Republic of Yemen

Saba University

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THE ROLE OF E-GOVERNMENT IN COMBATING CORRUPTION IN THE PUBLIC SECTOR IN YEMEN

IKHLAS SHARAF ALHAMMADI

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Business Administration to the Faculty of Administrative and Human Sciences at Saba University

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This Thesis/**THE ROLE OF E-GOVERNMENT INCOMBATING CORRUPTION IN THE PUBLIC SECTOR IN YEMEN**)Was Successfully Defended and Approved on **23/ 1/2018 .**

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I hereby declare that this Master's Project is the result of my own work, except for quotations which have been duly acknowledged.

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ABSTRACT

Corruption is generally considered to be one of the most significant impediments to economic development and good governance, while E-government is considered as a tool to promote transparency and reduce corruption. It is more than true especially in the least developed countries; Countries that have invested more in e-government have also seen more reduction in levels of corruption. Along the same line, the wider the availability of ICT in particular area, the lower the level of corruption in said area. Clearly, there was a need for strengthening research on e-government as a tool for combating corruption which at present is largely a-theoretical and descriptive. This research focused on different projects of e-government in Yemen that might be helpful to reduce corruption. The statistical analysis used a modified Klitgaard corruption model, which included as factors intervention of middlemen in addition to monopoly power, the discretion of officials and the absence of transparency. The purpose of this research was to study the direction and significance of the relationship between e-government and combating corruption in the public sector in Yemen. In order to examine this relationship, the researcher developed and tested empirical models that revealed the dimensions of this. The researcher achieved the objectives of this research by adopting the descriptive analytical approach in addition to using a quantitative method in the form of structured questionnaire. The research samples consisted of 370 of employeed who are working in government bodies that have a level of ICT ,and 120 of citizens who are using the government bodies' services. The results of this research suggest that the use of ICT in the form of e-government can make important headway to reduce corruption. Also the results of this research support the hypotheses that e-government limits positively and significantly the monopoly power, discretion, and intervention of middlemen, as well as it increases transparency. Further, this research documents a positive impact of e-government in increasing the levels of combating corruption which in turn limits levels of corruption.The research also concluds the important recommendations to organizations and governments. The most important recommendations to organizations are about working closely with ICT specialists to ensure that the design of the ICT system is coordinated with other reform processes, and installing a controlling system that relies on a computer system to follow up the work of individuals by using algorithms to track, control, and save every process that has done to

the public, While the most important recommendations to governments are about bridging the digital divide, and activating the law of the right of access to information.

Keywords:Corruption, ICT,E-government,Comabting Corruption,Monopoly Power, Discretion,Transparency,Yemen.

ملخص الرسالة

يعتبر الفساد أحد أهم عوائق التنمية الإقتصادية والإدارة الجيدة، في حين تعتبر الحكومة الإلكترونية الأداة الاكثر فاعلية لتعزيز الشفافية ومكافحة الفساد. في الحقيقة، شهدت العديد من الدول المتقدمة التي أستثمرت في أنظمة الحكومة الإلكترونية إنخفاضاً كبيراً في مستويات الفساد . وفي نفس السياق ، فإن توفر تكنولوجيا المعلومات والإتصالات على نطاق واسع في منطقة معينة يعمل على إنخفاض مستوى الفساد في تلك المنطقة. ولهذا من الواضح أن هناك حاجة لتعزيز البحوث المتعلقة بآثار مكافحة الفساد التي تنتهجها الحكومة الإلكترونية والتي لازالت في الوقت الراهن نظرية ووصفية الى حد كبير. تركز هذه الدراسة على المشاريع المختلفة للحكومة الإلكترونية والتي تساعد على الحد من الفساد في اليمن . وتستخدم الباحثة نموذج كليغارد للفساد حيث يتضمن االعوامل التالية:- احتكار السلطة ، السلطة التقديرية، تدخل الوسطاء، والشفافية ،ولهذا فإن الهدف الرئيسي من هذا البحث هو دراسة اتجاه وأهمية العلاقة بين الحكومة الإلكترونية ومكافحة الفساد في القطاع الحكومي في اليمن، وعلى وجه التحديد دراسة دور الحكومة الإلكترونية في الحد من المتغيرات الثلاثة التابعة وهى احتكار السلطة ،السلطة التقديرية، وتدخل الوسطاء ، بالاضافة الى دورها في زيادة المتغير الرابع وهو الشفافية. ومن أجل دراسة هذه العلاقات قامت الباحثة بتطوير وإختبار نموذج تجريبي يبحث في ابعاد هذه العلاقة. ولتحقيق اهداف البحث تم تبني المنهج الوصفي التحليلي وتم اعتماد الاستبانة كأداة للدراسة ولجمع المعلومات من مجتمعات الدراسة ؛المجتمع الاول الذي يتكون من العاملين في الجهات الحكومية التي تحتوي على تطبيقات تكنولوجيا المعلومات والاتصالات ، و الثاني الذي يتكون من المواطنين الذين يستخدمون خدمات هذه المؤسسات الحكومية. تألفت عينة الدراسة من 370 موظف و 120 مواطن. وبعد اجراء عملية التحليل لبيانات الدراسة وفرضياتها توصلت الباحثة الى عدد من النتائج من اهمها أن استخدام تكنولوجيا المعلومات والاتصالات يمكن أن يحقق تقدماً كبيرا في مكافحة الفساد. ومن نتائجه أيضاً أن الحكومة الإلكترونية تستطيع ان تلعب دورا هاما في الحد بشكل إيجابي من احتكار السلطة ،السلطة التقديرية، وتدخل الوسطاء بالاضافة الى انها تزيد من الشفافية ، إضافة إلى أن هذا البحث يوثق الأثر الإيجابي لزيادة إستخدام الحكومة الإلكترونية في تحسين مستويات مكافحة الفساد.كما توصلت الدراسة الى اهم التوصيات للمنظمات منها العمل عن قرب مع مختصين في تكنولوجيا المعلومات والاتصال لموائمة تصميمات تطبيقات تكنولوجيا المعلومات والاتصالات مع الاصلاحات الادارية المختلفة، و تحميل برامج المراقبة لحفظ ومراقبة وتتبع كل عملية يقوم بها الموظف.بينما كانت اهم التوصيات للحكومات سد الفجوة الرقمية ، وتفعيل قانون حق الحصول على المعلومات.

الكلمات المفتاحية:-

الحكومة االالكترونية، تكنولوجيا الاتصالات والمعلومات، الفساد، مكافحة الفساد، احتكار السلطة، السلطة التقديرية، تدخل الوسطاء ، الشفافية، اليمن.

DEDICATION

To

Mom and Dad

Thank you

والدي ..... والدتي

مع الشكر والاعتزاز والتقدير

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Praise to Allah the Almighty, Creator and Sustainers of the Universe, and prayers and blessings are sent on His Prophet.

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LIST OF ABBREVIATIONS

COCA	The Central Organization for Control and Auditing
E-government	Electronic Government
G2B	Government to Business
G2C	Government to Citizen
G2G	Government to Government
ICT	Information and Communication Technology
NGOs	Non-Governmental Organizations
PFP	The Public Funds Prosecution
SNACC	The Supreme National Authority for Combating Corruption
UN	United Nations
UNDP	United Nations Development Program

CHAPTER ONE

INTRODUCTION

1.1 Introduction:

Combating corruption is one of the most important challenges facing world countries. In this decade, countries, developed and developing, are vulnerable to corruption. Also, corruption has become a threat to the general objectives of the developmental government, disruption of its programs, plans, projects, and helps to the aggravation of the economic crises.

Recent researches in information and communication technology (ICT) have given a hope to the idea that new technologies in the form of e-government practices can be used to combat corruption in the public sector. Indeed, different studies (Andersen, 2009; Bhatnagar, 2003a; Shim and Eom, 2008; Kim et al, 2009) show that different e-government projects initiated in countries have common in one thing, which all the projects succeeded, is elimination or combating of corruption to a great extent.

In general, the need to have better transparency and combat corruption is not restricted to the Western countries. It is more urgently required in developing countries. Yemen is considered as one of the developing countries; Yemen has failed to combat corruption despite its efforts in this area. Corruption in Yemen has increased remarkably between 2005 and 2015 based on Transparency International ranks countries. (Transparency International, 2016) The public sector in Yemen suffers from many forms of corruption which became a big problem rooted in all departments and government bodies in Yemen. (Jamil, 2013) In recent years, many countries have considered administrative reform as a crucial step towards strengthening their economy and better management of their social development. (Bhatnagar, 2001a) Combating corruption with good governance is one of the most important challenges that Yemen's public sector currently face. Without administrative reforms will be unable to break the cycle of cronyism and bad governance that has constrained its tremendous potential for economic, political, and social development as well. (Jane Marriot, 2013) Yemen, however, as one of

the least developed countries seeks to improve its e-government development index which is 0.22 in 2016. (UN, 2016)

In this context, the Information and Communication Technology (ICT) skills in the public sector is closely related with transparency, and can have an important effect to increasing transparency, and accountability. So, countries around the world started utilizing ICT in an attempt to efficiently provide information and governmental services to the population, and reduce corruption. In this research, the term 'e-government' refers to the application of Information and Communication Technology (ICT). (Fang, 2002)

Although we recognize there to be cases of corruption in all types of organizations, but this research focuses exclusively on government corruption due to its adverse effect, and it being likely to have more influence on society. Corruption most likely will occur in the interaction between citizens and the government sector in Yemen, and it is generally practiced by public servants who have direct responsibility to deliver service to the public. There is not clear definition of corruption; this makes it hard to investigate what corruption exactly is and how to research it properly. Nevertheless, the research adopted Transparency International (TI)'s definition which defined corruption as the abuse of entrusted power by political leaders or bureaucracy for personal gain or specific group interest.

Klitgaard (1988) and Paul (1997) argue that illicit behavior flourishes when public servants have a monopoly power over citizens, when agents have great discretion, and when accountability of agents to the principal is weak. The monopoly power is defined as having control or access to material or human resources, as well as control procedures that allow third parties to fulfill the mandate of the government. (Martha García-Murillo, 2010) While discretion defined as the presence of ability or power to freely make some choices in an unconstrained manner. (Molaodi, 2010) Finally, transparency refers to the availability and increased flow of timely, comprehensive, relevant, high quality and reliable information concerning government activities to the public. (Harrison et al., 2011). So, the researcher adopted the drivers of corruption that are mentioned by the Professor Klitgaard (1988) and Rose-Ackerman(1978,1994) which is summarized in the following functional equation:

Corruption = Monopoly Power + Discretion – Transparency (in governance)".

But, In line with the forms of corruption in Yemen, the researcher adds one variable, Middlemen's Intervention to the equation, which is considered the most important driver based on different studies (Andersen. 2009; Hozoori and Kamali, 2011 ; Karv, 2015; Kim et al, 2009; Kaur, 2015). Middlemen's Intervention is defined as the direct interaction between officials and citizens. (Hozoori and Kamali, 2011)

Along the line with the Yemeni government's willingness to fight corruption, and increasing the realization to need for e-government in order to reduce corruption, the aim of this research is to examine the role of e-government in combating corruption in the public sector in Yemen, and to investigate if e-government reduces significantly monopoly power, discretionary authority, and middlemen's intervention, as well as increases transparency.

1.2 Research Problem

Although several laws, rules, prosecution and recovery of public properties have been made through years, but corruption is still growing rapidly. Most Yemeni have the view that the fight against corruption is sometime selective, while others believe that some people can involve in corruption without being noticed. **(**Glenn et.al, 2006) However, public officials often intentionally cause some of the delays in various public offices because they expect citizens offer bribes in order to fast-tract the services. In view of the above listed and other related reasons, it is necessary to research for other approaches of fighting corruption. One of such measures is the adoption of Information Communication Technology (ICT). Generally, ICT in controlling corruption operates by shining a bright light on institutional processes. ICT enhances transparence, while offering opportunities for easier access to public records. (Heek, 1998) The use of e-government services such as electronic delivery of services can reduce corruption because this will significantly reduce interactions between citizens and public officials, and speed up process, which is likely cause of bribery and corruption. ICT has been successfully used to control or at least minimize corruption in developed countries. In Yemen, the use of ICT is limited and scarcely applied**. (**Al-wazir and Zheng, 2012)

The researches of the role of e-government in combating corruption in Yemen are still new. In fact, most of the researches on the role e-government in combating corruption focused on samples from some countries such as India (Kaur.2015;

Karv.2015), South Korea (Kim, Jeong and Lee ,2009). Additionally, the study of e-government in combating corruption in Arabic countries is rare; there is only one published study that examined the effect of e-government on reduce administrative corruption in Kuwait. (L-Hussaini, AL-Mutairi, and Thuwaini, 2013)) Also, a common recommendation in corruption and ICTs studies is that the next step in this kind of research should examine if there is the positive effect of e-government on corruption (Andersen. 2009; Bhatnagar. 2003a; Kim et al. 2009; Shim & Eom .2008).So, the present research is an attempt to explore answers the following core question:

"What is the role of E-government in Combating Corruption in the Public Sector in Yemen?"

To help in answering the major question, the following sub-questions are proposed**:**

1- *To what extent e-government practices reduce the monopoly power in public sector organizations*?
2- *To what extent e-government practices reduce the discretionary authority in public sector organizations?*
3- *To what extent e-government practices reduce the middlemen's Intervention in public sector organizations?*
4- *To what extent e-government practices increase the transparency in the public sector organizations?*
5- *To what extent e-government practices significantly explain the variance in the four dependent variables (combating of monopoly power, combating of discretionary authority, combating of middlemen's intervention and increasing transparency in Public Sector in Yemen)?*
6- *To what extent e-government practices reduce significantly corruption in the public sector in Yemen from (the point of view of citizens)?*

1.3 Research objectives

This research has the following objectives:

1- To attain a better understanding about the relationship of e-government and corruption.

2- To investigate the relationships between e-government practices and the following major drivers of corruption:

- monopoly of power
- discretionary authority
- middlemen's intervention
- transparency

3- To evaluate the extent to which combating of monopoly power, discretionary authority, middlemen's intervention, and increasing transparency in the public sector is predicted by e-government.

1.4 Research significance

This research presents a number of significant contributions to the field of e-government. This research is an attempt to contribute to the efforts of combating corruption which is a major concern worldwide and of high priority to Yemen. Additionally, the research will contribute to raising the awareness of decision makers of the importance of e-government in combating corruption. Finally, such research might be a significant contribution to the body of literature related to combating corruption.

1.5 Research Hypotheses

To help in answering these questions, the following hypotheses are proposed**:**

H1: Higher level of e-government practices is significantly associated with higher level in combating of monopoly power in public sector organizations.

H2: Higher level of e-government practices is significantly associated with higher level in combating of discretionary authority in public sector organizations.

H3: Higher level of e-government practices is significantly associated with higher level in combating of middlemen's intervention in public sector organizations.

H4: Higher level of e-government practices is significantly associated with higher level of transparency in the public sector organizations.

H5: E-government practices is a significant predictor of the level of combating corruption as measured by the combined level of combating corruption drivers (monopoly power; authority discretion; middlemen's intervention and absence transparency) in Yemen's Public Sector.

H6: Higher level of e-government practices reduces significantly corruption in the public sector in Yemen from (the point of view of citizens).

1.6 Research Operational Definition

The key terms that are adopted for this research are listed below:-

E-government: is a way for governments to use the most innovative information and communication technologies (ICT), particularly web-based Internet applications, to provide citizens and businesses with more convenient access to government information and services, to improve the quality of the services and to provide greater opportunities to participate in democratic institutions and processes (Fang, 2002).

Corruption: the abuse of entrusted power by political leaders or bureaucracy for personal gain or specific group interest. (Transparency International (TI), 2012)

Transparency: refers to the availability and increased flow of timely, comprehensive, relevant, high quality and reliable information concerning government activities to the public. (Harrison et al., 2011)

Discretionary authority: the presence of ability or power to freely make some choices in an unconstrained manner (Molaodi , 2010).

Monopoly Power: having control or access to material or human resources, as well as control procedures that allow third parties to fulfill the mandate of the government. (Martha García-Murillo, 2010)

Middlemen's Intervention: The direct interaction between officials and citizens, which is considered as one of the main driver of corruption. (Hozoori and Kamali, 2011)

1.7 Research Model

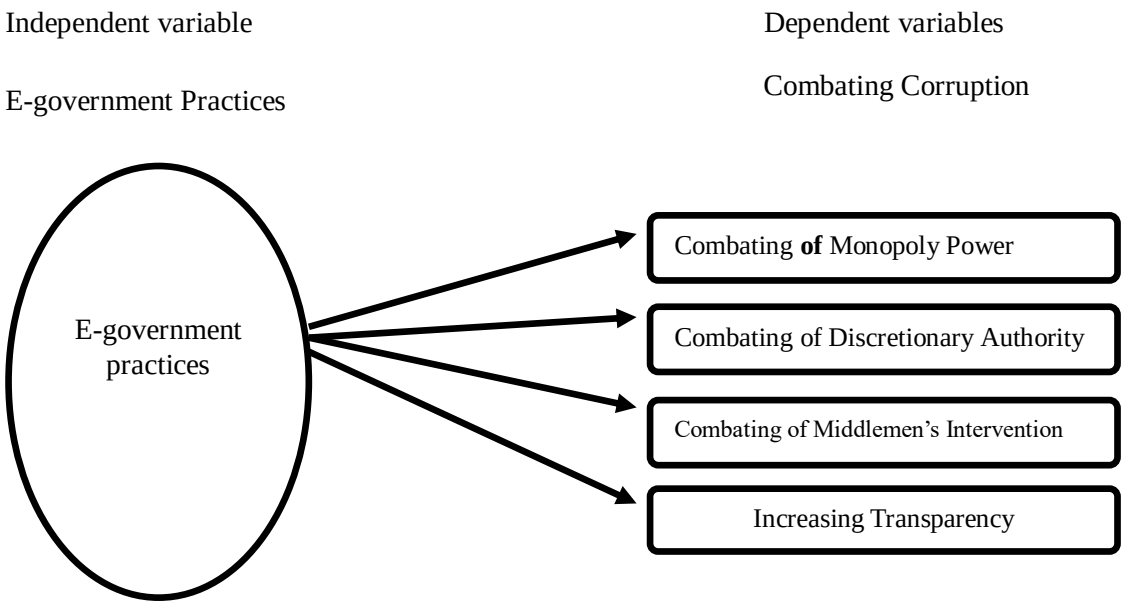

Figure1.1: A research model of relationship between E-Government practices and corruption

1.8 Research Approach

To achieve the objectives of this research, the descriptive analytical approach was adopted. The researcher uses this approach because it is usually the best methods for collecting information that will demonstrate relationships and describe the phenomenon as it exists. According to Fox, W. & Bayat, M.S. (2007) , descriptive approach is aimed at casting light on current issues or problems through a process of data collection that enables them to describe the situation more completely than was possible without employing this method'. Additionally, this research uses quantitative method in the form of structured questionnaires.

1.8.1 Population

The first research population is about the employees who are working in e-government project in nine ministries and government bodies namely; the Ministry of Finance, Ministry of Communication and Information Technology, National Information Center, Ministry of Civil Service, Customs Authority, Ministry of Higher Education and Scientific Research, The Higher Authority for Bids and Offers Control, The authority for

Bids and Offers, and Taxes Authority, while the second research population is about the citizens who are using the services of the government organizations that mentioned above.

1.8.2 Sampling

The first research samples consisted of a random sample of 370 employees who work in ministries and government bodies that have a level of ICT related of e-government. The second research sample consisted of a random sample of 120 of citizens who are using the government organizations 'services.

1.8.3 Data collection and tools

Data of this research was collected from primary resources and secondary resources. The primary resource in this research is questionnaire. There are two parts of questionnaire; first part targets the employees of public sector in Yemen, and the second part targets the citizens who are using the government's services. The secondary resources are studies published in periodicals, specialized scientific journals, and other accessible secondary sources (e.g. government reports and web site resources).

1.8.4 Data Analysis

For the purpose of this research, statistical analysis using SPSS performed to describe, explain and prove the theories proposed in this research based on the data collected from the samples. The relationships between one independent variable and four dependent variables were tested by correlation analysis. In addition, the MANOVA analysis conducted to understand the nature of prediction among the aforementioned variables.

1.9 Research Limitations

As it is the case of all researches, this research contains a number of limitations. Data was collected from the perspective of public sectors employees, who work in the ministries and government bodies that have e-government applications or level of ICT with two or three years of experiences in this field. Also it was gathered from the point of view of citizens who deal with those ministries and government bodies. Additionally, this

research focused on administrative corruption in the public sector in Yemen. Besides, this research took place just in the ministries and government bodies in Sana'a. Additionally, Time limit for this research was during 2016-2017.

1.10 Research Organization

This research contains five chapters and has been organized as follow: Chapter one is the introductory chapter which focuses on the overall purpose, direction, and research background. Research problem is discussed. In addition, research objectives, as well as the importance and limitations of this research are discussed too. Chapter two highlights the key researches and conceptualizations in e-government and corruption area, and discusses some relevant literatures for the factor under study. Then, it presents a Conceptual model for research. Then chapter three discusses the research methodology which includes research design, sampling design, research instrument, validity and reliability of the questionnaire, data analysis that were used in the study. Next, chapter four includes the finding and discussion of the results which are related to the research hypotheses. Descriptive and inferential analysis is illustrated. As well as data screening procedures that was used in the research. Finally Chapter five summarizes the main findings, provides summary for the research objectives. In addition, it explains recommendations of the research, as well as provides suggestions for the future research.

1.11 Chapter summary

This chapter demonstrated the background of the problem that is related to this research. There are three general objectives have been established and followed by the development of six specific research questions. Furthermore, the research approach and limitation were discussed. Finally, the definitions of key terms used throughout this research were described and the research organizations were illustrated.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter will present a brief of development economic in developing country and its Barriers; this chapter will give an overview how e-government can fight against corruption and the barratries to do it. Then it will show a literature review of corruption, and describes the drivers of corruption. Also the chapter will give a literature review on e-government which includes a discussion of main e-government definitions. Also it will describe a brief of e-government initiatives that has established in Yemen. Next, it will present forms of corruption in the public sector in Yemen, and the effort of Yemeni government in combating corruption. Third, the researcher will highlight some findings from the empirical literature on the relationship between e-government and corruption, and its relation to this research is mentioned. Finally this chapter will provide a conceptual model of corruption and e-government to help illuminating the present understanding of e-government's anti-corruption impacts.

2.2 Economic Growth in the developing countries

There is doubtlessly that the utilization of ICT is seen as a helper for economic development, and it is integrally tied to sustainable development and offered open door for development and advancement. Lots of researches on economic development distinguish ICT as a requirement for economic growth and the enhancing of social conditions. As Economic development is the expanding capacity of a country to create more merchandise and enterprises, (Miles, 2001) the usage of ICT empowers the generation of products in a short measure of time with the help of computerized system. Moreover, the economic reasoning on the role of ICT in the development process is that the technology improves the functioning of the markets because it provides information to producers and consumers in order to help them make efficient choices (Eggleston et aI, 2002).

In today's world economy, one of keys factor that has a strong impact on economic development both in short and long term is technology, and ICT has been credited with not just enhancing proficiency or productivity in the business world, but also with enhancing the way of living for citizens. Technology has changed modern life in many ways especially in the work environment, where the report on the 'networked world' begins with the statement that 'the Internet and other ICT has essentially changed the way the world works' (Kirkman et aI., 2002). And the invention of computers, Internet and the development of communication has all changed the business world. Business communication, in particular, has seen some of the greatest advancements due to technological development. It is similarly crucial for organizations to realize that an expanded in profitability must be accomplished if fuelled by relentless and quick enhancements in ICT execution (Cette et al, 2004), where technological advancements have helped businesses and organizations save time, cost of production, and conduct work successfully and effectively, which has been feature to all business. In fact, ICT investment promotes economic growth and labor productivity. Contrasts in economic performance between developed countries and developing countries are largely explained by their levels of ICT venture. The lack of ICT is realized to be an important factor contributing to the widening of the gap between 'developed' and 'developing' countries.

To summarize, new information and communications technologies (ICTs) are changing the way companies carry out business, enhancing public service delivery. ICT is a powerful to expand economic opportunities to millions of people. Due to the enormous contribution of the usage of ICT in economic growth, there is no doubt that the governments take great role in promoting the awareness of the benefits associated with the use of ICT. Whereas ICT planning and implementation should be closely linked to a country's overall economic development and poverty reduction strategy. Prioritizing among various (often competing) demands is never an easy task, nor is it one-model-fits-all.

2.3 The Concept of Corruption

Corruption is a word-wide phenomenon notable throughout history. The vague definition of corruption is one major aspect of the problem. Definitions and perspectives vary from country to country and society to society in accordance with cultural, legal or

other factors and the nature of the problem as it happens in each country. Transparency International (TI), the most cited source in corruption discussions, defined corruption as the abuse of entrusted power by political leaders or bureaucracy for personal gain or specific group interest.(Transparency International,2012) Most other international organizations, such as the UN and the World Bank, use either that definition or very similar ones. Some researchers defined corruption as an act in which the misuse of public power, office, or authority for private benefit. (Ivar Kolstad ,Verena Fritz ,and Tam O'Neil, 2008) .While others defined corruption to describe a variety of activities like Joseph S. Nye (1967) who argued that behavior which deviates from the formal duties of a public role (elective or appointive) because of private-regarding (personal, close family, private clique) wealth or status gains; or violates rules against the exercise of certain types of private- regarding influence. This includes such behavior as bribery, nepotism and misappropriation of public resources for private uses. In addition, corruption is generally connected with the activities of the government and especially with the monopoly and discretionary authority, and that particular aspects of governmental activities create a fertile ground for corruption. Economic analysis of corruption has relied on a principal-agent model, where corruption emerges when the principal, due to asymmetric information, is unable to perfectly monitor the activities of the agent. The agent takes advantage of this information problem and, having made a cost-benefit calculation, finds its profitable to engage in corruption.

2.4 Corruption- An Obstacle to Economic Development

Corruption and poor governance can have largely harming impacts on a country's growth rate and development potential. According to Transparency International's 2009 report, corruption has specified as a growing challenge for the business field both in the developing and developed countries. Corrupted economies are not able to function properly because corruption prevents the natural laws of the economy from functioning freely; also rising of corruption causes to increase the migration of economic competencies due to lack of appreciation; and the emergence of nepotism and favoritism in the occupancy of public office position. Some scholars stressed the negative impact of corruption on economic growth. Econometric researcher (Mauro, 1995, 1997) revealed that "corruption increases public investment because public investment projects lend themselves easily to manipulations by high-level officials to get bribes, and reduce the

productivity of public investment and of a country's infrastructure". Corruption can waste resources because of the overlap of personal interests with public development projects, and fail to obtain foreign aid as a result of the poor reputation of the political system. Scholars on corruption in the past decade (Aides and Di Tella, 1999; Aidt, 2003; Elliot, 1997; Jain, 2001; Mauro, 1997; Svensson, 2005; Tanzi, 1998) have indicated that corruption discourages investment, limits economic growth, alters the composition of government spending, usually hinders a nation's mission of reducing poverty, and disrupts improvement in the quality of life for the rural and poor segments of developing countries. Also, Tanzi (1998) noted that corruption inclined to be more common in poorer countries and in economies in transition than in rich countries". It damages a country's development by reducing trust in government, increase costs for businesses, and discourage both foreign and domestic investments.

Corruption threatens sustainable development, ethical values, justice, and undermines the rule of law and international security. Corruption has been considered as one of the most prevalent and persistent Obstacles in improving economic growth and enhancing the quality of life of citizens across the globe. These challenges include weak institutions, high unemployment, poor infrastructure, corruption, and unsuitable laws and regulations.

2.5 Drivers of Corruption

Paul's (1997) study on corruption in the public sector found that government monopoly, discretion, and lack of accountability are among the key factors in corruption. Also, (Kaufmann, Kraay, and Mastruzzi, 2003; Kligarrd,1988) identify three drivers of corruption; it can be understood through the following formula equation:

Corruption = Monopoly Power + Discretion – Transparency or accountability (in governance)".

The researcher adopted Kaufmann et al. 2003 and Kligarrd.1988's model with some modification to the equation according to the most common driver of corruption in the public sector in Yemen which is as follow:

Corruption = Monopoly Power + Discretionary authority + Middlemen's Intervention

– *Transparency or accountability (in governance)".*

Therefore, successful anti-corruption efforts must include the following: reduces monopolies, limits and clarifies discretionary authority, eliminate middlemen's Intervention, and raise accountability or transparency. To measure those factors, the researcher uses a questionnaire to monitor employees' opinion about the role of e-government in combating corruption. The following is a brief description of those drivers:

2.5.1 Monopoly of power

It can be defined as having control or access to material or human resources, as well as controlling procedures that allow third parties to fulfill the mandate of the government (Martha García-Murillo.2010). Monopoly increases corruption; one will tend to find corruption when an organization or person has monopoly power over a good or service. Similarly, Zemanovicova (2002) indicated that a large monopoly occurs when there is an imbalance in supply and demand for services and exclusivity of access to information .It is also true that, in many developing nations, power is concentrated among public servants and political elites who have been in power for a long time, and are often not responsive to the demands of the population (Khera, 2001). This type of control can be minimized when functions are decentralized or automated. In decentralized governments, the instances of corruption can be reduced because power is distributed across multiple entities. In this respect, Rose-Ackerman (2004) stated that a government can be dysfunctional if it is excessively decentralized with lower-level government officials establishing local monopolies free of oversight from higher levels of government. When scholars interested in corruption identify monopoly power as one of the causes, they also provide recommendations to alleviate this problem. In addition to punitive measures, they advocate for transparency of rules and processes, and access to government information (Zemanovicova, 2002). Electronic government sites can thus be a tool that can enhance transparency and provide access. Dismantling of monopolies (governmental or outsourced) requires administrative reform (Bhatnagar, 2001a). It has been suggested that ICT is no substitute for poor management, While obviously management matters, the very process of building an on-line delivery system requires that rules and procedures are standardized across regions and made explicit so as to make them amenable for coding

which reduces the discretion on part of civil servants and increases the auditability of operations (Bhatnagar, 2001a).

2.5.2 Discretionary Authority

It can be defined as the ability of public servants to enforce regulations and policies in a discretionary manner. Some forms of corruption arise when public servants are given sole power to make consequential decisions without adequate. In a bureaucracy, discretion is structured by rules and standard operating procedures, and it does allow civil servants to take into consideration contextual variations and act according to other norms. (Keil, 2003). Public servants exercise discretionary authority in their everyday work. However, discretion can be used in an improper way and become a source of corruption. The more decision power a public servant has, the more likely she/he will be corrupted. The problem of the corrupt exercise of discretionary authority by government officials has led many international organizations to demand that their public servants adhere to basic rules of public integrity and minimum standards of public conduct. (Flanary & Watt, 1999) As Garamfalvi (1998) pointed out that the most frequent source of corruption regarding public expenditures is the abuse of discretionary authority; the researcher resists the temptation to propose that discretionary power not be granted to public servants because this could paralyze public administration.

Corruption also surfaces when clients have to bear high transaction costs when dealing with formal and legal public services. Public servants have the discretionary authority to reduce those costs for clients who are willing to pay for services through a parallel, illegal, and corrupt market. It is thus often the case that when the system has a series of excessively complex and long procedures, the citizenry decides instead to take an expedited route by seeking the support of an internal party and pay the appropriate facilitation fee.(Flanary and Watt, 1999) The real challenge is to figure out how to modify practices that work in Western countries, so that they can work in transition/developing countries where there is no culture of accountability and transparency in any type of constituent-government interactions. In this research, we want to explore the possibility of having e-government as another tool that can help decrease the discretionary authority of government officials. E-government technologies can make processes more transparent by simplifying them and reducing or eliminating the intervention of government officials in these processes.(Bhatnagar, 2001a)

2.5.3 Middlemen's Intervention

Hozoori and Kamali (2001) defined the middlemen's interventions as the direct interaction between public servants and citizens, which is considered as one of the main driver of corruption. Middleman is a central actor in the corruption transaction. The outcome of leaving out the "middlemen" is that taking away the possibility of being corrupted. When Public services are put online, there is no need for direct contacts between third party and citizens who are asking for public services and potentially corrupt public servants. In fact, if services are put online, procedures will be streamlined and take less time. There will be no need to pay extra money for speed up the process. ICT can intervene more directly. By automation of processes, it is possible to significantly reduce opportunities for corruption by removing human agents at data collection and service delivery points. When people engage in e-banking there is no officer to bribe (Bhatnagar, 2003). Moreover, "anti-corruption" software tools can track various events in electronic systems that signal not only illegitimate actions that have already taken place but also proactively detect suspicious behavior before any crime has been committed. This may serve as a real deterrent as well as a monitoring tool. Such systems can, to some extent, assist in tracking anomalies in operations, observing systematic features of customers' reporting about errors or misuse, and in social media analysis (Gilliatt, 2007).

2.5.4 Transparency

It can be defined as a principle that allows those affected by administrative decisions, business transactions, or charitable work, to know not only the basic facts and figures but also the mechanisms and processes to share information with citizens. Lack of transparency is another indication of the corruption that can be addressed through information and communication technology. Clearly, the need for transparency and accountability calls for automated system; ICT can play a critical role in bringing transparency in government to citizen interaction. ICT has been identified as a viable tool for diminishing corruption by enhancing transparency and accountability of government administration. For example, the World Bank defined electronic government (e-government) as "the use of information and communications technologies (ICT) to improve the efficiency, effectiveness, transparency, and accountability of government", and argued that "e-government helps to increase the transparency of decision-making

processes by making information accessible, publishing government debates , budgets and expenditure statements, and in some cases, allowing the on-line tracking of applications on the web by the public and press" (World Bank, 2010a). Making information public will allow audit and hence induce a change in people's behavior.

2.6 History and Efforts of Combating corruption in the Public Sector in Yemen

Corruption is considered a strong constraint on growth economic and development. High levels of corruption are present where institutional mechanisms to combat corruption are weak or not utilized, and where a system of simple internal checks, rules, and balances does not exist. Additionally, High levels of corruption and bureaucratic delays by inhibiting inward investment are one of the most important challenge facing developing countries. Corruption in this research referred as the corruption which characterized in public sector, also referred to administrative corruption that happens among bureaucrats. According to the United Nations, "Corruption undermines human development and democracy. It reduces access to public services by diverting public resources for private gain". Corruption is the root cause of Yemen's stagnated growth, wasting vital resources, time, and human capabilities (Alkebsi ,Boucek, 2010). With corruption on such a large-scale, the government can't afford to pay for essential services, infrastructure, nor get the international support to develop the economy and reduce aid dependency.

Corruption in Yemen ranges from financial and political, to the petty corruption. For example, there is money that is given to police man to avoid the penalties and fines or to government employees to process paperwork. According to the USAID report about corruption, Yemen has examined both petty or administrative corruption and grand corruption. **(**Glenn et.al, 2006) Grand corruption in Yemen is the most dangerous and covert type of corruption, it found where public officers work in high positions, in the process of making decisions of significant economic value, and routinely demand bribes or kickbacks for ensuring that tenders or contracts are awarded to specific contractors. In fact, the most common form of administrative corruption in the public sector in Yemen is the hiring of 'ghost workers' in government organizations. For example, in the civil service ministry, many government officials and civil service employees in the public

sector in Yemen receive salaries for jobs they did not perform or multiple salaries for the same job. Also Bribery and gifts are common forms of corruption in Yemen; bribes and irregular payments are often involved in the process of awarding contracts and licenses. (Klaus; Xavier, 2014) Along the same line, favoritism is another widespread problem among government officials in Yemen who often allocate contracts to well-connected companies. In fact, the government has a long history of awarding large public contracts to companies owned by persons close to the ruling elite. (Klaus; Xavier, 2014) Similarly, another form of corruption in the public sector in Yemen is misuse of donor aid that has also been matter related to corruption; Foreign aid which is supposed to help poor people ends up into the hands of a few individuals who re-channel the funds to their individual use.

Several studies in Yemen have attempted to unravel what causes corruption; Jamil (2013) claimed that the most significant factors leading to corruption in the government sectors in Yemen are: low wages and salaries, deterioration of the economic status, and high cost of living. While El-yazidi (2012) proved that there are many gaps in the Yemeni civil service legislations, wherein no clear definitions of responsibilities for admin leaders to deal with their subordinates, who make them to behave as they want, without any fear of punishment.

Many challenges in Yemen still persist; Yemen still suffers from weak state institutions with under skilled and under-paid state employees. It can be seen from figure 1 that corruption in Yemen has increased remarkably between 2005 and 2015. In 2013, corruption reached to the lowest corruption score in the last 11 years which is 18 point out of 100. While in 2014, the score increased one point, but in 2015, the score decreased again to the same level of 2013.

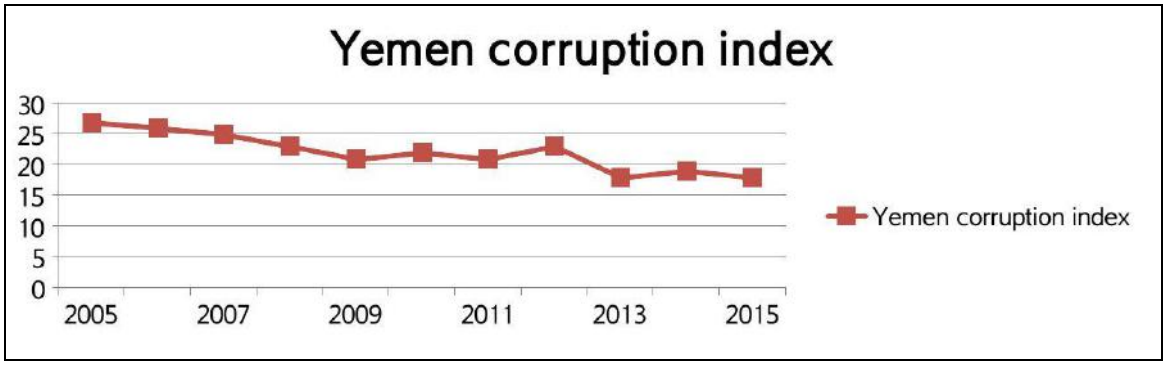

Figure2.1:corruption reception index. Source: available on: https://www.transparency.org/country/YEM

2.6.1 Yemen's Efforts in Combating Corruption

The efforts of the State of Yemen in the recent anticorruption efforts were hesitant. The researcher will review the efforts of Yemen, and will highlight the most important actors and legislation to fight corruption.

2.6.1.1 The Supreme National Authority for Combating Corruption (SNACC)

The Supreme National Authority for Combating Corruption has been established in 2006. It is a financial and administrative independent national body that exercises its functions and powers fully independently and impartially. SNACC is charged with drafting and implementing anti-corruption policies and collecting financial disclosure forms from senior government officials and Investigation of the perpetrators of corruption's crimes and send them to justice.

2.6.1.2 The Central Organization for Control and Auditing (COCA)

The Central Organization for Control and Audit has been established in 1992, the Authority is considered as the highest independent regulatory body which is follow directly to the President. COCA seeks to achieve effective control over public resources, and Financial Supervision leading to management the resources efficiency and effectively, as well as performance audit and monitor the implementation of the plans.

2.6.1.3 The High Authority for Tender Control

Based on the constitution, the government issued Law No.23 of 2007 to establish The High Authority for Tender Control. Under this law, the authority is responsible for examining and approving the documents of tenders and auctions after verifying the adequacy of the technical specifications and safety, revising and reviewing the results of the analysis. It also evaluates, and recommends of the various technical, financial and legal aspects that submitted to it after the auction procedure or the bid.

2.6.1.4 The National Committee for Combating Money Laundering and Terrorism Financing

The government issued Law No.1 of 2010 to establish the National Committee for Combating Money Laundering and Terrorism Financing. The committee is responsible for configure proposals for combating money laundering and terrorism financing policies, configure regulations and procedures for combating money laundering and terrorist, and coordinates and facilitates the exchange of information on terrorist financing and money laundering operation among related authorities.

2.6.1.5 Public Funds Prosecution

Public Funds Prosecution (PFP) is the link between The Central Organization for Control and Auditing (COCA) and the Public Fund Court. It receives allegations from junior public servants within ministries.

2.6.1.6 The Public Funds Courts

The public funds courts has been Established in 1996 by presidential decree in 1996. According to the constitution, the government issued Law .No 3. These courts are Competent in all issues related to public money or issues related to customs and taxes.

2.6.1.7 Press and Civil Society

In addition to this legislation and official institutions, there are efforts by the press and NGOs (Non-governmental organization) to strengthen legislation and institutions, policies, and practices to combat Corruption and promote integrity.

2.6.1.8 Legislation

There are some laws that were issued by government for combating corruption:

- Law No.12 of 1994 on penal & Criminal Code.
- Law No. 47 of 2005 on the approval of the United Nations Convention to combat corruption.
- Law No.39 of 2006 on combating corruption.
- Law No.30 of 2006 on the financial disclosure.

- Law No.23 of 2007 on Tender & Bids Control.
- Law No.1 of 2010 on for Combating Money Laundering and Terrorism Financing.
- Law No.13 of 2012 on the right of access to information.

2.7 The Concept of E-government

There is no standard definition of e-government that clearly explains what it really represents. In the existing literature, there are a number of definitions which explain the main concepts of e-government according to their research perspectives. E-government refers to the delivery of government services through the Internet; also e-government is understood as a government's use of ICT as a tool, particularly web- Based internet applications, to enhance the access to and deliver of government information and services to citizens, business partners, employees, and other agencies. To confirm, Silcock (2001) explains e-government as the use of technology to enhance access to and delivery of government services in order to benefit citizens, business partners, and employees. Along the same line, e-government is defined by United Nations as the "use of information and communication technology (ICT) and its application by government for the provision of information and public services to the people" (UN, 2012, p. 14). And World Bank (2007) defined e-government as utilizing ICT for changing and improving the relationship among government, citizens, businesses, and other government entities. While the definitions from citizen perspectives is that e-government enables the keeping up with citizens' demands by Providing them with services 24 hours a day, 7 days a week (Carbo & Williams, 2004; Cook et al., 2002; Reynolds & Regio, 2001).

In other words, it can be defined as interaction among government, citizens, and internal government operations to provide effective implementation of government policies with the use of ICT. Thus, e-government can be viewed as a subset of e-governance and its focus is largely on improving administrative efficiency and reducing administrative corruption (Bhatnagar, 2003). Also, e-government facilitates Procedures, making the system more responsive, more obvious flexible and competent to the demands of different clienteles.

2.7.1 E-government Key Interaction

E-government practices can be explored through the following:

- Government to Citizen (G2C)
- Government to Business (G2B)
- Government to Government (G2G)
- Government to Employee (G2E)

While the following is a brief description of those interactions:-

2.7.1.1 Government-to-citizen (G2C)

In e-government systems, citizens are able to initiate a request for a particular government service and then receive government service through the Internet or some computerized mechanism .The primary goal of e-government (G2C) is to serve the citizen and facilitate citizen interaction with government by making public information more accessible through the use of websites, as well as reducing the time and cost to conduct a transaction (Node, 2004)

2.7.1.2 Government-to-business (G2B)

G2B can bring significant benefits to both governments and businesses. Fang (2002) argued that G2B applications actively drive e-transaction initiatives such as e-procurement and the development of an electronic marketplace for government purchases. The government-to-business (G2B) is as useful as the G2C system, it is improving the efficiency and quality of communication and transactions with business .Also, it increases the equality and transparency of government contracting and projects (Moon, 2003).

2.7.1.3 Government-to-government (G2G)

This refers to the online communications between government organizations, departments and agencies based on a super-government database. The efficiency of processes is enhanced by using of online communication and cooperation which allows for sharing of databases and resources and the fusion of skills and capabilities. Similarly, the main objective here is to enhance the cooperation between government agencies at

different levels and to facilitate communication between government offices in different locations (Bose, 2004; Ndou, 2004).

2.7.1.4 Government-to-government (G2E)

The objective here is to increase the productivity of both government and its employees by principally enabling the former to interact more effectively. G2E services include information on government rules, policies, and civil rights. (world bank.2002; williams.2004)

2.7.2 Benefit of E-government

The key major benefits of e-government can be summarized in table 2.1 shown below

Table2.1: Benefits of E-government

Perspective	Benefit	Source
Government	-Reduce error -Improve the quality of decision making -Increase capacity of government -Saving time and money -Automate Processing -Reduce bureaucracy -Increasing accountability -Reduce Corruption -Improving the productivity and efficiency of government agencies	Shim & Eom 2008) Kaur(2015) Pathak and Prasad(2006) UN,(2001),Nodu(2004) Martha García-Murillo(2010)
Citizens and Business	-Reduce middlemen's intervention -Services availability 24/7 -Increase trust among government ,citizens, and business -Increase transparency -Increase access to information -Improving of quality of services delivering to business and citizens	Shim & Eom (2008), Andersen (2009), AL-Hussaini, et.al (2013), Karv(2015)Nodu(2004), Carbo and Williams, 2004; Reynolds & Regio, 2001; Cook et al., (2002).

2.8 The History and Development of E-government in Yemen

Many developing countries, like Yemen, are realizing the need for e-government in order to provide citizen-focused, cost effective, and user friendly for citizens to improve the transparency in procedures of government service delivery. Yemen, however, as one of the least developed countries seeks to improve its e-government development index which is 0.22 in 2016. (UN, 2016)

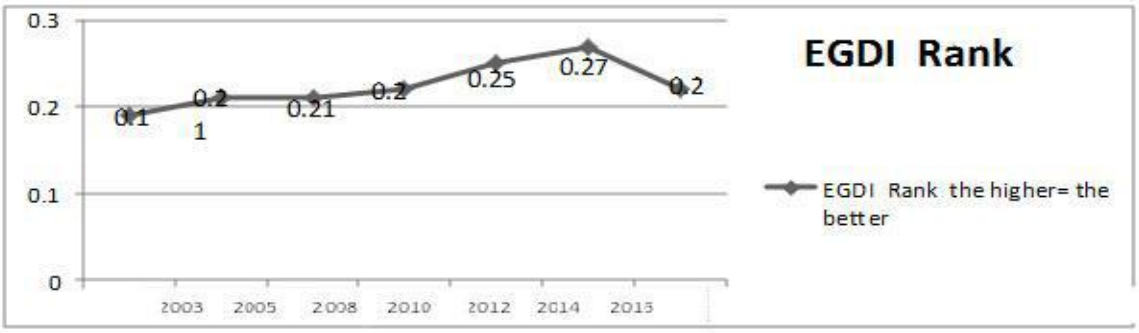

Figure 2.2 : E-government development index (EGDI**).** Source**:** UN e-government Survey. Available https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/190-Yemen

In 2002, Yemen have launched a 10 years e-government project, and it was named the National Project for Information Technology which aimed to delivery services to citizens, move to financial transaction, and increase access to telephone services. The National Project for Information Technology has only established a web portal which has one problem as follow: this portal contains many links to different organizations in the government, but these links are not working till now. (Al-wazir and Zheng .2012 ; Amer, J. M. H. A.2011). In fact, it is relevant to analyze how many people in Yemen are using internet and computers. E-government, together with its e-services, can have an effect only if people have the opportunity to use them. The more people are using internet and computers and the more available these services are, the better the chance there is people who are willing to use e-government, and that it can have an effect to corruption subsequently. The researcher is going to analyze the percentages of households who are having computers and internet connection at home and the usage of computer and internet in Yemen based on the UN report.

Table 2.2: Yemen Internet Users. Source: International Telecommunication Union (ITU), World Bank, and United Nations Population Division.(2016). Available on: http://www.internetlivestats.com/internet-users/yemen/

Year	Internet Users**	Penetration (% of Pop)	Total Population	Non-Users(Internet less)
2016*	6,773,228	24.7 %	27,477,600	20,704,372
2015*	6,441,112	24 %	26,832,215	20,391,103
2014	5,904,419	22.6 %	26,183,676	20,279,257
2013	5,106,643	20 %	25,533,217	20,426,574
2012	4,341,176	17.4 %	24,882,792	20,541,616
2011	3,612,218	14.9 %	24,234,940	20,622,722

The Internet was introduced in Yemen in 1996 and its usage increased gradually. It can be seen from table 2.2, a big step in the number of internet users from 3,612,218 in 2011 to 6,773,228 in 2016 which is representing 24.7 % of the total population. Also from figure 2.1, it is visible, that the number of households that have a computer, internet connection has increased slowly. The percentage of households with computer Were around 5.48 % in 2016, while it was 4.6% in 2011.And Percentage of households with internet connection were around 6.5% in 2016 which are the low level index compare to Arab countries according to figure 2.2, while it was only 4% in 2011. As a result, the number of people, who have computer and internet connection, is fairly increasing. Therefore, they have the possibility to use e-government initiatives and e-services. And this makes the usage of e-government and its e-services also much easier.

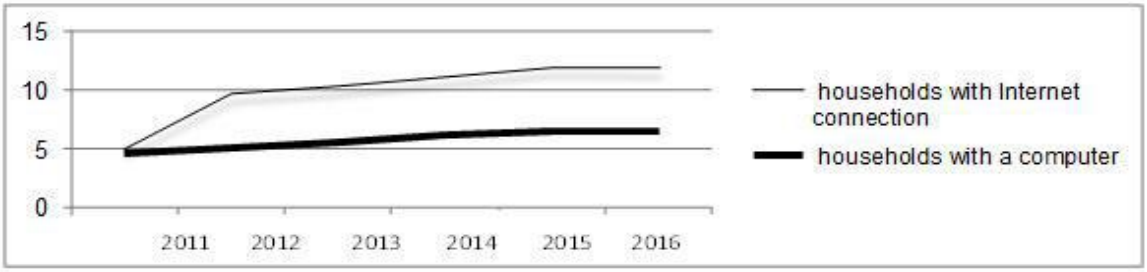

Figure 2.3: Percentages of households from 2011 to 2016 in Yemen. *Source:* http://www.itu.int/net4/ITU-D/idi/2016/#idi2016comparison-tab

Despite of improvement in Yemen's ICT infrastructure, Telecommunication infrastructure in Yemen has got a lower ranking among countries in Arab region. Currently, Yemeni government decided to revive the e-government, but there are many challenges that restrict providing a limited amount of information, delivering services to

citizens, and moving to financial transaction. These challenges are lack of ICT infrastructure, lack of budget, and lack of qualified human resources, as well as failure to move forward electronic administration instead of traditional management that is based on paper work. (Al-wazir and Zheng. 2012). While Alsohybe (2007) pointed out that the most challenges facing implementation of e-government in Yemen are leadership's commitment, weak training of government employees, poor national infrastructure, and poor Internet infrastructure and security. On the other hand, the researcher noted that the advantages of e-government implementation in Yemen are the less processing time, more efficiency, and cost effective. Also he claimed that the disadvantages of e-government implementation are job loss, high cost for the implementation and maintenance of e-government, security and privacy.

These hinder the ability of government to implement e-government project as well as adopted of any online services. And it means the readiness of e-government in Yemen is still very low compared to Arab region according to figure2.4 listed below

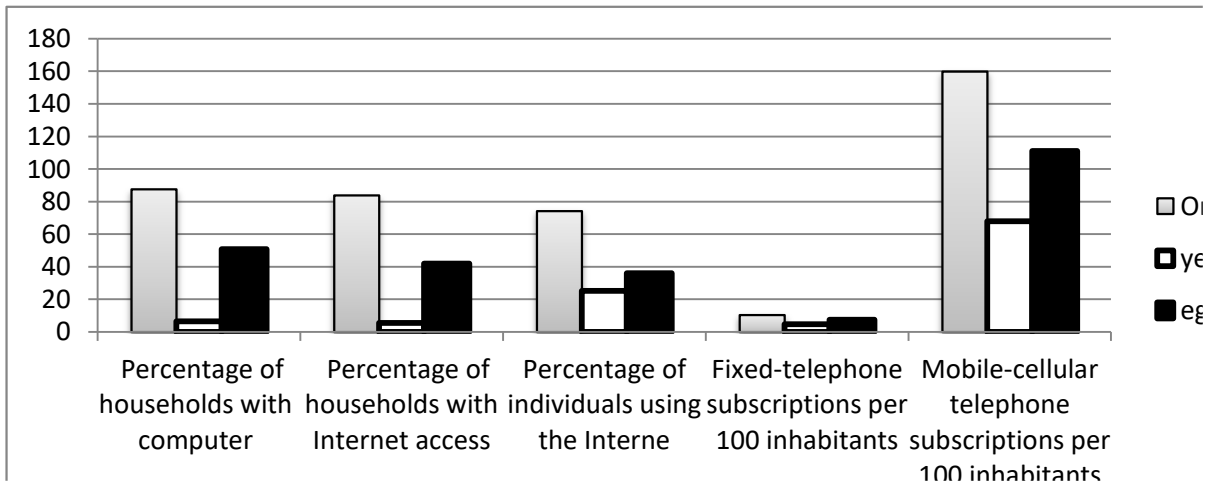

Figure 2.4: Telecommunication infrastructure index including In Yemen compare to Egypt and Oman in 2016. Source: http://www.itu.int/net4/ITU-D/idi/2016/#idi2016comparison-tab

2.8.1 Administrative Reform in the Public Sector in Yemen

In recent years, many countries have considered administrative reform as a crucial step towards strengthening their economy and better management of their social development. The growing interest in administrative reform in developing countries has several origins. Vital among these are three: one relates to the concern for improved performance in public bureaucracy through modernization of methods, techniques and

procedures of work and more effective management of human resources. (Klitgaard, 1995 and Heeks, 2003) Second is the process of fighting corruption within the government sector to enhance development economic.(Heeks, 2003)The third is the increasing concern for proficient and effective delivery of public services through decentralization that is involving devolution of authorities to lower levels of administration by the modification of departmental functions, the machinery of government, and policy coordination. (Martha García-Murillo, 2010)

Combating corruption with good governance is one of the most important challenges that Yemen currently face. Without reforms that dismantle the financial, political, and administrative structures will be unable to break the cycle of cronyism and bad governance that has constrained its tremendous potential for economic, political, and social development as well. The fight against corruption in Yemen needs more leadership commitment, capacity at all levels, and better cooperation among government bodies action, According to the British ambassador to Yemen, Jane Marriot (2013).

In fact, administrative reforms need to re-engineering the public sector, which is a management approach aiming at improvements government and involving citizens through ICT .By making government more accountable and transparent through this process of information rationalization, e-government is very often conceived as a powerful instrument to achieve the public administration reforms envisaged by the new public management (Barzelay, 2001; Cordella, 2007; Hood, 1991). Also, as noted by Singh et al., (2010), e-government "…entails streamlining operational processes, transcribing information held by government agencies into electronic form, linking disparate databases, and improving ease of access to services for members of the public". E-government has also been promoted as a strategy of public sector reform with a focus on how it can improve the managerial process (Kudo, 2010). E-government projects are intrinsically embedded in combinations of political reforms and organizational changes designed to enact, support, and drive a profound transformation in the organization of the public sector. Yet, the researches in the field have so far prioritized the study of the effects of information and communication technology (ICT) as a shortcut to increase public sector efficiency and improve internal administration and management capabilities. (Andersen, 1999)

2.8.2 E-government Practices in Yemen

Yemeni government has many attempts to apply the concept of e-government. Some ministries and government bodies have adopted e-government practices to build technological computer systems that are working to help various institutions to do their work efficiently and effectively, and to perform numerous functions of help desk and doing accounting tasks. (Amer, J. M. H. A, 2011).

All the systems listed below are still under development, and sometimes at risk of failure .These practices are in the following:

2.8.2.1 The E-gate for application and admission for the Yemeni universities project

The electronic portal has launched by the Ministry of Higher Education and Scientific Research in Sana'a in 2016 .It is an electronic system that provides access to the specialties available in each university, and presents the conditions and criteria for such disciplines. This portal has facilitated for students from all over Yemen to apply for universities; it presents in long lines waiting to record their information and chose their specialties. In this time, students are able to register themselves and choose the right specialization in any university across the country, as well as pay of fees through dedicated channels. (YCIT-HE, 2016)

2.8.2.2 National Information Network (NIN) project

National Information Network project has implemented by National Information Center in 2001. It is aimed to implement the project through the creation of networked system that is linking all government agencies and institutions in the various provinces, and it is aimed to establish the necessary infrastructure for the construction of an integrated national information system. The project exchanges information between the various institutions and sectors of Yemen. Also it improves the methods of decision-making, and the pursuit of "automation" administrative work at all administrative levels in Yemen including help to the preparation, implementation, monitoring, evaluation, and the development of plans, programs and policies in all fields. (ESCWA, 2009)

2.8.2.3 ASYCUDA World system

ASYCUDA World is one of e-governance systems implemented by Yemen Customs. It is a shining example of how ICT can help in reducing discretion of authorities, and improving accountability, transparency and anti-smuggling. Before this project became operational, it was no accountability or transparency in the process of providing the service. This system, which depends on the Internet, designed to simplify and improve customs procedures, calculated and collected of customs duties and other taxes associated with customs operations, and shorten the customs clearance time of goods, in addition to contributing to the anti-smuggling effort. Using this system leads to the non-use of papers in handling customs, helps to set up single-window in order to access all the information through the system , and link all the systems centralization of Yemen Customs department to be working through the Global ASYCUDA system. The start implementing global ASYCUDA system allows for many traders to provide customs paper directly via the Internet, as well as allows customs and traders manage most of their business and operation. (IBP**,** Inc , 2012)

2.8.2.4 Accounting and Financial Management Information System (AFMIS)

The Accounting and Financial Management Information Systems (AFMIS) has implemented in 2007 by Ministry of Finance and financed by the World Bank. The project is viewed as a critical step to ensuring accountability for processing and reporting the government's operating budget and payment systems. The objectives of the AFIMS system are grasping controls of expenditure with approved budget (re-current & development), providing the necessary information to decision-makers in convenient way, enhancing the performance of the personnel of finance department and accounts department and helping them in carrying out their activities efficiently, helping the concerned officers in arranging, implementation, following-up, checking and evaluation in the implementation of their responsibility, and improving communication among the various departments. This system will be presented more transparency by publishing the approved reports monthly and quarterly, and annual budget on the Internet. **(**World Bank, 2010b)

2.8.2.5 Procurement management information system (PMIS) project

Yemen's PMIS was established to support the country's efforts to combat corruption. Procurement Management Information System (PMIS) project has initiated by the Higher Authority for Bids and Offers Control. The Authority for Bids & Tender Control did manage to launch an interactive website of draft laws and regulations, allowed the public and civil society organizations to submit comments**.** The objectives of the PMIS Project are to replace existing manual system to electronic systems in purchasing departments, to support and reinforce the Procurement Law no. (23) of tenders and biddings, and to develop existing procurement capacity. Before this project became operational, the procurement process, from the smallest to largest tenders, was a major source of corruption throughout all levels of Yemeni government. Controlling and monitoring of all tender steps are difficult; corruption may occur in each step; the tender's process for major procurements is also not transparent; and bids may be granted for people who do not fit the requirement of tenders, but now people may use this service offered by website to locate procurement competition, and participate fully in electronic form. Also this way will reduces corruption and improves transparency in the process of transaction, control and monitor of all tender steps, improve financial management, reduce cost, and increase efficiency and productivity. **(**World Bank,2010b).

2.8.2.6 Yemen Civil Service Modernization Project

With assistance from the World Bank, Yemen Civil Service Modernization Project has started reforms to rationalize government employment and limit ghost workers. The main objective of this project is to reduce corruption in registration procedure in the civil service. The project still has been struggled as a result of strong bureaucratic resistance and absence of institutional building to carry out a complex multifaceted reform program. Before this project became operational, the Yemen country at the Crossroads report notes that “the government’s patronage system involves ‘employing’ thousands of Yemenis in government positions, have more than one wages with no performance or duties.”, also Yemeni government had not had an accurate survey of Yemen’s worker. **(**Brian, 2004) But the USAID report stated that The Civil Service Modernization Program create the first civil service survey, which initially found that between 473,000 employees in civil service, 15,000-30,000 were either having double –job or so-called" double- dippers"

(those who receive more than one government salary) or ‘ghost employees (those who did not perform any duties) . **(**Glenn, et.al., 2006)

Currently, the civil service depends on the computerize system to reduce individuals discretion; all job applications are entered into the database as an attempt to minimize human interaction between job seekers and government employers, thus reducing opportunities for corruption. As mentioned above, the civil service survey disclosed a high number of potential ‘ghost employees. As an attempt to control that, the government has been in the process of implementing a biometric identification card system which contains a unique biometric identification of the employee.

2.8.2.7 The Public Finance Modernization additional financing (PFMP) project

The appropriation of the PFMP was in December 2010 and began the actual implementation of the project in January 2011 by the ministry of financial. The project aims to improve the efficiency and transparency of public financial management by providing decision support systems, enhancing the ability of government employees and building the capacity of government institutions on the management of public finance. **(**World Bank, 2013)

2.9 Relationship between E-government and Combating Corruption

E-government may offer a weapon against corruption. Recent innovations in information and communication technology (ICT) and scholars have given hope to the idea that new technologies in the form of e-government systems can be used to combat corruption in the public sector. Combating corruption considered to the extent that increased transparency, accountability and predictability (of rules and procedures) are made priorities. Many researches has also suggested that the main rationale for the use of e- government and e-governance is that it can reduce costs and delays in processing and delivering services, expand citizen's access to public sector information, increase transparency and public accountability, and weaken authoritarian tendencies (Haque, 2002).

The activities and factors of government that contribute directly and indirectly to corruption are institutional regulations and authorizations, the taxation system, spending decisions, public expenditure, provision of goods and services at below-market prices, financing of political parties, quality of the bureaucracy, level of public sector wages (low salaries), penalty systems, and institutional controls (Tanzi .1998: 565-576). Some researches stated that e-government has become an umbrella term covering all use of information technology in government. (Torres et al.2006). Moreover e-government is considered as a wave that keeps rising in public sector across the world. Anderson(2009); Cullier and Piotrowski (2009); Fuchs (2006); Shim & Eom (2008) have found that recent years have seen trends toward using e-government for greater access to information and for promotion of transparency, accountability, and anti-corruption goals .

Sarah (2003), while assessing 20 e-government projects in India, confirmed that it has led to greater responsiveness, transparency and accountability, improved service delivery and overall reduced corruption, and all signs of good governance. Along same line, e-government may help to increase the transparency of procurements system, make public services more accessible and clear, and ensure a universal citizens' access to information (Norris and Zinnbauer, 2002). In addition, the Findings from the study presented by Shim & Eom (2008) suggested that ICT has a strong potential to reduce corruption through the promotion of "good governance and enhancing relationships between government employees and citizens". Besides all these cost-efficiency benefits that Communication that ICT can provide to governments, it is believed that e-

government can decrease corruption levels through increased transparency and accountability and strengthen good governance (Von Haldenwang 2004: 427). In fact, e-government has been identified as a viable tool for elimination corruption by enhancing transparency and accountability of government administration. The World Bank argued that "e-government helps to increase the transparency of decision-making processes by making information accessible, publishing government debates, budgets and expenditure statements, outcomes and rationales for key decisions, and in some cases, allowing the online tracking of applications on the web by the public and press" (World Bank, 2010a).

2.9.1 How E-government can combat Corruption?

There are different actions can be taken by e-government to reduce corruption (or drivers of corruption), these actions are as follow:

- E-government should put the entire departments online like customs, income tax, sales tax, and property tax. Every services of government must be delivering online to every citizen all over the country. The use of computers and online transactions makes the delivery systems more efficient, and reduces abuse of discretion and other opportunities for corruption. According to Kaur(2015), while exploring the five e-governance projects in India, the services of government should become online, that was really the best way to decrease the level of corruption in different states. In fact, if services are put online, procedures will be streamlined and taken less time. And there will be no need to pay extra money for speed up the process.
- E-government also can help monitor corruption and hence better enforce laws and policies that ensure accountability and transparency by standardizing data collection methods, tracking action and decision, and developing a feedback/complaint mechanism. This needs to be complemented with the development of institution, laws and practices that protect whistleblowers, impose powerful disincentives for corruption, and punishes those involved in corruption.(UNDP,2006)
- By automating government's services. The automation of administrative processes diminishes discretionary power, and controls government officials on operations by using algorithms to track, control, and save every process that have done to the public. Tracking government employee's transactions, monitoring, and controlling

their official activities are made easier through e-government initiatives because it leaves behind information track and saves every movement somebody has done. E-government tools can not only track various events and illegitimate actions that have already taken place but also proactively detect suspicious behavior before any crime has been committed. If decisions and transactions will be documented and easily tracked to officials, officials will think twice before committing a corrupt behavior. Law-enforcing agencies will be in a better situation to investigate and press charges against corrupt officials. Bhatnagar, (2003) stated that "by automation of processes, it is possible to significantly reduce opportunities for corruption by removing public servants at data collection and service delivery points, when people engage in e-banking, there is no need to bribe".

- By eliminating 'middleman': Middleman is a central actor in the corruption transaction; he\she plays an important and sometimes crucial role. For example: a public servant may take a bribe in return for a favorable decision, or may simply steal from the state's coffers. (Karv.2015; Andersen. 2009) pointed out that e-government limit the individuals' intervention. In fact, the process of constructing electronic services entails transferring information, which held by government bodies or individual public servants, into electronic platforms, and presenting it to users in forms that defined by laws and process regulations. Because this is done automatically, there is no room for individuals to influence by manipulating or withholding information as long as the user has direct access to the electronic service.
- By giving citizens convenient access to government information and services from everywhere anytime, via multiple channels. Publishing of government information online provide documentation to citizens to substantiate their complaints against corrupt practices. Also, if e-government provides 24x7 days access of information for the citizen, and the day-to-day transaction level, it makes bribes more difficult to give and to conceal. Access to information concerning governance of the state allows individuals to exercise their political and civil rights in election processes, monitor the quality of public spending, and demand accountability. Norris & Zinnbauer. (2002), and Zemanovicova. (2002) pointed out that e-government may help increase the transparency, make public services more accessible and clear, and ensure a universal citizens' access to information. Also Aucoin & Heintzman

(2000: 49) affirmed that e-government is important to bridge the gap between public servants and citizens, thus it leads to increase trust between government and citizens. Direnzio et al. (2007: 322) stated that if there is a better access to information and it's more available and transparent, it will lead to a greater accountability.

- By activating a complaints handling system through e-government portals which is fundamental to delivering quality public services. In fact, the improvement in the complaints handling regime would increase the public's confidence and trust in the system, it may result in reduction of corruption. As complaints are a valuable opportunity to obtain feedback from the community and identify the need for service and policy improvement, the government is always striving to improve its services to the public. Complaints handling goes to the heart of this; each department should establish a complaints and enquiries handling regime that fits its needs and customers' needs. Complaint channels should be clearly advertised to both the public and staff. Thus, citizens can complain about the way in which a policy is implemented or service is delivered, including staff attitude, and revealing any corrupt behavior.
- By simplifying and facilitating rules and procedures, and re-engineering processes and systems. That leads to help citizens in learning how public systems are supposed to work (citizen-service-providers) (kligaard,1988). It became harder for public servants to trick a citizen because the rules and processes of the systems were available online. The use of computers and online transactions makes the delivery system more effective to reduce abuse of discretion and other opportunities for corruption.
- By reducing monopoly power. Decreasing monopoly power (driver of corruption) through e-government means distribution of power and responsibilities and devolution of powers and authority to lower levels of administration. And the absence of this condition makes the governmental structure vulnerable to exploitation and an abuse of public power for personal gain. (Martha García-Murillo, 2010). Also reducing monopoly power means enabling competition, whereby should put all government contracts and procurement plans online, so plans, prices and winners will be known for public. Lui (1996: 26-27) affirmed that, "if the resource allocation system is perfectly competitive, then corruption cannot exist […].

To summarize, an important actions for combating corruption can be by providing an easy access to information for all citizens through e-government portals, bridging the gap between public servants and citizens, and increasing trust between government and citizens. This can result in greater transparency that reduces the ability of public servants to demand bribes or commission. Also there are some actions for reducing corruption by distribution of authorities and responsibilities in bureaucratic system, and reducing direct contact with citizens through Web applications. Moreover, by using e-government, procedures and rules will be simplified and clear.

2.9.2 Limitation of E-Government in Combating Corruption

Some Scholars noted that there are some limits facing e-government to reduce corruption. There are as follow:

- Impossible offering all services online. It is due to the fact that online channels are suited to certain types of products/services. Even in presence of a G2C online service, citizens may still prefer to use a traditional channel for either information search, or the final transaction, also referred to as the 'research shopper phenomenon. (Verhoef, Neslin, & Vroomen, 2007)
- Complexity of government process, and difficulty in re-engineering it. According to (Klitgaard 1995; Heeks, 2003) who are remarked that the removal of corrupt government officials would not necessarily eliminate corruption, but changes in the organization and its operations would make it possible to reduce corruption. Governments in many countries have not reviewed their laws, administrative manuals, and process to making them amenable to e-government. As a result, a number of government processes cannot be moved to e-government channels. In some cases, there are instances wherein a citizen or a business can file his/her application online, but the official process may still require a visit of a government inspector, whose style of operation may have undergone little reform.
- Lack of clear vision and strategy. Fighting corruption should be part of the e-government vision. Each government must announce the anti-corruption goal to the public. If fighting corruption is publicly announced as a major part of the e-government agenda, it could help build coalitions and public pressure for anti-corruption results.(Heeks, 2003; United Nations, 2002)

- Inactive citizens' participation (Norris and Moon, 2005; Chen et al., 2007; Sharma and Gupta, 2003)
- Lack of organizational readiness (Lam, 2005; Salem, 2006; Fedorowicz et al., 2010)
- Lack of suitable legal framework/Unsuitable legislations: the administration and its processes should be reformed and suitable for combating corruption according to Pathak et al. (2009). The previous methods of anticorruption including administrative reforms, law enforcement, and social change focused on economic performance rather than identifying issues such as transparency as an anti-corruption measure in public agencies and departments. However, the scholars concluded that the evolution of e-government, the focus on information, and using of transparency as the measures of corruption are factors that served as anticorruption tools in modern public administration.
- Poor technological infrastructure and professional staff: the government must provide the necessary infrastructure that will aid the successful combating corruption through e-government. This means that the success of it is tied to the availability of power supply, and internet connected with trained and qualified staff.(Jaeger and Thompson, 2003; Heeks, 2003, Wang, 2003)
- The continuing role of intermediaries in service delivery: Majority of the public servants are likely to use their positions to frustrate the effective application of e-government in combating corruption. They will definitely dislike a system that will reduce to the minimum face to face contact between citizens and public servants. Also, dealings between the government and a citizen are mediated by a front-desk civil servant who is in a position to provide advice or tips that the citizen may require. If a citizen values such a service, he\she may prefer to get served at the government office even if it entails payment of a petty amount as bribe to the dealing civil servant. On the other hand, citizens, who lack requisite skills and resources to use the self-use e-government services, have no option to seek service in person from (corrupt) civil servants.
- Lack of e-communications with all constituents of e-service delivery. (Sharma and Gupta, 2003; Heeks, 2003; Zhang et al., 2005)
- Poor mechanisms of complaint handling: complaint channels are not clearly advertised to both the public and staff. Also the citizens are not able to lodge complaints outside of normal office hours, or there is a complex procedure to lodge complaints.

2.10 Related Studies

Most of the existing researches in this field have focused on the relationship between e-government and corruption, While some research that are mentioned below focused on corruption in Yemen, and the readiness of e-government in Yemen as well. For the present discussion, literature addressing the e-government and its role in combating corruption is organized along two dimensions: first, studies which take a micro view and focus on the description and outcome of specific e-government projects; and second, studies which do not focus on any particular e-government project, but take a macro view of the outcomes of e-government in a country/state.

2.10.1 E-government studies

The study presented by **Alsohybe (2007**) found that the advantages of e-government implementation in Yemen are the processing time, efficiency, cost effective, and interaction between government and citizens, while the disadvantages of e-government implementation are job loss, high cost for the implementation and maintenance of e-government, security and privacy. Also the findings of the study showed that the most challenges of e-government implementation are that employees still have lack in computer use, and although the most ministries have websites, but these websites do not allow real interactions with citizens. Along the same line, the findings of **Al-wazir and Zheng (2012**) reported that the ICT strategies and plans have not been implemented in Yemen due to many challenges such as: lack of IT budget, luck of IT skills, lack of leadership, and resistance to change, lack of infrastructure and the disruption of the structure of the national economy.

2.10.2 Corruption studies

The results reported by **Jamil (2013**) are supported the fact that the most common patterns of corruption in the government sectors in Yemen are: influence peddling, favoritism and bias to groups and individuals. Also the findings of this study proved that the most significant factors leading to corruption in the government sectors are: low wages and salaries, deterioration of the economic status, and high cost of living. On the other hand, the researcher proved that poor effectiveness of administrative and financial control in the government sectors, lack of qualified technical staff, and lack of laws and

regulations are obstacles facing efforts to combat corruption in the government sectors in Yemen .Also the study presented by **Elyazidi(2012**) demonstrated that there are many gaps in the Yemeni civil service legislations wherein no clear definitions of power, and there is a conflict of responsibilities for admin Leaders and employees in state.

2.10.3 E-government in combating corruption studies

First: the linkage between e-government and corruption at country/state level has been addressed by relatively few studies, and these are discussed individually. The case study presented by **karv(2015)** reported a significant effect of e-government on corruption in Estonia, and focused on four factor could be the most effective way to reduce corruption through e-government. These factors are increased transparency, better accountability, disappearance of the "middlemen" and bridging the gap between public workers and citizens.

The results reported by **AL-Hussaini, AL-Mutairi, and Thuwaini.(2013**) in Kuwait suggested that the transition to e-government limits the intervention of individuals in the public sector in Kuwait. Thus it reduces many kinds of corruption related to individual emotion through favoritism, nepotism and bribery. Additionally, this study showed that the presence of e-government can be seen as one of the tools that can help reducing the discretion of government officials. Also the results reported by **Pathak, Singh, Belwal, and Smith (2007**) are supported of a positive connection between e-government and reduction in corruption in Fiji and Ethiopia. This study, using a structured questionnaire, explored the perceived role of e-government in reducing corruption amongst 800 respondents each from Fiji and Ethiopia. This study also noted that while e-government is important to anti-corruption, it also has its limits because many ICT projects fail because of insufficient planning capacity and political instability. In order to overcome these challenges, the researchers said, successful implementation requires matching the right technologies with capable and progressive reformers and government systems.

The study of **Andersen and Rand (2006)** focused on the relation between corruption and e-government, and examined a cross-section of countries from the 1997 to 2002 period. **Andersen and Rand (2006)** suggested that the reduction of contact between corrupt official and citizens through e-government is a simple mechanism to reduce corruption. The findings also proved that well-designed ICT policies are likely to be effective in the fight against

corruption. In another article, the finding presented by **Anderson (2009)** brought out many ways to explain how e-government can eliminate corruption, one of them is reducing contacts between public servants and the users of public services, thus leaving out the "middle-man" who might use corrupt practices and can empower citizens to challenge corrupt and arbitrary bureaucratic action. Additionally, the findings of **Shim & Eom (2008)** focused on the impacts of bureaucratic professionalism, bureaucratic quality and law enforcement through the use of national level data. The researchers found that both e-government and traditional anti-corruption factors have a positive impact on reduction of corruption. Also their finding suggested that e-government can lower corruption by bridging gaps between public workers and citizens; all the work processes between these two are monitored by the Information and Communication Technology (ICT) systems, which help to discover corrupt behaviors by analyzing the digitalized data; and this makes detection of corrupt behavior more efficient. In a follow up article, **Shim and Eom (2009)** examined the impact of ICT and social capital on corruption and argued that ICT has the potential to reduce unnecessary human intervention in government transactions processes, which reduces the need to monitor corrupt behavior.

Second: the linkage between e-government and corruption at specific e-government projects; it has been addressed by relatively few studies, and these are discussed individually. The case study of Punjab presented by **Kaur**(**2015**) explored the five e-governance projects in Punjab that are really decrease the level of corruption in different states in India. The findings of this study suggested that to help to reduce corruption, the services of government should be available online. If services are put online, procedures will be streamlined and take less time and there will be no need to pay extra money for speed up the process. Also, the results suggested that e-government must be firmly embedded in the existing government processes, must be supported, both politically and technically by the governments. The study presented by **Kim, Jeong & Lee (2009)** explained one particular case in South-Korea. They tried to examine the OPEN (Online Procedures Enhancement for civil applications) system of the Seoul Metropolitan Government. The finding brought out that the implementing OPEN was the most effective tools to reduce corruption, and the strong leadership was crucial to its successful. They also brought out that e-government eliminates discretion from the equation by removing intermediary services and allowing citizens to conduct transactions themselves. **Pathak & Prasad (2006)** studied the impact of e-government on corruption

based on the Indian Experiences through nine different e-governance projects. The findings of this study concluded that those e-government projects resulted in elimination of corruption totally in many areas or reduced corruption substantially in others. This reduction in corruption had a positive effect on the society in achieving societal harmony.

2.11 The Relationship between E-government and corruption: A Conceptual Model

Based on extensive literature survey, and the preceding discussion on anti-corruption mechanisms of e-government, the researcher finds that there are many facets to a potential conceptual model of e-government as anti-corruption tools:

i. Corruption in the Public Sector

Corruption in the public sector hampers the efficiency of public services, undermines confidence in public institutions, and increases the cost of public transactions. In most developing countries, especially Yemen, corruption is spread by weak governance practices, overlapping laws and regulations, weak institutions, and limited accountability that create a fertile environment for corruption. This environment gives rise to petty corruption as well as grand misuse and/or misappropriation of public resources. Along the same line, corruption can have hugely damaging effects on a country's growth rate and development potential.

ii. Administrative Reform by E-government

The first step to combat corruption is to re-engineer the public sector by administrative reform. E-government is a key component in achieving the administrative reforms .An efficient, responsive, transparent, and accountability of public administration are central parts of e-government, it is also an important step to achieve economic growth goals.

iii. Impact of E-government on Drivers of Corruption

Corruption identified in this model as four drivers of corruption: monopoly power, discretionary authority, middlemen’s intervention, absence of transparency. E-government in this model might decrease monopoly power, discretionary authority, and middlemen’s intervention in the public sector, while it might increase the transparency.

iv. Better Governance

The characteristics of e-government that make it stand out in comparison to traditional government are reduction of corruption, hence many forms of corruption will decrease too such as: Influences peddling, bribery, favoritism and bias, accepting commission, and violating laws& regulations. That leads to having better governance in countries which results in increasing economic growth.

v. Increase Economic Growth

By surveying recent research, both the adoption of e-government and combating corruption have been the factors behind the improved economic performance of the countries. The impact of e-government and ICT on economic growth is more generally aggregated through its impact on individuals, businesses, government and communities. The more successful economies have more technologies are better prepared for using them to their competitive advantage.

Figure 2.3 depicts the gap that our proposed conceptual model of relationship between e-government and corruption try to bridging it. It is expected that the model help illuminating and advancing the present understanding of e-government and its role in combating corruption. It also would bridging the gap in literature which is supported that e-government or level of ICT can decrease three of drivers of corruption such as monopoly power, discretionary authority , middlemen intervention, and it increases the last driver of corruption which is transparency. The impact e-government on these drivers of corruption will lead to reduce corruption, thus many forms of corruption will decrease too such as: Influences peddling, bribery, favoritism and bias, accepting commission, and violating laws and regulation.

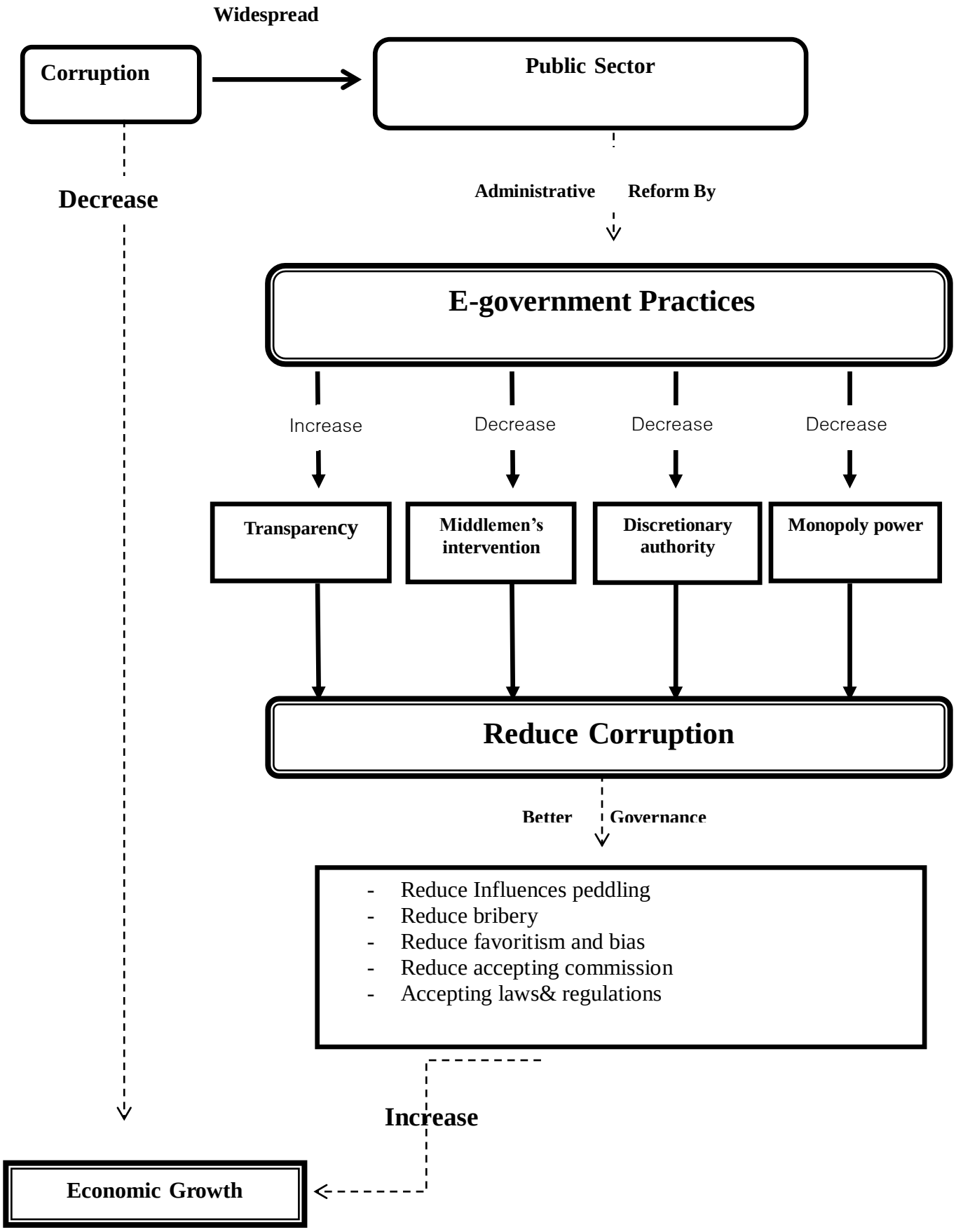

Figure2.5: A conceptual model of relationship between E-Government and corruption.

In order to answer the research questions, six hypotheses were created based on literature review. The first four hypotheses were developed to find out the direction and significance of the relationship between four independent variables (e-government) and the dependent variable (of combating of monopoly power, combating of discretionary authority, combating of middlemen's intervention, increasing of transparency) in Yemeni's public sector. The fifth hypothesis aimed to examine the significance and amount of variance in dependent variables accounted for by the independent variable mentioned in this research. The last hypothesis proposed to study if e-government practices reduce corruption in the public sector organization based on the point of view of citizens.

2.12 The Research Gap

The relationship between an e-government practices and corruption has not received adequate attention in the e-government literature. Most of the recent researches focused on samples from foreign countries such as India (Kaur. 2015; Karv .2015), South Korea (Kim, Jeong and Lee, 2009). Also, the study of e-government in combating corruption in Arabic countries is rare. In addition, this research represents an attempt to view the anti-corruption effect of e-government from a quantitative perspective. Besides, this research investigated the relationship between e-government and corruption by identifying e-government impacts on four drivers of corruption within the public sector: i.e. monopoly power, discretionary authority, middlemen's intervention, and transparency which have not yet been clarified in most studies. It also would bridging the gap in literature which is supported that e-government or level of ICT can decrease three of drivers of corruption such as monopoly power, discretionary authority, middlemen's intervention, and it increases the last driver of corruption which is transparency. Also, from a practical viewpoint, the framework provides a roadmap for policy makers to formulate e-government practices in reducing corruption commensurate with their respective environments.

2.13 The Summary

This Chapter presented various perspectives that could be adopted in the use e-government for combating corruption. The objective of this chapter is to propose a conceptual framework for identifying the ways and enablers of e-government in

combating corruption. This chapter was organized as follows: first, the researcher identified corruption and its role as a barrier to economic growth; second, it described the drivers of corruption and Yemen's Efforts in Combating Corruption. Then, the critical review of the literature in the area of e- government has been presented, and it discussed the e-government practices to counter corruption in Yemen. Besides, the review pointed to a number of ways to fight against corruption that this research has addressed in this section. Finally, it presented the development of hypotheses, and the research conceptual framework that considers dependent variables and independent variable and its relationships, and showed a brief overview of the gap that this research tried to bridging.

CHAPTER THREE

RESEARCH METHODOLGY

3.1 Introduction

The research methodology adopted for a study must be capable of enabling the research objectives to be met. So, this chapter discusses in details the methodological approach and techniques used to examine the research questions and test the proposed hypotheses. The first part explains why the analytical descriptive approach is mostly preferred for this research work, and intended to explain population, sampling and data collection, respectively, while the last part focuses on validity and reliability, design of research instruments, and data analysis.

3.2 Research Design

For any research to be undertaken there is a need to choose an approach that is appropriate for the gathering of data, and facilitate to answers the research questions. According to Easterby Smith et al (1991), researchers must be aware of the debate about methodological paradigms if they are to make appropriate decisions concerning how to collect their data. Descriptive approach (Quantitative) is usually the best methods for collecting information that will demonstrate relationships and describe the phenomenon as it exists. Bickman and Rog (1998) suggested that descriptive studies can answer questions such as "what is" or "what was". Similarly, the intent of this approach is to establish, confirm, or validate relationships and to develop generalizations that can contribute to theory (Leedy & Ormrod, 2001, p. 102). In addition, descriptive research is unique in the number of variables employed.

Like other types of research, descriptive research can include multiple variables for analysis, yet unlike other methods, it can require only one variable (Borg & Gall, 1989). For example, a descriptive study might employ methods of analyzing correlations between multiple variables by using tests such as pearson's correlation, regression. Moreover, descriptive approach is “aimed at casting light on current issues or problems

through a process of data collection that enables them to describe the situation more completely than was possible without employing this method". (Fox and Bayat, 2007) Also, descriptive research can be either quantitative or qualitative. It can involve collections of quantitative information that can be tabulated along a continuum in numerical form such as scores on a test or the number of times, or it can describe categories of information such as gender. As Miles and Huberman (1994) affirmed that if the data collected are in the form of words and explain conditions, they are classified as qualitative, whereas they are considered as quantitative if they are in the form of numbers . In this research, quantitative method uses because it aligns with the descriptive approach. The participants were surveyed by using a quantitative method in the form of structured questionnaires; the data collection and analysis were based on these questionnaires.

In short, The researcher uses the descriptive approach to answer six research questions ,and test the hypotheses .These questions need this approach to measure or explore the relationship that exist between independent variable which is **e-government** and dependent variables which are combating of monopoly power, combating of discretionary authority, combating of middlemen's intervention, and increasing transparency. Thus, the main idea behind using this type of research is to better define an opinion, attitude, or behavior held by a group of people on a given subject.

3.2.1 Strengths & Weaknesses of Descriptive Research

A skilled researcher can focus on both the strengths and weaknesses of descriptive research that may affect the research project's objective. The Strengths are that the descriptive research is the best methods for collecting information to demonstrate relationships between variables. Also it covers several angles of information in order to find data and characteristics about the population and phenomenon that is being studied, and gives the researches the opportunity to use both quantitative and qualitative data which can include case study, observation, and surveys.

The primary weakness of descriptive approach often is that participants may refuse to provide answers to questions they view to be too personal. In addition, the study may contain errors, as the researcher may record what she/he wants to hear and ignore data that does not conform to the research project's hypothesis. Also, overcoming a research bias is an extreme difficulty for descriptive research.

3.3 Population and Sampling

3.3.1 Population

Population is the specific number of group or people from which the respondents of the research are drawn. Polit and Hungler (1999:37) referred to the population as an aggregate or totality of all the objects, subjects or members that conform to a set of specifications. A researcher cannot study all cases that make up the study population. (Kitzinger, 1994)

- The first population in this research is about the employees in the public sector organizations which were carefully chosen for this research based on the extent of using the ICT, or e-government practices. The organizations have been chosen are as follow: Ministry of Finance, Ministry of communication & Information Technology, National Information Center, Ministry of Civil Service, Customs authority, Ministry of Higher Education and Scientific Research, The Higher authority for Bids and Offers Control, The authority for Bids and Offers, and Taxes authority. For the purpose of this research, the total number of employees is about ten thousand employees based on HR managers on these organizations.
- The second research population is about the citizens who are using the services of the government organizations that mentions above.

3.3.2 Sampling

Sampling is a method that allows researchers to infer information about a population, without having to investigate every individual. Also Bryman and Cramer (1990:99) argued that ” ...researchers should strive to create as accurate as possible a representative sample of the general population or case of study, and that such sample if planned precisely will highly increase the external validity of the research ”. The descriptive (Quantitative) data collection methods rely on random sampling that fit diverse experiences into predetermined response categories. They produce results that are easy to summarize, compare, and generalize. Mason (2002) and Ritchie et al (2003) argued that sampling is identification and selection of appropriate sources of data for the research such as people, organizations and settings giving reasons for choosing them. Therefore, it is necessary to design a sample population to be representative of the study population. In this case, each individual is chosen entirely by chance and each member of

the population has an equal chance, or probability, of being selected. Moore and McCabe defined a simple random sample as follows: "A simple random sample (SRS) of size n consists of n individuals from the population chosen in such a way that every set of n individuals has an equal chance to be the sample actually selected". As a result, the sample will be undertaken over a period of several weeks by the researcher personally .In this research, there are two samples:

- **In Phase 1: For stage which is targeted the employees (G2E)**

The first sample contains a three hundred and seventy candidate of public sector which is a good sample of 10000 thousands of employees, based on HR managers on these government bodies. According to Krejcie, R.V. and Morgan, D.W. (1970) in figure 3.1, the sample size which is required for the total population of 10000 employees should be equal 370 responses. However, taking into account the time and other constraints, sample size of 370 is considered satisfactorily sufficient in order to conduct statistical analysis

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Figure3.1: sample size. Source: Krejcie, R.V. and Morgan, D.W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, *30*, *607-610.* Note: *N* is the sample population; *S* is the sample size

- **In Phase 2:- For stage which is targeted the citizens (G2C)**

The second sample contains one hundred and twenty candidates of citizens who are using of the target government organizations' services in this research.

3.4 Data collection instruments

Data can be collected in variety of ways, in different settings - the field or laboratory - and from different sources. Collection methods include face-to-face interview, telephone interview; and questionnaires that are either personally administered, sent through the mail or electronically administered; observation of individuals and events with or without videotaping or audio recording; and a variety of other motivational techniques such as projective tests .(Sekaran, 2003)

Descriptive research involves gathering data that describe events and then organizes, tabulates, depicts, and describes the data collection (Glass & Hopkins, 1984). It often uses visual aids such as graphs and charts to aid the reader in understanding the data distribution. Also, using a descriptive research design requires the use of specific forms of data collection. This can include case studies, observation or surveys. Survey research is an important area of measurement in applied social research (Pinsonneault and Kraemer, 1993). Scholars mentioned that the main purpose of a survey is to produce quantitative statistics about some aspects of a study. Additionally, a survey is a systematic method for assembling information from a sample of the population for the rationale of constructing quantitative attributes. Data Collection is an important aspect of any type of research study. Inaccurate data collection can impact the results of a study and ultimately lead to invalid results.

For this research, the researcher chose survey method for collecting data. In fact, the term survey is often used to mean 'collect information.' Survey research commonly includes that type of measurement, but often goes beyond the descriptive statistics in order to draw inferences whether you would use it to collect qualitative data or quantitative data. Groves and Singer (2004:23) stated that “survey in quantitative side emphasizes solutions to problems, extraction of principles that have wide applicability, generalization of results, and standardization of measurement”. Finally, Dwivedi et al (2006); Shareef et al (2009); Irani et al (2009); and Dwivedi and Irani (2009) argued that the survey approach is considered most widely used for examining technology adoption. While this research embodies an analysis of a wide range of secondary work on corruption, e-government, and its relation of each other, much of the information presented in this research was obtained mainly from primary sources.

In short, primary data was collected mainly through questionnaire. Secondary data,

in the form of published official statistics, documents, books, and journal articles, review the analysis of the role of the e-government in combating corruption and the conceptual framework of chapter two also were collected. In addition, published works relevant to the discussion such as journals were consulted and cited. However, the research relies considerably on the Internet as a research tool because a large volume of resources is available on the Internet. The researcher spent as much time as necessary until she was satisfied that she had found the answers to the research questions. Hartley (2004:331) stated that when you have collected enough data, you will have to leave. Additionally, Glaser and Strauss (1967) noted that the saturation point is reached at time of your research when you really do think that everything is complete and that you're not obtaining any new information by continuing. (Glaser and Strauss, 1967: cited in Dawson, 2002: 53)

3.4.1 Using a Questionnaire-Based Survey

Questionnaire is data collection instruments that comprise written questions determined in advance, and that usually require respondents to give their answers within fairly closely-defined alternatives. Sekaran(2003) noted that they are an efficient mechanism for gathering data when the researcher knows exactly what is required and how to measure the variables of interest. Also questionnaire is one of the most popular methods of conducting scholarly research; it provides a convenient way of gathering information from a target population. As Berdie, Anderson, and Niebuhr (1972) stressed that questionnaires are familiar to the most people. Additionally, questionnaires are easy to analyze, and most statistical analysis software can easily process them. It is less intrusive than telephone or face-to-face surveys. Also written questionnaires reduce interviewer bias because there is uniform question presentation. (Jahoda et al, 1962). On the other hand, questionnaires are a popular means of collecting data, but are difficult to design and often require many rewrites before an acceptable questionnaire is produced. A first consideration when designing questions is whether to include open-ended, closed-ended, partially open-ended, or rating-scale questions. (Jackson, 2009)

3.4.2 Using Likert Scale

The researcher uses 5 -point likert scale in questionnaire. Likert (1932) developed the principle of measuring attitudes by asking people to respond to a series of statements

about a topic, in terms of the extent to which they agree with them, and so tapping into the cognitive and affective components of attitudes. A five-point Likert Scale rating from 1 to 5 where (1= Strongly Disagree,2=Disagree, 3=No View, 4=Agree, 5 =Strongly Agree). Additionally, a 5- point Likert-type scale was used to increase response rate and response quality along with reducing respondents' 'frustration level'. (Babakus and Mangold, 1992). A few researchers, however, have reported higher reliabilities for five-point scales. Jenkins & Taber, 1977; Lissitz & Green, 1975; McKelvie, 1978; Remmers & Ewart, 1941) Also, the previous research has found that a five-point scale is readily comprehensible to respondents and enables them to express their views. (Marton-Williams,1986).

3.4.3 The Process of Preparing the Questionnaires

This questionnaire was developed based on research literature with a particular focus on the information technology adoption literature outlined in Chapter two. Also the questionnaire was developed in English, and then translates into Arabic. Respondents were advised to choose the most suitable and honest way to answer the questionnaire in Arabic. Additionally, respondents were assured of privacy and confidentiality and told not to write any name that might represent their identity

The questionnaire was designed according to the four practical guidelines suggested by Leedy (1997) as follows: 1) using clear language; 2) meeting research aims; 3) planning development, sample, distribution and collection; 4) creating a solid cover letter. The questionnaires were divided into different sections for easy reading and completion, and were accompanied by a short, simple and informative cover letter that informs respondents about the aims and importance of the research. The first part of questionnaire was written carefully using clear language to encourage participants to provide honest and unbiased information, and emphasize the privacy and confidentiality measures put in place, and the second part was adopted from previous study. The researcher combined two scales for two questionnaires as follow:

- The first part (Government to Employee G2E) combined of 43 items (12 items concern on the availability of ICT in the public sector organization ,8 items concern on the role of e-government in combating of monopoly power, 10 items concern on the role of e-government in combating of discretionary authority, 4

items relating to the role of e-government in combating of middlemen's intervention, and 9 items relating to the role of e-government in increasing transparency), besides the personal information, and the information about the organizations .

- The second part (Government to Citizens G2C) combined of 8 items, all related to the role of e-government in combating corruption, besides the personal information.

3.5 Data Collecting

The process through which the data are gathered in order to investigate the variables under study is called data collection; there are various methods to collect data such as quantitative methods or qualitative methods, besides, the secondary data analysis for literatures (Sekaran & Bougie, 2010). In this researcher, primary data collected quantitatively through survey method by administering questionnaires to the sample under investigation. The secondary data was collected from various sources of previous literatures. The questionnaires administered personally, also the gathering of questionnaires has been carried out personally by the researcher. Since, the researcher has plentiful experience and relations with many employees in the public sector, and citizens. So the administration of the questionnaires was self-handed by the researcher to the respondents. Follow up to gather the questionnaires were carried out through calling respondents to their mobile phones. According to Sekaran and Bougie (2010), there are some advantages of personally administered questionnaires. For instance, the researcher can collect the finished responses in a short period of time. Additionally, the researcher can elevate any concerns and clarify any points in the survey that is unclear. Furthermore, the researcher encourages and urges the participants to answer the questions, with the ability to present the research topic and concept. Finally, using questionnaire is generally inexpensive process with the ability to target a larger number of respondents. However, the researcher has to overcome some practical problems with conducting the questionnaire surveys, especially the one related to employee of public sector. The problem was how to reach the participants. In recent years, Yemen faced a very difficult situation; almost thousands of employees have lost their wages. Hence, most of them are not available in their work place.

3.6 Reliability Scale

Reliability means the ability of the measure to generate the same result if the same instrument is repeated several times. In other word, reliability is the degree to which the assessment tool produces stable and consistent results (Sekaran&Bougie, 2010). The most common method to measure the reliability of the questionnaire is Cronbach's Alpha Coefficient. Cronbach's alpha is a measure of internal consistency that is how closely related a set of items are as a group. Some scholars find Cronbach's alpha to be too sensitive to number of measures items, and prefer the use of the raw mean interterm correlation as a statistical marker of internal consistency. As noted by Streiner (2003), "one of the central tenets of classical test theory is that scales should have a high degree of internal consistency as evidenced by Cronbach's alpha" (p. 217). Also, Clark and Watson (1995) noted that the issue of internal consistency reliability assessment is complicated by the fact that "there are no longer any clear standards regarding what level is considered acceptable" for Cronbach's alpha" .(p. 315)

Questionnaire stability was calculated by a reliability coefficient (Cronbach alpha), The reliability coefficient in the questionnaire that is targeted employees of public sector in Yemen (G to E) is (92.2%)

Table 3.1:- Scale Reliability, Cronbach's Alpha Coefficient (α) for first part of questionnaire (G2E)

Reliability Statistics		
Cronbach's Alpha	**Section**	**N of Items**
.922	All Questions	43
.785	E-government	12
.866	Combating of Monopoly Power	8
.865	Combating of Discretionary authority	10
.506	Combating of Middlemen's Intervention	4
.881	Increasing Transparency	9

Also, the reliability coefficient in the second questionnaire that is targeted citizens (G to C) is (89.2%). That means both of questionnaires confirmed the validity of the tool being used.

Table 3.2:- Scale Reliability, Cronbach's Alpha Coefficient (α) for second part questionnaire (G2C).

Reliability Statistics	
Cronbach's Alpha	**N of Items**
.892	8

3.7 Scale Validity

One of the most common tasks often encountered in social science research is ascertaining the validity and reliability of a measurement tool. (Kember D, Leung DY. 2008). Validity of measurement instrument could be defined as the ability of the instrument to actually measure the concept that it is established to measure. The researchers always wish to know if the measurement tool employed actually measures the intended research concept or construct (is it valid? or true measures?) or if the measurement tools used to quantify the variables provide stable or consistent responses (is it reliable? or repeatable?).

Firstly, after the first part of questionnaire that is targeted to employees was designed, the researcher uses two ways to ensure that the questionnaires are valid. First, the researcher dispatched copies of questionnaires targets a number of experts who specialize in management and business studies at the Sana'a University to be assessed. Each tool was assessed by at least three people. This had two main aims: to improve the questions and to test comprehension and clarity before the actual survey was administered (Saunders et al., 2003; Miles and Huberman, 1994). Then the researcher received comments and suggestions that helped in improving the first part of questionnaire, that is targeted o employee (G2E), to led to the removal and modification of some questions. These comments and suggestions concerned the wording or format of some statements. This group of administrators is as follow:-

Table3.3:- The group of administrators

Prof	scientific department	Specialization	Positions
Senan Al-marhthi	Business Administration	Business Administration	Sana'a University
Ahmed Al-Maweri'	Public Administration	Public Administration	Sana'a University
Ahmed Al-Dhurafi	Business Administration	Strategic Management	Sana'a University

Afterwards the researcher uses Pearson correlations coefficient test to ensure that the objectives of the measurement tool are achieved and showed how closely each dimension of the scale relates to the overall score of the questionnaire. As presented in Table 3.5, correlations for all dimensions measuring each construct were all statistically significant at 0.01 levels. Hence, the scales testing each construct in the first part of questionnaire were substantiated to be valid for investigating the concept around which the instrument was designed.

Table 3.4 Scale validity, Correlation coefficient between each construct and the total scale.

Correlations		
Section	**Pearson Correlation**	**P-Value**
E-government	.589**	.000
Combating of Monopoly Power	.858**	.000
Combating of Discretionary authority	.856**	.000
Combating of middlemen's Intervention	.695**	.000
Increasing Transparency	. 726**	.000

Secondly, the researcher uses the questionnaire that was published in AL-Hussaini et.al. (2013)'s research to target the citizens (G2C). This questionnaire was presented to a group of administrators and PhD legal professionals at the Public Authority for Applied Education (Business Studies) to ensure the veracity of the questionnaire.

3.8 Pilot Study

As noted above, the design of a questionnaire is crucial in facilitating the desired information (Saunders et al, 2007), and as a part of the effort to ensure that the final formulation is as clear as possible; it is important to undertake some form of pilot. For a pilot study, the number of participants should be sufficient to include any major variations in the population that the researcher feels are likely to affect responses, and this generally means a minimum of ten respondents. Fink (2003) So, to increase validity and improve the quality of the questionnaire, the researcher conducted a pilot study to assess the clarity of questions, whether or not the questions yield relevant information, and the time required to complete the questionnaires. Ten questionnaires were administered to each target groups, and the pilot study indicated that the first and second questionnaires were

clear and understandable, and were answered precisely by respondent.

3.9 Questionnaire Translation

Saunders et al (2003: 300) argued that translating questions and associated into another language requires care if your translated or target questionnaire is to be decoded and answered by respondents in the way you intended. The original questionnaire was developed in the English language but a translation into Arabic was conducted because some respondents did not speak English, and Arabic was their first language. Therefore, the researcher provided the questionnaire in one language, Arabic, to maximize the effectiveness of the data collection. In order to maximize validity, the researcher followed two distinct phase processes. In the first phase, the researcher translated the English version of the questionnaire into Arabic. Then, in the second stage, the Arabic version was translated back into English by an interpreter.

3.10Data analysis

Data Analysis is the process of systematically applying statistical and/or logical techniques to describe and illustrate, condense and recap, and evaluate data. According to Shamoo and Resnik (2003), various analytic procedures provide a way of drawing inductive inferences from data and distinguishing the signal. Robson (2002) noted that analysis is an extremely important aspect of the research process. Likewise, Yin (1994) has maintained that each research project starts with a common analytical strategy, which involves the researcher analyzing as she/he goes along, in order to recognize when saturation point has been reached, and to assist in the analysis of new data. Following the instructions of the SPSS program, all the demographic responses were coded under certain categories. In a sequential order, the descriptive frequencies for all the demographics were derived with the help of SPSS Statistics Program. Also, the mean and standard deviation analysis was carried out for measurement. The statistical methods that were used are:

- **Frequencies:** It is another measure of central tendency that tells us the number that occurred the most often in your data set.
- **Mean**: The mean is the average of all numbers. It also provides a way of assigning an average value to a set of numerical quantities. This average amount determines the midpoint of a data set also known as Central Tendency.

- **Standard Deviation** It is a measure that is used to quantify the amount of variation or dispersion of a set of data values. A low standard deviation indicates that the data points tend to be close to the mean (also called the expected value) of the set, while a high standard deviation indicates that the data points are spread out over a wider range of values.
- **Pearson correlation coefficient ®:** The most common measure of correlation in stats is the Pearson Correlation. Analysis of Pearson correlation will be used to check for significance relationships among of the variables. Also it is appropriate to investigate hypotheses with proposed relationships between one or more factors of interest (independent variables) and an outcome (dependent) variable. (Sekaran .2003). Correlation between sets of data is a measure of how well they are related. It is not able to tell the difference between dependent and independent variables. It only tells you whether there is a relationship. The results will be between -1 and 1. You will very rarely see 0, -1 or 1. You'll get a number somewhere in between those values. Hence, the researcher applied this test to understand and determine the strength and the direction of the relationship between independent variables (E-government) and dependent variable (Combating of Monopoly Power, Combating of Discretionary authority, Combating of Middlemen's intervention, and increasing Transparency).
- **MANOVA analysis**. It is a procedure for comparing multivariate sample means. As a multivariate procedure, it is used when there are two or more dependent variables, and is typically followed by significance tests involving individual dependent variables separately.
- **Analysis of Variance (ANOVA) Test**: It is powerful parametric methods for testing the significance of differences between sample means where more than two conditions are used, or even when several independent variables are involved. ANOVA test helps in examining and comparing the difference in means of more than two groups on an interval or ratio scaled dependent variable (Sekeran&Bougie, 2010). The result developed by measuring the significance ($p < 0.05$) of the difference in means of the groups under study. In this study, ANOVA analysis was used to examine whether the views of participants about the combating corruption in the public sector Yemen differ significantly based on the type of Age, Gender, Experience, Position, or Academic Qualification.

3.11 Chapter Summary

For any research study, the importance of choosing the methodology best suited to the aims of the research should not be underestimated. However, it is also important to ensure that considerations of the methodological 'purity' of the study do not overshadow the aims. The researcher in this chapter provided the rationale towards selecting a suitable research strategy and outlines the research methodology that has been followed to ensure that its design is appropriate to provide the answers to the research questions, test the research hypothesis, and achieve its aims. Also this chapter went on to describe the adopted data collection procedures and techniques, data analysis technique, and the kinds of criteria used to judge the quality of the research design. Finally, this chapter explained how the researcher overcame problems that arose in conducting the chosen methodology.

CHAPTER FOUR

DATA ANALYSIS, RESULT AND DISCUSSION

4.1 Introduction

This chapter deals with data analysis and discussion of the obtained results. The first section presents the data screening procedures. Then it goes on to illustrate descriptive statistics of the first and second questionnaires for the demographic variables of gender, age, academic qualification, experience, and position. It highlights the descriptive statistics (mean, standard deviation) for the factors under study. Following the descriptive statistics, the inferential statistics will be presented and discussed to substantiate the hypotheses using Pearson's Correlation Coefficient, MANOVA analysis, , and ANOVA test.

4.2 Data Screening

A total of 261 of first part of questionnaire (Government to Employee) and a total of 120 of second part of questionnaire (Government to Citizens) were collected from the samples. In order to prepare the data for analysis to test the research hypothesis, it is of utmost importance to finalize the preliminary procedures of data screening to ensure that the data are eligible for further analysis. These procedures are data coding, data entry, and data editing. The data was coded, entered, edited, and analyzed by SPSS program version 20 with the assistance of specialized Statistician.

4.2.1 Data Coding

At the very beginning of data preparation is the step of data coding which involves specifying numbers to the variables and to the responses of the respondents before entry to the database.

The first part of questionnaire G2E comprised a total of 43 items in five point Likert scale, measuring five variables of combating of monopoly power, combating of

discretionary authority, combating of middlemen's intervention, increasing transparency, and e-government. In addition, it included five demographic variables and four variables about information of the organizations as shown in Appendix (A). The second part of questionnaire G2C comprised a total of 8 items in five point Likert scale, measuring one variable which is the effect of using e-government on corruption. Additionally, it included four demographic variables as shown in Appendix (B).

Each single response for the both items of both parts of questionnaire was coded via the actual number circled by the respondents (1, 2, 3, 4, 5) with 1= Strongly Disagree, 2= Disagree, 3= No View, 4= Agree, and 5= Strongly Agree. For the demographic variables, Gender was coded as 1 for male and 2 for female. The rest demographic variables were coded categorically from 1 to 5.

4.2.2 Data Entry

After coding, all the responses were entered manually to SPSS. The first column was assigned for the response ID number to simplify data sorting and analyzing. The other columns represented other variable of interest of research. Each row represented one case of responses. Hence, the total number of rows was 261(of first part of questionnaire) and 120 (of second part of questionnaire) in accordance with the total number of two parts of the questionnaire collected.

4.2.3 Data Editing

After the data was entered, it was edited in term of missing values and data transformation. This study adopted the assigning mean value of responses to the missing entries. As stated by Tabachnick and Fiddel (2007) when the proportion of missing value is very small, the mean of the values could be used to estimate and substitute the missing data. Then, we also carried out data transformation after data entry and editing. Data transformation is a data coding variation, which is the process of altering the original numerical representation of a quantitative value to another value (Sekaran and Bougie, 2010). The data transformation was not required in this research, because all the questions are in positive forms.

4.3 Phase 1: First Part of Questionnaire (Government to Employee) Results

4.3.1 Sample Profile

The demographic characteristics of the data collected and sample profile are presented and discussed in this section. Descriptive statistics help to quantify the main features of the sample and the data gathered. The descriptive frequencies are illustrated in tabulation and graphical presentation for better understanding to the results. The questionnaire was distributed to 370 employees in government organizations that have level of e-government practices. Only 261 questionnaires were returned over a period of 4 weeks which represent about 70%of response rate.

4.3.1.1 Gender

Frequencies showed that out of 261 respondents, approximately 26.4% was female (n=69) and 73.6% of the sample was male (n=192) as presented in Table 4.1.

Table 4.1 Frequency of Male and Female of first part of (G2E) Questionnaire

Gender			
		Frequency	**Percent**
Valid	**Male**	192	73.6%
	Female	69	26.4%
	Total	261	100%

4.3.1.2 Age

Frequency analysis of the age indicated that 46.7% (n=122) of respondents belonging to the group in the age of 25-35 years, 46.4% (n=121) to 36-45 age group, 5.4 % (n=14) in the age of more than 45 years old, and finally, only 1.5 % (n=4) belonged to the group of less than 25 years old. As presented in Table 4.2.

Table 4.2 Frequency of Age of first part (G2E) of Questionnaire

Age			
		Frequency	**Percent**
Valid	**less than 25**	4	1.5%
	25-35	122	46.7%
	36-45	121	46.4%
	more than 45	14	5.4%
	Total	261	100%

4.3.1.3 Academic Qualification

As demonstrated in in Table 4.3 below, frequency results for the academic qualification revealed that approximately 69.3 % of the respondents (n=181) earning Bachelor Degree, 19.2% (n=50) having Master Degree, 9.2% (n=24) with Diploma Degree, 1.9 % of the sample (n=5) having secondary school, and finally, only .4 % (n=1) earning PHD Degree. Academic Qualification profile is illustrated in Table 4.3.

Table 4.3 Frequency of Academic Qualification of first part (G2E) of Questionnaire

Academic Qualification			
		Frequency	**Percent**
Valid	**Secondary School**	5	1.9%
	Diploma	24	9.2%
	Bachelor	181	69.3%
	Master	50	19.2%
	PHD	1	0.4%
	Total	261	100%

4.3.1.4 Position

This research investigated the public sector employees; Based on the sample profile, the frequency distribution showed that 41.4% (n=108) of the respondents was employee position, 28.0% (n=73) belonged to director position, 22.6% (n=59) belonged to manager position and finally, 8% (n=21) of the respondents working as a general manager. As presented in Table 4.4.

Table 4.4 Frequency of Position of first part (G2E) of Questionnaire

Position			
		Frequency	**Percent**
Valid	**Employee**	108	41.4%
	Director	73	28.0%
	Manager	59	22.6%
	general manager	21	8.0%
	Total	261	100%

4.3.1.5 Experience

As revealed by Table 4.5, the highest percentage of length experience was 35.2% (n=92) belonged to the group between 6-10 years, second frequency of 28.0% (n=73) came from 11-15 years of experience, then the category of 16-19 years with 15.3% (n=40) . The category of less than 5 years was 11.9% (n=31), also the category of 20-25 was with 8.4% (n=22), and finally, 1.1% (n=3) form group of more than 26 group.

Table 4.5 Frequency of Experiences of first part (G2E) of Questionnaire

Experiences			
		Frequency	**Percent**
Valid	**less than 5 years**	31	11.9%
	6-10years	92	35.2%
	11-15 years	73	28.0%
	16-19 years	40	15.3%
	20-25 years	22	8.4%
	more than 26 years	3	1.1%
	Total	261	100%

4.4 Phase 2: Second Part of Questionnaire (Government to Citizens) Results

4.4.1 Profile Sampling

The demographic characteristics of the data collected and sample profile are presented and discussed in this section. Descriptive statistics help to quantify the main features of the sample and the data gathered. The descriptive frequencies are illustrated in tabulation and graphical presentation for better understanding to the results. A total of 120 questionnaires were distributed. Data collected were from 120 respondents, the response rate was 100%. The sample was drawn from the citizens who are using the target government organization's services.

4.4.1.1 Gender

Frequencies showed that out of 120 respondents, approximately 43.3% was Female (n=52) and 56.7% of the sample was Male (n=68) as presented in Table 4.6.

Table 4.6 Frequency of Male and Female of second part (G2C) of Questionnaire

Gender			
		Frequency	**Percent**
Valid	**Male**	68	56.7%
	Female	52	43.3%
	Total	120	100%

4.4.1.2 Academic Qualification

As demonstrated in in Table 4.7 below, frequency results for the academic qualification revealed that approximately 46.7 % of the respondents (n=56) earning Master Degree, 42.5% (n=51) having Bachelor Degree, 5% (n=6) with Diploma Degree, 3.3 % of the sample (n=4) having PHD Degree , and finally, only .2.5 % (n=3) earning Secondary School.

Table 4.7 Frequency of Academic Qualification of second part (G2C) of Questionnaire

Academic Qualification			
		Frequency	**Percent**
Valid	**Secondary School**	3	2.5%
	Diploma	6	5.0%
	Bachelor	51	42.5%
	Master	56	46.7%
	PHD	4	3.3%
	Total	120	100%

4.4.1.3 Place of Work

Frequencies showed that out of 120 respondents, approximately 59.2% was working in private sector (n=71) and 37.5% of the sample was working in public sector (n=45), and finally, 3.3 % (n=4) was working in both (private& public sector) as presented in Table 4.8.

Table 4.8 Frequency of Place of Work of second part (G2C) of Questionnaire

Place of Work			
		Frequency	**Percent**
Valid	**public sector**	45	37.5%
	private sector	71	59.2%
	Both	4	3.3%
	Total	120	100%

4.4.1.4 Experience

As revealed by Table 4.9, the highest percentage of experience was 34.2% (n=41) belonging to the group between 5-9 years, second frequency of 26.7% (n=32) came from 10- 14 years of experience. Then the category of more than 15 years was 25.0% (n=30), and finally, 14.2% (n=17) came from less than 5 years group.

Table 4.9 Frequency of Experiences of second part (G2C) of Questionnaire

Experiences			
		Frequency	**Percent**
Valid	**less than 5 years**	17	14.2%
	5-9 years	41	34.2%
	10-14 years	32	26.7%
	more than 15	30	25.0%
	Total	120	100%

4.5 Descriptive Statistics for Quantifiable Variables

The main features of the variables under study are presented and discussed in this section. Normality assumption was discussed in this section too. Furthermore, the means and standard deviations were shown and explained. Normality of the distribution is the underlying assumption for most statistical tests. As a consequence, all the variables in the current research (E-government, combating of Monopoly Power, combating of Discretionary authority, combating of Middlemen's intervention, and increasing Transparency) in the first questionnaire, and the one variable(the effects of e-government on corruption) in second questionnaire were tested for normality of distribution of the score of measures to ensure that this fundamental assumption was met before proceeding with inferential examination to prove the proposed hypothesis. Histogram for each factor was plotted with superimposing the normality curve to help in determining the normal distribution of the data (Appendix C). Besides, normality statistics in term of skewness and kurtosis for the five variables were illustrated in Table 4.10, and Table 4.11.

The data is considered to be normally distributed when the skewness value is between +/- 3. Also, for the kurtosis the value must be between +/- 10 to meet the normality assumption (Cohen, Cohen, West & Aiken, 2003). However, according to Tabachnik and Fidell (2007), when the sample size is large, of 200 or more, the departure from normality does not affect the results significantly. Consequently, based on the above mentioned criteria, all the scales in this study were assumed to have acceptable statistics for normality.

Table 4.10 Skewness and Kurtosis Analysis of first part of questionnaire (Government to Employee)

Descriptive					
	E-government	**Combating of Monopoly Power**	**Combating of Discretionary authority**	**Combating of middleman's Intervention**	**Increasing Transparency**
Mean	3.4662	3.2088	3.2130	3.1149	3.5185
Std. Deviation	0.58978	.75055	0.756906	.93114	0.70334
Skewness	-.142	-.020	.195	.977	-.840
Std. Error of Skewness	.151	.151	.151	.151	.151
Kurtosis	-.419	-.304	-.513	6.228	.919
Std. Error of Kurtosis	.300	.300	.300	.300	.300

Table 4.11 Skewness and Kurtosis Analysis of second part of questionnaire (Government to Citizens)

Descriptive	
	Combating corruption
Mean	3.647917
std. Deviation	0.905310
Skewness	-0.426
Std. Error of Skewness	.221
Kurtosis	-0.519
Std. Error of Kurtosis	.438

Table 4.10 and Table 4.11 presented the descriptive statistics (mean, standard deviation) for the measured variables in both parts of questionnaire. The means of the factors of e-government, combating of Monopoly Power, combating of Discretionary authority, combating of middleman's Intervention, and increasing Transparency in the first part of questionnaire (G2E) and factor of the effects of e-government on corruption in the second part of questionnaire (G2C) were measured using escalating scale from 1, the minimum scored value, to 5, the maximum value that could be scored. In which 1= very low level (Strongly Disagree) increasing to 5= very high (Strongly Agree). Therefore, low mean value indicates low level and high mean value represents high level of combating of monopoly power, combating of discretionary authority, and combating of middleman's intervention, as well as increasing transparency by e-government levels.

4.6 Data Analysis

In the current section, the inferential statistics were performed and discussed. The hypotheses under investigation were tested by examining the correlation for the first four hypotheses. Moreover, the regression analysis was produced to estimate the variability in combating of monopoly Power, combating of discretionary authority, and combating of middlemen's intervention, as well as increasing transparency predicted by e-government. Also, the analysis of means and Std. Deviation test was conduct to test the last questions. Finally, the Analysis of variance (ANOVA) test was conducted to examine the differences in participants' views in both questionnaires about combating corruption n in the public sector in Yemen due to a variation in demographic factors.

4.6.1 The Technique Used

a) Correlation Analysis

Pearson's Correlation test was performed in order to study the strength and direction of the relationships stated in the proposed hypotheses (H1, H2, H3, and H4) for the reason to establish the relationship of factors. According to Cohen (1988), Pearson's Correlation Coefficient is used to examine the correlation between dependent and independent variables. In addition, the research suggested that the correlation is considered significant when $p< 0.05$, and the strength of the correlation is considered small when r = 0.01-0.29, medium when r = 0.3-0.49, and large when r = 0.5-1. Graphical scatter plot diagrams were used in this research in order to demonstrate the patterns of the associations and provide a better visualization for the linear relationships between the factors under study. The scatter plot diagram provides a visual representation for the linear relationships between the dependent and independents variables. In addition, it helps in the interpretation of the correlation coefficient results. When the relationship is linear, the points in the scatter plot are clustered around a straight line (regression line). (Cohen et al., 2003)

To test the hypotheses

Hypothesis One: *Higher level of e-government practices is significantly associated with higher level in combating of monopoly power in public sector organizations.*

The hypothesis proposed a direct relationship between e-government and combating of monopoly power. This relationship was investigated by running Pearson's Correlation test. The result demonstrated a medium positive and significant relationship between e-government and combating of monopoly power ($r = .360$ **, $p=.000 < 0.001$). Accordingly, it could be inferred that government organizations who scored high in e-government would report a high level in combating of monopoly power. Therefore, Hypothesis 1 was supported. Table 4.12 provides correlation analysis between the factors under study.

Table 4.12 Correlation analysis for combating of Monopoly Power level and E-government level

Correlations			
		E-government	**Combating of Monopoly Power**
E-government	Pearson Correlation	1	.360**
	Sig. (2-tailed)		.000
	N	261	261
Combating of Monopoly Power	Pearson Correlation	.360**	1
	Sig. (2-tailed)	.000	
	N	261	261

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

The direct linear correlation between combating of monopoly power and e-government is graphically presented in Figure 4.1. As can be seen in the figure, most the points in the scatter plot graph clustered around a straight line. Additionally, it was noted that the rise in the level of combating of monopoly power associated with a rise in the level of e-government.

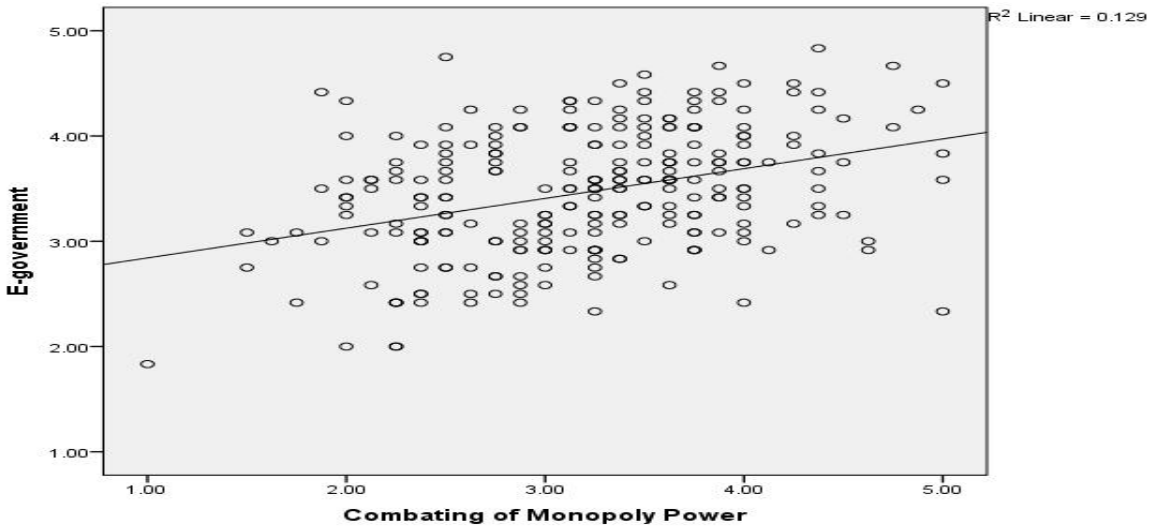

Figure 4.1 Scatter Diagram of relationship between combating of Monopoly Power and E-government

Hypothesis Two: *Higher level of e-government practices is significantly associated with higher level in combating of discretionary authority in public sector organizations.*

The hypothesis proposed that there is a direct relationship between e-government and combating of discretionary authority. This relationship was investigated by running Pearson's correlation test. The Result demonstrated a medium positive and significant relationship between e-government and combating of discretionary authority ($r = .302^{**}$, $p=.000 < 0.001$). Accordingly, it could be inferred that organizations who scored high in -government would report a high level in combating of discretionary authority. Therefore, Hypothesis 2 was supported. Table 4.13 provides correlation analysis between the factors under study.

Table 4.13 Correlation analysis for combating of Discretionary authority and E-government

Correlations			
		E-government	**Combating of Discretionary authority**
E-government	Pearson Correlation	1	.302**
	Sig. (2-tailed)		.000
	N	261	261
Combating of Discretionary authority	Pearson Correlation	.302**	1
	Sig. (2-tailed)	.000	
	N	261	261

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

A good picture of the direct linear relationship between combating of discretionary authority as dependent variable and e-government as independent variable is represented in Figure 4.2. It showed that most the points are clustered around a straight line. Besides, it seen that when the scores of e-government increased, the scores of combating of discretionary authority also increased. Hence, an additional support for the positive linear relationship between both variables was visually illustrated by scatter plot diagram.

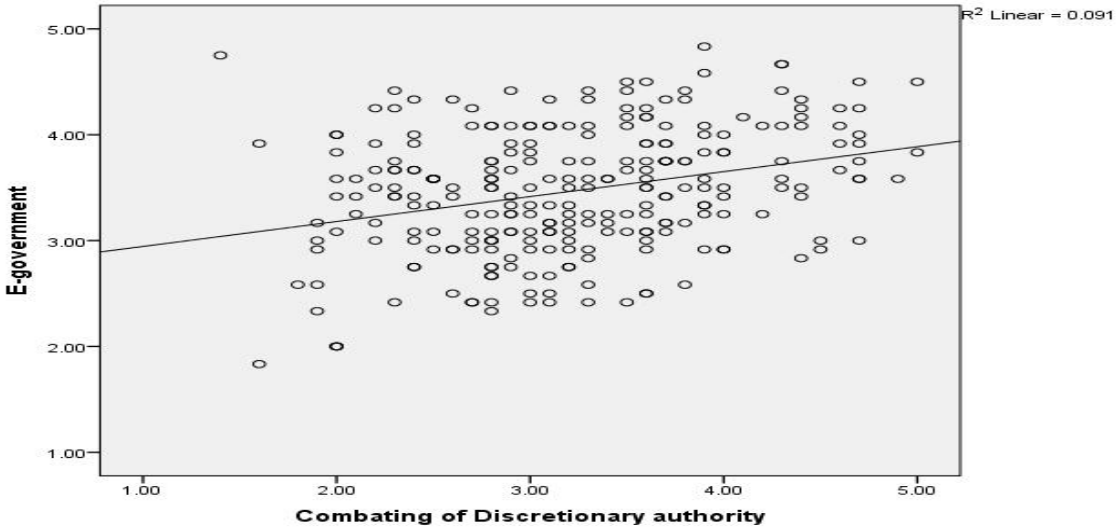

Figure 4.2 Scatter Diagram of relationship between combating of Discretionary authority and E-government

Hypothesis Three: *Higher level of e-government practices is significantly associated with higher level in combating of middlemen's intervention in public sector organizations.*

The hypothesis proposed a direct relationship between e-government and combating of middlemen's intervention. The correlation coefficient for the above mentioned factors was tested for the strength, direction and significance of the relationship according to the standard provided by Cohen (1988). The results revealed a medium positive relationship between e-government and combating of middlemen's intervention ($r = 0.297^{**}$, $p=.000 < .001$). Consequently, public organizations which perceived a higher level of e-government also were likely to develop a higher level of combating of middlemen's intervention. Therefore, Hypothesis 3 was accepted. Table 4.14 provides correlation analysis between the factors under study.

Table 4.14 Correlation analysis for combating of Middlemen's intervention and E-government

Correlation			
		E-government	**Combating of middleman's Intervention**
E-government	Pearson Correlation	1	.297**
	Sig. (2-tailed)		.000
	N	261	261
Combating of middlemen's Intervention	Pearson Correlation	.297**	1
	Sig. (2-tailed)	.000	
	N	261	261

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

The positive linear correlation for the above mentioned factors is graphically supported in Figure 4.3. As can be seen in the figure, most the points in the scatter plot graph clustered around a straight line. Additionally, it was noted that the rise in the points of combating of middlemen's intervention as a result of the rise in the points of e-government.

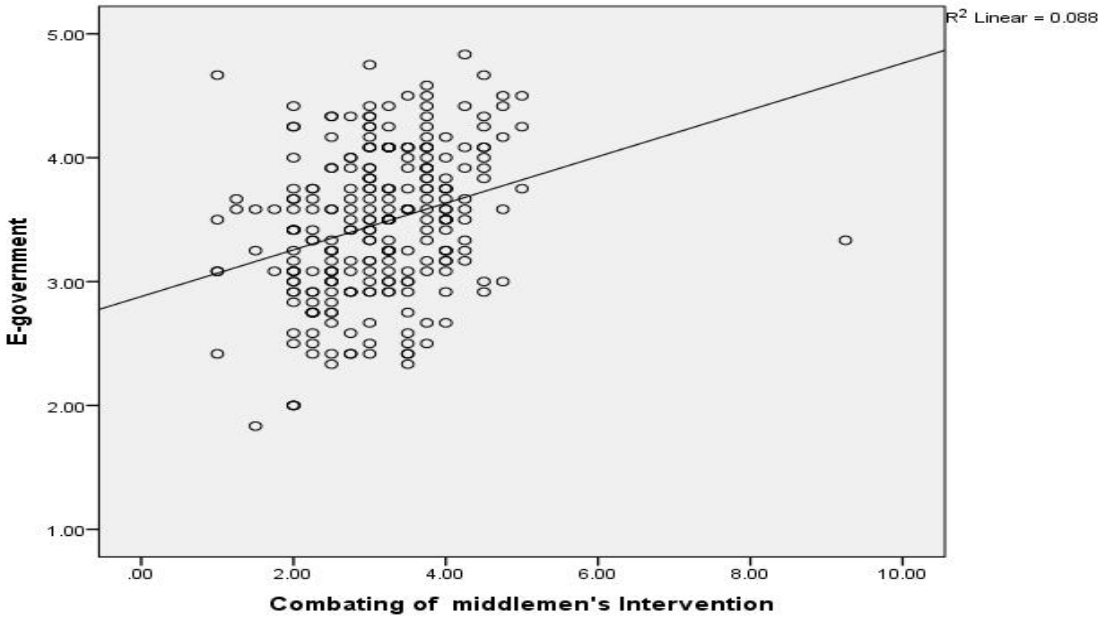

Figure 4.3 Scatter Diagram of relationship between combating of Middleman's Intervention and E-government

Hypothesis Four: *Higher level of e-government practices is significantly associated with higher level of increasing of transparency in the public sector organizations.*

This hypothesis suggested a direct relationship between e-government and increasing of transparency. The correlation was examined by running Pearson's correlation coefficient. There was a statistically significant (p=.000 < 0.005) but rather weak positive correlation (r =. 144*) between increasing transparency and e-government. Thus, e-government increases significantly transparency in the public sector organizations. Table 4.15 provides correlation analysis between the factors under study. Accordingly, it could be inferred that organizations who scored high in e-government would report a high level in transparency. Hence, Hypothesis 4 was accepted.

Table 4.15 Correlation analysis for increasing Transparency and E-government

Correlations			
		E-government	**Transparency**
E-government	Pearson Correlation	1	.144*
	Sig. (2-tailed)		.000
	N	261	261
Increasing Transparency	Pearson Correlation	.144*	1
	Sig. (2-tailed)	.000	
	N	261	261

*. Correlation is significant at the 0.05 level (2-tailed).

The existence and direction of the linear relationship between transparency and e-government is represented in the Figure 4.4 above. The scatter plot diagram revealed that most the scores were scattered around the regression line. Also, the positive correlation of the scores was noticed by accompanied increase in transparency and e-government scores.

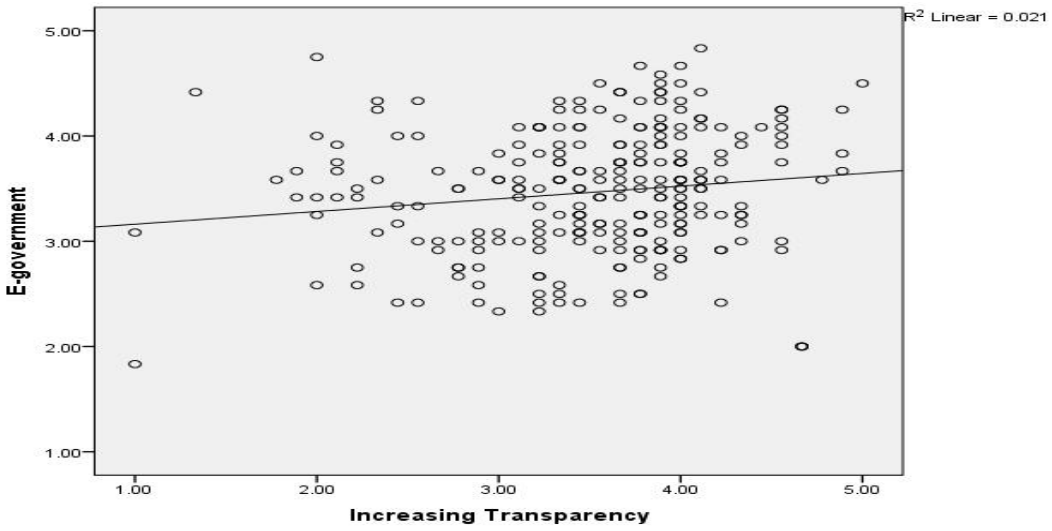

Figure 4.4 Scatter Diagram of relationship between increasing Transparency and E-government

b) MANOVA Analysis

MANOVA analysis is a procedure for comparing multivariate sample means. As a multivariate procedure, it is used when there are two or more dependent variables, and is typically followed by significance tests involving individual dependent variables separately. This type of analysis is desirable because researchers often hypothesize that a given outcome of interest is affected or influenced by a predictor. In this research, MANOVA analysis was conducted to investigate overall relationship between e-government and all corruption driver the (combating of monopoly power, combating of discretionary authority, combating of middlemen's intervention, and increasing Transparency) which could be resulted from the variance in the predictor (E-government).

Hypothesis Five: *E-government practices is a significant predictor of the level of corruption as measured by the combined level of corruption drivers (monopoly of power; authority discretion; middlemen's intervention and absence transparency) in Yemen's Public Sector.*

There was a statistically significance differences in combating of corruption level based on e-government level, F (128, 897) =1.890, p= .000 < 0.005; Wilks' Lambda = 0.387; Partial Eta Squared = 0.211; Observed power=1.000 as seen in table 4.16. As long as the value of Partial Eta Squared = 0.211, that means 21% of variance in dependent variables is attributable to e-government. Consequently, hypothesis five was accepted.

Table 4.16 MANOVA Tests

Multivariate Tests		
	E-government	
	Pillai's Trace	Wilks' Lambda
Value	.835	.387
F	1.881	1.890
Hypothesis df	128.000	128.000
Error df	912.000	897.736
Sig.	.000	.000
Partial Eta Squared	.209	.211
Noncent. Parameter	240.738	240.467
Observed Power[d]	1.000	1.000

As seen in Table 4.17 below, e-government has statistically significance effect on:

- Combating of Monopoly Power, f (32,228) = 2.638; p =.000< .005 ; Partial Eta Squared = .270 ;Observed power =1.000.
- Combating of Discretionary authority, f (32,228) = 1.892; p =.004 < .005; Partial Eta Squared = .210; Observed power =0.997.
- Combating of Middlemen's intervention, f (32,228) = 1.738; p =.011 > .005; Partial Eta Squared = .196; Observed power =0.994.
- Increasing Transparency, f (32,228) = 2.250, p =.004 < .005; Partial Eta Squared = .240; Observed power = 1.000.

Table 4.17 MANOVA Analysis: Tests of Between-Subjects Effects

Tests of Between-Subjects Effects				
	Source			
	E-government			
	Dependent Variable			
	Combating of Monopoly Power	Combating of Discretionary authority	Combating of middlemen's Intervention	Increasing Transparency
Type III Sum of Squares	39.580	31.254	44.203	30.866
Df1	32	32	32	32
Df2	228	228	228	228
Mean Square	1.237	.977	1.381	.965
F	2.638	1.892	1.738	2.250
Sig.	.000	.004	.011	.000
Partial Eta Squared	.270	.210	.196	.240
Noncent. Parameter	84.430	60.543	55.613	71.993
Observed Power[e]	1.000	.997	.994	1.000

e. Computed using alpha = .05

Therefore, this research demonstrated how e-government can combat corruption positively by combating monopoly power, discretionary authority, and middlemen's intervention, and increasing transparency within public sector organizations. It examined this important link and show that a 1% increase in the e-government Index may result in a 21% increase in combating corruption. Thus, our findings confirmed that increasing of level of e-government will result in combating of corruption.

c) Analysis of Means and Std. Deviation Test.

Hypothesis Six: *Higher level of e-government practices reduces significantly corruption in the public sector in Yemen from (the point of view of citizens).*

The majority of participants 73% believe that e-government decreases significantly corruption in the government sector, with Mean value of 3.6479, and Std. Deviation of 0.90532.This result indicated that e-government significantly reduces corruption in the public sector organizations as preserved by majority of citizens. Therefore, Hypothesis six was accepted. Table 4.18 provides means and std. deviation

analysis between the factors under study.

Table 4.18: Means and Std. Deviation

Means and Std. Deviation					
	N	**Mean**	**Std. Deviation**	**Std. Error Mean**	**Percent%**
Combating Corruption By E-government(citizens' point of view)	**120**	**3.6479**	**0.90531**	**.08264**	**73%**

A summary of the results presented in the table 4.19 are below:

1- The majority of the samples of citizens agreed (61.7%) that e-government helped to reduce accepting commissions in return for personal deals and contracts in government sector with a 3.75 mean value.
2- 2. 61.7 % of participants indicated that the use of e-government helped to reduce asking gifts and favors from the users of government services in government sector, with a mean value of 4.57.
3- 70.8 % agreed that the use of e-government reduces blackmailing users of government services in in government sector, with a mean value of 3.75.
4- 70.8% of participants revealed that the use of e-government restricts using the position in public office to achieve personal interests in government sector with a mean value of 3.81.
5- With a mean value of 3.73, 69.2% of participants believed that they benefited from e-government when employees of government sector started respecting laws and regulations in public organizations.
6- 64.2% of samples of citizens believe that e-government reduces Bias and favoritism for groups and individuals in public organizations, with a mean value of 3.36.
7- 66.7% of participants agreed that e-government contributed to reduce citizen abuse and inequality in dealing with them in government sector, with a mean value of 3.74.

Table 4:19: Distribution and Relative Means for the Impact of E-government on Reducing Corruption in the Government Sector of Yemen (n= 120)

Means							
E-government	**Strongly Disagree**	**Disagree**	**No View**	**Agree**	**Strongly Agree**	**Mean**	**Direction**
	No.	**No.**	**No.**	**No.**	**No.**		
	%	**%**	**%**	**%**	**%**		
1-e-government helped to reduce accepting commissions in return for personal deals and contracts in the organizations that you deal with	5	28	13	38	36		
	4.2%	23.3%	10.8%	31.7%	30.0%	3.60	Positive
2-e-government helped to reduce asking gifts and favors from the users of government services in the organizations that you deal with	5	29	12	41	33	3.57	
	4.2%	24.2%	10.0%	34.2%	27.5%		Positive
3-e-government helped to reduce blackmailing users of public sector services in the organizations that you deal with	5	18	12	52	33	3.75	
	4.2%	15.0%	10.0%	43.3%	27.5%		Positive
4-e-government helped to reduce using the position in public office to achieve personal interests in the organizations that you deal with	4	19	12	46	39	3.81	
	3.3%	15.8%	10.0%	38.3%	32.5%		Positive
5-e-government helped to increase respecting laws and regulations in the organizations that you deal with	4	20	13	51	32	3.73	
	3.3%	16.7%	10.8%	42.5%	26.7%		Positive
6-e-government helped to reduce Bias and favoritism for groups and individuals in the organizations that you deal with	7	20	16	45	32		
	5.8%	16.7%	13.3%	37.5%	26.7%	3.63	Positive
7-e-government contributed to reducing citizen abuse and inequality in dealing with them in the organizations that you deal with	7	13	20	44	36		
	5.8%	10.8%	16.7%	36.7%	30.0%	3.74	Positive
8-e-government helped to reduce asking bribery in the organizations that you deal with	11	25	19	39	26	3.37	
	9.2%	20.8%	15.8%	32.5%	21.7%		Positive

4.6.2 Additional Findings

a) Analysis of Variance (ANOVA) Analysis.

To identify the extent of differences in participants' views about combating corruption in the public sector in Yemen (in the in first part of questionnaire G2E) due to a variation in demographic factors, the ANOVA test was executed and presented in Table 4.20. Through running ANOVA analysis for significance, the result indicated that there is no statistical significance difference of the impact of gender, Age, Position, or Academic Qualifications (p = 0.33, 0.105, 0.250., 0.795 respectively, larger than 0.05) on the views of participants about the role of e-government in combating corruption in the public sector in Yemen from the point of view of employees. However, there is significant difference in participants' views appeared due to experience differences (p=.000, less than 0.05)

Table 4.20: ANOVA ONE WAY Test (a variation in demographic factors in (G2E))

ANOVA					
demographic factors of G2E questionnaire					
	Sum of Squares	**Df**	**Mean Square**	**F**	**Sig.**
Gender	**1.832**	**1**	**1.832**	**4.615**	**.033**
Age	**3.071**	**4**	**.768**	**1.943**	**.105**
Position	**1.657**	**3**	**.552**	**1.378**	**.250**
Experience	**10.560**	**5**	**2.112**	**5.722**	**.000**
Academic Qualifications	**.681**	**4**	**.170**	**.419**	**.795**

Also, the result showed that there is a statistical significance of the impact of Duration of use of information and communication technology (ICT) in the organizations (p = 0.00, less than 0.05) on the views of participants about the role of e-government in combating corruption in the public sector Yemen. The ANOVA test was executed and presented in Table 4.21.

Table 4.21: ANOVA ONE WAY Test (a variation in Duration of use of ICT in the organizations

ANOVA					
	Sum of Squares	**Df**	**Mean Square**	**F**	**Sig**
How long does your organization use ICT applications?	13.288	18	.738	2.927	.000

Additionally, to identify the extent of differences in participants' views about combating corruption in the public sector in Yemen (in the second part of questionnaire G2C) due to a variation in demographic factors, the ANOVA test was executed and presented in Table 4.22. The result demonstrated that there is no statistical significance of the impact of gender, Place of Work, Experience, or Academic Qualifications (p = 0.811, 0.690, 0.854, 0.081 respectively, larger than 0.05) on the views of participants about the role of e-government in combating corruption in the public sector Yemen from the prospective of citizens.

Table 4.22: ANOVA ONE WAY Test (a variation in demographic factors in (G2C))

ANOVA					
Demographic factors of G2C questionnaire					
	Sum of Squares	**Df**	**Mean Square**	**F**	**Sig.**
Gender	.048	1	.048	.058	.811
place_ of_ work	.618	2	.309	.373	.690
Experience	.650	3	.217	.259	.854
Academic Qualifications	6.732	4	1.683	2.132	.081

A summary of the Hypotheses proposed in this research are presented below in Table 4.23.

Table 4.23 Summary of Hypotheses Testing Results

Hypothesis	Statement	Correlation	Results
H1	**High level of e-government practices is significantly associated with combating of monopoly power in public sector organizations.**	**r = .360****	**Accepted**
H2	**High level of e-government practices is significantly associated with combating of discretionary authority in public sector organizations.**	**r = .302****	**Accepted**
H3	**High level of e-government practices is significantly associated with combating of middlemen's intervention in public sector organizations.**	**r =.297****	**Accepted**
H4	**High level of e-government practices is significantly associated with increasing of transparency in the public sector organizations.**	**r =.144***	**Accepted**
H5	**E-government practices is a significant predictor of the level of corruption as measured by the combined level of corruption drivers (monopoly of power; authority discretion; middlemen's intervention and transparency) in Yemen's Public Sector.**		**Accepted**
H6	**E-government practices reduce significantly corruption in the public sector in Yemen from (the point of view of citizens).**		**Accepted**

4.7 Chapter Summary

This chapter presented and discussed the results of the research. The six hypotheses proposed in this research were supported. E-government practices reduced significantly Monopoly Power, Discretionary authority, Middlemen's intervention; it also increases Transparency. Additionally e-government was significantly medium in predicting and explaining the variability in dependent variables. Besides, the findings revealed that e-government practices reduced corruption in the public sector organization as perceived by citizens. Also, there is a high consensus for respondents in both parts of questionnaire that e-government decrease corruption in the public sector in Yemen. Finally, there is no statistical significance of demographic factors of age, gender, position, and academic qualification on the participants' view in both part of questionnaire. However, significant differences in participants' views appeared due to experience and Duration of use of information and communication technology (ICT) in the organizations.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 Summary of the Research

This research adopted the drivers of corruption; they are summarized in the following functional equation:

Corruption = Monopoly Power + Discretionary authority + Middlemen's intervention – Transparency (in governance)".

The purpose of this research is to examine the role of e-government in combating corruption in the public sector in Yemen. Also, it studies the relationship between combating corruption and e-government. Specifically, it investigates the relationships and significant of the correlation of E-government with combating of monopoly power, discretionary authority, and middlemen's intervention .Additionally, it investigates the relationship of e-government and transparency. Furthermore, this study examines the amount of variance accounted for by e-government in predicting combating of monopoly power, combating discretionary authority, combating middlemen's intervention, and increasing transparency.

This research tries to give a clear and well formulated answer to the following main research question:

"What is the Role of E-government in Combating Corruption in the Public Sector in Yemen?"

Chapter one is the introductory chapter which focuses on the overall purpose and research background. Research problem was discussed. In addition, the research's objectives, as well as the importance and contribution of this research were presented. Chapter two highlighted the key researches and conceptualizations in e-government and its role in combating corruption areas, and discussed some relevant literatures for the factor under study. Then, it presented the research framework. Chapter three discussed the research methodology which includes research design, sampling design, research

instrument, validity and reliability of the questionnaire, data analysis. This research is analytical for the purpose of testing and explaining the proposed hypotheses. A quantitative research was conducted by using two parts of questionnaire to address the research problem. The first part of questionnaire survey was distributed to a sample of employees from public sector organizations that have a level of e-government practices with two or three years of experiences in this field. The second part of questionnaire was distributed to a sample of citizens who are using the public sector's services. The total of 261participants in the first part of questionnaire, and the 120 participants in the second part of questionnaire were collected, validated screened, and used in analysis. Reliability of the first and second part of questionnaire was 92.2%, 89.2% respectively. Chapter four included the finding and discussion of the results which are related to the research hypotheses. Analysis of Variance (ANOVA), Pearson correlation and MANOVA analysis were used to test the proposed hypotheses and to further predicting the variance of four dependent variables. The six hypotheses proposed in this research were supported. E-government practices reduce significantly monopoly power, discretionary authority, middlemen's intervention; it also increases transparency. Additionally e-government practices were significance in predicting and explaining the variability in dependent variables. Besides, the findings revealed that e-government practices reduce corruption in the public sector organization as perceived by citizens. Finally, the last chapter will present and answer the questions of the research. In addition, it will provide recommendations for managers, organizations, and government, as well as provide suggestions for the future research.

5.2 Research Findings

To help in answering the major question, the following questions are proposed to answers**:**

First Question: *To what extent e-government practices reduce the monopoly power in the public sector organizations?*

The finding revealed that e-government practices reduce significantly the monopoly power in the public sector organization to some extent. There is a medium positive relationship between e-government and combating of monopoly power. It could be conceptualized that government organizations who scored high in e-government would

report a low level of monopoly power. Actually, decreasing monopoly power means distribution of power and responsibilities and devolution of powers and authority to lower levels of administration. The only way to do that is transferring to e-government.

The answer of the first question in this study was supported by previous researches (AL-Hussaini, et.al, 2013; Martha García-Murillo, 2010). The result of these studies indicated that e-government decreases monopoly power through the decentralization of tasks or automated transformation.

***Second Question**: To what extent e-government practices reduce the discretionary authority in public sector organizations?*

The result confirmed that e-government practices reduce the discretionary authority to a medium extent. Also the finding demonstrated a medium positive relationship between combating of discretionary authority and e-government. As a result, a higher level of e-government is seemed to be associated with a high level of combating of discretionary authority. By automating government's services, e-government would decrease discretion of public sector servants. Tracking government employee's transactions, monitoring, and controlling their official activities are made easier through e-government initiatives because it leaves behind information track and saves every movement somebody has done. If decisions and transactions will be documented and easily tracked to officials, officials will think twice before committing a corrupt behavior.

The result of the current question supported by the previous researches which indicated that discretionary authority is one of the four drivers identified as a driver of corruption, Shim & Eom (2008) and Kim et al. (2009) brought out that e-government eliminates discretionary authority from the equation by removing intermediary services and allowing citizens to conduct transactions themselves .

***Third Question**: To what extent e-government practices reduce the middlemen's Intervention in public sector organizations?*

The findings confirmed that e-government practices reduce the middlemen's Intervention in public sector organizations to a great extent. There is a medium positive relationship between e-government and combating of middlemen's Intervention. E-

government practices have a great potential to limit human interactions, particularly between bureaucrats and citizens who patronized public services. Consequently, public organizations which perceived a higher level of e-government also were likely to develop a high level in combating of middlemen's intervention. if all the transactions and procedures in e-government is done automatically, and the public services are put online, there will be no room for individuals to influence by manipulating or withholding information as long as the user has direct access to the electronic service. So e-government would eliminate the middlemen's intervention who could be a central actor in the corruption transactions.

The finding of the third question in this research was corroborated by the outcomes of earlier studies investigating similar conceptualization (Andersen and Rand, 2006; Shim & Eom, 2008; Anderson, 2009; AL-Hussaini et al, 2013; Mistry and Jalal, 2012). These studies showed that ICT or e-government can reduce unnecessary human interactions between citizens and public officials in administrative processes, which is the likely cause of bribery and corruption.

Forth Question: *To what extent e-government practices increase the transparency in the public sector organizations?*

E-government practices do increase the transparency in the public sector organization to some extent. There was a weak positive relationship between transparency and e-government. We could assume that e-government practices increase the transparency in the public sector organizations. Accordingly, it could be inferred that organizations who scored high in e-government would report a high level in transparency. ICT or e-government practices can play a critical role in bringing transparency in government to citizen interaction. Clearly, the need for transparency and accountability calls for automated system. So, e-government practices help to increase the transparency of decision-making processes by making information accessible, publishing government debates, budgets and expenditure statements, and in some cases, allowing the on-line tracking of applications on the web by the public and press.

The result of the fourth question in this research was supported by many previous research, their findings revealed that the use of ICT is considered as a tools to provide public services, reduces corruption, and increase transparency (Armantier & Boly, 2011;

Bertot, Jaeger, & Grimes, 2010; Dutt, 2009; Ionescu, 2013; Kim, Hyun, & Heejin, 2009).

Fifth Question: *To what extent e-government practices significantly explain the variance in the four dependent variables (combating of monopoly power, combating of discretionary authority, combating of middlemen's intervention, and increasing transparency in Public Sector in Yemen)?*

The result indicated that the weighted combination of prediction variables (e-government) explained approximately 21% of the variance in dependent variables. In other word, 21% of the variability in combating of Monopoly Power, combating of Discretionary authority, combating of middleman's Intervention, and increasing transparency were predicted by e-government.

Sixth Question: *To what extent e-government practices reduce significantly corruption in the public sector in Yemen from (the point of view of citizens)?*

As received by citizens, the result revealed that e-government practices reduce corruption significantly to a medium extent in the public sector organizations. The majority of participants in this research revealed that e-government considered the best way to mitigate corruption, and argued that there is a negative relationship between e-government and corruption. Also, the result agreed that e-government practices help to reduce accepting commissions in return for personal deals and contracts in government sector, and to reduce asking gifts and favors from the users of government. E-government practices restrict using the position in public office to achieve personal interests in government sector too.

The findings confirmed by several studies of corruption (Armantier & Boly, 2011; Bertot, Jaeger, & Grimes, 2010; Dutt, 2009; Ionescu, 2013; Kim, Hyun, & Heejin, 2009; Krishnan, Teo, & Lim 2013; Marquette, 2012).the findings of their studies revealed a negative relationship between e-government and corruption. And they are consistent that the uses of ICT or E-government in public sector do hold a promise for the combating of corruption to a great extent.

Finally, we concluded that there is a high consensus for respondents in both parts of questionnaire that e-government reduces corruption. Besides, the results demonstrated

that there is no significance difference in participants' views for both parts of questionnaire based on demographic factors such as age, gender, position, and academic qualifications. However there are significance differences in employees' views due to the experiences and duration of the use of information and communication technology (ICT) in the organizations.

5.3 The Conclusion

Corruption is the main problem all over the world that never be ignored. Corruption in many ways resembles viruses, whose survival mechanisms are so robust that containing or eliminating them, proves an extra-ordinarily challenging task. Combating corruption in countries across the globe has proven very difficult, regardless of various administrative reforms. E-government has shown promise this regard, and in many instances it has delivered by eliminating or at least reducing corruption in public services delivery. In addition, the focus on the role of e-government in combating corruption is timely in the current global context of increased interest in attenuating the economic divide within and across countries, which lead to do promotion of good governance and social responsibility. E-government, however, does not guarantee the end of corruption. Officials who master technology-empowered processes can find new opportunities for rent seeking. Such circumstances, fighting corruption should be part of the e-government vision. If fighting corruption is included in the vision, the next key question is when to announce the anti-corruption goal to the public. If fighting corruption is publicly announced as a major part of the e-government agenda, it could help build coalitions and public pressure for anti-corruption results. Also, the awareness is necessary; the public should be aware by all the government policies and online services. The media also would play a great role in this.

There are many studies on the success of e-government as anti-corruption tool in many developed countries across the globe, but little studies were existed to demonstrate whether this tool can be successful in developing countries or not. This research fill an important gap in the literature linking e-government and corruption by demonstrating how e-government can combat corruption by fighting monopoly power, discretionary authority, middlemen's intervention, as well as increasing transparency within public sector in Yemen. Based on the result from the analysis of this research, it could conclude

that e-government has an important role to combat administrative corruption in the public sector in Yemen. Also, this research informs public administrators, policymakers, and politicians regarding the usefulness of online public services and its impact on saving huge sums of money that is lost through corrupt practices in public institutions. Clearly, the findings also revealed that ICT in the form of e-government offered a promising glimpse of the power of ICT in developing countries to mitigate corruption, and live up to their promise of offering transparency. This research documents a positive impact of e-government in increasing the levels of combating corruption which in turn limits levels of corruption.

It is unquestionable that the conditions for successful e-government as anti-corruption tools in Yemen are the commitment of higher leaders, the legal environment, and the growing ICT sector. Without these factors, it would be impossible to create the comprehensive e-government services. Although, the majority of participants in questionnaire believe that their organizations have a modern network of communications and information of technology (ICT), but there is a weakness in the exploitation of this technology to combat corruption. Also, there are no developed legislations and regulations to simplify the processes and provide the requirements of electronic work through Internet networks in the government sector. Actually, still there are no nation-wide government efforts to fight corruption through e-government practices in Yemen. In fact, this research revealed many reasons to detect that why e-government practices in Yemen still have obstacles in combating corruption. The researcher concluded that there are substantial challenges need to be faced as follow:

- Commitment of decision makers and adequate financial resources allocation.
- Overlapping roles and responsibilities among government departments and lack of cross-departmental cooperation in developing common data collection methods, rules and procedures.
- Centralization of administrative and financial resources.
- Lack of providing legal support.

5.4 Recommendations

It has been established by previous studies and in the answers of the questionnaire that giving discretionary authorities to people without adopting an effective system of tracking corrupt behavior in performance is corruption itself. Corruption may spread and become worse due to the absence of an effective control and a lack of deterrent accountability. By studying the factors that are related or lead to reduce corruption, this research provides evidence to public organization's management on how they can implement of e-government as anti-corruption tools. Building upon the results achieved, this research offers number of recommendations for government, organizations, and managers.

5.4.1 Recommendations for Organization

- It is highly recommended to work closely with ICT specialists to ensure that the design of the ICT system is coordinated with other reform processes. Sometimes, ICT may even provide an opportunity for more corruption. Securing the ICT system is important to prevent corruption by those who know how to manipulate the ICT system.
- Transferring completely to e-government and reducing the overall paperwork. This will help reducing the efforts and time used to accomplish a transaction, helps to track the transactions, and restrict individual involvement in processing the transaction. Hence, reducing the bribery and corruption.
- Installing a controlling system that relies on a computer system to follow up the work of individuals by using algorithms to track, control, and save every process that has done to the public. If decisions and transactions will be documented and easily tracked to individual officials, officials will think twice before committing a corrupt behavior.
- Successful implementation of combating corruption programs requires matching the right technologies with capable and progressive reformers and government systems.
- Each organization, at least the one that provides services to the public, should re-engineer administrative processes, which means initiating a comprehensive change in procedures, laws, working methods and organizational structures in

accordance with the requirements of e-government to fight corruption.

- Each department should establish a complaints and enquiries handling regime through organization's websites that fits its needs and customers' needs. Complaint channels should be clearly advertised to both the public and staff. The improvement in the complaints handling regime would increase the public's confidence and trust in the system, it may result in reduction of corruption.
- Organizations should help citizens in learning how public systems are supposed to work through organization's website. Hence, it becomes harder for public servants to trick a citizen because the rules and processes of the systems were available online.

5.4.2 Recommendations for Government

- Bridging the digital divide. Even if the government information is available in all government sites, and the citizen does not have access to technology or field to use the same capabilities. Ways of combating corruption will be futile. Therefore, government should give citizens convenient access to government information and services from everywhere anytime, via multiple channels
- Government should publish government's information online, and provide documentation to citizens to substantiate their complaints against corrupt practices.
- Activating the law of the right of access to information because of its role in combating corruption at various government units by committing to providing a minimum level of information on transactions and tenders for citizens and making it difficult for decision makers to manipulate decisions or policies.

5.4.3 Recommendations for Managers

- Political leaders and managers should fully commit themselves to fight against corruption.
- Managers and supervisors of the organizations should provide the needed support to their employees by training course, and the necessary resources and rewards.

5.5 Further Research Recommendation

The researcher recognizes the limitations of the present research and suggests that these limitations can be viewed as opportunities for future study and reflection. First, this research was limited to a public sector in Yemen. Future studies should attempt to replicate this research in private sector in Yemen, also to replicate this research in different sitting and countries. The second limitation concerns on data collected from the point of view of businesses. In this research, the businesses' point of view was not addressed systematically, Future studies would provide more insight if the businesses' point of view could be conducted. Also, the financial and political corruption was not addressed, Future studies would be more benefits if financial and political corruption could be addressed too. Additionally, the researcher suggests the following further research:

- Building a case study of one of e-government practices in government sector in Yemen.
- Developing a comprehensive framework that will enable policy makers and researchers to point out the potential priority areas that need to be automated.
- Exploring the factors that would play a key role in e-government to combat corruption.

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APPENDIX A: First part of Questionnaire of G2E

Questionnaire

Brother… Sister ... Greetings,,,

This questionnaire which was designed to get some data and information that serves the goals of scientific research that we prepare:

The Role of E-government in Combating Corruption in the Public Sector in Yemen

so we hope you will mark the right answered with (x) in the box that fits With your opinion in front of the phrase, Thank you for your positive response and cooperation in the success of this study, which we hope to achieve, and we assure you of our commitment to the confidentiality of the data provided by you and not to be used only for the purposes of scientific research.

I: Personal Information

Gender	◊ male	◊ female
Age	◊25-35	◊Less than 25
	◊More than 46	◊35-45
Position	◊Deputy Minister	◊ Director general
	◊ Director	◊Head of the Department
	◊Employee	◊Employee
Experience	◊Less than 5 years	◊ 5-9
	◊10-14	◊15-19
	◊20-25	◊more than 26
Academic	◊PHD	◊Master

Qualification		
	◊Bachelor	◊Diploma
	◊Secondary School	

vi. Information about your Job:

How long does your organization use ICT application?.....
Are ICT's applications still working? ◊ **YES** ◊**NO**
Is there an IT department where you work? ◊ **YES** ◊**NO**
What are the fields of using ICTs in your organization?(you can choose more than one answer) ◊Secretarial and archiving management systems ◊ Financial & accounting systems ◊ HR systems ◊Management systems ◊OTHERS

vii. The Questions

- **Measure of availability of ICT level in the organization**

No	QUESTUIONS	Strongly Disagree	Disagree	No View	Agree	Strongly Agree
1	organization has a modern network of technology, communications and information (computers, LAN, internet connection) that has the ability to transmit information very quickly	1	2	3	4	5
2	there is a provision of adequate technical and financial support to your Organization for the use of ICTs	1	2	3	4	5
3	there is a provision of adequate financial support to your Organization for the use of	1	2	3	4	5

	ICTs					
4	There are enough IT professionals to manage Computer networks and programs in your organization	1	2	3	4	5
5	The computers in your organization are suitable for the number of employees	1	2	3	4	5
6	There is a website on the Internet in your organization	1	2	3	4	5
7	functions have been restructured to suit the integration of IT projects in your organization	1	2	3	4	5
8	There are plans to train and develop the skills and abilities of employees in dealing with the computer and the Internet	1	2	3	4	5
9	There is good knowledge by your organization's officials of the requirements of business transformation and the provision of services electronically	1	2	3	4	5
10	There is an exchange of data electronically between the organization in which you work and other organizations and ministries	1	2	3	4	5
11	there is an electronic archiving system to store data and information in your organization	1	2	3	4	5
12	there is developed legislation and regulations to simplify the processes and provide the requirements of electronic work through Internet networks in your organization	1	2	3	4	5

Measure of role of ICT in combating of monopoly power

No	QUESTUIONS	Strongly Disagree	Disagree	No View	Agree	Strongly Agree
13	E-government helps to reduce the Multiplicity of layers of authority	1	2	3	4	5
14	E-government helps in speeding up the decision	1	2	3	4	5

	making process.					
15	With using E-government, the decision-making process is carried out according to the standards and rules of E-government applications	1	2	3	4	5
16	E-government gives individuals and citizens equal opportunities to compete by placing all government transactions on the Internet such as bidding and auctions	1	2	3	4	5
17	E-government distributes and expands powers and authorities to employees and managers	1	2	3	4	5
18	E-government contributes to defining the roles and responsibilities of managers and employees Which helps the effectiveness of the system of control and follow-up	1	2	3	4	5
19	E-government helps to protect public money, and reduce the employment of public funds for personal interest or for the benefit of a particular groups	1	2	3	4	5
20	E-government helps to reduce the overriding of regulations and laws by managers and employees	1	2	3	4	5

- **Measure of role of ICT in combating of discretionary authority**

No	QUESTUIONS	Strongly Disagree	Disagree	No View	Agree	Strongly Agree
21	E-government helps to reduce the use of personal relationships at the expense of efficiency in recruitment	1	2	3	4	5
22	E-government helps to reduce the use of personal relationships at the expense of efficiency in promotions	1	2	3	4	5
23	E-government helps in reducing Accept commissions and bribery in return for personal deals and contracts	1	2	3	4	5
24	E-government helps in reducing Accepting gifts and favors from the users of government services	1	2	3	4	5
25	E-government helps reduce the absolute power of the public official to enforce or reject regulations and act without fear or punishment	1	2	3	4	5

26	E-government helps to reduce the ability of public servants from repudiated their responsibilities	1	2	3	4	5
27	E-government helps to automate and simplify administrative processes	1	2	3	4	5
28	E-government helps to track and control each process	1	2	3	4	5
29	E-government helps to reduce Bias and favoritism for groups and individuals	1	2	3	4	5
30	E-government contributed to reducing citizen abuse and inequality in dealing with them	1	2	3	4	5

- **Measure of role of ICT in combating of middleman's intervention**

No	QUESTUIONS	Disagree Strongly	Disagree	No View	Agree	Agree Strongly
31	E-government helps to reduce meditations by allowing citizens to serve themselves through internet,	1	2	3	4	5
32	E-government helps to restrict employee's intervention in the processing transactions	1	2	3	4	5
33	E-government helps to speed up in completing transactions	1	2	3	4	5
34	E-government creates a website for communication between citizens and services directly, and eliminating the need to engage public officials	1	2	3	4	5

- **Measure of role of ICT in increasing of Transparency**

No	QUESTUIONS	Disagree Strongly	Disagree	No View	Agree	Agree Strongly
35	E-government helps to publish and exchange government information online through E-government portals	1	2	3	4	5
36	E-government helps to provide documents to citizens to prove their complaints against corrupt practices	1	2	3	4	5

37	E-government helps to clarify and facilitate ways of reporting corruption through the organization's portal	1	2	3	4	5
38	E-government contributed to encouraging the adoption of necessary procedures to monitor and verify complaints submitted by citizens	1	2	3	4	5
39	E-government helps to promote the principle of transparency and integrity in all financial procedures and government transactions	1	2	3	4	5
40	E-government helps to increase access to government information and data and to detect any corrupt behavior	1	2	3	4	5
41	E-government helps to increase the accountability of government employees	1	2	3	4	5
42	E-government helps to increase the level of responsiveness to citizens' queries through website	1	2	3	4	5
43	E-government helps to increase the trust between government and citizens	1	2	3	4	5

APPENDIX B: Second part of Questionnaire of G2C

Questionnaire

Brother... Sister ... Greetings,,,

This questionnaire which was designed to get some data and information that serves the goals of scientific research that we prepare,

The Role of E-government in Combating Corruption in the Public Sector in Yemen

so we hope you will mark the right answered with (x) in the box that fits With your opinion in front of the phrase, Thank you for your positive response and cooperation in the success of this study, which we hope to achieve, and we assure you of our commitment to the confidentiality of the data provided by you and not to be used only for the purposes of scientific research.

I: Personal Information

1 – Gender ☐ Male ☐ Female

viii. Academic Qualification

☐ Secondary ☐ Diploma ☐ Bachelor ☐ MA & PhD

2– Experience

☐ Less than 5 years ☐ 5-9 ☐ 10-14 ☐ more than 15

4 – Place of work

☐ Public sector ☐ Private Sector

ix. The Effect of Using E-Government on Corruption

No	Questions	Strongly Disagree	Disagree	Not View	Agree	Strongly Agree
1	e-government helped to reduce accepting commissions in return for personal deals and contracts in the organizations that you deal with	1	2	3	4	5
2	e-government helped to reduce asking gifts and favors from the users of government services in the organizations that you deal with	1	2	3	4	5
3	e-government helped to reduce blackmailing users of public sector services in the organizations that you deal with	1	2	3	4	5
4	e-government helped to reduce using the position in public office to achieve personal interests in the organizations that you deal with	1	2	3	4	5
5	e-government helped to increase respecting laws and regulations in the organizations that you deal with	1	2	3	4	5
6	e-government helped to reduce Bias and favoritism for groups and individuals in the organizations that you deal with	1	2	3	4	5
7	e-government contributed to reducing citizen abuse and inequality in dealing with them in the organizations that you deal with	1	2	3	4	5
8	e-government helped to reduce asking bribery in the organizations that you deal with	1	2	3	4	5

APPENDIX C: Statistical Output – Histograms

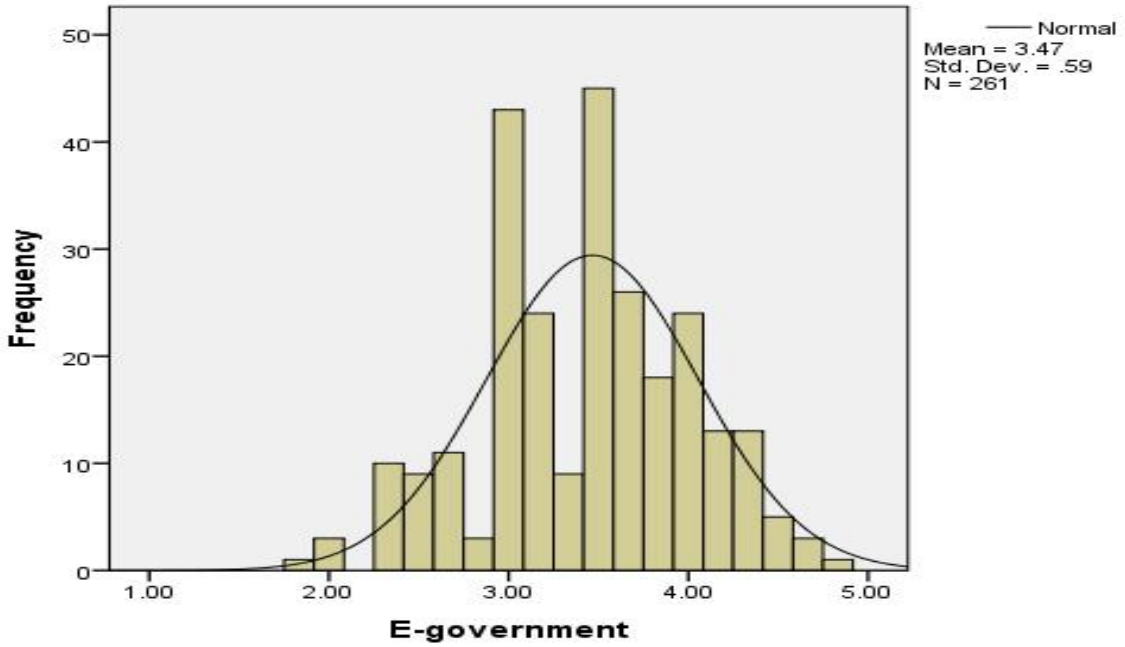

Figure C.1 Histogram chart of E-government

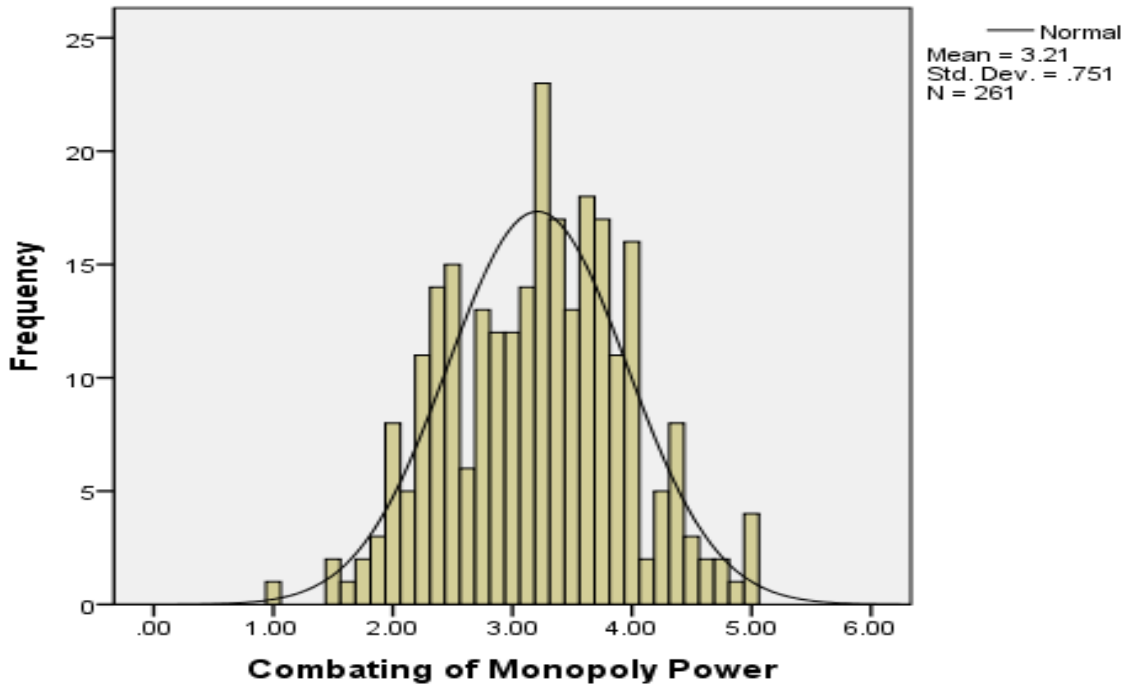

Figure C.2 Histogram chart of combating of Monopoly Power

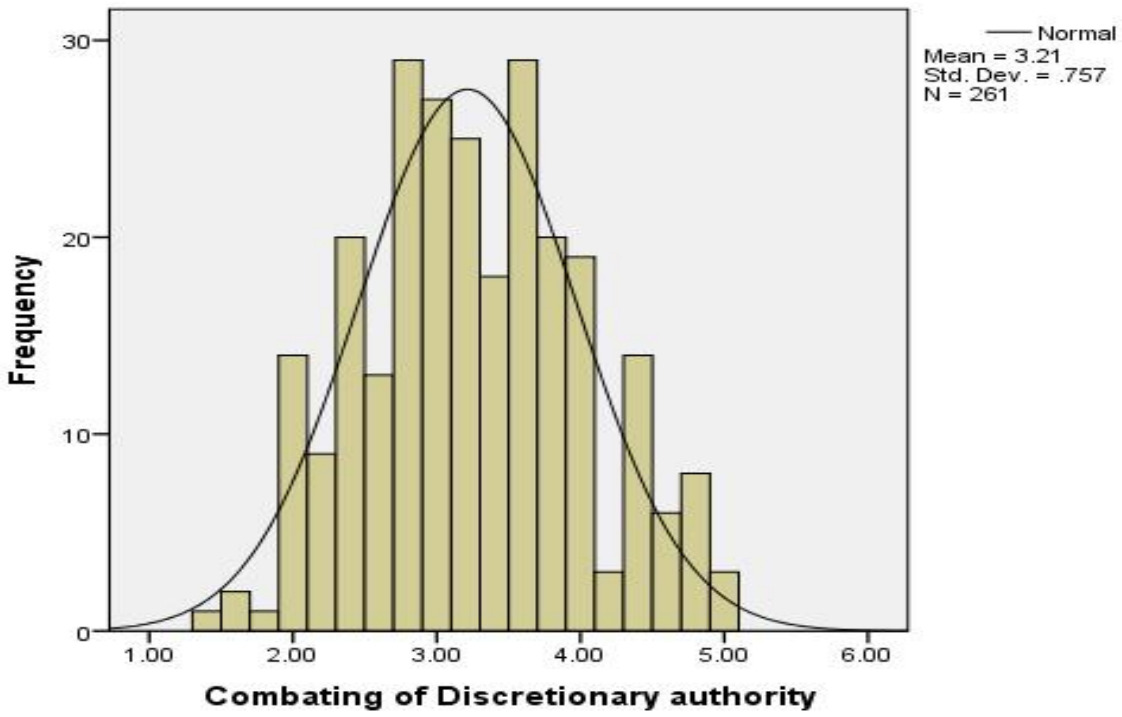

Figure C.3 Histogram chart of combating of Discretionary authority

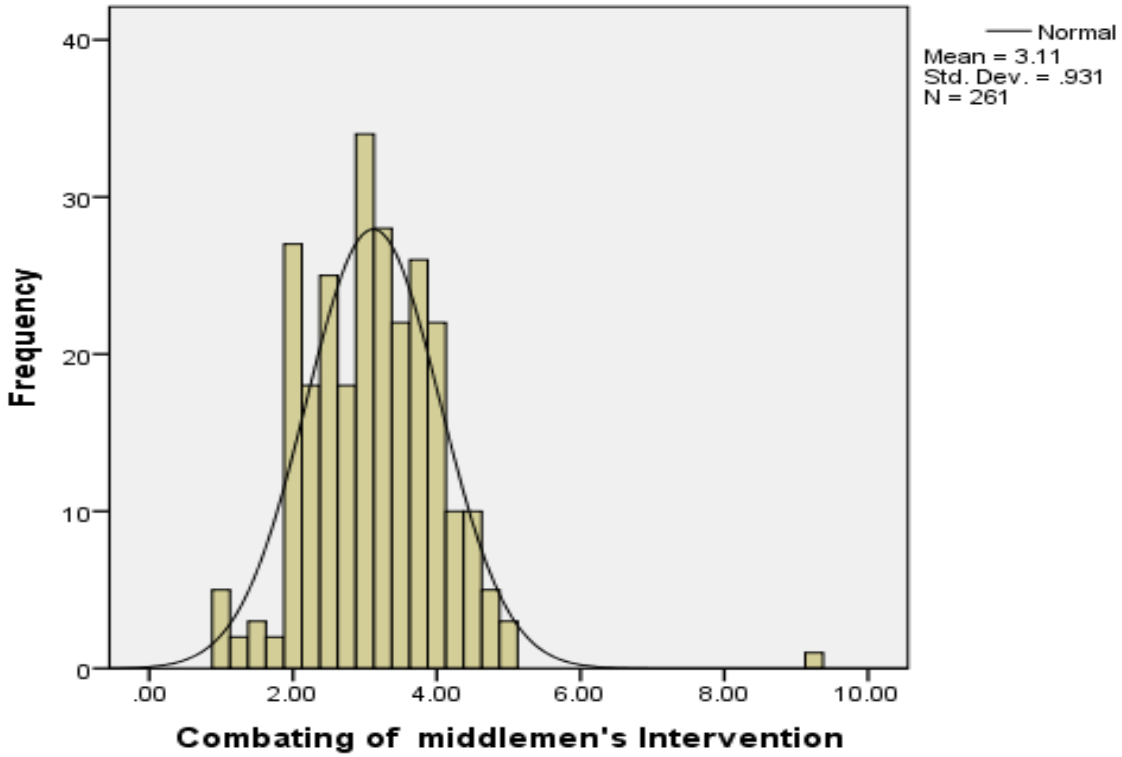

Figure C.4 Histogram chart of combating of Middlemen's intervention

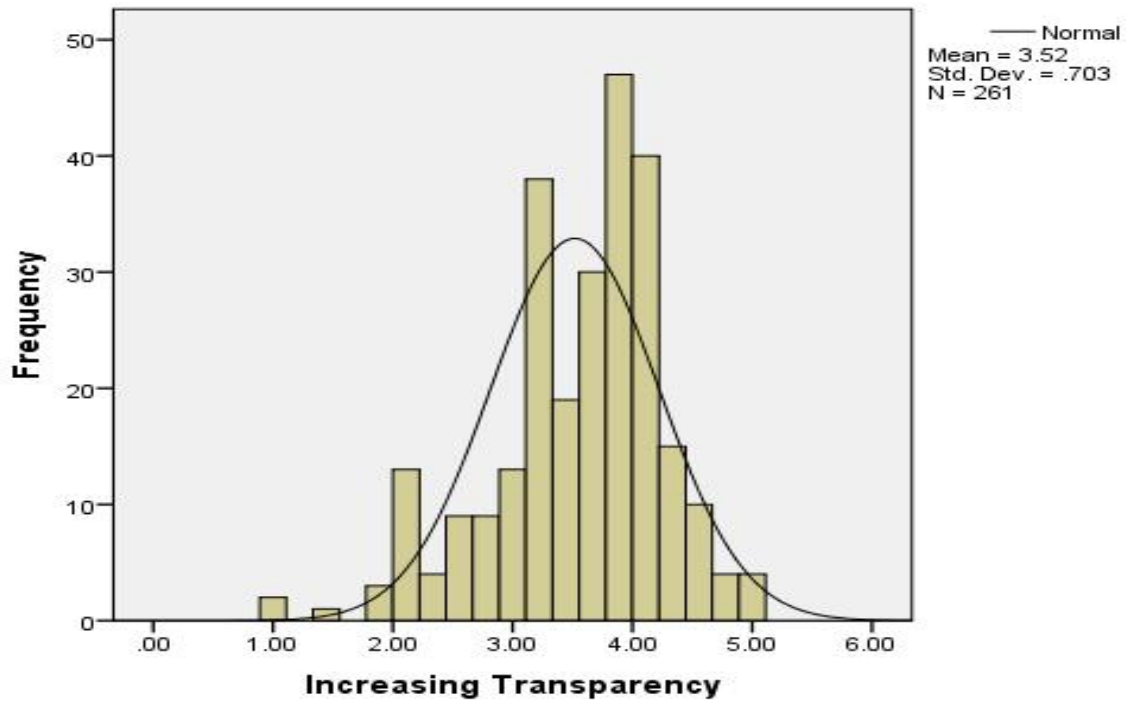

Figure C.5 Histogram chart of Transparency

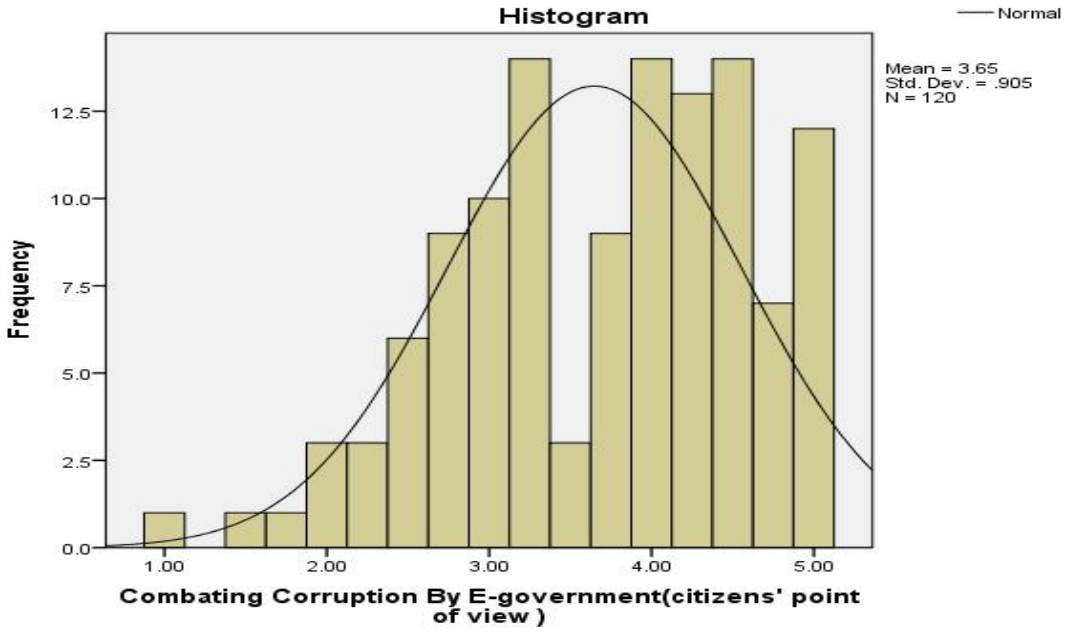

Figure C.6 Histogram chart of Combating Corruption By E-government (citizens' point of view)