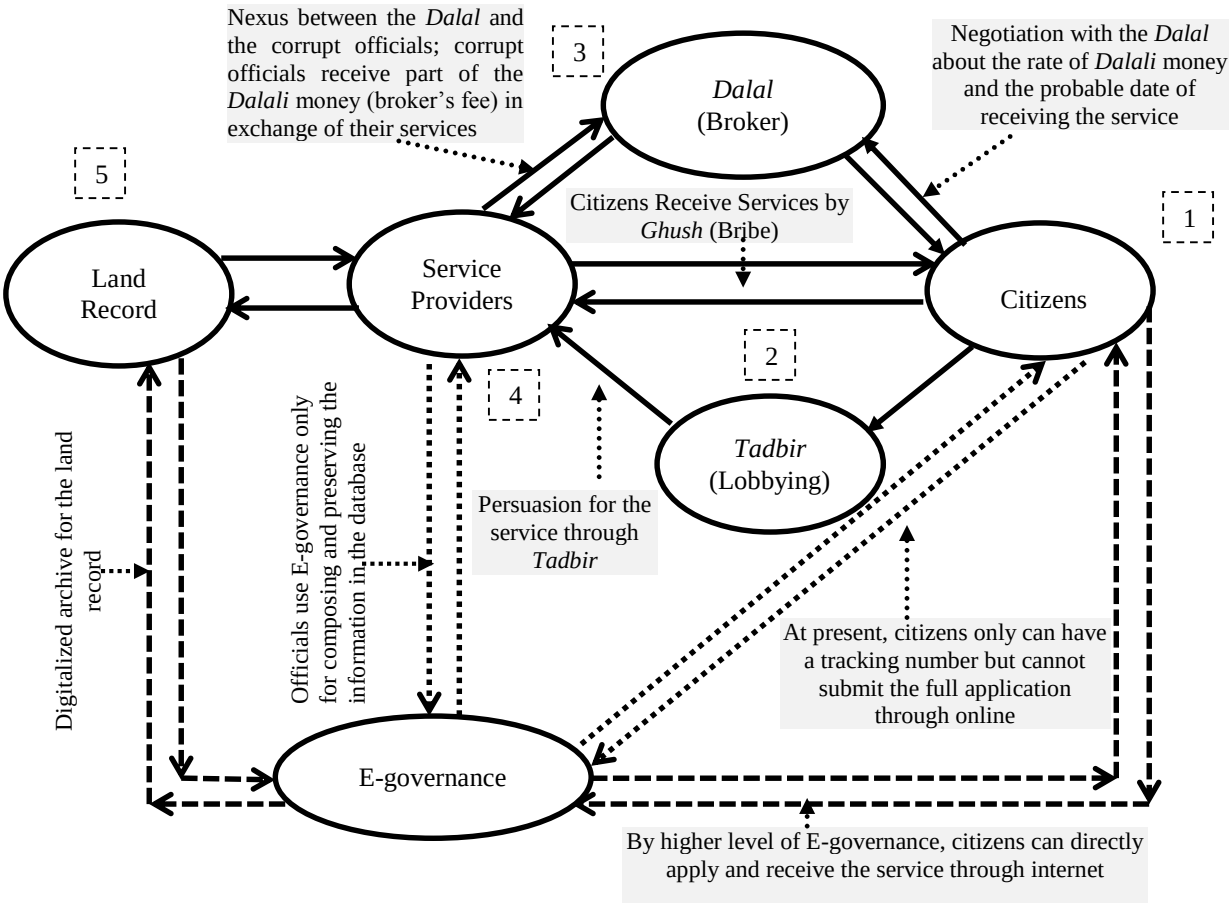


Figure 9: Corruption Dynamics in the District Land Administration and the Role of E-governance

As there are shortages of the employees and they work after the office hours and even in the holidays without any official incentives, the higher officials keep quiet as at least, somehow, the general people are getting the services. If the higher official become harsh on them and take any drastic action to punish them, then there are possibilities that those officials will not work and that can hamper the entire service. Here, the corrupt money has the 'greasing' effect to motivate the employees to work for the extra hours. Sometimes the higher officials also get share of the corrupt money which also make them silent. Either one of the reasons or for both of the reasons, they do not want to disrupt the existing system. This lack of enforcement of law has created a 'culture of impunity' in the organization. Due to this culture, still the corrupt officials can claim *Ghush* (bribe)

without any fear. They can claim that the land record is missing or misplaced or can raise any such excuses to delay the process so that they can have more bargaining power to claim illegal benefits. E-governance failed to bring change to this culture. Because, as a tool, E-governance can at best detect the corrupt activities, but the enforcement of laws does not belong to it. Due to this reason, the concerned officials also get demotivated to use the online system to monitor. Under the present arrangements, though there are provisions to monitor on the movements of the applications of the service seekers from any places through internet; but in the study areas, it is observed that the use of online platform to monitor is not that much in practice. Though, for the other services, this monitoring practice was seen in the study area. Thus, the E-governance initiative in the district land administration become ineffective and does not have significant impact on curbing corruption. So, the proposition of **Hypothesis 3** which assumes that the introduction of E-governance can affect the accountability system in an organization and consequently may affect the extent of corruption but this is not visible in Case 1 of the study.

Case 2

The second case of this study is from Bangladesh Railway which indicates about the enhancement of the accountability level due to E-governance but it appears that such improvement is not sufficient enough to have significant impacts on reducing corruption. For the E/M-ticketing (level 3.5), the accountability level increases from 1.83 to 2.50 while in level 2, it increases from 2.25 to 2.50. This enhancement trend is also visible in level 1 as it increases from 2.17 to 2.67.

Table 33: Perception on the Level of Accountability in Bangladesh Railway (Scale 1-6)

Study Areas	Level of E-governance	Before the Introduction of E/M/C-ticketing	After the Introduction of E/M/C-ticketing
Urban Area	3.5	1.83	2.50
	2	2.25	2.50
Rural Area	1	2.17	2.67

Questions were asked: 1) How do you rank the level of '**Accountability'** for the officials related with selling tickets for Railway **before** the introduction of E/M/C-ticketing? (Low =1 and 6 = High) **2)** How do you rank the level of '**Accountability'** for the officials related with selling tickets for Railway **after** the introduction of E/M/C-ticketing? (Low =1 and 6 = High)

Reasons for such improvement in the accountability system are attributed to the provisions of monitoring capacities by enhancing the traceability through computerized ticketing system. According to the existing arrangements, every booking clerk (who is responsible to sell ticket from the counter) has individual ID number and password. Their activities through the software are preserved in the system and can easily be retrieved later on. Based on the analysis of such login

information and selling history, a person's activities can be traced and the discrepancies can easily be identified. For these types of monitoring, one needs to visit the respective places. The corrupt officials capitalize this opportunity, especially in level 1. They mainly follow two techniques to deceive the authority. Sometimes they just buy the tickets as a customer and then sell in higher prices to the passengers. As they are in charge of the ticketing system, they can do that easily and then pretend that all the tickets are sold. If they cannot sell the tickets then they can return the tickets for refund as a customer by paying some administrative charges. Usually, they do not need to return the tickets, because always there are higher demands for the tickets and from their experiences they can also predict more or less precisely about the demand. Some of them also take the advantage of the electronic system. Officially, there are systems of blocking tickets. This provision is kept to provide tickets to the VIPs (very important persons) (like Member of the Parliament, senior bureaucrats, judge, military personnel, and other important persons). Some of the corrupt officials use this to hide tickets from the public. As they know that their ticketing is not connected with the central server, they can block more tickets than the permitted number and no one from outside can identify that.

This practice is comparatively difficult in the stations where the E-governance level is 3.5 and 2. Because, the 'blocking' of tickets through software can easily be detected as they are connected with the central servers. In these levels, the higher officials can monitor the activities of the field officials from any places through internet. Though, such monitoring is yet to be institutionalized properly because of a number of challenges like lack of equipment and logistic supports, proper training, manpower etc. There is no formal process to monitor the ticketing system by the divisional officials[21]; though they are mainly entrusted with the duty to oversight the entire system. Most of the officials use their own laptops/tabs/computers and internet connections to monitor the system. Generally the salary of the public officials is very poor compared to the private sector. On the top, the officials are not given proper training to do so and thus, the entire monitoring system become ineffective. The monthly salary of an assistant level official's (one of the main monitoring officer at the field) salary is around BDT 11,000 (80 BDT = 1USD) and the per month rent for the internet connection is around BDT 1,000 which is one eleventh of his salary. Under such situation,

[21]The hierarchical arrangements of Bangladesh Railway are: Headquarter → Zone → Division→ Stations

it is difficult for a civil servant to spend such a large portion of his own salary for the work of his office.

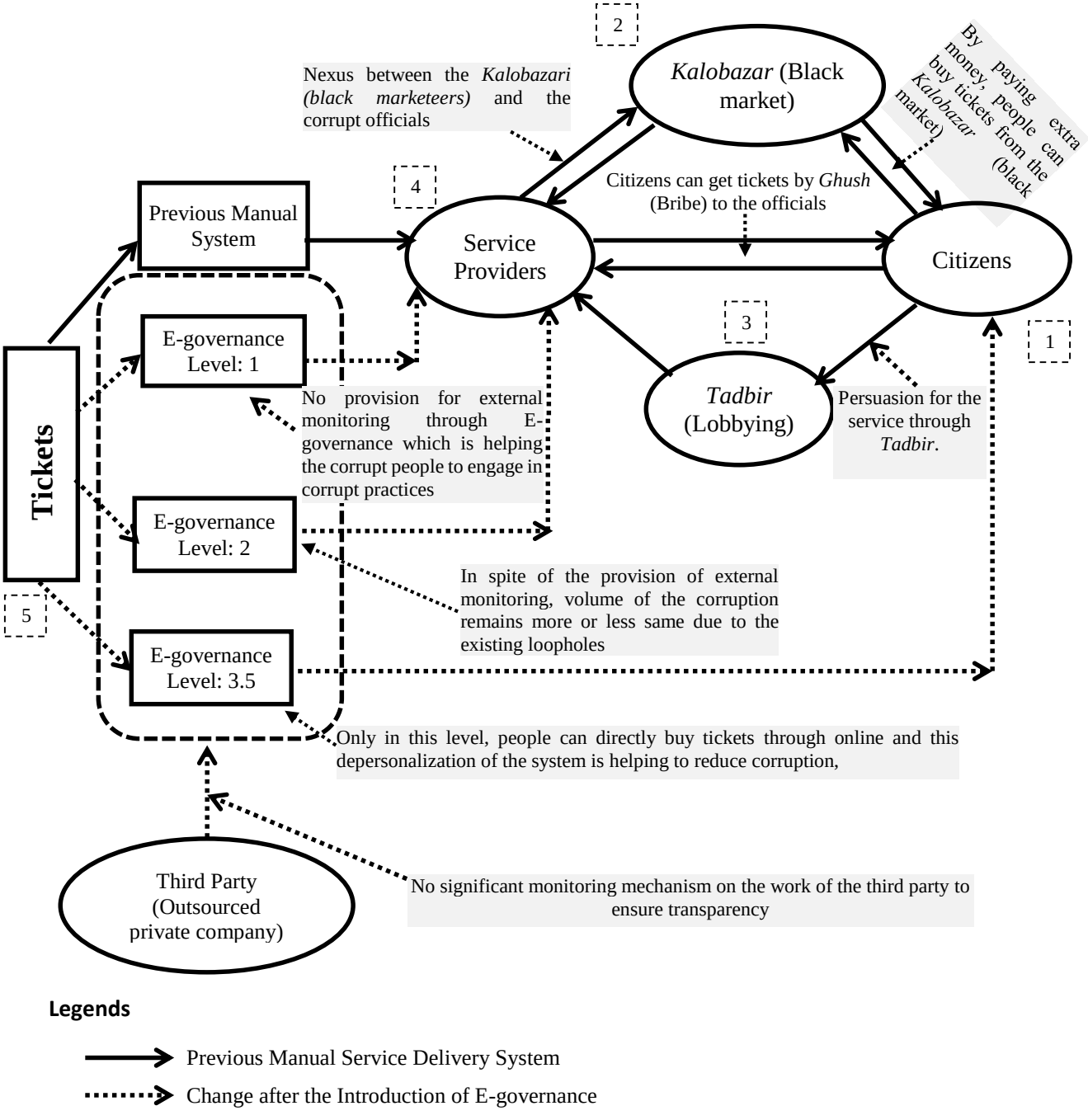


Figure 10: Corruption Dynamics in the Ticketing System in Bangladesh Railway and the Role of E-governance

Another factor that reduces the effectiveness of the monitoring capacity is the nature of the E-governance system itself. In the level 3.5 and 2, there are provisions for monitoring from other

places but the available information are not that much comprehensive. Because, in the existing system, there is no provision for generating inquiry in the database from the remote places. It just presents the seat allocation and the sells information. If there are searchable options to generate query, then the monitoring can be more comprehensive; like when someone enters in the system, which ID is responsible for suspicious transactions etc. In spite of these limitations, the existing provision for monitoring from the remote can act as a deterrent; because it can create a fear to get detected for the corrupt practices. So usually, in these two levels of E-governance, the corrupt officials do not follow this technique until the senior officials become part of the corruption chain. Usually, they buy the tickets and then sell it to the people in higher prices. Sometimes they buy for their regular clients when they receive the demand over telephone. Thus, though there are indications for more enhanced monitoring system and the higher opportunities for investigation, but these provisions are seemed to be insufficient and ineffective to reduce corruption. In addition, there are also challenges for 'enforcement of the laws' to punish the corrupt officials. In many cases, they cannot be punished due to the political influence or the pressure from the trade unions, or due to the shortage of manpower. Sometimes, it also happens due to the corruption of the higher authorities as well. Thus, the overall accountability mechanism in Case 2 becomes ineffective to have significant effect on curbing corruption and the case shows inconsistent trend with **Hypothesis 3** of the study.

6.2.3 E-governance and Monopoly: the Test of Hypothesis 4

Case 1

The monopoly of the service delivery system can increase the scope for corruption as the people do not have any other options. The introduction of E-governance can provide an alternative channel for the service delivery instead of the traditional system. However, just the introduction of E-governance, does not necessarily lead to curtail the monopoly power of the service providers. Because, for curtailing monopoly, the automated platform needs to be transformed as an alternative service delivery channel. In both the sample districts of case 1, the system of E-governance has failed to become an alternative channel for the service delivery. This is also reflected in the ranking of the respondents. They identified an absolute monopoly in both the urban and the rural district. The level remains same even after the introduction of E-governance as indicated in Table 34. One of the main obstacles for going complete online is the existing laws. According to the 'Court Fee

Act, 1870', one has to pay the fees through buying the government revenue stamp. This acts as an obstacle for online payment.

Table 34: Perception on the Level of Monopoly in the District Land Administration (Scale 1-6)

Study Areas	Level of E-governance	Before the Introduction of DESC/NESS	After the Introduction of DESC/NESS
Rural Area	2.5	6.00	6.00
Urban Area	2.5	6.00	6.00

Questions were asked: 1) How do you rank the level of '**Monopoly'** of the desk based service delivery channel **before** the introduction of DESC/NESS in the DC office? (Low 1 and 6 = High). **2)** How do you rank the level of '**Monopoly'** of the desk based service delivery channel **after** the introduction of DESC/NESS in the DC office? (Low =1 and 6 = High)

Though, the electronic platform is used discretely in the different phases of the entire service providing chain in the district land administration; but, still, a lot of tasks are done manually; even one cannot complete the application electronically. A service seekers need to visit the office physically to complete the application. This provision continues the monopoly of the traditional service delivery system and helps to retain the bargaining power of the officials. If the officials are corrupt then most of the cases one has to fulfill the demand of the corrupt officials or have to play counter power games through *Tadbir* (lobbying). Otherwise, they might be in difficulties in getting the services. Such difficulties can have negative consequences on the ultimate objectives of collecting the land records like selling/buying the land or taking loan from an organization. So, the service seekers usually fulfill the demand of the corrupt officials by paying the bribe. However, E-governance has the potentiality to become an independent channel for this service delivery which can eventually reduce the monopoly of the traditional platform of the service delivery. In that case, if a service seekers face any difficulties then s/he can have an alternative option to switch to avoid the corruption prone service delivery channel. That is why one of the service seekers mentions:

> *"For getting benefits from the E-governance, there should have provision for complete online services where one does not need to go to the offices physically. He should get the whole service from his own home and then he can avoid the corrupt peoples and their undue demands."*

As the present level of E-governance cannot change the monopoly of the traditional desk based service delivery channel, it fails to have significant impact on the level of corruption. Thus, it appears that Case 1 is not supporting **Hypothesis 4** of the study.

Case 2

In the second case of the study, only in the case of E/M-ticketing (level of E-governance 3.5), the monopoly is curtailed significantly as it drops from 6 to 3.50, but in the other two levels (the level 2 and 1), it remains same as before (Table 35). For these two levels, the system is automated but such automation cannot transform the service providing system into an alternative channel for the service. The monopoly is reduced in E/M-ticketing as the service seekers can bypass the traditional counter based system and can buy the tickets directly through electronic platform. However, for the other two levels (level 2 and 1), still the services are provided from the traditional counter system and thus the monopoly of the earlier channel continues. Though, the respondents mentioned that the introduction of E-governance has increased efficiency but it fails to effect the corruption dynamics significantly; still the general people are facing the harassments and the problem of corruption. So, from the sample areas, it appears that when E-governance can become an alternative channel for the service delivery (like in level 3.5), then it may demonstrate positive effects on controlling corruption level i.e. can support **Hypothesis 4** but if it fails (like in level 2 and 1), then it may not support **Hypothesis 4**. Thus, from the sample case, it appears that the nature of E-governance is an important factor to affect the corruption level of an organization.

Table 35: Perception on the Level of Monopoly in Bangladesh Railway (Scale 1-6)

Study Areas	Level of E-governance	Before the Introduction of E/M/C-ticketing	After the Introduction of E/M/C-ticketing
Urban Area	3.5	6.00	3.50
	2	6.00	6.00
Rural Area	1	6.00	6.00

Questions were asked: 1) How do you rank the level of '**Monopoly'** of the traditional counter based ticketing system **before** the introduction of E/M-ticketing? (Low =1 and 6 = High)
2) How do you rank the level of '**Monopoly'** of the traditional counter based ticketing system **after** the introduction of E/M-ticketing? (Low =1 and 6 = High)

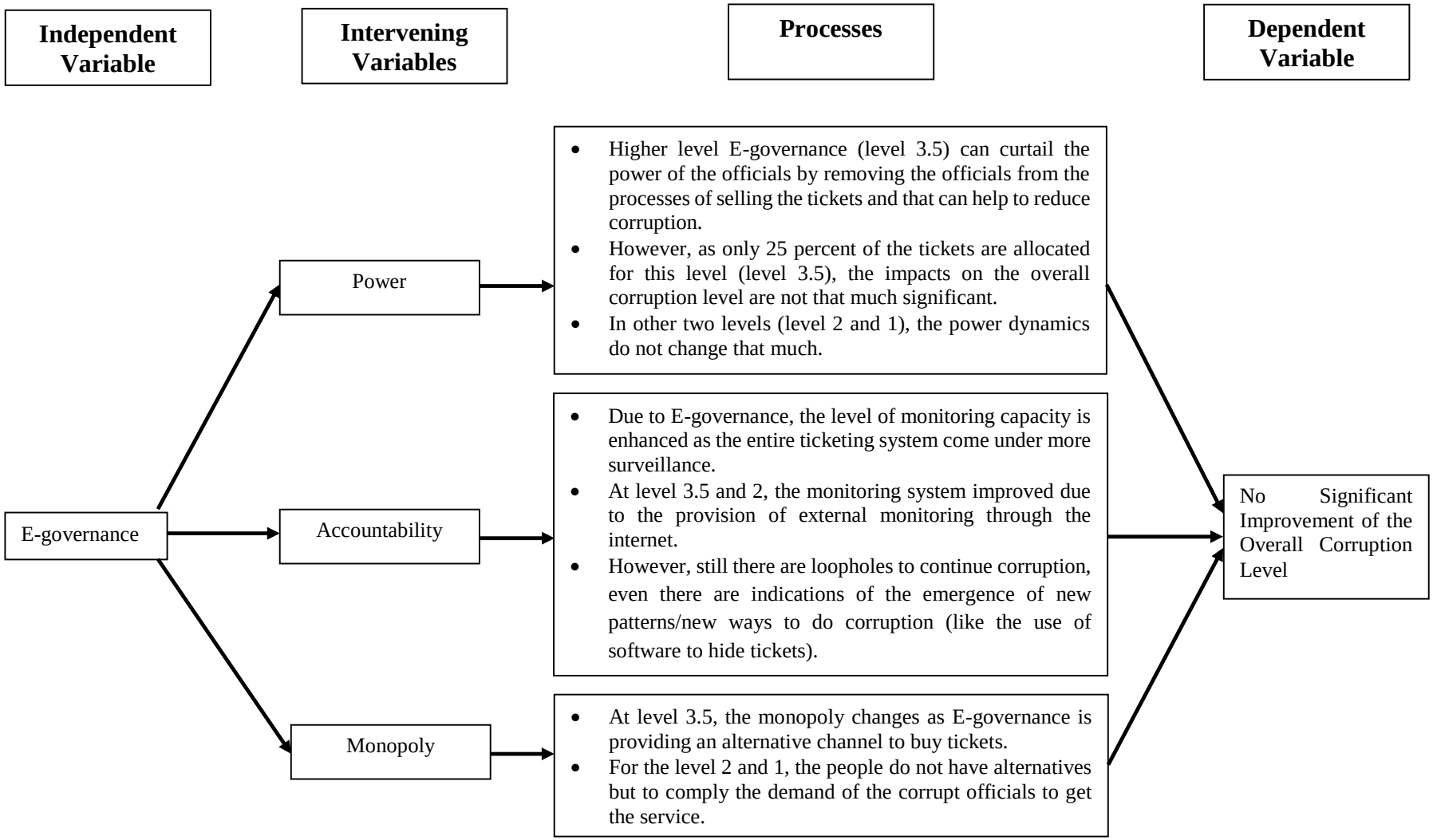


Figure 11: The Effects of the different Levels of E-governance on the Corruption level of the Ticketing System in Bangladesh Railway

6.3 Cross-Case Syntheses

Cross-case syntheses of the sample cases are performed to produce more valid and robust understanding on the impacts of E-governance on corruption, because it can confirm the nature of relationships across the cases. In Case 1 of the study, E-governance cannot get success because of the problem of incomplete implementation of E-governance. This is incomplete in a sense that it partially provides online services as still one needs to visit the office for the application of the service. It also fails to change the power relations significantly in the offices as still the corrupt officials can exercise the discretionary power. There are also indications for the improvements of the monitoring capacity but lack of implementation of the established rules make the system ineffective. This lack of enforcement also demotivates the respective authorities to use the system to monitor as in many occasions it appears that the corrupt people are not punished or cannot be punished based on the detection through the monitoring system.

Table 36: Cross-Case Syntheses of the Case Studies

Indicators	**Case 1**	**Case 2**		
Level of E-governance	**E-governance Level: 2.5**	**E-governance Level: 3.5**	**E-governance Level: 2**	**E-governance Level: 1**
Power	Not affected	Affected; curtail the power of the officials by removing the officials from the service delivery channel	Not affected	Not affected
Accountability	• Monitoring and investigation capacity increases due to the tracking system • Problems with enforcement of the laws make the system ineffective	• Monitoring and investigation capacity increases due to the connectivity of the local servers with the central servers • Problems with enforcement of the laws make the system ineffective	• Monitoring and investigation capacity increases due to the connectivity of the local servers with the central servers • Problems with enforcement of the laws make the system ineffective	• Monitoring and investigation capacity increases but less than the E-governance level 3.5 and 2, due to lack of the connectivity of the local servers with the central servers • Problems with enforcement of the laws make the system ineffective
Monopoly	Monopoly continues as before	Monopoly reduced	Monopoly continues as before	Monopoly continues as before
Probable Effects on Corruption	Not significantly affected	Help to reduce corruption though there are also indications for the opening of the new opportunities for corruption like *Kalobazari* (black marketing)	Not significantly affected	Not significantly affected

In the second case, only in the level 3.5, E-governance can become an alternative service delivery channel and can affect the power relations significantly. Though, there are improvements of the monitoring capacities, specifically in the level 3.5 and 2; but still there are loopholes to deceive the system; and the organization is also suffering due to lack of enforcement of the laws. When E-governance level is 3.5, the monopoly of the traditional counter system is also reduced. Thus, case 2 provides variable impacts of E-governance on the different intervening variables and accordingly the variable effectiveness on corruption. Now, if we combined the trends of both the cases, there are indications that if E-governance cannot change the power relations by curtailing the discretion of the officials, E-governance may not be successful in curbing corruption. If E-governance can provide an alternative service delivery channel through the electronic platform, the power relations can significantly be affected and the monopoly of the traditional service delivery system can be reduced. From both the cases, it appears that E-governance may enhance the monitoring ability but the lack of enforcement of the laws and the existing loopholes of the E-governance system may make the system ineffective to have significant impact on corruption.

These qualitative generalizations of the sample cases can also be confirmed by the statistical generalization. For this, based on the rankings of the variables of the study, correlation coefficients can be generated which may indicate the nature and the magnitude of the probable relationships among the variables of the study. If we consider the relation between the dependent (corruption) and the independent variable (E-governance), the statistics shows that there is higher level of negative correlation between the level of E-governance and the level of corruption as $r = - 0.534$ and $p < 0.01$ (Table 37). This means with the increase of E-governance level, corruption reduces. Now the question is how E-governance is effecting corruption. For this, the intervening variables of the study may help us by indicating the trends. There is a negative correlation between E-governance and the level of monopoly as $r = - 0.697$ and $p < 0.01$. This means with the increase of E-governance level, the monopolistic nature of the organizations reduces. Similarly, there is also a negative correlation between E-governance and the level of power in an organization. Here power indicates the discretionary power of the officials which decline with the increase of E-governance level as $r = - 0.533$ and $p < 0.01$. However, in the case of accountability, the study does not show any statistically significant relation as $p > 0.05$. Though, it shows a very low positive correlation between E-governance and accountability. This may happen due to the nature of the E-governance in the sample areas. Because, the way E-governance is implemented in the respective

offices, that does not have significant impact in improving the overall accountability system of the respective offices.

Table 37: Pearson Correlation Coefficient among the Variables (N= 31)

	Level of E-governance	Level of Corruption	Level of Monopoly	Level of Power	Level of Accountability
Level of E-governance	1				
Level of Corruption	-.534**	1			
	.002				
Level of Monopoly	-.697**	.746**	1		
	.000	.000			
Level of Power	-.533**	.745**	.804**	1	
	.002	.000	.000		
Level of Accountability	.108	-.142	-.178	-.118	1
	.564	.447	.337	.527	

**. Correlation is significant at the 0.01 level (2-tailed).

Now, the next question is how far these intervening variables can explain the changes of the level of the dependent variable (corruption). The statistical findings of the study indicate that the changing dynamics of the intervening variables; especially the variables 'monopoly' and 'power' have significant impact on decreasing the corruption level. For the level of monopoly and the corruption; r = 0.746 and $p < 0.01$, which means there is a positive correlation between these two variables i.e. with the decrease of monopoly, corruption level also decreases. Similarly the variable 'power' shows a positive correlation as r = 0.745 and $p < 0.01$**.** This means, both the variables move in the same direction i.e. with the decreases of power, the corruption level also decreases. However, the variable 'accountability' does not indicate any statistically significant trends as $p > 0.05$. Thus, from these intervening variables, we can get some of the explanations of the probable ways to influence corruption by E-governance which also support the finding from the previous qualitative generalization.

6.4 Caveats on the Statistical Trends of the Micro Level Findings

To map the extent of variations of the variables, the study depends on the rankings constructed through the opinions of the respondents. As this ranking is based on the perception of the respondents and the sample size is very small, the ranking can be just an indication of the trends, strict comparison between and within the services may be misleading. Different people may also

have different levels of ranking trends i.e. someone can rank the level of an indicator as 1 while other can put that as 2. Such variation may have significant impacts on the results within the small sample size. The ranking of the variables and their 'correlation coefficient' can provide an idea of the probable effects of E-governance on corruption. Though, drawing causality based on the correlation coefficients is not statistically correct as it can only indicate about the trends. However, the qualitative data as discussed before also confirmed the same trends which are emerged from the statistical analyses.

6.5 Conclusions

The micro level case studies are included in the research design to have better understanding of the effects of E-governance on corruption. The sample cases indicate that just the introduction of E-governance is not enough to control corruption, its natures and levels are also important to have significant affects. Because, the degree of the discretionary power, the level of the effectiveness of the accountability system and the extent of monopoly are contingent on the natures and the levels of E-governance. When an E-governance system can change these factors i.e. can curtail the discretionary power, enhance the accountability system and provide an alternative service delivery channel, then it may affect the level of corruption in an organization. Though, from the case of Bangladesh Railway, it appears that only the change of the power relations due to E-governance can have impacts on curbing corruption.

CHAPTER 7: CONCLUSION AND THE IMPLICATIONS OF THE STUDY

7.0 Introductions

The concluding chapter summarizes and provides a brief overview of the key findings of the relationships between E-governance and corruption. The findings are based on the empirical evidences collected from both the macro level data and the micro level cases. The macro level data are based on the state level aggregate indexes while the micro level cases are from two organizations from Bangladesh, selected on certain rationales, like the level of E-governance, intensity of corruption, accessibility etc. This chapter starts by recapitulating the research questions and the hypotheses of the study and then proceeds with the brief illustration of the major findings and their relations with the research question and the hypotheses. Due to the inductive nature, the study also tries to generalize the findings and the trends; and combined them in the theoretical relevance section. However, along with this theoretical implications, the study also tries to delve into the practical implications of the findings. Finally, it outlines the limitations of the study and suggests the possible avenues for further research.

7.1 Research Question and the Key Empirical Findings

The research question for the study was "*What E-governance does and how it reduces corruption*?". It is a single question but has two major parts: the *first part* is related with the probable relationships between E-governance and corruption; and the *second part* is related with the processes of affecting corruption by E-governance. Based on the research question and its theoretical responses, the study develops four hypotheses to test by empirical evidences. The first hypothesis is developed as the response of the first part of the research question i.e. to explore the probable relations between E-governance and corruption while the other three hypotheses are related with the second part of the research question which are developed to understand the processes of effecting corruption by E-governance.

7.1.1 Research Question and Review: Part 1

The first part of the question is about the inquiry of the relationship between E-governance and corruption. Based on the theoretical arguments and the earlier findings, the study draws **Hypothesis 1**, which postulates that E-governance has a positive role in reducing corruption. At the macro level, the study considers 161 countries' statistics to understand the effects of E-governance on corruption. To explore the statistical trends, the study uses different statistical tools like the 'correlation coefficient' and the 'regression analysis'. The 'correlation coefficient' indicates that there is higher level of correlation between E-governance and corruption as r = .676; $p < 0.01$(Table 18). The regression analysis indicates that its models can explain maximum of the variation of the dependent variable (variation of the corruption level); such as Model 4 can explain 68.7 percent variation, and E-governance (measured though OSI) has the second highest explanatory power among the three explanatory variables (GDP, DI and OSI) of the study. The country specific analysis indicates that 119 countries out of 161 countries i.e. 73.91 percent of the sample countries support Hypothesis 1 of the study. Thus, the macro level findings indicate that maximum of the countries' data are supporting Hypothesis 1.

From the micro level cases, it appears that the case from the district land administration does not support **Hypothesis 1** while the case from Bangladesh Railway, it supports only where there are higher level of E-governance (level 3.5). Though, there are also indications that even in that higher level of E-governance, the scopes for certain types of corruption may also increase like *Kalobazari* (black marketing/scalping). However, it can help to reduce the problem of *Ghush* (bribe) by creating new service delivery channel through the electronic platform. This change of the service delivery channel curtails the bargaining power of the officials for *Ghush* (bribe). Except this level, in other two levels (level 2 and 1), the corruption dynamics do not change that much, rather in the lower level (level 1), E-governance itself is used sometimes to continue corruption as it lacks the scope for external monitoring through online. The lower level corrupt officials capitalize this opportunity and sometimes block tickets more than the permitted amount or even sometimes they remove the tickets from the system as well. When they get extra money in the form of *Ghush* (bribe), then they put back the tickets in the system and sell it. Thus, the sample cases indicate that mere implementation of E-governance is not adequate to have positive impacts on corruption, the nature and the level of maturity of E-governance are also very important to have significant impacts on corruption.

7.1.2 Research Question and Review: Part 2

The second part of the research question is related with the processes of effecting corruption by E-governance. To understand this dynamics, the study develops three hypotheses to test them by empirical data. **Hypothesis 2** of this study is the first hypothesis which emphasizes the processes of effecting corruption. This hypothesis is about the power relations which indicate that changing power relation due to E-governance may lead to the reduction of corruption in an organization. The cases of the study support this assumption but also indicate that mere implementation of E-governance may not be enough to change the power relations and to have a positive impact on corruption. When E-governance can 'depersonalize' a service delivery system i.e. can remove the interactions of the service seekers with the officials, then it can significantly affect the power relations and may have a positive impact on corruption. This change of power relation is only observed in the sample cases when the E-governance level was 3.5, but in the other levels (level 2.5, 2 and 1), the power relations remain more or less same and consequently there are no significant positive impacts of E-governance on corruption.

The next **hypothesis (H3)** is about the system of accountability, which assumes that changing of the accountability patterns due to E-governance may reduce the level of corruption. The main argument in favor of this hypothesis is about the E-governance's ability to trace a task process; and by this monitoring ability, E-governance can expose the corrupt activities. The sample case from Bangladesh Railway indicates that in all the E-governance levels, the monitoring capacity has enhanced, especially in the levels of 3.5 and 2, as they can be monitored from any places through internet. However, still there are loopholes in all the levels (especially in level 2 and 1) to deceive the existing monitoring system. In the lower level E-governance (like level 1), the effectiveness of monitoring does not improve that much as the system is disconnected from the central servers. Because of this disconnected nature, the higher authority cannot oversight the activities without visiting of the respective places. Similarly, in the district land administration, the provision for monitoring is also enhanced after the introduction of E-governance. However, one of the main challenge for both the cases are related with the 'enforcement' of the rules and the regulation; not the detection of corruption as more or less everyone knows who are involved with the corrupt practices, especially in the district land administration. Taking legal actions against the corrupt people are difficult for various reasons, like the problem of trade unions, political

interferences, corruption of the higher authorities, shortage of manpower etc. This lack of enforcement of laws makes the E-governance system ineffective in curbing corruption.

The last **hypothesis (H4)** is about the monopoly which assumes that by reducing the monopoly in the service delivery system, E-governance can help to reduce corruption. The main logic of the hypothesis is when E-governance can provide an alternative platform for the service delivery instead of the traditional desk based channel then corruption may reduce. Because, then the citizen have an option to avoid the corrupt officials. In the sample case of Bangladesh Railway, only E-governance level 3.5 can provide an alternative service delivery channel, but other two levels (level 2 and 1) still depend on the traditional counter based system. The same situation also exists in the district land administration where the traditional counter system has the absolute monopoly. As a result, when someone faces any problem then s/he does not have any other options and most of the cases they have to comply with the corrupt demand of the officials to avail the service. So, from the findings, it appears that just the introduction of E-governance is not sufficient enough to control corruption; it may have impact when it can provide an alternative service delivery channel through the electronic platform.

7.3 Juxtaposing the Macro and the Micro Level Findings: Looking through Each other's Lenses

The main objective of the study is to understand the probable effects of E-governance on corruption. The macro level study is based on the statistical analysis of two renowned datasets to understand the probable nature of the effects of the independent variable on the dependent variable. This statistical analysis can indicate the trends between E-governance and corruption. However, such statistical trends cannot indicate how the independent variable can affect the dependent variable. So, to understand the processes, the study considers some cases from the micro level. The micro level analysis provides the trends between the dependent and the independent variables and the possible explanations of those trends. This section is an effort to combine both the micro and the macro level trends to increase the analytical robustness.

7.3.1 Introduction of E-governance is Beneficial to Control Corruption

Macro Level Trend:

The majority of the countries (119 countries out of 161 countries) show consistent trends with the Hypothesis 1 of the study i.e. the corruption level reduces/increases with the increases/reduces of the E-governance level.

Reflections from the Micro Level Trends

Theoretical analysis indicates that by improving monitoring capacity, reducing discretionary power and by providing alternative channel for the delivery of services, E-governance can have positive impacts on corruption. The empirical findings from the micro level cases indicate that by reducing discretionary power and by providing alternative channel for the service; E-governance can control some kinds of corruption. In the findings from the cases, we can see when E-governance can bring change in the power relations then it can successfully reduce corruption. In the case of E/M-ticketing, the power of the officials curtailed as the system is operated electronically without human interference. Such kind of 'depersonalized' system makes the power of the official's ineffective and can help to control the associated corruption; like controlling *Ghush* (bribe). This higher level E-governance (like E/M-ticketing) can also help to curtail the power of the interest groups which disable the exercise of *Tadbir* (lobbying) by 'depersonalizing' the process; thus under such system, their *Tadbir* (lobbying) also become ineffective. The E/M-ticketing also reduces the monopoly of the traditional service delivery system by providing an alternative service delivery channel in the electronic platform. However, as only 25 percent tickets are sold through these two channels, the overall impacts on corruption is not that much significant. The micro level cases, however, do not show that there has been much improvement in the accountability system. In all the cases, E-governance contributes to improve the monitoring capacities but lack of 'enforcement of the laws' are making the overall effort ineffective. Though, the possible improvement in enforcing the law may also can contribute to reduce corruption. These trends can indicate about some of the explanations of the reduction of the corruption levels in maximum of the countries with the enhancement of the E-governance level.

7.3.2 Mere Introduction of E-governance May not be sufficient to Control Corruption: Contingent on a Number of Factors

Macro Level Trend:

Significant number of countries' (42 countries out of 161 countries) corruption levels does not improve with the improvement of E-governance level.

Reflections from the Micro Level Trends

Monitoring Capacities May Varies

One of the main argument to treat E-governance as an effective anti-corruption tool is because of its ability to increase the capacity to trace a work process by enhancing the monitoring capacity.

However, just the introduction of E-governance may not be sufficient enough to ensure such enhancement of the monitoring power. The available provisions and the maturity level of E-governance are also important factor. The micro level case from Bangladesh Railway indicates about such trend. The places where computerized ticketing system are introduced but the remote databases are not connected with the central severs (level 1), the monitoring capacities do not improve that much like the other higher levels of E-governance (level 3.5 and 2). As a result, the officials cannot monitor the activities of the field from other places and fail to know what the respective officials in the field are doing. Such 'disjointed silo types' i.e. fragmented implementation of E-governance may not be effective to have significant impacts on corruption. This trend may indicate about a possible explanation for the inconsistent trends in the different countries.

Power Relations May not be Sufficiently Changed

Discretionary power is attributed as one of the key factors that can create the supporting environment for corruption. When E-governance can bring change to this discretionary power of the officials, then it may be effective to have positive impacts on corruption. The cases also support this assumption. In the sample cases, E-governance with the lower levels (like level 1 in Bangladesh Railway) fail to bring change in the power relations. In the lower level of E-governance, still the corrupt officials can exercise their discretionary power for continuing the corrupt practices. However, such power is curtailed when higher level of E-governance (level 3.5) can depersonalize the system by providing the service through the electronic platform. This changing power relation can help to affect the extent of the corruption in an organization. Thus, the level of corruption may depend on the degree of the effectiveness of E-governance in changing the power dynamics. The unchanged power relations may provide another explanation of the inconsistent trend between E-governance and corruption in some of the countries.

Enforcement of Law

E-governance as a tool can detect corrupt activities and can expose corrupt persons but the key to control corruption is to take necessary actions based on those detections. If such actions are not taken then the implementation of E-governance cannot be effective to control corruption. Rather such tendencies may promote corruption as the corrupt people can see that they are not punished even after the detection of their corrupt activities. Such tendencies are visible in the findings, especially in the district land administration. It appears that the monitoring and the detection of the

corrupt persons is not the key to control corruption there; as more or less everyone knows who are involved with the corruption, rather taking actions can be the key to control corruption. There are hardly any evidences to take action against them and this leads to a 'culture of impunity' where one can easily continue his corrupt practices. This trend may explain the inconsistent trend in some of the countries, especially in the developing and the Non-OECD countries. Because, in the OECD countries, such tendencies are rare where if someone is detected for corruption and not punished.

May Eliminate Older Actors but New Actors May Emerge

From the micro level cases, it is evident that just the introduction of E-governance or just the upgradation from one stage to another is not sufficient to control corruption. The sample cases indicate that corruption may shift its arena and new actors may emerge due to new opportunities. In the micro level findings, we can see that at first, railway introduces computerized ticketing system. Later on, it improves its service delivery system by introducing higher level E-governance system, like the online ticketing (E-ticketing) and the mobile ticketing (M-ticketing). Initial computerized ticketing system improved the work efficiency by making the maintenance of the accounts for the tickets easier or by helping faster selling of the tickets. Nevertheless, such provision cannot change the corruption dynamics that much. Because, when the local database of the ticketing system is not connected with the central sever, then it is not possible to monitor the selling process from outside, one needs to visit the respective place. Under such environment, the corrupt officials can continue their corrupt practices. When the ticketing system is upgradated to higher level of E-governance i.e. introduces E/M-ticketing, then new problem starts to emerge. New actors from outside of the office are getting the opportunities to get involved with *Kalobazari* (black marketing) due to the provision for E/M-ticketing while the scopes for the corrupt Booking Clerks are shrinking due to such online ticketing. In the earlier system, the officials had some kinds of discretion which they now lost due to the online ticketing. Now, the people from outside of the office start to buy the tickets and sell them in higher prices. This is how even the higher level of E-governance can open new opportunities for new actors to get involved with the corrupt practices. Higher level E-governance can reduce the corruption opportunities of the officials but it can include new actors from outside. Thus, the problem of corruption may persist due to the emergence of new actors. Earlier, the outsider got involved with the nexus of the corrupt officials, but under the present arrangements, the outsider can involve with the corrupt practices without the collaboration of the officials and this encourages the new people to get involved with corruption.

Many of these people even do not know anyone from the railway. Because, now, they can buy tickets through E/M-ticketing by themselves. Thus, the sufferings of the service seekers continue even after the introduction of higher level E-governance. These trends may provide an important insight regarding the relationships between E-governance and corruption. From the observations of the sample cases, we can say that the improvement of corruption scenario is not always linear with the enhancement of E-governance level. These trends may partially explain some of the countries' trends which show inconsistent trend with the Hypothesis 1 of the study. The measure of corruption by CPI index is based on the people's perception on corruption. If the sufferings of the people continue due to corruption, then the effectiveness of E-governance on controlling corruption in some areas may not be reflected in the people's opinions.

Implementation Challenges May Reduce the Effectiveness

Manipulation of Software

The problems of manipulation of software and the hacking of an electronic system are now the emerging challenges for the E-governance system in all around the world. Various countries and organizations are working on enhancing the security of the electronic systems. In the sample cases, there is no information on the incidents of hacking but there are feedbacks of the manipulation about the software. Due to lack of proper security features in the software, some of the corrupt officials bring changes in the database for bad intentions. Such changes are easier in the places where the local databases are not connected with the central servers. Though, such practices can easily be prevented by adding some of the security features in the software like limiting the access to the database and by creating the provision to track the person who enters in the system. In the existing system, such features are missing and the corrupt persons are taking the advantages.

Lack of Infrastructure

For proper monitoring, there should be sufficient infrastructure and provisions in the E-governance system. Lack of such provisions may make the effort of the E-governance weaker to control corruption. Like in Bangladesh Railway, there is no formal mechanism to monitor the ticketing. Some officials use their own laptops and internet connections for monitoring. Such approach is not sustainable when the officials are also ill paid; this is a huge burden for an honest officer. That is why, most of the cases they get demotivated to monitor and the monitoring system loses its effectiveness. Even the existing available online monitoring is not that much comprehensive as the officials can only see some front end outputs, like the composition of the ticketing for a train or

the sells information; they cannot generate quarries for the details of a transaction in the database; like which ID is responsible for the sell and the refund of the suspicious amount of tickets. For more details data, one need to visit the respective station. This lack of provision in the E-governance system also makes the monitoring ineffective.

Lack of Training

To operate the electronic devices, one should have sufficient knowledge on the processes of the operation of those devices. For this, training can be the key, as it is an effective tool to inculcate proper knowledge. From the sample cases, it appears that the officials do not have proper training. Most of the cases, they learn the operation of the system by themselves or consulting with the older officials. In the railway, the booking clerks mostly learn the operation from the senior booking clerks by just observing their activities and by asking where they get stuck. Similarly, the higher officials' training is not sufficient to have detail operational knowledge. This lack of knowledge is acting as an impediment for the proper monitoring. The situation of the land administration is a bit better. The higher officials get training under A2I (Access to Information) project run by UNDP (United Nations Development Programme) and the Bangladesh Government. Nevertheless, the lower level officials lack proper training. Such lack of knowledge becomes as one of the key obstacles for the proper implementation of E-governance. All of these implementation challenges can limit the effectiveness of E-governance in controlling corruption and can provide some of the explanations for the inconsistent trends, especially in the developing countries where E-governance cannot have expected impacts on corruption level.

7.3.3 Effectiveness of E-governance may Varies between the Developed and the Developing Countries

Macro Level Trends

a) Inconsistent Trend in the OECD Countries

The countries which show inconsistent trends with the Hypothesis 1 are mostly from the developed countries - particularly OECD countries. Total 42 countries shows inconsistent trends and among them 28 countries can be treated as the high-income countries by the definition of World Bank (per capita GNI $12,476 or more) and out of these 28 countries, 21 are from the OECD countries. This inconsistent trend also confirmed by other studies like Andrew (2009). He conducted the study based on the Control of Corruption Index by World Bank. However, in general, in the OECD countries, the overall corruption problem is lower than the other countries, especially the problem of the petty corruption done by the street level

bureaucrats. At the same time, these countries also have higher level of E-governance compare to other countries. However, from the statistical analysis, it appears that the overall corruption levels are increasing to a significant number of OECD countries in spite of the increase of E-governance level. From the existing data, it is not possible to say conclusively about the nature of corruption, which are increasing, and the probable roles of E-governance in such increase.

b) More Effective in the Developing countries?

Macro level trends are indicating that E-governance is more effective in the developing countries than the developed countries. Because, out of 42 countries, only 14 are from the developing countries which showed inconsistent trends with the Hypothesis 1 of the study.

Reflections from the Micro Level Trends

Nature of Corruption

E-governance may not be equally effective against all types of corruption. It may be comparatively more effective for checking petty corruption than the grand corruption like the policy or strategic level corrupt practices. For most of the petty corruption, street level bureaucrats receive bribes or some kinds of illegal benefits in exchange of the provided services. If the service delivery channel can be changed i.e. can be converted to the electronic platform then the bargaining power of the corrupt officials for the illegal benefits can be curtailed. Thus, the degree of 'petty corruption' of an organization can be reduced by E-governance. There can be a possibility that these improvements in controlling the petty corruption (if any) in the developing countries may contribute in the improved perception on the corruption level of the respective countries.

In contrast, most of the grand corruption originates in the policy or strategic level. Such types of corruption are difficult to control through E-governance. Like, if the higher authority sets some tailor-made policies in exchange of illegal benefits to favor an interest group to win a bidding process, then E-governance may have limited role to play. Introduction of Electronic Tendering (E-tendering) may not have significant impact to control such types of corruption. E-tendering can suggest the best suitable bidders based on the criteria/policies which are set before. If the criteria are set in a way to favor any interest groups then E-governance may have little role to curb those corruption. Though, the sample cases of this study are from a developing country, but there is an example, which can provide some insights regarding this trend. In Bangladesh Railway, there is an allegation for a policy level corrupt practice when there was a bidding process to outsource the

ticketing system of the railway to a private company (third party). There were allegations that some of the conditions were set to favor a particular company; like, to have 15 years of relevant working experience within the country and to have financial transaction more than BDT 20 million (80 BDT = 1 USD). There is only one company, which can fulfill such conditions. Thus, the strategic or policy level corrupt practices can ensure the wining of the desired company in a bidding process. If these types of corruption exists or increase in a country then E-governance may have little impact in controlling corruption. E-governance is just a tool, which can select best suitable options based on the preset criteria. As the problem of petty corruption is low in the OECD countries, but corruption is increasing, there can be possibilities that the strategic or the policy level corruption is increasing; but this observation is just a possibility. It needs further study to explore the patterns of corruption. If these possibilities are true then it may provide an explanation for the inconsistent trend of the OECD countries.

Table 38: Juxtaposing the Micro and the Macro Level Findings

No	Macro Level Trends	Micro Level Trends
1.	The majority of the countries (119 countries out of 161 countries) show consistent trends with the Hypothesis 1 of the study i.e. the corruption level decreases/increases with the increases/decreases of the E-governance level.	• The empirical findings from the micro level data indicate that by reducing discretionary power and providing alternative channel for the service delivery, E-governance can contribute to control some kinds of corruption.
2.	Significant number of countries' (42 countries out of 161 countries) corruption levels do not improve with the improvement of the E-governance level.	**Incomplete E-governance** • Mere introduction of E-governance is not sufficient to change the key factors of corruption. From the sample cases, it appears that incomplete implementation of E-governance may not be able to change the power relations and to increase the monitoring capacity. Specially, until a system does not become an alternative channel to provide a service, it may not be able to effect the power relations. Lack of necessary infrastructure and training of the officials can act as the impediments to enhance the monitoring capacity and may make the initiative of E-governance ineffective to control corruption. **Shifting of Arena or Displacement of Corruption and the Emergence of New Actors** • Another explanation may come from the shifting of the arena of corruption and the possible emergence of new actors of corruption. In the case 2, the provision of E/M-ticketing system indicates that it can also open new opportunities of corruption for the *Kalobazari* (black marketing). **Nature of Corruption** • From the sample cases, it appears that E-governance is better in controlling some kinds of corruption. For example, in the sample cases; by changing the service delivery channels to the electronic platform, E-governance can reduce the

No	Macro Level Trends	Micro Level Trends
		opportunities for *Ghush* (bribe). However, that may not be equally effective for policy level or strategic corruptions. If someone sets any standard or criteria at the policy level which can favor some interest groups then that will be difficult to control by E-governance. Because, E-governance may run based on such preset standards or criteria.
3.	**Inconsistent Trend in the OECD Countries** • The countries, which show inconsistent trends with the Hypothesis 1, are mostly from the developed countries - particularly from the OECD countries. • Total 42 countries shows inconsistent trends and among them 28 countries are from the high-income countries and out of these 28 countries, 21 are from the OECD countries (the number of total OECD counties is 34).	• There can be a number of possibilities; like the emergence of new patterns of corruption, change of arena of the traditional corruption, the emergence of new actors, even the use of E-governance as the tool for corruption or all of these possibilities can be true. • From the micro level cases, we can have some supporting evidences for these possibilities. The micro level findings indicate about the emergence of new actors and the shifting of arena of the corruption (Ex: *Kalobazari*-black marketing) and the new ways to do the older/traditional corruption (Ex: manipulation of software to increase the bargaining power for *Ghush* – bribe) or the problem of policy/strategic corruption (Ex: the tailor-made specifications to favor someone in the bidding). • However, in general, in the OECD countries, the overall corruption problem is lower than the other countries, especially the problem of the petty corruption. At the same time, these countries also have higher level of E-governance compared to the other countries. From the existing data, it is not possible to say conclusively about the nature of corruption and the role of E-governance in such increase.
4	**More Effectives in the Developing countries?** • Macro level trends are indicating that E-governance is more effective in the developing countries than the developed countries. • Because, only 14 developing countries showed inconsistent trends with the Hypothesis 1 of the study.	• Some of the micro level trends may indicate the probable explanations of the trends in the developing countries. E-governance can be effective for certain patterns of corruption like petty corruption done by the street level bureaucrats. By changing the service delivery channel, E-governance can demonstrate its effectiveness on the petty corruption. • There can be a possibility that the improvement in controlling the petty corruption (if any) in the developing countries may contribute in the improved perception on the corruption of the respective countries.

7.4 Theoretical Relevance of the Study

7.4.1 Power Relations and Corruption

From the corruption incidences of the study, we can find two main actors who are related with the corruption process of an organization: in one side, there are corrupt officials and in the other side, there are interest unit/s. This unit/s can be an individual or a group or a number of groups. The corruption of an organization depends on the dynamic power game between these two main actors. Their level of power and the willingness to exercise such power enable their bargaining capacity to influence an incidence or a course of action from which the respective party may make illegal benefits. From this dynamic power game, we can find two types of power: effective and

ineffective. When one party can successfully exercise his power for his own interests then that can be defined as 'effective' power for that actor and accordingly the 'ineffective' power is the opposite. By this distinction of power, we can derive the following grid:

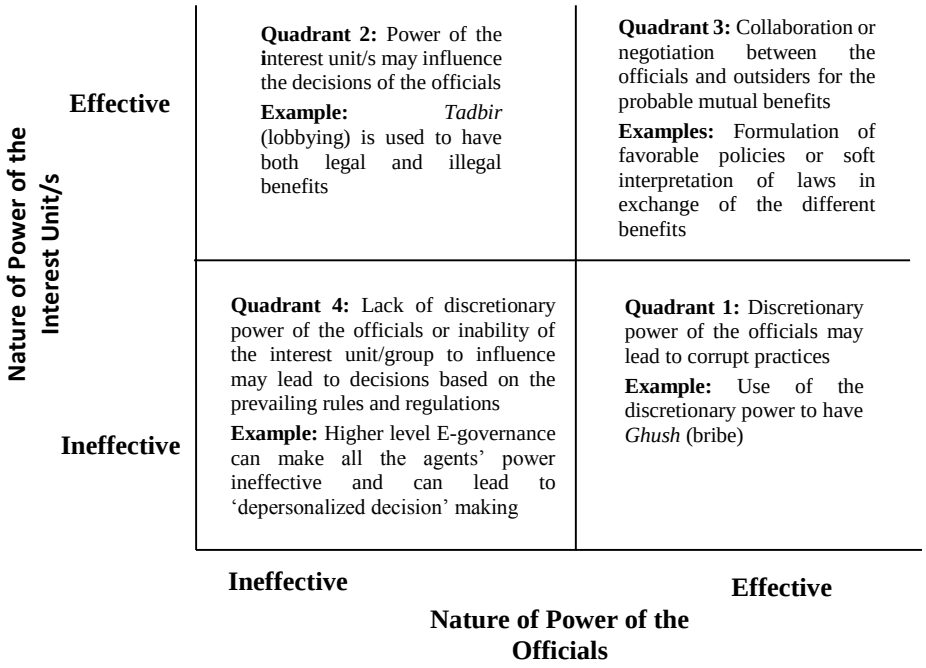


Figure 12: Power Relations and Corruption

Source: Researcher's synthesis

Quadrant 1:

The provisions for the exercise of the discretionary power of the officials may enable them to misuse power. Corrupt officials who have such discretionary power may utilize the power to claim illegal benefits from the service seekers. Such type of exercise of power is overt in nature. To get the services, the service aspirants may have nothing to do but to comply the desire of the corrupt officials. If we analyze this exercise of the discretionary power, we can find the similarities with the 'first dimension' of power. Because, the first dimension indicates about 'power over' or the coercive nature of power. In this quadrant, the officials also use their coercive power to have undue benefits. There is an example of this kind of power exercise in the sample cases; the discretionary power of the officials enable them to force the service seekers to provide *Ghush* (bribe).

Quadrant 2:

This quadrant indicates that the interest unit/s can be more powerful to make the power of the officials ineffective. This nature is similar to the 'second dimension' of power where the people can 'covertly' influence a course of action to bend the decisions in favor of them or to certain

interest groups. From the micro level findings, the mechanisms of *Tadbir* (lobbying) can be treated as the exercise of such kind of power which can make the officials' power ineffective and through this power, the interest unit can get both legal and illegal benefits.

Quadrant 3:

In quadrant 3, there is a dynamic balancing in the power game between the officials and the interest unit/s. The situation is a bit different compared to the previous two types of power. In earlier two cases, both the actors try to use coercive nature of power but here each may know about the capacities of the other. They know that they may not completely win if they try to exercise the power over the opposition. So, in most of the cases both parties go for negotiation and collaboration and try to maintain a calculative good rapport with each other so that both can be benefited from such relationships. This kind of collaboration may be evident when the officials formulate policies to favor some particular interest groups or interpret the laws in a way that may help someone or some interest groups. The micro level cases of the study indicate that by presenting expensive *Upodhoukon* (gift) to the higher officials or giving *Bakshish* (tips) to the lower officials, the interest units maintain some kinds of relationships with the officials to get support from them in the different events.

Quadrant 4:

In Quadrant 4, both the parities' power becomes ineffective. From the sample cases, we can see that higher level E-governance can make a system of decision making 'depersonalize' i.e. decision are taken automatically or the process is completed electronically without the scope of interference. It can curtail both the external and the internal agents' power significantly to influence a decision or a process and thus can make them ineffective to influence the system. Such, provisions may control associated corruption. Though, absolute 'depersonalization' of a task process may be difficult. In maximum E-governance system, there are provisions to influence the system but only few have such opportunities and authorities. Like, few have the authority to access the system or the knowledge to manipulate the software or the electronic system. Without proper monitoring mechanisms that may open new windows for corruption and may fail to control the entrance of new actors of corruption.

7.4.2 Transformation of Corruption

From the sample cases of the study, it appears that E-governance may have positive impacts on some of the patterns of corruption but it may also open new opportunities for new patterns of corruption or provide more effective tool to continue the old corruption. Thus, corruption may be controlled in one place but it can grow in other places and the problem of corruption may persist. By changing its forms and natures, corruption may linger even after the implementation of higher level E-governance. This study indicates that during such mutation of corruption, three elements can be the key:

Change of Actors

The options for the old actors may be eliminated but may open opportunities for the new actors. In the cases of the study, it appears that due to E/M-ticketing, the provision for *Ghush* (bribe) is shrinking for the corrupt booking clerks (who sell the ticket in the counter), but it is also opening the opportunities for the new actors who are mostly from outside of the organization; popularly they are known as *Kalobazari* (black marketeers). Earlier the outsider can get involved with the process in collaboration with the officials but now they can operate by themselves as they can buy tickets directly through E/M-ticketing. For these kinds of technology based corruption, people who have more technical knowledge are getting competitive advantage.

Table 39: Transformation of Corruption

Elements	Processes
Change of Actors	New actors may enter while the scopes for the older actors' may shrink.
Change of Patterns	The older patterns of corruption may be reduced or eradicated but new patterns of corruption may emerge.
Change of Tools	To make the corruption more convenient and efficient, corrupt agents may try to look for more efficient tools.

Change of Patterns

Corruption is about undue/illegal profit maximizing tendencies. If a corrupt agent finds any area problematic for the continuation of corruption then s/he may look for new avenues. That is why, the older patterns of corruption may be reduced or eradicated but new patterns of corruption may emerge. The case study from the railway indicate that due to the introduction of E/M-ticketing; *Ghush* (bribe), *Tadbir* (lobbying) can be reduced; but it can open the opportunities for *Kalobzari*

(black marketeers). Earlier one needs to keep relation with the officials; but now, one can do such corrupt activities independently.

Change of Tools

To be corrupt, one needs to be creative and needs to go for innovative tools. The micro level findings show that, the corrupt persons are using the E-governance system itself as a tool for their corrupt practices. In earlier manual system, one tries to manipulate the paper works. Sometimes they make delay or improperly give entry to the registry or follow other techniques. Now, such types of tendencies are reducing. People are using various devices and techniques for corruption and illegal activities. In the sample cases of Bangladesh Railway, we can see the problem of manipulating the software and this appears as the new tool for continuing the corruption.

7.5 Policy Implications of the Findings: Lessons Learnt and Measures to Curb Corruption

The findings of the study can add some new insights in the discourse of corruption and can lead to some policy directives for the policy makers and the practitioners. The study empirically examines the argument that E-governance can be a significant tool to affect the level of corruption and both the macro level statistical trends and the micro level case studies provide some of the supportive evidences in favor of the argument. Though, in most of the countries, E-governance can explain the variation of the level of corruption but the case studies indicate that just the introduction of E-governance is not sufficient to control corruption, its effects are contingent on a number of factors. The findings of the cases indicate that when E-governance can become an alternative platform for the delivery of a service then it can influence the power relations of an organization which can help to reduce corruption. Another important insight emerges from the findings that E-governance may enhanced the monitoring or the oversight capacity of an organization but that may not be sufficient to have significant impact on corruption; it should be combined with ‘enforcement of the laws’; because lack of this provision may make the efforts of E-governance ineffective. Various implementation challenges like lack of sufficient infrastructure, training of the officials, limited access of the citizen to the ICT facilities, limited facilities of the online banking services, interruption of the electricity supply etc. can also affect the processes of E-governance.

7.6 Limitations of the Study and the Future Scopes

The macro level study is based on a single database to measure each of the variables; but there are other databases, like Bribe Payers’ Index (BPI) or Global Corruption Barometer (GCB), which can

be used to check the validity of the present findings. The regression model of the present study may suffer the problem of 'Endogeneity'. To overcome this problem, 'instrumental variable' can be a good solution. Someone can find an appropriate instrumental variable for E-governance and then can conduct the study. The present study only considers the economic nature of the countries (like high income, low income etc.) to understand the probable variation of the effectiveness of E-governance but other variations like culture, geography, governance system can provide more deeper and interesting insights on the dynamics between E-governance and corruption. Present study is only based on the UN index of E-governance, but there are other indexes for E-governance like Brwon index, Waseda index etc. which can also be used to check the validity of the present findings. At the micro level cases, the small sample size (N) is a major challenge, because a small variation of the opinions may have significant impacts on the ranking of the respective variables. To have more valid findings, another study can be conducted with larger samples. As both of the cases are from a developing country, their finding may be more relevant for the other developing countries. To understand the dynamics of the developed countries, a study can be conducted based on the cases from the developed countries. Thus, it is evident that the research left many questions and areas unexplored which are left as the scopes for further research of the future researchers.

7.7 Concluding Remarks

The purpose of the research was to investigate whether E-governance can reduce corruption. The findings of the study affirm this effectiveness of E-governance with some observations and conditions. The macro level findings indicate that E-governance can explain most of the variations of corruption in the different countries i.e. it supports the main argument of the study that E-governance may have positive impacts in reducing corruption in different countries. The findings seem to be robust and more consistent in the developing countries though some of the developed countries, particularly the OECD countries show inconsistent trend. This inconsistent trend also confirmed by other studies, e.g. Andrew (2009). From the micro level case studies, it appears that just the introduction of E-governance is not sufficient to control corruption, its nature and maturity level is also important. As part of the natural experimental design, the study includes different levels of E-governance to understand the dynamics between E-governance and corruption. The dynamics that emerged from the different levels of E-governance provide some understandings about the nature of E-governance which can have greater impacts on corruption and some insights on explaining the limited success of the different E-governance projects/initiatives. From the

sample cases, it appears that E-governance may have better impacts when it can affect the power relations in an organization. This power can be affected when E-governance can provide an alternative service delivery channel through the electronic platform. Because, then the officials may lose their power to influence the process as the system is automated and run electronically. The discretionary power of officials can also be affected if the accountability system can be improved. In the sample cases, though there are indications for the improvement of the monitoring and the investigation capacities due to higher traceability by E-governance; but such development fails to achieve the desired success due to lack of 'enforcement of the law' and some other implementation related challenges. E-governance as a tool can detect corrupt activities and can expose the corrupt persons but the key to control corruption is to take necessary actions based on the detections. If these conditions are fulfilled, then an E-governance initiative may demonstrate more effectiveness in combating corruption.

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Appendixes

Appendix 1: Research Design at a Glance (in Macro Perspective)

Independent Variables	Indicators	Operational Definitions	Source of Data	Hypothesis	Dependent Variable	Indicator	Operational Definitions	Source of Data
E-governance	Degree of Emerging Level	This indicates the degree of information available through online.	United Nations' Online Service Index (OSI)	**H1:** E-governance may reduce the level of corruption	Corruption	Level of Corruption	The 'level of corruption' means the magnitude or the volume of corruption in a country.	Transparency International's Corruption Perception Index (CPI)
	Degree of Enhanced Level	This is the measure of one-way or simple two-way e-communication (use of online platform) between government and citizen or government and the business people.						
	Degree of Transactional Level	This indicator is about the degree of engagement of the government in two-way communication with their citizens through online.						
	Degree of Connected Level	'Connected Service' measures the degree of integration across the agencies to provide government services.						

Appendix 2: Research Design at a Glance (in Micro Perspective)

Independent Variables	Indicators	Hypotheses	Intervening Variables	Operational Definitions	Indicators	Dependent Variable	Indicators	Source of Data
E-governance	Level of E-governance: • Emerging Level • Enhanced Level • Transactional Level • Connected Level	**H2:** E-governance may change power relations, which may help to reduce the level of corruption	Power	Power is the ability to participate in decision making process (Lasswell and Kaplan, 1950; cited in Bacharach and Bartaz, 1962:948)	• Dimensions of Power • Power Distance • Accessibility to Services	Corruption	• Level of Corruption • Patterns of Corruption	Case study on two public organizations from Bangladesh
E-governance	Level of E-governance: • Emerging Level • Enhanced Level • Transactional Level • Connected Level	**H3:** E-governance may change the patterns of accountability, which may contribute to reduce the level of corruption	Accountability	Accountability is the obligation of a person (the accountable) to another person (the accountee), according to which the former must give account of, explain and justify his actions or decisions in an appropriate way (Weber, 2011:133) and if the former fails then the later can impose sanctions (Lindberg, 2009:1)	• Oversight Capacity (Both External and Internal Mechanisms) • Rules and Regulations • Working Procedures • Investigation • Enforcement	Corruption	• Level of Corruption • Patterns of Corruption	Case study on two public organizations from Bangladesh
E-governance	Level of E-governance: • Emerging Level • Enhanced Level • Transactional Level • Connected Level	**H4:** By reducing the monopoly in service delivery system, E-governance may help to reduce corruption	Monopoly	Monopoly is the lack of competition to produce a good or a service and a lack of viable substitute (Baumol and Blinder, 2012: 220).	• Degree of Choice • Transaction Cost	Corruption	• Level of Corruption • Patterns of Corruption	Case study on two public organizations from Bangladesh

Appendix 3: Sources of Corruption Measures by TI

No.	Sources
1.	African Development Bank Governance Ratings.
2.	Asian Development Bank Country Performance Assessment.
3.	Bertelsmann Foundation Sustainable Governance Indicators.
4.	Bertelsmann Foundation Transformation Index.
5.	Economist Intelligence Unit Country Risk Assessment.
6.	Freedom House Nations in Transit.
7.	Global Insight Country Risk Ratings.
8.	IMD World Competitiveness Year Book.
9.	Political and Economic Risk Consultancy Asian Intelligence.
10.	Political Risk Services International Country Risk Guide.
11.	Transparency International Bribe Payers Survey.
12.	World Bank – Country Performance and Institutional Assessment.
13.	World Economic Forum Executive Opinion Survey (EOS).
14.	World Justice Project Rule of Law Index.

Source: Mistry and Jalal, 2012: 156

Appendix 4: Sample Respondents from the District Land Office

	Rural District				Urban District			
	Category	**Total Officials**	**Sample Size**	**%**	**Category**	**Total Officials**	**Sample Size**	**%**
1.	Higher Level Officials (DC, ADC)	4	3	75	Higher Level Officials (DC, ADC)	6	1	16.67
2.	Mid-Level Officials (AC, Programmer)	8	4	50	Mid-Level Officials (AC, Programmer)	14	4	28.57
3.	Lower Level Officials (Record Keeper, Office Assistant)	4	2	50	Lower Level Officials (Record Keeper, Office Assistant)	12	4	33.33
	Total	**16**	**9**	**56.13**	**Total**	**32**	**9**	**28.13**

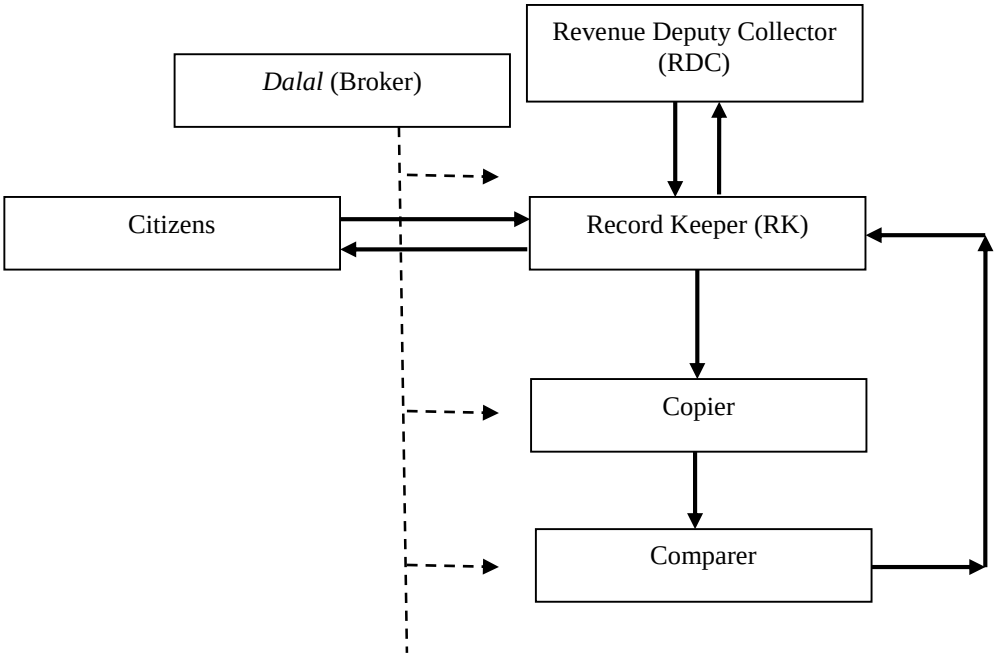
Appendix 5: Sample Respondents from Bangladesh Railway

	Rural Station				Urban Station			
	Category	**Total Officials**	**Sample Size**	**%**	**Category**	**Total Officials**	**Sample Size**	**%**
1.	Higher Level Officials (JDG, CCM, DRM and other equivalent officials)	6	3	50	Higher Level Officials (JDG, CCM, DRM and other equivalent officials)	6	3	50
2.	Mid-Level Officials (DCO, ACO, DD)	5	3	60	Mid-Level Officials (DCO, ACO, DD)	5	3	60
3.	Lower Level Officials (TI, JTI, Booking Clerk)	3	1	33.33	Lower Level Officials (TI, JTI, Booking Clerk)	20	2	10
	Total	**14**	**7**	**50**	**Total**	**31**	**8**	**25.80**

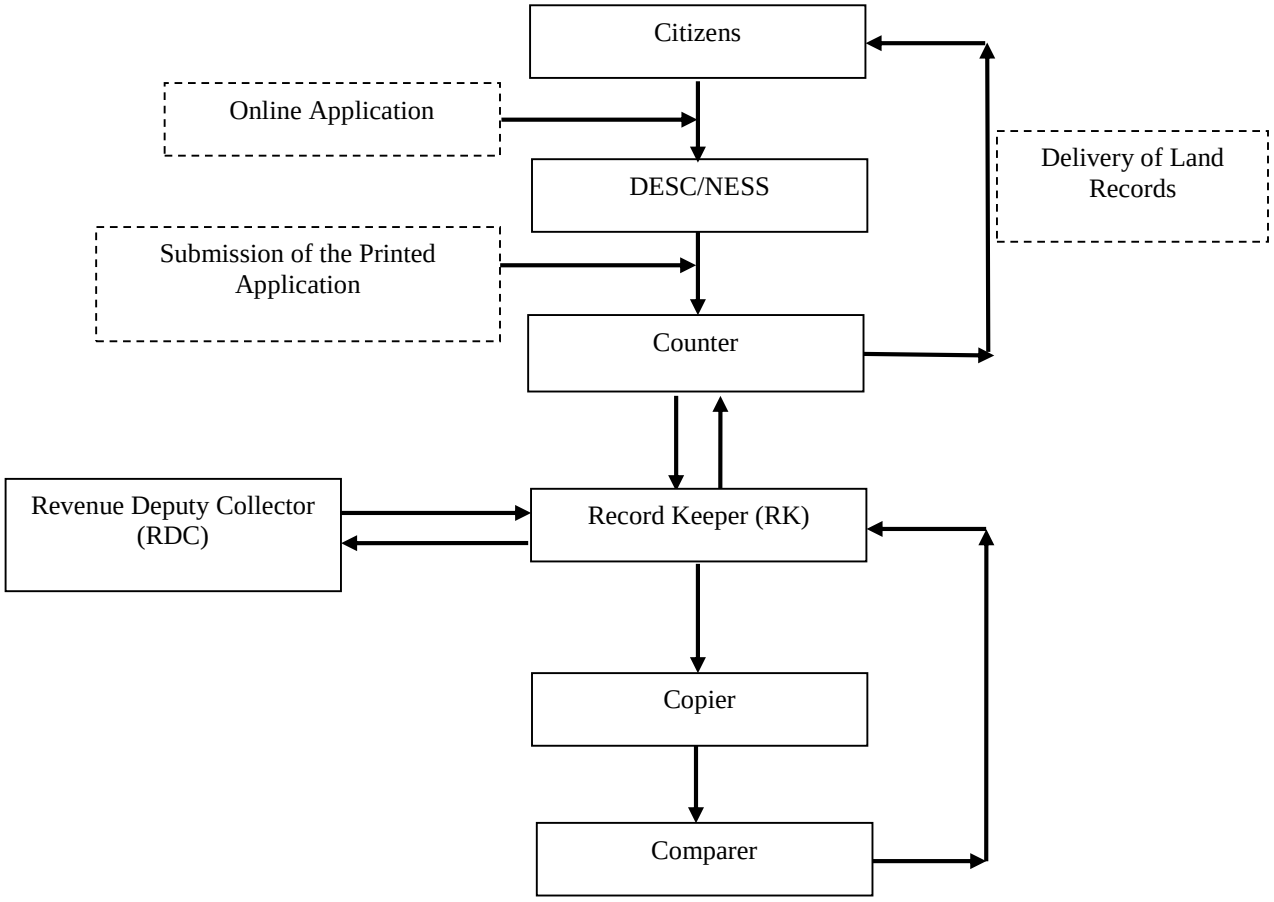
Appendix 6: Target Population and the Sample Size for the Questionnaire Method

S/N	**District Land Administration**		**Bangladesh Railway**		**Total**
	Category	**Respondents**	**Category**	**Respondents**	
1.	Service Recipients	5	Service Recipients	6	11
2.	Public Officials	10	Public Officials	10	20
	Total	**15**		**16**	**31**

Appendix 7: Conventional Manual System of Service Delivery in the District Land Administration



Appendix 8: Service Delivery System after the Introduction of DESC/NESS in the District Land Administration



Appendix 9: Descriptive Statistics of the Macro Level Data

	N	Minimum	Maximum	Mean	Std. Deviation
CPI 2010	150	1.4000	9.3000	4.064000	2.1130239
CPI 2012	150	1.3000	9.0000	4.348667	1.9193377
OSI 2010	150	.0000	1.0000	.324087	.2062217
OSI 2012	150	.0784	1.0000	.482360	.2235463
GDP 2010	148	210.7692	103574.1713	1.285286E4	1.8512884E4
GDP 2012	140	250.9708	107475.9479	1.310291E4	1.9405672E4
DI 2010	149	1.52	9.80	5.7046	2.15369
DI 2012	149	1.62	9.93	5.7558	2.11043

Appendix 10: List of the Counties which Indicate Inconsistent Trends with the Hypothesis 1 of the Study

No.	Country	CPI 10	CPI 12	Difference D = (CPI 12 - CPI 10)	OSI 10	OSI 12	Difference D = (OSI 12 - OSI 10)	Nature of the Countries
Nature: Increase of OSI Value and Decrease of CPI Value								
1	Ireland	8	6.9	-1.1	0.4984	0.5359	0.0375	High income: OECD
2	Austria	7.9	6.9	-1	0.4762	0.7451	0.2689	High income: OECD
3	Qatar	7.7	6.8	-0.9	0.2794	0.7386	0.4592	High income: Non-OECD
4	Singapore	9.3	8.7	-0.6	0.6857	1	0.3143	High income: Non-OECD
5	Afghanistan	1.4	0.8	-0.6	0.2317	0.2353	0.0036	Low income
6	Oman	5.3	4.7	-0.6	0.3683	0.6667	0.2984	High income: Non-OECD
7	Canada	8.9	8.4	-0.5	0.8825	0.8889	0.0064	High income: OECD
8	Luxembourg	8.5	8	-0.5	0.381	0.6993	0.3183	High income: OECD
9	Zimbabwe	2.4	2	-0.4	0.127	0.3007	0.1737	Low income
10	Japan	7.8	7.4	-0.4	0.673	0.8627	0.1897	High income: OECD
11	Sweden	9.2	8.8	-0.4	0.527	0.8431	0.3161	High income: OECD
12	Denmark	9.3	9	-0.3	0.673	0.8562	0.1832	High income: OECD
13	Iceland	8.5	8.2	-0.3	0.3968	0.5425	0.1457	High income: OECD
14	Netherlands	8.8	8.5	-0.3	0.6794	0.9608	0.2814	High income: OECD
15	New Zealand	9.3	9	-0.3	0.6381	0.7843	0.1462	High income: OECD
16	Slovenia	6.4	6.1	-0.3	0.4	0.6667	0.2667	High income: OECD
17	Somalia	1.1	0.8	-0.3	0	0.183	0.183	Low income
18	Sudan	1.6	1.3	-0.3	0.1556	0.2549	0.0993	Lower middle income

No.	Country	CPI 10	CPI 12	Difference D = (CPI 12 - CPI 10)	OSI 10	OSI 12	Difference D = (OSI 12 - OSI 10)	Nature of the Countries
19	Saudi Arabia	4.7	4.4	-0.3	0.3111	0.7974	0.4863	High income: Non-OECD
20	Barbados	7.8	7.6	-0.2	0.2	0.3725	0.1725	High income: Non-OECD
21	South Africa	4.5	4.3	-0.2	0.3079	0.4575	0.1496	Upper middle income
22	Australia	8.7	8.5	-0.2	0.7651	0.8627	0.0976	High income: OECD
23	Finland	9.2	9	-0.2	0.4794	0.8824	0.403	High income: OECD
24	United Kingdom	7.6	7.4	-0.2	0.7746	0.9739	0.1993	High income: OECD
25	Eritrea	2.6	2.5	-0.1	0.0222	0.2092	0.187	Low income
26	Kazakhstan	2.9	2.8	-0.1	0.527	0.7843	0.2573	Upper middle income
27	Venezuela	2	1.9	-0.1	0.3048	0.4837	0.1789	Upper middle income
28	Estonia	6.5	6.4	-0.1	0.5016	0.8235	0.3219	High income: OECD
29	Israel	6.1	6	-0.1	0.5841	0.8497	0.2656	High income: OECD
30	Kuwait	4.5	4.4	-0.1	0.4603	0.5817	0.1214	High Income: Non-OECD
31	Norway	8.6	8.5	-0.1	0.7365	0.8562	0.1197	High income: OECD
32	Switzerland	8.7	8.6	-0.1	0.4444	0.6732	0.2288	High income: OECD
Nature: Stable OSI Value and Increase of CPI Value								
33	Korea (South)	5.4	5.6	0.2	1	1	0	High income: OECD
Nature: Increase of OSI Value and Stable CPI Value								
34	Albania	3.3	3.3	0	0.3111	0.4248	0.1137	Lower middle income
35	Brunei	5.5	5.5	0	0.2825	0.5948	0.3123	High Income: Non-OECD
36	Chile	7.2	7.2	0	0.6095	0.7516	0.1421	Upper middle income
37	Germany	7.9	7.9	0	0.5492	0.7516	0.2024	High income: OECD
38	Laos	2.1	2.1	0	0.0794	0.2157	0.1363	Lower middle income
Nature: Decrease of OSI Value and Increase of CPI Value								
39	Jordan	4.7	4.8	0.1	0.5333	0.3922	-0.1411	Upper middle income
40	Angola	1.9	2.2	0.3	0.3397	0.3333	-0.0064	Upper middle income
41	Spain	6.1	6.5	0.4	0.7651	0.7582	-0.0069	High income: OECD
42	Mauritania	2.3	3.1	0.8	0.0889	0.0784	-0.0105	Low income

Appendix 11: Impacts of E-governance and the Processes of Effecting the Corruption Patterns in the District Land Administration

<table>
<tr><th>Critical Issues that Trigger Corruption</th><th>Patterns of Corruption</th><th>Impacts of E-governance</th><th>Process of Effecting Corruption</th><th>Potential Future Scopes and Caveats of E-governance</th></tr>
<tr><td>Push Factors:
Do not know the procedures for the service
Do not know the place precisely to have the services
Fear of harassments
Uncertainty for the service
Pull Factors
Offers from the Dalal (brokers) to have the service without any hassles in exchange of extra money</td><td>Create the dependency on the Dalal (brokers)</td><td>Have limited success to control this type of corruption; failed in maximum cases</td><td>Reasons for Limited Success
Some of the challenges are addressed by the present level of E-governance like to inform the detail procedures, and the place for submission, but that is not sufficient enough to control this type of corruption.
Because the present level of E-governance:
Cannot curtail the discretionary power of the service providing staffs, still they can create obstacles and claim bribe.
Failed to increase the monitoring capacity i.e. not sufficient to identify someone who is involved with corruption, even if someone is identified, then s/he is not given exemplary punishment in many cases.
Thus a ‘culture of impunity’ is developed where E-governance may detect someone for the corruption/crime but may not be punished.
Because of these factors, still there are fear of harassment and uncertainty among the service seekers; and to avoid these troubles, many people depend on the Dalal (brokers).</td><td>In higher online system where one can directly apply through electronic platform, a citizen may avoid this type of corruption as they do not need to interact with anybody or to know the place where or to whom one has to submit the document.
If anybody delays to provide any service then s/he can easily be traced through online monitoring system
Caveats
E-governance is a tool, its success depends on the proper use of the tool, it may detect the crimes but if based on that detection, proper legal actions are not taken then E-governance can never be effective to control corruption.</td></tr>
</table>

Critical Issues that Trigger Corruption	Patterns of Corruption	Impacts of E-governance	Process of Effecting Corruption	Potential Future Scopes and Caveats of E-governance
If someone even manage to get the right place and the person to submit the application, one still has to face difficulties to have the services because of the obstacles created by the officials themselves	Pay *Ghush* (bribe) to have the service	Existing level of E-governance has failed to address this type of corruption.	**Reasons for Limited Success** • The officials still have the discretionary power to create obstacles to have the services by the service seekers.	• There are lots of potentials to curb the corruption by enhancing the level of E-governance, like by creating the provisions for online application, online payment, and digitalization of the documents. • Online application and online payment can help a service seeker to avoid the human interactions which enable an employee to exercise his discretionary power over him. • Digitalization may help to preserve the documents more efficiently and the official cannot give excuse that the document is missing.
	Try to do *Tadbir* (lobbying)	Existing level of E-governance has failed to address this type of corruption.	**Reasons for Limited Success** • The present level of E-governance has failed to depersonalize[22] the entire service delivery system. That is why, *Tadbir* (lobbying) can play a significant role in influencing the decision of the public officials. • In many cases, *Tadbir* (lobbying) is used as the counter measure of corrupt demand of the officials. For this reason, it can be labeled as the second dimension of power which helps to neutralize the illegal use of power of the officials. • Sometimes *Tadbir* (lobbying) is also use to get illegal favors or services from the officials.	• Higher level of E-governance may lead to depersonalize the decision making processes, i.e. the possibilities for the interventions through *Tadbir* (lobbying) can be minimized or will become difficult which may help to reduce this type of corruption.

[22] There should not have any provisions for human interactions and everything need to be done electronically.

Appendix 12: Impacts of E-governance and the Processes of Effecting Corruption in the Ticketing System of Bangladesh Railway

Critical Issues that Trigger Corruption	Patterns of Corruption	Impacts of E-governance and the Processes of Effecting Corruption	Potential Future Scopes of E-governance

• **Pull factors:**
  o Rate of return from selling the tickets by corruption
  o Lack of enforcement of law
  o Availability of tickets from the corrupt officials
• **Push factors**
  o Scarcity of tickets
  o Unemployment
	Create the provision for *Kalobazar* (black market)	**E-governance Level - 3.5**:
		• As the people can purchase the tickets directly without any human interaction, this level of E-governance is helping to reduce corruption significantly if anyone can use the platform.
		• However, as only 25 percent tickets are selling through this platform and the total number of tickets is incompatible with the demand, the overall impact of this system is not very significant on the total volume of corruption.
		• There are also evidences that this higher level of E-governance is opening new opportunities for corruption to some people. They buy tickets through online and then sell them in higher prices in the black market.
		E-governance Level -2:
		• Improve the monitoring system because of the provisions to monitor from the remote places.
		• However, still has loopholes, cannot detect who is buying the tickets, so the corrupt officials can buy the tickets and can maintain the supply of tickets to the 'black marketeers' to have certain percentage of corrupt money. Thus, the improvement of monitoring system becomes ineffective for these loopholes.
		E-governance Level -1:
		• Though, this level of E-governance can help to increase the work efficiency but failed to control the corruption. It remains more or less same as it was during the manual system of ticketing.
			Potential Scopes:
			• Can use the ICT tools more efficiently; like to ensure the identity of the travelers through different ID cards (like the checking of the authenticity of the traveler in the arilines) or mobile phone number etc. Under such situation, the corrupt people may buy the tickets but cannot sell to anybody as other people cannot travel buy those tickets.
			Caveats
			• Such arrangements may not be cost effective and user-friendly.

• **Pull factors:** o Rate of return from selling the tickets by corruption	Create the provision for *Ghush* (bribe)	**E-governance Level - 3.5**: • As this level of E-governance can depersonalize the ticketing system, the corrupt officials cannot exercise their power to have *Ghush* (bribe).	• Increase of E-governance level may help to reduce this type of corruption.

Critical Issues that Trigger Corruption	Patterns of Corruption	Impacts of E-governance and the Processes of Effecting Corruption	Potential Future Scopes of E-governance
○ Lack of enforcement of law ○ Availability of tickets from the corrupt officials • **Push factors** ○ Scarcity of tickets ○ Unemployment		**E-governance Level -2:** • This level of E-governance failed to change the corruption dynamics because under this system, a corrupt person still can buy tickets and keep it to himself to claim *Ghush* (bribe). Though, the monitoring provision has enhanced but still it is not sufficient enough to address the problem. **E-governance Level -1:** • This level of E-governance is helping the corrupt practices rather than controlling the corruption in many instances. By manipulating the software, the corrupt official can pretend that all the tickets are sold. However, if anyone pays extra money then they put the tickets into the system again and sell it to them. As these computers are not directly connected with the central database, the monitoring is difficult from the distance which is possible in level 2 or 3.5.	
○ Scarcity of tickets ○ Anticipated future benefits	*Bakshish* (tips) to maintain a good relationship to get favors	**E-governance Level - 3.5**: • Need not to maintain the relation with the officials as one can purchase the tickets directly **E-governance Level -2 and 1:** • As the citizen still face challenges to have the tickets, they maintain a good rapport by providing *Bakshish* (tips) to the lower level officials.	• Higher level of E-governance may curtail the discretionary power of the officials and then the people may not feel the need to maintain the relationships with the officials by providing *Bakshish* (tips).
○ Scarcity of tickets ○ Behavior of the employees (like telling lie about the tickets, hassles etc.)	Use of *Tadbir* (lobbying) who has connection with the influential persons (like politicians or high officials)	**E-governance Level - 3.5**: • Need not to do *Tadbir* (lobbying) as one can purchase the tickets directly **E-governance Level -2 and 1:** • As the citizen still face the challenges to have the ticket, still need to do *Tadbir* (lobbying) to have tickets.	• Depersonalizing or complete automation of the system may make difficult the processes of *Tadbir* (lobbying). • Because under such situation persuasion may not be effective as the process is automated.

Appendix 13: Interview Guide for the Case Studies

District Land Administration

For Service Providers

1. For how long have you been involved with the district land administration?
2. What is the background of the establishment of DESC/NESS?
3. What is your general impression about the District e-Service Center (DESC) or National E-Service System (NESS)?
4. What are the general merits and demerits of the DESC/NESS?
5. What was the condition of corruption before the introduction of DESC/NESS?
6. Is there any change of the level of corruption after the introduction of DESC/NESS? If yes then how?
7. If DESC/NESS cannot bring any changes of the corruption level in the district land administration then please explain the causes.
8. Does DESC/NESS bring any change in the accountability system of the district land administration? If yes then how?
9. If DESC/NESS cannot change the accountability system of the district land administration, then please mention the causes.
10. Can DESC/NESS bring any changes in the power relations in the organization? If yes then how?
11. If DESC/NESS fails to change the power relation then what are the probable causes?
12. Does DESC/NESS can affect the monopoly of the service delivery system? If yes then how?
13. If DESC/NESS fails to change the monopoly then what are the reasons?
14. What are the challenges of the implementation of DESC/NESS?

For Service Seekers

1. What is your general impression about the District e-Service Center (DESC) or National E-Service System (NESS)?
2. Does DESC/NESS have any significant impact on the ‘accessibility to the service’ in the district land administration and how?
3. What was the condition of corruption before the introduction of DESC/NESS?
4. Is there any change of the level of corruption after the introduction of DESC/NESS? If yes then how?
15. If DESC/NESS cannot bring any changes of the corruption level in the district land administration then please explain the causes.
5. Does DESC/NESS has any change in the accountability system of the district land administration and how?
6. If DESC/NESS cannot change the accountability system of the district land administration, then then please mention the causes.
7. Can DESC/NESS bring any changes in the power relations in the organization and how?
8. If DESC/NESS fails to change the power relation then what are the probable causes?
9. Does DESC/NESS can affect the monopoly of the service delivery system and how?
10. If DESC/NESS fails to change the monopoly then what are the reasons?
11. What are the general merits and demerits of the DESC/NESS?

Bangladesh Railway

For Service Providers

1. For how long have you been involved with Bangladesh Railway?
2. What is your general impression about the E/M/C-ticketing?
3. What is the background of the establishment of E/M/C-ticketing?
4. What are the general merits and demerits of the E/M/C-ticketing?
5. What was the condition of corruption before the introduction of E/M/C-ticketing?
6. Is there any change of the level of corruption after the introduction of E/M/C-ticketing? If yes, then how?
7. If E/M/C-ticketing cannot bring any changes of the corruption level in the ticketing system of BR then please explain the causes.
8. Does E/M/C-ticketing has any change in the accountability system of the ticketing system of BR? If yes, then how?
9. If E/M/C-ticketing cannot change the accountability system of the ticketing system of BR, then why?
10. Can E/M/C-ticketing bring any changes in the power relations in the organization? If yes, then how?
11. If E/M/C-ticketing fails to change the power relation then what are the probable causes?
12. Does E/M/C-ticketing can affect the monopoly of the service delivery system? If yes, then how?
13. If E/M/C-ticketing fails to change the monopoly then what are the reasons?
14. What are the challenges of the implementation of E/M/C-ticketing?

***For* Service Seekers**

1. What is your general impression about the E/M/C-ticketing?
2. Does E/M/C-ticketing have any significant impact on the ‘accessibility to the service’ in the district ticketing system of BR and how?
3. What was the condition of corruption before the introduction of E/M/C-ticketing?
4. Is there any change of the level of corruption after the introduction of E/M/C-ticketing? If yes then how?
5. If E/M/C-ticketing cannot bring any changes of the corruption level in the ticketing system of BR then please explain the causes.
6. Does E/M/C-ticketing has any change in the accountability system of the ticketing system of BR? If yes, then how?
7. If E/M/C-ticketing cannot change the accountability system of the ticketing system of BR, then why?
8. Can E/M/C-ticketing bring any changes in the power relations in the organization? If yes, then how?
9. If E/M/C-ticketing fails to change the power relation then what are the probable causes?
10. Does E/M/C-ticketing can affect the monopoly of the service delivery system? If yes, then how?
11. If E/M/C-ticketing fails to change the monopoly then what are the reasons?
12. What are the general merits and demerits of the E/M/C-ticketing?

Appendix 14: Questionnaire for District Land Administration

Form No.:

Reducing Corruption through E-Governance: Rhetoric or Reality? An Empirical Inquiry

Objective: *The objective of the questionnaire is to understand the probable effects of District e-Service Center (DESC) or National E-Service System (NESS) on corruption. The study is being undertaken for partial fulfillment of the requirement of the course Master of Philosophy in Public Administration under the University of Bergen, Norway.*

Note:

- Data collected through this questionnaire will be used for research purpose only and personal identity of the respondents will not be disclosed. So, I am humbly seeking your kind cooperation to help the research work by providing the valuable information.
- There is no right or wrong answers; we want to hear your own personal views.
- Please tick wherever applicable.

Part A: Socio-economic background of the respondent

1. Gender:

Code	Gender	Put a (√) mark
1	Male	
2	Female	

2. Age :

Code	Age Range	Put a (√) mark
1	< 20	
2	21-25	
3	26-30	
4	31-35	
5	36-40	
6	41-45	
7	46-50	
8	51 and above	

3. Education:

Code	Education Level	Put a (√) mark
1	Illiterate	
2	Literate	
3	Primary level (1-5)	
4	Lower secondary level (high school 6-8)	
5	Secondary level (S.S.C passed)	
6	Higher secondary level (H.S.S passed)	
7	Graduate degree	
8	Master's degree or higher	

4. Occupational Status:

Code	Occupational Status	Put a (√) mark
1	Service/Working	
2	Self-employed	
3	Unemployed	
4	Retired	
5	Student	
6	House wife	
7	Other (Plz. mention)…….	

Part B: Quality of Services in District Land Administration (DC Office)

5. Nature of the District:

Code	Area	Put a (√) mark
1	Urban	
2	Rural	

6. You know about District e-Service Center (DESC) or National E-Service System (NESS) by:

1) Providing Services 2) Receiving Services 3) Others, (Plz. mention)…….

7. Please state your satisfaction level of the services of the DC office on land related services **after** the introduction of DESC/ NESS

Very unsatisfactory(1)	Unsatisfactory (2)	Neither satisfactory nor unsatisfactory (3)	Satisfactory (4)	Very Satisfactory (5)

8. Please state your satisfaction level of the services of the DC office on land related services **before** the introduction of DESC/NESS

Very unsatisfactory(1)	Unsatisfactory (2)	Neither satisfactory nor unsatisfactory (3)	Satisfactory (4)	Very Satisfactory (5)

9. If the quality of the services varies then please mention the reasons:

1. ……
2. ……
3. ……

10. How do you rank the 'magnitude of corruption' **before** the introduction of DESC/NESS on land related services in the DC office? (Low=1 and 6= High)

Low					**High**
1	2	3	4	5	6

11. How do you rank the 'magnitude of corruption' **after** the introduction of DESC/NESS on land related services in the DC office? (Low=1 and 6= High)

Low					**High**
1	2	3	4	5	6

12. If the magnitude of corruption varies for land related services then please mention the reasons:

1. .....
2. .....
3. .....

13. If there is corruption **before** the introduction of DESC/NESS, then which types of corruption were dominant? (Like bribe, embezzlement, fraud, extortion, favoritism, political/ bureaucratic influence etc.)

Code	Types of Corruption	Lowest					Highest
1		1	2	3	4	5	6
2		1	2	3	4	5	6
3		1	2	3	4	5	6
4		1	2	3	4	5	6
5		1	2	3	4	5	6
6		1	2	3	4	5	6

14. If there is corruption **after** the introduction of DESC/NESS, then which types of corruption were dominant? (Like bribe, embezzlement, fraud, extortion, favoritism, political/ bureaucratic influence etc.)

Code	Types of Corruption	Lowest					Highest
1		1	2	3	4	5	6
2		1	2	3	4	5	6
3		1	2	3	4	5	6
4		1	2	3	4	5	6
5		1	2	3	4	5	6
6		1	2	3	4	5	6

Part C: Changing Patterns and Explanations

15. How do you rank the level of '**Accountability'** on land related services **before** the introduction of DESC/NESS in the DC office? (Low=1 and 6= High)

Low					**High**
1	2	3	4	5	6

16. How do you rank the level of '**Accountability'** on land related services **after** the introduction of DESC/NESS in the DC office? (Low=1 and 6= High)

Low					**High**
1	2	3	4	5	6

17. If the level of '**Accountability'** varies for the land related services in DC office then please mention the changing processes:

1. .....
2. .....
3. .....

18. How do you rank the level of '**Discretionary Power'** of the officials for the land related services **before** the introduction of DESC/NESS in the DC office? (Low=1 and 6= High)

Low					**High**
1	2	3	4	5	6

19. How do you rank the level of '**Discretionary Power'** of the officials for the land related services **after** the introduction of DESC/NESS in the DC office? (Low=1 and 6= High)

Low					**High**
1	2	3	4	5	6

20. If the level of '**Discretionary Power'** of the officials varies for the land related services in DC office then please mention the changing processes:

1. .....
2. .....
3. .....

21. How do you rank the level of '**Monopoly'** of the desk based service delivery channel **before** the introduction of DESC/NESS in DC office? (Low=1 and 6= High)

Low					**High**
1	2	3	4	5	6

22. How do you rank the level of '**Monopoly'** of the desk based service delivery channel **after** the introduction of DESC/NESS in DC office? (Low=1 and 6= High)

Low					**High**
1	2	3	4	5	6

23. If the level of '**Monopoly'** of the officials varies for the land related services in DC office then please mention the changing processes:

1. .....
2. .....
3. .....

24. If you have any comments or observations on the provable effects of DESC/NESS on the level of corruption in land related services of the DC office, then please mention:

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Thank you for your kind cooperation.

Appendix 15: Questionnaire for Bangladesh Railway

Form No.:

Reducing Corruption through E-Governance: Rhetoric or Reality? An Empirical Inquiry

Objective: *The objective of the questionnaire is to understand the probable effects of E/M/C-ticketing on associated corruption. The study is being undertaken for partial fulfillment of the requirement of the course Master of Philosophy in Public Administration under the University of Bergen.*

Note:

- Data collected through this questionnaire will be used for research purpose only and personal identity of the respondents will not be disclosed. So, I am humbly seeking your kind cooperation to help the research work by providing the valuable information.
- There is no right or wrong answers; we want to hear your own personal views.
- Please tick wherever applicable.

Part A: Socio-economic background of the respondent

3. Gender:

Code	Gender	Put a (√) mark
1	Male	
2	Female	

4. Age :

Code	Age Range	Put a (√) mark
1	< 20	
2	21-25	
3	26-30	
4	31-35	
5	36-40	
6	41-45	
7	46-50	
8	51 and above	

4. Education:

Code	Education Level	Put a (√) mark
1	Illiterate	
2	Literate	
3	Primary level (1-5)	
4	Lower secondary level (high school 6-8)	
5	Secondary level (S.S.C passed)	
6	Higher secondary level (H.S.S passed)	
7	Graduate degree	
8	Master's degree or higher	

5. Occupational Status:

Code	Occupational Status	Put a (√) mark
1	Service/Working	
2	Self-employed	
3	Unemployed	
4	Retired	
5	Student	
6	House wife	
7	Other (Plz. mention)…….	

Part B: Quality of Services in Bangladesh Railway and E/M/C-ticketing

5. Nature of the District:

Code	Area	Put a (√) mark
1	Urban	
2	Rural	

6. You know about E/M/C-ticketing by:

1) Providing Services 2) Receiving Services 3) Others, (Plz. mention)…….

7. Please state your **satisfaction level** for purchasing tickets to travel through Railway **after** the introduction of E/M/C-ticketing:

Very unsatisfactory(1)	Unsatisfactory (2)	Neither satisfactory nor unsatisfactory (3)	Satisfactory (4)	Very Satisfactory (5)

8. Please state your satisfaction level for purchasing tickets to travel through Railway **before** the introduction of E/M/C-ticketing:

Very unsatisfactory(1)	Unsatisfactory (2)	Neither satisfactory nor unsatisfactory (3)	Satisfactory (4)	Very Satisfactory (5)

9. If the satisfaction level varies then please mention the reasons:

4. ……

5. ……

6. ……

10. How do you rank the 'magnitude of corruption' **before** the introduction of E/M/C-ticketing in Railway? (Low=1 and 6= High)

Low					**High**
1	2	3	4	5	6

11. How do you rank the 'magnitude of corruption' **after** the introduction of E/M/C-ticketing in Railway? (Low=1 and 6= High)

Low					High
1	2	3	4	5	6

12. If the magnitude of corruption varies then please mention the reasons:

1. .....
2. .....
3. .....

13. If there is corruption **before** the introduction of E/M/C-ticketing, then which types of corruption were dominant? (Like bribe, embezzlement, fraud, extortion, favoritism, political/ bureaucratic influence etc.)

Code	Types of Corruption	Lowest					Highest
1		1	2	3	4	5	6
2		1	2	3	4	5	6
3		1	2	3	4	5	6
4		1	2	3	4	5	6
5		1	2	3	4	5	6
6		1	2	3	4	5	6

14. If there is corruption **after** the introduction of E/M/C-ticketing, then which types of corruption were dominant? (Like bribe, embezzlement, fraud, extortion, favoritism, political/ bureaucratic influence etc.)

Code	Types of Corruption	Lowest					Highest
1		1	2	3	4	5	6
2		1	2	3	4	5	6
3		1	2	3	4	5	6
4		1	2	3	4	5	6
5		1	2	3	4	5	6
6		1	2	3	4	5	6

Part C: Changing Patterns and Explanations

15. How do you rank the level of '**Accountability'** for the officials related with selling tickets for Railway **before** the introduction of E/M/C-ticketing? (Low=1 and 6= High)

Low					High
1	2	3	4	5	6

16. How do you rank the level of '**Accountability'** for the officials related with selling tickets for Railway **after** the introduction of E/M/C-ticketing? (Low=1 and 6= High)

Low					High
1	2	3	4	5	6

17. If the level of '**Accountability'** varies then please mention the changing processes:

1. .....
2. .....
3. .....

18. How do you rank the level of '**Discretionary Power'** of the officials who are related with selling of the tickets for Railway **before** the introduction of E/M/C-ticketing? (Low=1 and 6= High)

Low					High
1	2	3	4	5	6

19. How do you rank the level of '**Discretionary Power'** of the officials who are related with selling of the tickets for Railway **after** the introduction of E/M/C-ticketing? (Low=1 and 6= High)

Low					High
1	2	3	4	5	6

20. If the level of '**Discretionary Power'** of the officials varies **after** the introduction of E/M/C-ticketing for selling tickets for Railway then please mention the changing processes:

1. .....
2. .....
3. .....

21. How do you rank the level of '**Monopoly'** of the traditional counter based ticketing system **before** the introduction of E/M/C-ticketing? (Low=1 and 6= High)

Low					High
1	2	3	4	5	6

22. How do you rank the level of '**Monopoly'** of the traditional counter based ticketing system **after** the introduction of E/M/C-ticketing? (Low=1 and 6= High)

Low					High
1	2	3	4	5	6

23. If the level of '**Monopoly'** of the officials varies, then please mention the changing processes:

1. .....
2. .....
3. .....

24. Do you have any comments or observations on the provable effects of E/M/C-ticketing on the level of corruption related with ticketing in Bangladesh Railway?

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Thank you for your kind cooperation.