

**FACTORS THAT DETERMINE CORPORATE GOVERNANCE OF
ETHIOPIAN ELECTRIC POWER CORPORATION IN ETHIOPIA**

**A THESIS SUBMITTED TO THE DEPARTMENT OF ACCOUNTING AND FINANCE PRESENTED
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Declaration

The undersigned, declare that this thesis is my original work, has not been presented for degree in any other university and that all sources of materials used for the thesis have been dully acknowledged.

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Certification

This is to certify that thesis entitled, “Factors that determine Corporate governance of Ethiopia Electric Power Corporation in Ethiopia: An Empirical Study on EEP Co”, undertaken by Muluken Yosef for the partial fulfillment of degree of Master of Science in Accounting and Finance at Adama Science and Technology University, to the best of my knowledge, is an original work and not submitted earlier for any degree either at this University or any other University.

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Abstract

As the different literatures document shows the corporate governance has significant impact on both the firm performance and stockholder interests. Having this; aim of the research is to identify the main factors affecting the corporate governance of Ethiopian Electric Power Corporation, to measure the extent to which these factors exert impact on corporate governance of Ethiopia Electric Power Corporation (EEPCo., to rank the factors according to their degree of influence on corporate governance and finally to determine the relationship corporate governance of EEPCo and firm performance, measured by regression model with different independent variables such as Firm size, Customer Demand, Power loss, fixed asset not capitalized, Audit Quality, Financial characteristics, Growth rate and Tobin's Q. The audit annual financial reports of EEPCo is used covering period of twelve years (1994-2006E.C). The time series data collected is analyzed by using descriptive and simple regression analysis. Explanatory research design and purposive sampling method (for EEPCo.) is used for the study. The study has found out that: Firm size, customer demand, power loss, and financial characteristics have a negative influence with different level of significance on corporate governance; but, remaining variable influence is found to be direct. Having this; increase with Power loss, fixed asset not registered; financial characteristics, Growth rate and Firm size have negative and significant impact on corporate governance of EEPCo. So the organization better to register asset as per job completion and soon the asset operated and prevent theft and rehabilitate the longstanding substation, transmission line and distribution line. The impact of firm size is better to solve by splitting the company like the developed country.

Keywords: Corporate governance, transformational leadership, and fixed asset capitalization.

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Acronyms & Abbreviation

CEO: Chief Executive Officer

CG: Corporate Governance.

Company: EEPCo

EEPCo: Ethiopian Electric Power Corporation

FAC: Fixed asset Capitalization

GCG: Good Corporate Governance

GOE: Government of Ethiopia

GTP: Government Transformation program

IOG: Institution of Governance

LGA: Local Government Authority

OCED: Organizational for Committee of Economic Development

PASDEP: Plan for Accelerated and Sustained Development to End Poverty

RAP: Resettlement Action Plan

ROA: Return On asset

ROE: Return On Equity

T & D: Transmission and Distribution

TLA: Transformational Leadership Applicability

UEAP: Universal Electricity Access Program

WB: World Bank.

CHAPTER I

INTRODUCTION

This chapter presents a general overview of the study. It starts from the background of the study and followed by statement of the problem, research objectives, Literature Driven Hypotheses, significance of the study, scope and limitation of the study, organization of the paper and finally, Conceptual framework is presented.

1.1. Background of the Study

Related to the corporate governance Ethiopian develops Commercial Code of Ethiopia incorporates provisions pertinent to the governance of share companies. However, such provisions are inadequate to address specific issues in corporate governance related to board of directors such as separation of roles of nonexecutive directors and CEOs, composition and independence of the board as well as director's remuneration. Moreover, proclamations and directives governing financial share companies in Ethiopia do not sufficiently address the aforementioned issues (Hussein Ahmed Tura, 2012).

The evidence on whether there is a link between governance structure and performance remains weak. The researcher will argue that one possible reason could be due to the research methodology. Earlier no much research has examined subsets of that affect governance mechanisms, usually one or two governance variables only clarified in abroad also. As the firms can choose and modify the structure of their governance system to suit their circumstances, the researcher argue, it is more appropriate to examine a number of governance variables and over a longer time period.

Corporate governance is concerned with the processes, systems, practices and procedures as well as the formal and informal rules that govern institutions, the manner in which these rules and regulations are applied and followed, the relationships that these rules and regulations determine or create and the nature of those relationship. It also addresses the leadership role in the institutional framework. Corporate governance, therefore, refers to the manner in which the power of a corporation is exercised in the stewardship of the corporation's total of assets and resources with the objective of maintaining and increasing corporation value and satisfaction of other stakeholders in the contest of its corporate mission.

It implies that companies not only maximize shareholders wealth, but balance the interests of shareholders with those of stakeholders, employees, customers, suppliers and investors so as to achieve long term sustainable value.

From a public policy perspective corporate governance is about managing an enterprise while ensuring accountability in the exercise of power and patronage by firms. In summary corporate governance is all about ensuring compliance with agreed minimum standards for the good management and stability of the organization. This requires clarity, focus and consistency of the stakeholders to achieve the standard set.

According Latif, et al (2013) documented that corporate governance has a significant impact on the firm performance. Besides, Rashid and Lodh (2011) found that the implementation of good corporate performance practices is determinants efficient firm performance. Indeed. Sheikh, Wang & Khan (2013) argues that there is existence of material effect between internal governance mechanism (board size, board composition and so on) and firm performance.

1.2. Statement of the Problem

Many researches in different countries have made investigation on this area are by considering the importance of corporate governance. Same studies have compiled on the area of corporate governance related to (Operating Efficiency; Philip H.Dybvig (2009); C.G and Efficiency In Nepalese; Martin Hovey, (2013); Performance (Jennifer.Wang, (2007), Mechanism (Douglas Nanka-Bruce,2010) and in developed Countries like China, UK, USA, Japan journal and articles are highly published in public sectors, insurance companies, bank and so on; because they have highly organized stock market and most of the market is exercised by privately.

However, related to Determinant Factors of Corporate Governance many studies were made for different countries (For example, Eunjung lee et al (2004) for Korean, Arinze Ngwube(2013) for Singapore and Nigeria, Alexander et al.(2007) for Brazil, Sultan Qaboas University(2007) for Oman, UAE(United Arab Emirate) and Singapore, Gompers et al. (2003) for the U.S., Klapper and Love (2004) for fourteen emerging markets, Durnev and Kim (2002) for twenty seven countries, Bauer et al. (2003) for the EMU and the U.K., Luo Lei(2006) for UK, Chatrudee Jongsureyapart (2006) for Thailand, Kogilavani and Siti ubaryani(2014) for Malaysia). These studies generally find relationship between governance standards and its determinants factors.

The study done in abroad related to factors that affect corporate governance were firm size, audit quality, Tobin's Q, financial characteristics, and growth rate that have negatively or positively influence the corporate governance of firms value. As result this output of one author contradict the others argument. Some of this confirmation is Chatrudee Jongsureyapart (2006) and Eunjung lee et al. (2004) has a positive relationship between corporate governance and firm size and performance except for Bauer et al. (2003) who surprisingly detect a significant negative relationship and Demsetz (1973) and Becker et al. (2010) finds there is a negative relationship between firm size and corporate performance. Likely Eunjung Lee and kyung sun Park (2004) find that there is direct relationship between corporate governance and financial characteristics, but Durnev and Kim (2003) the debt ratio to be negatively correlated with the corporate governance mechanism. Similarly Gao & Kling (2012), Zulkatli & Samad(2007), Sarens et al (2012), they found that there is a significant and positive relationship between internal audit function and role in corporate governance led to good audit quality. Contrarily Ashenafi Beyene Fanta et al has found that as well as accounting and auditing; and weak legal framework to protect minority shareholder rights are the major factors with adverse impact on corporate governance and bank performance in Ethiopia.

Since the most developed country has organized stock market much of the extensive research paper on the determinants of corporate governance are mostly focus on the private firms Kogilavai and siti Subaryani (2014); Arinze Ngwobe, (2013); Lue lei, 2006). But the researcher conducts his research under public service giving sector which is called Ethiopian electric power corporation (EEPCo.) and including impacts of Firm size, Customer Demand, power loss, fixed asset not capitalized, Audit Quality, Financial characteristics, growth rate and Tobin's Q on corporate governance. Additionally, Ethiopia is developing country and issues of corporate governance is new, the research and publication of journal and article were not done more; but related to corporate governance there is "overview of corporate governance in Ethiopia" Article reviewed by (Hussein Ahimed Tura, 2012); Ashenafi Beyene Fanta, et al (2013) on commercial banks in relation to audit, board composition and bank size and Dessalegn Getie Mihret (2011), also work on audit. Such limitation of study and EEPCo's prominent role for country development by providing reachable and low cost electric service to citizen leads the research in site. Having this; the study will assess what factors affect corporate governance of in EEPCo.

Generally, as mentioned above related to determinants of corporate governance many researcher study more, on growth rate, firm size, audit quality, financial characteristics, and board composition, return on equity, return on asset, Tobin's Q and etc. but their study have inconsistency of idea (argument) that depends on demography and other problems.

Due to three reasons researcher demanded to study on factors that determine corporate governance of Ethiopian Electric Power Corporation in Ethiopia. Inconsistency of the study, like developed country those who have organized stock market the field were not exercised more (limitation of the study) and at the last the prominent role of the organization for the country.

1.3. Objective of the study

1.3.1 General Objective

The general objective of the paper is to examine the factors that determine corporate governance and its impact on the corporation service proving.

1.3.2 Specific Objectives

The specific objectives of the study are:

- ❖ To show the relationship between growth rate and corporate governance EEPCo.
- ❖ To show the relationship between Audit Quality and Corporate Governance of EEPCo.
- ❖ To determine the impact of Power loss and Customer demand on corporate Governance of EEPCo
- ❖ To determine the relationship between Company(Firm) size and corporate Governance of EEPCo
- ❖ To investigate the impact of Fixed asset registration and Financial Characteristics on corporate governance of EEPCo
- ❖ To assess the extent to which, Return on Equity on and Tobin's Q affect corporate governance of EEPCo.
- ❖ To assess the extent to which they influence corporate governance of EEPCo.

1.4. Hypotheses of the study

Based on review of relevant and related literatures, it is hypothesized that Growth rate, Audit Quality, power loss, customer demand, firm size, Tobin's Q, Fixed asset Registration and Financial characteristics was expected to influence corporate governance of EEPCo. and that measured by combined effects of these variables. Variable hypothesized are classified as dependent and independent variables, accordingly the following hypotheses was tested by the study:

1.4.1 Dependent Variable

Structural model Equation

The researcher was used a structural equation model that allows him to analyze the combined effect of different variables to determine factors that affect corporate governance of EEPCo. It shows whether the organization operates efficiently or measure good corporate governance of EEPCo. For any company, corporate governance depends on the company policy decision as well as other factors that determine good governance.

Many regulators and researchers believed that combined effects of different variables best measure of corporate governance. Accordingly; Martin Eling and Sebastian Marek (2011), Luo Lei (2006), Arinze Ngwobe, (2013), Kogilavai and siti Subaryani (2014), Gao & Kling(2012), Zulkatli & Samad(2007), Sarens et al (2012); they recommend this idea to measure corporate governance in different ways.

There were many variables of performance measurement related to corporate governance noted in the literature. Wiwattanakantang (2000) studied the effectiveness of the existing corporate governance mechanism on performance using return on assets (ROA) and Tobin's Q. Additionally, the study done by Ashenafi Beyene Fanta; et al (2013) assessed the relationship between selected internal and external corporate governance mechanisms, and bank performance as measured by ROE and ROA. Similarly Brown and Caylor (2004) considered the association between corporate performance and return on equity (ROE) and found that better governance as measured by ROE is associated with poor performance. Chatrudee Jongsureyapart (2006) the variables ROA, ROE and Tobin's Q will be relevant for the measurement of corporate governance performance in Thailand.

Demsetz and Villalonga (2001) used accounting profit ratios, specifically Return on equity' (ROE), 'return on assets' (ROA) and 'Tobin's Q' to measure firm performance in good corporate governance. Additionally, Dr.Waseem et al. Return on Assets (ROA), and Return on equity' (ROE), can determine the firms' performance indicators through corporate governance, for a sample of Jordanian industrial companies. According to Brown and Caylor (2004) examined return on equity (ROE) and observed that better governance as measured by ROE is associated with corporate performance. As a result; the researcher used to measure corporate governance by return on equity by hypothesis the following variables.

Firm Size

- ❖ Hypotheses **HP0**: Firm size has positive relationship with corporate governance of EEPCo.
- ❖ Hypotheses **HP1**: Firm size has no positive relationship with corporate governance of EEPCo.

Growth rate

- ❖ Hypotheses **HP0**: Growth rate has positive relationship with CG of EEPCo.
- ❖ Hypotheses **HP1**: Growth rate has no positive relationship with CG of EEPCo.

Audit quality

- ❖ Hypotheses **HP0**: Audit quality has positive relationship with CG of EEPCo.
- ❖ Hypotheses **HP1**: Audit quality has no positive relationship with CG of EEPCo.

Financial Characteristics

- ❖ Hypotheses **HP0**: Financial Characteristics has positive relationship with CG of EEPCo.
- ❖ Hypotheses **HP1**: Financial Characteristics has no positive relationship with CG of EEPCo.

Power Loss

- ❖ Hypotheses **HP0**: Power Loss has negative relationship with CG of EEPCo.
- ❖ Hypotheses **HP1**: Power Loss has negative relationship with CG of EEPCo.

Customer demand

- ❖ Hypotheses **HP0**: Customer demand has negative relationship CG of EEPCo.
- ❖ Hypotheses **HP1**: Customer demand has negative relationship with CG of EEPCo.

Tobin's Q

- ❖ Hypotheses **HP0**: Tobin's Q has positive relationship with corporate governance of EEPCo.
- ❖ Hypotheses **HP1**: Tobin's Q has positive relationship with corporate governance of EEPCo.

Fixed asset not registered

- ❖ Hypotheses **HP0**: Fixed asset not registered has negative relationship with corporate governance of EEPCo.
- ❖ Hypotheses **HP1**: Fixed asset not registered has no negative relationship with corporate governance of EEPCo.

1.5. Significance of the study

The first Significance of this study is for the researcher. It also has different benefits for the EEPCo as well for those who need to get information about the determinants factors of EEPCo corporate governance. In addition to the above mentioned once, this study does have a contribution towards extending research in the area of factors that determine corporate governance of Ethiopian electric power corporation in Ethiopia. Managements of EEPCo need to know which indicators of success and frailer to take necessary action to advance the performance of EEPCo and to made correct course of action and decisions. Additionally there was no enough literature on corporate governance in Ethiopia so this may serve a means of embarking. Moreover, the researcher thinks this study can potentially serve as a stepping stone for further research in the area.

1.6. Scope of the study

The assessment of the study focus on determinants factors affecting corporate governance of EEPCo. The study covers only five regions out of 15 EEPCo regions and seven working process at head office level which has been located in Addis Ababa city and Adama Town. The area selected will be from both head office and regions based on their rank given to region by the organization and number of customers (District office) they constitute. The researcher selects the title to checkup factors affecting corporate governance of EEPCo Regions and seven working process based on given criteria. The researcher will try to fill the gap in literature on the area. For the selection of the Regions and work unit the researcher will use **purposive sampling** technique. The study covers 13 years period from 1994- 2006E.C.

1.7. Limitations of the study

The study has the following limitations. First, since this study was based on quantitative data, there are other explanatory variables such as like Employee contribution, transformational leadership, organizational structure, accountability and other variables which were not modeled in the study because of their qualitative nature. Therefore the econometrics model used in the study has not fully explained the variability in the determinant factors of corporate governance of EEPCo by modeled independent variable in the study and the study might fail to measure the actual effect of the internal and external determinant factors of corporate governance of corporation. Second, ever since the research employed quantitative research approach, the qualitative aspects of corporate governance are not modeled. Third, data limitation, (expected 15 years, actually received 13 years only); Fourth, financial and time constraint was faced.

1.8. Organization of the study

The main research paper constitutes five chapters these are: - Chapter one covers the introduction part of the study which contain background of the study; statement of the problem; objective of the study, significance of the study, and scope and limitation of the study. The second chapter provides the related summary of empirical and theoretical literature review on Determinant factors affecting corporate governance of EEPCO. The third chapter covers the methodology of the study. Chapter four is devoted to data analysis and discussion based on data collected. Finally, chapter five concludes the study and provides relevant recommendations.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter deals with the literature review part of the research report. It contains the review of available literature in the area of corporate governance of firms in general. It has two parts; the first part contains theoretical literature, and the second part deals with the empirical literature of profitability.

2.1 Theoretical review

2.1.1 What is Corporate Governance?

Various authors and practitioners give definition of ‘corporate governance’ in various ways. Economists and social scientists, for instance, tend to define it broadly as “the institutions that influence how business corporations allocate resources and returns”; and “the organizations and rules that affect expectations about the exercise of control of resources in firms.” Jeswald (2004). This definition covers not only the official rules and institutions of corporate governance, but also the informal practices that evolve in the absence or weakness of formal rules. Corporate managers, investors, policy makers, and lawyers, on the other hand, tend to employ a narrower definition. In consider of this, corporate governance is the system of rules and institutions that determines the control and direction of the corporation and that defines relations among the corporation’s primary participants. The definition used in the United Kingdom’s 1992 Cadbury Report is widely cited from this perspective, and it reads: “Corporate governance is the system by which businesses are directed and controlled.” <www.ecgn.org>. This narrower definition focuses almost exclusively on the internal structure and operation of the corporation’s decision-making processes, and is central to public policy discussions about corporate governance in most companies.

2.1.2 Factors that Determine success of Corporate Governance in an Organization

1. Working Board

A functioning Board represents the interests of shareholders in truth and in spirit. If a board exists it does not mean that it functions .Functioning of a board goes beyond setting.

It must be able to set policies and define the large purpose of the business, approves strategic directions and hold executive accountable for performance. Board members must not own their seats to the benevolence of the executives they are meant to govern, if they would exercise objective judgments in the discharge of their duties. They must also be knowledgeable in the complexities of the company and its industry, of finance and of relevant laws and regulations.

If they lack expertise in their field cannot simply be effective partners in decision making. Arinze Ngwube (2013).

2. Transparency

There is the need for transparency in the organization, in its day to day operations, its systems and decision making process. A culture of organization transparency is critical to sound ethical practice and corporate governance. Low level of organization transparency is usually the umbrella that hides abuse of power and unethical managerial behavior. An organization that is not internally transparent to itself cannot be externally transparent to its shareholders and the larger public. Arinze Ngwube (2013)

3. Power Concentration

The organization should have a system of check and balances. The organization should have a system of check and balances that ensure power is not concentrate in a few hands. A firm should not be run like a democracy; it should also not be run like an imperial kingdom. Imperialness of power leads to abuse of power. You find in situation good men with good intentions have found themselves corrupted by power and end up abusing their office because the organization is not run by a system of checks and balances against power concentration Arinze Ngwube (2013).

4. External Regulation and Monitoring

It is a fact that business should not be over regulated. The reason, due to recent experiences that without a regulator that monitors compliance of business to specified rules of engagement by society such business will not behave responsibly. The organization deploys its governance process as describe above, the regulatory environment can further compel companies to stick to high levels of corporate governance.

It is important to have a regulatory environment in place which can compel companies to stick to high levels of corporate governance. It is also important where extant laws are lagging behind ethical or governance challenges of corporations Arinze Ngwube (2013).

5. Open and well implemented conflict of interest policy

It ensures that interests of managers, executives and directors are disclosed when they enter into relationship with the company. This will be to ascertain that such business is fair to the firm, the larger shareholders and that such business interests are not in conflict with the fiduciary responsibilities of directors and in the case of managers that such interest are not in conflict with their duty as agents of shareholders. Arinze Ngwube (2013.)

6) Managers' Remuneration

The empirical work shows that the role of managers' remuneration in coordinating managers' and investors' interests is limited. Hutchinson and Gul (2003) find a positive role for managers' remuneration, while Coles et al. (2001) do not.

2.2 Empirical review

2.2.1 Good Governance in the Perspective of Employees

Previously, there is lack of study that examines the area of good governance in the context of individual since the concept of good governance itself has been explained and discussed famously in the context of organization such as above explanation and also in many other studies (Azmizam, Hamzah & Habibah, 2010; Haikio, 2007; Rasian, 2009; Shiplay & Kovaks, 2007; Siddiquee, 2008). However, it is revealed that the roles of employees are essential and become the main element and the actual indicator that represent the performance and achievement of organization (Edgar & Geare, 2005). Thus, in the area of good governance, the direct impact on the criteria of action, practice, attitude and behavior of the employees have to be explored in identifying more specific about good governance performed by the employees. In consequent, there will be easier, more direct and more accurate for the researchers to share the actual occurrence of employees' good governance in organization and also to recommend for the significant improvement of good governance to be performed by the employees.

Relatively, in the context of individual, good governance is also related to the staff or employees empowerment (AnuarZaini, 2000; Zulkarnain, 2000) which the empowered employees take the responsibility for their own development and performance by practicing the characteristics of good governance within an enabling framework provided by the organization (AnuarZaini, 2000).

Moreover, through empowerment, the process to perform good governance at work will be more easy, inclusive and realistic since the employees at different levels take part to succeed it. Basically, employees empowerment in good governance is parallel to the concept of governance that emphasizes the distribution of rights, obligations and power that underpin the organization (OCED, 2000) and governance also involves the manner in which the members of the organization community including employees who have interest and stake in the organization contribute to the governance system (Anuar Zaini, 2000). Therefore, the definition of good governance as above mentioned in the organization context (IOG, 1999) is applicable to define good governance in the context of individual which is the characteristics of the exercise of power by the empowered employees of various level of government. With that, indeed, good governance has the characteristics that are interpreted by effective, honest, equitable, transparent and accountable (IOG, 1999) employees in government organizations. Mohd Hamran Mohamad, ZulkifleeDaud and Khulida Kirana Yahya Similarly, for LGAs, employees who succeed good governance are depicted by the employees who seriously practice the particular characteristics. For example, they must be transparent in interpersonal communication that involves co-workers and clients, accountable for any action taken in avoiding conflict, effective in doing the job that meets the goal and committed to the stated vision. As above mentioned, these valuable characteristics of good governance affect better performance of employees' service delivery and eradication of corruption and other misconduct to be done by employees. These are because of among of employees; they have mutual understanding, no personal interest, and good cooperation, clear target to be attained and strong loyalty to the organization. Consequently, successful good governance will drive to the manageable resources of organization which makes the organization become stronger for future growth. It is not stopped here because the strong organizations of public sector with good governance mainly will contribute to the investors' confidences in attracting them for the business expansions in this country. It has been proven that the countries such as Sweden, Singapore and Australia with high level of good governance indexes are able to maintain their strong economy through intense business investments as well as less corruption cases (Transparency International, 2011).

Therefore, it is obvious that good governance must be well performed at individual employee level through the practices of related characteristics to ensure the excellence of public sector organizations such as LGAs in order to serve for the country benefits finally. In relation to that, it is discovered that few researches have studied the area of characteristics that relevant for good governance in the context of individual.

The researches focused separately on limited characteristics such as transparency (Rogers, 1987), accountability (Hochwarter, Kacmar& Ferris, 2003), effectiveness (Quinn, 1988), efficiency (Van deVen & Ferry, 1980), integrity (Mayer & Davis, 1999) and commitment (Cook & Wall, 1980). However, these characteristics can be combined as dimensions of good governance in a latter study for examining more deeply and closely on their roles that represent good governance. Hence, all the findings and discussions from the separated past studies of these characteristics are beneficial to support the latter study.

2.2.2 Firm Size

Meanwhile, several studies indicated that the firm size may eventually affect the firm performance. Based on Mashayekhi and Bazaz (2008) stated that there were solid and important relationships between firm size and corporate operation. The results of Sheikh et al. (2013) explorations indicate that firm size shows a positive linkage with various performance indicators. The primary ground is because large firms are more potent to enjoy benefits such as economies of scale which may amend the corporate performance significantly. According to research conducted by Rashid, De Zoysa, Lodh and Rudkin (2010), the authors found that firm size is classified as one of the major variable as large firms could be influenced by having more capacity in order to generate internal funds. Prior research suggests that firm size is a key determinant of the extent of voluntary disclosure (Meek et al., 1995; Ahmed and Courtis, 1999). Larger companies are associated to larger resources to allocate for the preparation of high quality information, and the costs involved are lesser due to the economies of scale. The accounting literature (Chow and Wong-Boren, 1987; Eng and Mak, 2003; Gul and Lang, 2004) has consistently confirmed the existence of a positive relationship between firm size and the extent of voluntary information disclosure. Bujaki and McConomy (2002) also document the existence of a positive relationship between firm size and the extent of information provided by TSX-listed companies regarding their corporate governance practices in 1997.

2.2.3 Business Structure and Corporate Governance

Another major factor that can affect the governance structure of a firm is business structure, and conglomerates have been a focus of interest since they offer a very comfortable environment for controlling shareholders to pursue their own benefits through transactions among affiliated firms.

Tunnelling, as it is known in the literature, has been widely reported in European conglomerates by Johnson, La Porta, Lopez de Silanes and Shleifer (2002), and also in Korean conglomerates by Bae, Kang and Kim (2002). A conglomerate business structure also allows controlling shareholders to maintain their control through affiliated ownerships. In this paper, we use a dummy variable which takes a value of 1 if a firm belongs to one of the 30 largest chaebols as defined by the Korea Fair Trade Commission for their regulatory purpose. We conjecture that those firms that belong to a chaebol suffer from the agency problem more than independent firms do, and therefore may have a more stringent monitoring mechanism as demanded by outsider investors. But, the dominance of controlling shareholders through affiliated ownership may also weaken it. This will be confirmed by empirical analysis.

2.2.4 Transformational Leadership and Good Governance

Recently, transformational leadership has gained significant interest, assuming it as a valuable factor for organizations seeking to gain quality of service delivery and exploit their employees' competency and attitude based on good governance characteristics (Azman et al., 2011; Ina, Rajesri, Budhi & Iman, 2012). The reason is charismatic transformational leadership would be able to instill committed followers who would continuously respect and be loyal to their leader (Bass & Avolio, 2004). Another reason, Boselie & van der Wiele (2002) verified that to encourage excellent service delivery, knowledge and motivation are two main elements given high attention especially by transformational leader to the employees. Hence, knowledgeable employees will increase the efficiency of their service delivery. Besides, motivated employees will influence them to be more effective of their work because they feel more valuable and confident. Obviously, the characteristics of efficiency and effectiveness of good governance fostered by the transformational leader to the subordinates lead to excellent services performed by them. Empirically, there are studies indicating significant positive influence determined by transformational leadership on effectiveness within organization (Erkutlu, 2008; Rukmani, Ramesh & Jayakrishnan, 2010).

Apart of that, other characteristics have been proven associated to transformational leadership through separated studies. For instance, employee's creativity and innovative behavior (Axtell et al., 2000; de Jong & Den Hartog, 2007; Kahai et al., 2003; Shin & Zhou, 2003). Basically, intellectual stimulation behavior of the leader stimulates the follower to perform beyond the task specification, guides follower to think outside the box and stimulates follower to justify any action taken in developing creative and innovative follower. Besides, employee commitment to organization also has been studied on its association with transformational leadership (Clark, Hartline & Jones, 2008; Laschinger, Finegan & Shamian, 2001; Raemah & Rosli, 2012; Rowden, 2000). The leader who has individualized consideration is an informative person who shares timely information with his follower, provide greater opportunities for decision making, challenges, responsibilities and self-determination which most likely motivate the follower to reciprocate with high level of commitment to organization. However, other studies conducted by Jaussi and Dionne (2003) and Walumbwa et al. (2005) have indicated that transformational leadership has less significant effect on employee's creativity and commitment to organizational service quality respectively. These results might be influenced by the leader who does not fully emphasize on the behaviors such as intellectual stimulation, inspirational motivation and individualized consideration that they supposedly foster follower's creativity and commitment respectively. Conversely, a study by Indrianawati (2010) has examined the impact of leadership on good governance at the university in East Jawa, Indonesia. The study employed leadership characteristics that related to transformational leadership and found that it significantly influences good governance at the university. Interestingly, the study measured the single construct of good governance based on the items developed by different characteristics. They are fairness, transparency, accountability, openness and participation which relate to the perspective of organization. However, these characteristics are applicable as well for employee perspective since they are the characters and behaviors of employees in fighting the misconducts mainly corruption (U Myint, 2000). Thus, result of the study (Indrianawati, 2010) is meaningful to support another study such as in Malaysian LGAs which leadership is possible to influence good governance and solve the issue of employee corruption in Malaysian LGAs. Hence, this review reveals that transformational leadership is an important variable for enhancing good governance through the leader behaviors that are more cooperative, humanistic and charismatic that leads to valuable characteristics performed by the employees. Organizations with transformational leadership are likely to have proper practice of good governance characteristics than those which pay less emphasis to this variable.

In order to make transformational leadership more effective, it is essential to ensure the leaders embedded themselves with these characteristics that could be a role model to influence the employees towards the practice of these characteristics. This would enhance the competency of every individual employee in delivering more quality services besides, fighting or reducing misconducts at work place especially when they are answerable and not for self- interest of their jobs.

2.2.5 The Relationship between Governance Mechanism and Firm Performance

Our study builds on Himmelberg et al. (1999) who use panel data to show that managerial ownership is explained by key variables in the contracting environment. A large fraction of the cross-sectional variation in managerial ownership is explained by unobserved firm heterogeneity. Moreover, after controlling for both observed firm characteristics and firm fixed effects, changes in managerial ownership do not affect firm performance econometrically. In literature, many other researchers have examined the relationship between variety of governance mechanisms and firm performance. The results, however, are mixed. Some examine only the impact of one governance mechanism on performance as Himmelberg et al. did, while others investigate the influence of several mechanisms together on performance. None of them covers a complete set of governance mechanisms. Below, we will briefly review some of previous studies on the governance-performance relationship.

1) Board Composition

When the member composition of executive higher than non-executive directors in the board helps to understand each other and implement rules and regulations. Kee et al. (2003), Hutchinson and Gul (2003) and Luo lei (2006) they suggested there is a positive relationship between non-executive director representations and firm performance by argue that non-executive directors in the board help to reduce the agency expense. In contrast, in the U.K., Weir and Laing (2000) find a negative relationship between non-executive director representation and performance. It is suggested that higher proportion of non-executive directors in the board helps to reduce the agency cost. Kee et al. (2003) and Hutchinson and Gul (2003) support this view by showing that that higher levels of non-executive directors on the board weaken the negative relationship between the firm's investment opportunities and firm's performance. However, de Jong et al. (2002), Coles et al. (2001), and Weir et al. (2002) dispute it by stating that there is no significant relationship between non-executive directors' representation and performance. In contrast, in the U.K., Weir and Laing (2000) find a negative relationship between non-executive director representation and performance.

In addition, Yermack (1996) present that small board has a higher market valuation. Stronger support for the positive impact of non-executive directors comes from event study analysis. The studies by Rosenstei and Wyatt (1990 and 1997) and Shivdasani and Yermack (1999) show that the appointment of non-executive directors increases company value.

(2) Leadership Structure

Although U.K. Code regards separation of the role of CEO and chairman as a sign of good governance, previous empirical analyses do not support it. For example, Coles et al. (2001), Weir et al. (2002), and Weir and Laing (2000) do not find any significant relationship between CEO duality and performance. Brickley et al. (1997) observe that costs of separation are larger than benefits for most large U.S. firms.

(3) Institutional Holdings

As the U.K. Code encourages institutions to take an active role in governance, some researcher expect a positive relationship between institutional holdings and firm performance. Unfortunately, empirical evidence is not supportive of this recommendation. Both Faccio and Lasfer (1999, 2000) fail to find such a significant relationship for U.K. firms. Besides, de Jong et al. (2002) find that major outside and industrial shareholders negatively influence the firm value.

(4) Committee Composition

For U.K. companies, Conyon (1997) provides a thorough review of the workings of remuneration committees and shows that firms with remuneration committees pay directors less remuneration. Conyon & Mallin (1997) observe that U.K. firms have been slow in adopting nominating committees, a symptom of failure of the corporate governance system. By contrast, audit committee use in the U.K. has been widespread (e.g. Conyon, 1994; Collier, 1993). The results in Forker's (1992) study suggest that the quality of disclosure is only weakly related with audit committees and non-executive directors.

(5) Managers' Remuneration

The empirical work shows that the role of managers' remuneration in coordinating managers' and investors' interests is limited. Hutchinson and Gul (2003) find a positive role for managers' remuneration, while Coles et al. (2001) do not.

2.2.6. Other Financial Characteristics and Corporate Governance

The financial characteristics would affect the governance decision and need to be controlled.

The effects of profitability on corporate governance may be two way. High profitability implies a good capability of management and so monitoring them may not be necessary. On the other hand, high profitability means the company can afford a better governance system. Outside investors may also demand better governance as they have a greater economic stake to lose.

Higher liquidity as measured by the amount of free cash flow would lead to a better governance mechanism since it can be appropriated by the management for their private benefit. It also allows firms to maintain a costly monitoring system. The growth potential would also be related to better governance since those firms with high growth rates have more to lose from a lack of investment capital, and would try to satisfy outside investors with better governance as Durnev and Kim (2003) have argued. Durnev and Kim (2003) also include the debt ratio and the bank loan ratio. A higher debt ratio implies a larger amount of interests and principals to be paid periodically, and the management would be under pressure to ensure enough cash flow to cover the debt payment, which can be done through more efficient management (Grossman and Hart (1982)). They expect the debt ratio to be negatively correlated with the corporate governance mechanism. Among the different types of debt, a bank loan is of particular interest since banks, as larger creditors with a long-term relationship with firms, are supposed have an incentive and capability to monitor their client firms.

2.2.7 Audit quality

Inquiry, led by Gao & Kling (2012) mentioned the Chinese government in ways to improve corporate governance and the external audit quality and led to the better government performance. They carried the research using the data from Shenzhen Stock Exchange from 2001 until 2007.

The answer indicates that internal administration was improved and delivered a positive relationship that effect on firms' when comply to disclose the requirements.

In the study of Zulkafli and Samad (2007), larger audit firms tend to protect their image and reputation because of the size of the organization and the resources available to them. Thus, they will always furnish a better audit quality which may result in good corporate governance and ultimately push the corporate performance upwards.

According to Lin and Hwang (2010) the quality audit is required to cut down the danger of material misstatement or omission and the stage of creative accounting and earning management. Their results show that the quality of audit is determined by audit independence, professional care exercised, and competency. Supported by Sarens, Abdolmohammadi, & Lenz (2012), they investigate the relationship between internal audit function and role in corporate governance. They found that is a significant relationship between internal audit function and role in corporate governance led to good audit quality.

In addition Haat, Rahman and Mahenthiran (2008), investigated the relationship between corporate governance practices and corporate transparency and performance among Malaysian PLCs. The results show a negative association between audit quality and performance of Malaysian companies. In the study of Al-Ajmi (2009), survey on 300 credits and financial analyst, he found that effective audit committees and Big 4 auditing firm provide best quality led better corporate performance. In contrast, a study of Hassan and Halbouni (2013) examined the relationship between audit type and firm performance by taking into consideration of 95 financial and non-financial corporations. However, the result shows that there is no significant relationship between audit type and firm performance due to the fact that the operational decision of the client is not affected by the external auditor. But the research conducted by Gardner, Hussin, Sanusi, Sulong and McGowan (2013) found that there is a positive relationship between audit quality and firm performance. They focus on the relationship between audit quality and firm performance by taking into consideration of 82 companies listed in the Malaysian ACE market from the year 2007-2009.

2.2.8 Power Loss

Power loss can be expressed as the difference between the total powers generated and transmitted power to received power. Losses in electrical system can be determined in different ways.

Electric technical losses occur as current flows through resistive materials and the magnetizing energy in the lines transformers and motors. Generally, system losses increase the operating cost of electric utilities and consequently result in high cost of electricity.

According to M. C. Anumaka (2012) reduction of system losses is of paramount importance because of its financial, economic and socio-economic values to the utility company, customers and the host country.

Er. Vinay Gupta (2013), argue that the power loss of a country negatively influence the corporate decision; because, Power Systems not all the electricity generated reaches paying consumers because of inefficiencies and improper managerial practices: that bias the decision.

According to Thomas B.Smith (2004) Electrical theft and comparative analysis the power loss is justified as follows:

- System use – The electricity power system consumes some of the electricity generated in order to produce and distribute the electricity. Lighting maintenance etc. have to be provided in associate Power Stations and facilities and this power is not subject to metering or “sold” in the commercial terminology. System use can vary from 2% to 6% of generation accordingly.
- Technical Transmission and Distribution (T&D) Losses- Electric power is lost while being transmitted and distributed when it passes through transformers and is distributed in low capacity Lines. Systems with long Transmission Lines Network risk a higher amount of T&D loss than the shorter Line Systems. Also the quality of the Lines and Transformers can affect efficiency of Transmission and Distribution. Power Systems that invest significantly in the Operation Maintenance (O&M) and in the advanced technology of Transmission and Distribution can reduce technical T&D losses.
- Gratis- A third type of loss is electricity allocated gratis. DISCOMS provide free electricity without charge to certain people and Organization.

2.2.9 Customer demand

Electrical distribution systems are dynamic, not static. That is, distribution grid conditions are continuously changing as a function of a variety of factors.

Customer power demand and energy consumption varies continuously over time, sometimes with large, frequent changes in magnitude. Jim See et al (2013) As customer demand increase, customers demand options from their utilities that allow them to manage their energy costs as well as the environmental impacts of meeting their energy needs will increase.

Customers have no understanding of, no interest in, and decreasing tolerance for the causes of declining electric service reliability and quality. This makes the sector difficult to manage.

There are two types of customer demand in electric utility service; the first one is new customer which needs for new connection and the second is existing customer which needs additional power. In both case the company need to Real-Time power Distribution Analysis that require customer management.

Electricity is in demand not for itself but for what it enables people to do. Practical Action (2010) identifies six different kinds of essential energy service that electricity can be used to provide: lighting; cooking and heating; space heating; cooling; information and communications; and earning a living. In order to be able to use electric power for these services, equipment or appliances are necessary, as well as a supply of electricity.

Institutional Holdings

As the U.K. Code encourages institutions to take an active role in governance, Lue lei (2006) expect a positive relationship between institutional holdings and firm performance. Unfortunately, empirical evidence is not supportive of this recommendation. Both Faccio and Lasfer (1999, 2000) fail to find such a significant relationship for U.K. firms. Besides, de Jong et al. (2002) find that major outside and industrial shareholders negatively influence the firm value.

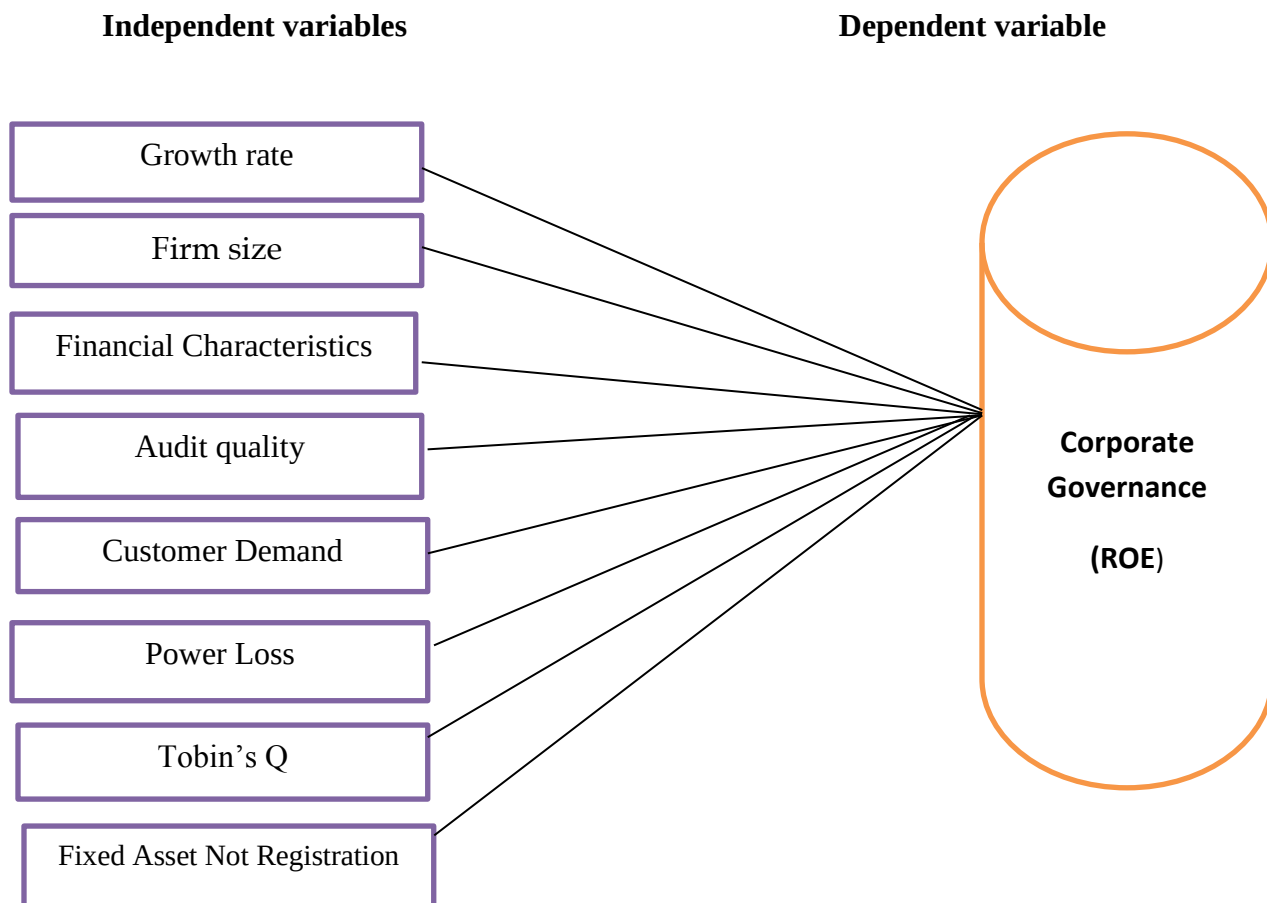
Transformational leadership

Recently, transformational leadership has gained significant interest, assuming it as a valuable factor for organizations seeking to gain quality of service delivery and exploit their employees' competency and attitude based on good governance characteristics (Azman et al., 2011; Ina, Rajesri, Budhi & Iman, 2012). Besides, employee commitment to organization also has been studied on its association with transformational leadership (Clark, Hartline & Jones, 2008; Laschinger, Finegan & Shamian ,2001; Raemah & Rosli, 2012; Rowden, 2000).

The leader who has individualized consideration is an informative person who shares timely information with his follower; provide greater opportunities for decision making, challenges, responsibilities and self-determination which most likely motivate the follower to reciprocate with high level of commitment to organization. However, other studies conducted by Jaussi and Dionne (2003) and Walumbwa et al. (2005) have indicated that transformational leadership has less significant effect on employee's creativity and commitment to organizational service quality respectively.

2.3 Conceptual frame work

Theoretical, factors affecting the corporate governance of EEPCo are as follows:



CHAPTER - THREE

+METHODOLOGY

The chapter explains the methodology employed for conducting the study on determinant factors of corporate governance in Ethiopian public sector; case study on Ethiopian Electric Power Corporation. It includes research design, data type and source, target population, sampling technique, data analysis and discussion, and model specification.

3.1. Research design

Anol Bhattacharjee (2007) explanatory research identifies causal factors and outcomes of the target phenomenon. It looks for explanation about the nature of relationship between the dependent and independent variables with the help of testing hypothesis which gives understanding about the relationship between variables. This study employed explanatory research design since the main aim of the study was to examine the determinant factors of Corporate governance in Ethiopian electric power corporation by assessing the relationship between dependent variable (Return on Equity (ROE)), and independent variables (such Firm size, Customer Demand, Growth rate, Power loss, fixed asset not capitalized, Audit Quality, Financial characteristics and Tobin's Q).

3.2. Data type and source

This study used quantitative data type and secondary data source such as for company specific variables, audited annual financial statements collected from corporate finance of Ethiopian Electric Power Corporation and others were acknowledged from different presses of like LDC (Load dispatch center), Generation and Retail business office; additionally the primary data were collated from EEPCo employees and industry customer.

3.3. Sampling and sampling technique

Target population of the study was all regions of EEPCo. The total number of regions in EEPCo is fifteen. Purposive sampling technique was used to select sample of five regions (Central region which is called South East region, North Addis Ababa, Western, and South Addis Ababa and Eastern Addis Ababa Regions), based on the rank given by the organization, depending on number of customer they constitute and areas they cover; the regions which are very large (Region 2) were included in the

sample frame. Which covers more than seventy five percent of corporation and seven work processes at head office level should be included in the sample unit of the study. The small regions which have been cover small area were not included.

Thus, considering the regions and work process; assessing the determinants factors of corporate governance of EEPCo at head office level, only 13 years duration is unlikely to identify and examine which factors affects corporate governance which is measured by Return on Equity .

3.4. Data analysis procedure

Analysis of data was undertaken to describe data nature, important relationship between variables, and impact of independent variables on dependent variables and draw inferences from the data in the study. This was realized by employing statistical tools such as descriptive analysis, white test and correlation analyses and regression analysis.

Descriptive analysis

Descriptive analysis was the first step in the analysis of the converted data from the sources. It deals with enumeration, organization and graphical representation of data. The descriptive statistics employed in this study i.e. Mean, Median, Standard deviation, Maximum and Minimum explores and presents an overview of all variables (Firm size, Customer Demand, Growth rate, Power loss, fixed asset not capitalized, Audit Quality, Financial characteristics and Tobin's Q) used in the study for the period from 1994 to 2006 E.C.

Correlation analyses

This section of statistical analysis shows whether or not the variables used in the study (such as Firm size, Customer Demand, Growth rate, Power loss, fixed asset not capitalized, Audit Quality, Financial characteristics and Tobin's Q.) are independent variables and how they are related with one another. The correlation coefficients which were generated from correlation analysis show the nature, direction, significance of correlation of the variables under the study. According to Gujarati (2004) the primary objective of correlation analysis is to measure the strength and degree of linear association between variables and their c-orrelation coefficient shows the strength of association.

Regression analysis

Multiple regression analysis was used to examine the relationship between the explanatory variables (Firm size, Customer Demand, Growth rate, Power loss, fixed asset not capitalized, Audit Quality, Financial characteristics and Tobin's Q) and the dependent variable (ROE). One way to study company performance is regression analysis, which allows modeling the functional form of dependence between various economic and financial indicators. Modeling economic performance aims to increase efficiency by improving interventions in an adaptive- learning cycle (Campbell et al, 2001). Ordinary least square (OLS) in the form of multiple regression method was used in the empirical analysis.

3.5. Model Specification

Based on the hypotheses stated in the study, the researcher first estimated the mathematical model (equation 1 below). Then the statistical or econometric model (equation 2 below) was derived based on the researchers in different areas such as Thailand, Chatrudee Jongsureyapart (2006), Luo Lei(2006), Arinze Ngwube(2013) and Kogilavani and Siti ubaryani(2014).The financial econometrics model (equation 3 below) was estimated in the study in the following procedures

$$\diamond \quad ROE = \alpha + \sum \beta x_{it} \text{-----}(1)$$

$$\diamond \quad ROE = \alpha + \sum \beta x_{it} + u_{it} \text{-----}(2)$$

By taking all explanatory variables into consideration, the extended equation for equation 1 that consider the error term is stated as equation 2 which can be expressed in full extended form as follows.

$$ROE = \beta_0 + \beta_1 (TSQ)_{it} + \beta_2 (FSZ)_{it} + \beta_3 (CDD)_{it} + \beta_4 (FANR)_{it} + \beta_5 (ADQ)_{it} + \beta_6 (PLSS)_{it} + \beta_7 (FCH)_{it} + \beta_8 (GR)_{it} + u_{it} \dots\dots\dots(3)$$

Where:

A ROE: Corporate governance measure, i.e., Return on Equity

B α : Constant term of the regression

C. GR: The difference between last year sales and this year sales to this year sales

D. FSZ: Natural logarithm of Equity

E. CDD: The difference between last year Electric sales and this year Electric sales to this year Electric sales

F. FANR: Total asset of job completion submitted – asset capitalized to total asset

G. ADQ: Audit opinion, internal control

H. PLSS: Power supplied – power sold

I. FCH: Total Debt to Total Asset

J. TSQ: Summation of total debt and Market value of Equity to Book value.

↗ $\beta_1 \dots \beta_8$: Coefficient of independent variables

↗ i : EEPCo

↗ t : Time period

↗ u : Error term

The method of ordinary least square was used in this multiple regression analysis. The OLS was used to estimate the population regression function (PRF) on the basis of the sample regression function which involves estimation of β_1 to β_8 . The assumption made about the 'i' variable(s) and the error term are extremely critical to the valid interpretation of the regression estimates. Therefore the five basic assumption of classical linear regression model were tested. These CLRM assumptions were used to give certain properties to the OLS estimators. The precision of OLS estimators was measured by their standard errors in the study. In addition the overall goodness of fit of multiple regression model was measured by the adjusted coefficient of determination, adjusted R^2 .

It tells what proportion of the variation in the dependent variable (ROE) is explained by the explanatory variables (Firm size, Customer Demand, Growth rate, Power loss, fixed asset not capitalized, Audit Quality, Financial characteristics and Tobin's Q) used in the study.

In order to run the multiple regression equation and to examine the influence of independent variables on corporate governance of EEPCo, the dated regular frequency data of Ethiopia Electric Power Corporation over the last 13 years was used and the time series element was reflected in the period of the study (1994 to 2006 E.C).

The statistical analysis was done with the help of Eview-6 software package and the outputs generated were presented by different tools like figures and tables.

3.6. Variable description and measurement

In order to examine the determinants of corporate governance of EEPco, the study try to look 8 variables. These are one dependent variable and eight independent variables.

Dependent variable

Corporate Governance

Return on equity was used as proxy measure the corporate governance of Ethiopia electric power corporation. Because, the government owned sector aims long term growth prospect in having citizen's satisfaction. Additionally; according to Eugene F. Brigham and Joel F.Houston (2009) ROE is the single best accounting measure of Firm performance and return on equity (ROE) determine the long-term growth prospects of a company. So, corporate governance is best measured by ROE. Such argument and Ethiopian government welfare of not for profit seeking rather than in long run return, leads the researcher to use the return on equity as a measure of corporate governance. But, others are work differently as like here Wiwattanakantang (2000) studied the effectiveness of the existing corporate governance mechanisms on corporate performance using ROA and Tobin's Q. Limpaphayom and Connelly (2004) studied the connection between corporate governance and market performance as measured by Tobin's Q, and suggested that Tobin's Q is an indicator of good corporate governance in Western systems. Brown and Caylor (2004) examined return on equity (ROE) and observed that better governance as measured by ROE is associated with corporate performance.

A high return on equity (ROE) creates a scope to invest and good investments lead to accelerated growth. Based on Jim Mcmenamin (2005) return on equity (ROE) measures the return the firm is earning on the equity funds invested by its shareholders (the firm's owners). ROE of the corporation were measured by earning before tax as a percentage of equity was used as a measure of corporate governance.

Independent variable

The corporate governance of the corporation is affected by various factors including Firm size, Customer Demand, growth rate, Power loss, fixed asset not capitalized, Audit Quality, Financial characteristics and Tobin's Q. The independent variables used in the study are classified as corporate financial variable and non-financial variables which is called totally independent variable.

Corporate financial variable factors

Corporate financial variable factors are those factors mainly influenced by a company's management decisions and policy objectives. The Corporate financial variable reflects less in internal control system and decisions of management with respect to source and use of funds, credit management, borrowing and expense management. Therefore the impact of corporate financial variables on corporate governance was analyzed by using audited annual financial statement of balance sheets and income/ profit and loss statements of the companies. The Corporate financial variables used in the study were Firm size, fixed asset not capitalized, Audit Quality, Financial characteristics and Tobin's Q. Faccio and Lasfer (1999, 2000) and Lue lei (2006) fail to find a significant relationship for U.K. firms. Besides, de Jong et al. (2002) find that major outside and industrial shareholders negatively influence the firm value. Chatrudee Jongsureyapart (2006) and Eunjung lee et al. (2004) has a positive relationship between corporate governance and firm size, likely Eunjung Lee and kyung sun Park (2004) find that there is direct relationship between corporate governance and financial characteristics, similarly Gao & Kling(2012), Zulkatli & Samad(2007), Sarens et al (2012), they found that there is a significant relationship between internal audit function and role in corporate governance led to good audit quality.

Firm size

Since governance mechanisms consume corporate resources, the study used natural logarithm of total asset to capture the impact of total asset on corporate governance of the corporation. Most of the monitoring system such as the board of directors, internal control system, and financial reporting and disclosure system incur financial costs, most of which are of a fixed component and can be borne more efficiently by larger firms. The more complicated business structure of large firms may also require better corporate governance variable. Chatrudee Jongsureyapart (2006), Eunjung Lee, Kyung Suh Park (2004) use this apple idea for their study. Similarly many empirical studies such as Babalola, Y. A. (2013), Mesut, D. (2013), Chen-Ying, L.(2014), Sehrish, G.et al (2011),Noor, A. M.et al (2014), Panayiotis et al (2005) used natural logarithm of total asset to capture the impact of firm size on their respective profitability performance measures.

Tobin's Q

Tobin's Q is a measure of market performance and is calculated for the purposes of this study as the ratio between the market value of equity (bond and shares of EEPCo) and firm debt divided by the book value of total assets. It is widely used in finance research as a measure of managerial performance (Limpaphayom and Connelly, 2004).

Financial Characteristics

The growth potential would also be related to better governance since those firms with high growth rates have more to lose from a lack of investment capital, and would try to satisfy outside investors with better governance as Durnev and Kim (2003) have argued. A higher debt ratio implies a larger amount of interests and principals to be paid periodically, and the management would be under pressure to ensure enough cash flow to cover the debt payment, which can be done through more efficient management (Grossman and Hart (1982)).

Audit quality

According to Sarens, et al (2012), Lin and Hwang (2010) the quality audit is required to cut down the danger of material misstatement or omission and the stage of creative accounting and earning management.

In addition Haat, Rahman and Mahenthiran (2008), Gardner, Hussin, Sanusi, Sulong and Mc Gowan (2013) found that there is a positive relationship between audit quality and corporate governance.

Fixed asset not capitalized

Capital expenditures are investments made to acquire, build, or update fixed assets such as plant and equipment. Such expenditures are typically made to improve the efficiency of operations, or to accommodate expected future growth in the demand for a company's products and services. Such expenditures are an alternative to solve future problem in terms of the use of corporate governance (Jensen, 1988), Michael Carney (2000). Even though, the capital expenditure is invested for the future good governance, the fixed asset registration (capitalization) has great impact on company profitability, material management with equivalent to capital invested. According to Fazilah Abdul Samad (2002), Sudip Das (2010), Maria Radu (2012) in good internal controlling system, when the capital investment is invested and job completion were completed, fixed asset is capitalized soon, that has positive relationship with corporate performance means profitability increase.

Non-financial variable factors

Power Loss

Power loss can be expressed as the difference between the total powers generated and transmitted power to received power. Losses in electrical system can be determined in different ways. Electric technical losses occur as current flows through resistive materials and the magnetizing energy in the lines transformers and motors. Generally, system losses increase the operating cost of electric utilities and consequently result in high cost of electricity. According to M. C. Anumaka (2012) reduction of system losses is of paramount importance because of its financial, economic and socio-economic values to the utility company, customers and the host country. Er. Vinay Gupta (2013), argue that the power loss of a country negatively influence the corporate decision; because, Power Systems not all the electricity generated reaches paying consumers because of inefficiencies and improper managerial practices: that bias the decision.

Customer demand

Electrical distribution systems are dynamic, not static. That is, distribution grid conditions are continuously changing as a function of a variety of factors.

Customer power demand and energy consumption varies continuously over time, sometimes with large, frequent changes in magnitude. Jim See et al (2013) As customer demand increase, customers demand options from their utilities that allow them to manage their energy costs as well as the environmental impacts of meeting their energy needs will increase. Customers have no understanding of, no interest in, and decreasing tolerance for the causes of declining electric service reliability and quality. This makes the sector difficult to manage.

Transformational leadership

According to Azman et al., 2011; Ina, Rajesri, Budhi & Iman, (2012), (Clark, Hartline & Jones, 2008; Laschinger, Finegan & Shamian ,2001; Raemah & Rosli, 2012; Rowden, 2000), the leader who has individualized consideration is an informative person who shares timely information with his follower, provide greater opportunities for decision making, challenges, responsibilities and self-determination which most likely motivate the follower to reciprocate with high level of commitment to organization

Board Composition

In the board composition there is two different ideas were exercised in different researches. The first group is Kee et al. (2003), Hutchinson and Gul (2003) and Luo lei (2006) they suggested there is a positive relationship between non-executive director representations and firm performance by argue that non-executive directors in the board help to reduce the agency expense. In contrast, in the U.K., Weir and Laing (2000) find a negative relationship between non-executive director representation and performance.

Table 3.1: Summary of variables with their notation, measurement and source

Category variables	Name of variables	Notation	Measured by	Source
Dependent	Return on Equity	ROE	Net income to Equity	Chatrudee Jongsureyapart, (2006), Khatab, H.(2011), Gugler, K. et al (2004)
Independent	Firm size	FSZ	Natural logarithm of total asset	Sehrish, G.et al (2011),
	Customer Demand	CDD	The difference between last year Electric sales and this year Electric sales to this year Electric sales	Jim See et al (2013)
	Fixed Asset Not Registered	FANR	Total asset of job completion submitted – asset capitalized to total asset	Michael Carney (2000), Manual of EEPCo.(2000)
	Audit Quality	ADQ	Audit opinion, internal control	Sarens, et al (2012), Lin and Hwang (2010), self
	Power Loss	PLSS	Power supplied – power sold	M. C. Anumaka (2012) Er. Vinay Gupta (2013),
	Financial Characteristics	FCH	Total Debt to Total Asset	Durnev and Kim (2003)
	Growth rate	GR	The difference between last year sales and this year sales to this year sales	Eunjung lee et al. (2004)
	Tobin's Q	TSQ	Summation of total debt and Market value of Equity(bond share of EEPCO) to Book value	Chatrudee Jongsureyapart,(2006),

CHAPTER - FOUR

RESULT AND DISCUSSION

The main purpose of the study was to examine the determinant factors of corporate governance of Ethiopian Electric Power Corporation. In order to meet the objective and to test the hypotheses stated in the study, it has obtained necessary quantitative data like Audited annual financial statements of organization and different corporate work process data. This chapter, data analysis and discussion, presents the results of different methods used in the study for the sake of analyzing data and it contains three sections. In the first section, the descriptive statistics analysis of the dependent and independent variables with discussion of its output such as mean, median, standard deviation were undertaken by the researcher under the study. The second section, the unit root tests of the all variables and correlation analysis and its discussion of correlation coefficient were carried out. In the last section of the chapter, the classical linear regression model/CLRM/ assumptions were tested and the econometric multiple regression in the form of ordinary least square method/OLS/ was run and its outputs were discussed and also testing of hypotheses were presented.

4.1. Descriptive statistic of the data

The descriptive statistics (such as mean of distribution, median of distribution, minimum/maximum of the range of distribution and standard deviation of the distribution) were actively investigate and present an overview of both dependent (ROE) and independent variables (Firm size, Customer Demand, Growth rate, Power loss, fixed asset not capitalized, Audit Quality, Financial characteristics and Tobin's Q) used in the study. Table 4.1 shows the descriptive statistics output of all variables.

Table 4.1: Descriptive statistics output of all variables.

Variables	Dependent	Independent							
	ROE	FSZ	CDD	FANR	ADQ	PLSS	FCH	GR	TSQ
Mean	0.011285	23.63679	0.129081	0.265273	0.727	0.226923	0.435293	0.128033	1.101412
Median	0.011284	23.75488	0.123938	0.24637	0.750	0.25	0.381789	0.161318	1.027675
Maximum	0.020862	24.591	0.305931	0.49034	1.000	0.35	0.611605	0.275422	1.521176
Minimum	0.000112	22.46589	-0.04305	0.070094	0.000	0.1	0.255739	-0.04508	0.858907
Std. Dev.	0.005765	0.719041	0.107184	0.1586	0.239	0.077716	0.114683	0.102764	0.171604
Observations	13	13	13	13	13	13	13	13	13

Source: *Output of Eviews 6*

Table 4.1 shows the descriptive statistical results of corresponding 13 total observations of each variable in the study. It also present the overall nature of variables used in the study and their interpretation is presented as follows.

4.1.1 Descriptive statistics result interpretation for dependent variable

The mean distribution of the dependent variable (ROE) of the study is 0.11285, which shows the balancing point of ROE distribution for the last thirty years. The maximum/highest return on equity earned over the last thirty years is 0.02862 which indicates that the corporation has earned almost 0.0286 cents of net return for each birr invested and the minimum/lowest return on equity is 0.000112 which indicates that the corporation has gain almost nothing for each birr have invested rather than cover cost of customer. The standard deviation statistics for ROE was 0.005765, which shows that how individual values of ROE in a data set vary from the mean of ROE over the last thirty years. This figure also indicates that the corporate variation around its mean was very small as compared to the dispersion of other data set over its mean value. The result implies that a minimum variation of return on equity of EEPCo and it indicates that organization should efficiently utilize their asset to maximize their return on equity.

4.1.2 Descriptive statistics result interpretation for Independent variable

From the independent variables, the mean of the Firm size which is measured by natural logarithm of total asset has on average the value was 23.637, which is the center of the distribution of firm size Value Corporation over a last thirty years. The maximum value of firm size distribution was 24.591 and its minimum value was 22.466. The standard deviation of firm size was 0.7190. It indicates that the firm size has great dispersion around the mean, and it also shows that the existence of relatively high variation of firm size data of EEPCo as compared to the variation in ROE.

As it can be seen from Table-4.1, the mean value of growth rate variable was 0.128033. The maximum value of growth rate was 0.275422 and its minimum value was -0.0451. The standard deviation of growth rate was 0.1028. It shows that the existence of moderate difference among the value of growth rate under consideration as compared to the standard deviation of all data. The maximum growth of the firm was recorded in the year 2004 (i.e. 28 %) and the minimum growth rate was recorded at the time of total blackout for one month and half in year 2002 (i.e.-0.2%).

The other determining factor is financial characteristics. The descriptive statistics result of this variable indicates that organization had total debt of 43.53% averagely out of total asset invested with maximum and minimum values of 61.16% and 25.57% respectively. This shows that the company alive with foreign and domestic debt to serve the customer with a cheap price and has high cost of debt. The standard deviation of this variable from the mean is lowest at the second level out of all data collected.

The fourth independent variable shown in the table 4.1 is customer demand. The derivative statics result of this variable reflects that organization had annual increment of average mean 12.90%. The customer demand of the corporation over a last thirty years has a maximum of 30.59% that increases from time to time with both existing and new customers' demands and had a minimum of increment of -4.3 % of demands which the company faces total blackout of the country over one month and half. The standard deviation of this variable from the mean is moderate out of listed variables.

The next independent variable sited in the table above is fixed asset not registered. The derivative statics result of this variable reflects that the EEPCo. had not register his most investments of with average mean of 26.53% and most of which is processed to register in 2007 E.C. The fixed asset of the corporation not capitalized in past years had not capitalized in a maximum of 49% and were remain from capitalize in a minimum of 7% of total fixed asset capitalize and would have to registered in having job completion. This means the total return of the corporation became decrease in depreciation of not capitalize per years. This means the material management and internal controlling system of corporation were limited. The sixth independent variable is non-financial variable that affects corporate governance of EEPCo. which measured by the difference of power supplied and sold. The derivative statics result of this variable reflects that, the power generated from hydro, geothermal, wind and diesel were lost with average mean of 22.69%; the maximum and minimum of loss of 35% and 10% respectively. According to World Bank energy report of 2013, the country having high power loss may not gate loan of credit. In highly experienced and some developed countries this loss is tolerable up to 6% out of which is controllable.

From the last two independent variables Tobin's Q is also the determinant factors affecting corporate governance of Ethiopian electric power corporation.

That has derivative statics result of average mean 1.101412 which implies; the ratio of market value of equity plus total debt to book value of asset. According to Chatrudee Jongsureyapart (2006), when the Tobin's Q become more than 1, it means that 1st the company is highly wanted to purchased and reinvested in outsider Company to have high profit; 2nd debt of the corporation was very high which means the company equity to cover the debt is at best level. But, contrarily the result reflects that there is high debt, to cover customers' satisfaction with reachable and cheap price and less in book value of asset. And the maximum and minimum values of Tobin's Q are 1.5211 and 0.858907 respectively. The standard deviation of this variable from the mean is varying in amount of 0.171604 from mean.

The last determining factor of corporate governance is audit quality. The descriptive statistics result of this variable indicates that EEPCo had a mean value of audit quality is 72.69%, with a less internal control system; the maximum and minimum values of audit quality are 100% and 0% respectively. The standard deviation of this variable from the mean is varying in amount of 0.2386 from mean. This is the highest variance from mean of data collected for thirty years.

4.2 Correlation analysis

This section presents the correlation matrix which indicates all independent variables included in the analysis. These variables are listed in Table 4.2. The correlation coefficient is used to measure the strength and magnitude or degree of linear relationship or association between two variables in the study. The values of the correlation coefficient are always lies between -1 and +1, if the correlation coefficient of +1 indicates that the linear relationship between two variables are perfectly or strongly related in a positive linear sense; while a correlation coefficient of -1 indicates that two variables are perfectly or strongly related but in a negative linear sense. A correlation coefficient of 0 indicates that there is a little or no linear relationship between the two variables.

Table 4.2 Correlation matrix between variables

Variables	ROE	FSZ	CDD	FANR	ADQ	PLSS	FCH	GR	TSQ
ROE	1								
FSZ	-0.57717	1							
CDD	-0.42548	0.465341	1						
FANR	-0.33262	0.767909	0.194429	1					
ADQ	0.324057	-0.34339	0.195268	-0.33543	1				
PLSS	-0.20498	0.33771	0.533777	0.078268	0.047536	1			
FCH	-0.40651	0.741775	0.236514	0.799877	-0.34576	0.052117	1		
GR	-0.44275	0.423881	0.792622	0.042018	-0.05405	0.665259	0.110726	1	
TSQ	0.499699	-0.90231	-0.32346	-0.71921	0.316306	-0.13957	-0.55528	-0.34385	1

Source: Output of Eviews 6

4.2.1. Correlation analysis result discussion between ROE and related variables

Table 4.2 above provides information on the degree of correlation between the dependent variables and explanatory variables used in the regression analysis. If an independent variable is an exact linear combination of the other independent variables, then it can say that the model suffers from perfect co linearity problem, and it cannot be estimated by OLS (Brooks 2008). As it can be seen in Table 4.2 Audit quality and Tobin's Q are the most positively correlated variable with ROE with a coefficient of 0.324057, and 0.4997 respectively. This means that when the Audit quality and Tobin's Q increased by 100%, ROE of EEPCo will increase by 32.4% and 49.97% respectively.

In contrast, Firm size, customer demand, fixed asset not registered, Power loss, financial characteristics and growth rate are negatively correlated with return on equity and the figure reveals that there is a highly relation between ROE and the independent variable (Firm size, customer demand, fixed asset not registered, Power loss, financial characteristics and growth rate) over the last thirty years.

It also describes that when ROE decrease by 20.5% the power loss increases by 100%, the ROE decrease 40.65% the financial characteristics increased by 100%, the ROE decrease by 57.71% the firm size of the organization increased by 100%, the ROE decrease by 42.55% the customer demand of the organization increased by 100%, the ROE decrease by 44.28% the growth rate of the organization increased by 100% and the ROE decrease by 33.26% the fixed asset not registered of the company increased by 100% this relationship point out that as the stated variable moves upward the return on equity of the corporation move down; which implies that the corporate governance of the corporation is affected negatively.

4.2.2. Correlation analysis results discussion between two independent variables

Tobin's Q variable was positively correlated to audit quality with correlation coefficient of 0.3163; whereas it was negatively correlated with firm size, customer demand, fixed asset not capitalized, power loss, financial characteristics and growth rate with correlation coefficient of 0.9023, 0.3235, 0.7192, 0.1395, 0.552 and 0.3439 respectively. Growth rate was positively correlated to firm size, customer demand, fixed asset not registered, power loss, and financial characteristics with correlated coefficient of 0.4238, 0.7926, 0.0420, 0.6653 and 0.1107 respectively but a negatively correlation to audit quality with the correlated coefficient of 0.0540. The financial characteristics is positively correlated to firm size, customer demand, fixed asset not registered and power loss with the correlated coefficient of 0.7417, 0.2365, 0.7999, and 0.05211 and a negatively correlation to audit quality with correlated coefficient of 0.3457. The power loss was positively correlated to firm size, customer demand, fixed asset not registered and audit quality with correlated coefficient of 0.3377, 0.53377, 0.07827 and 0.04754. Audit quality was negatively correlated to correlated firm size and Fixed asset not registered with coefficient of 0.34339 and 0.3354 respectively and positively correlated to customer demand with coefficient of 0.1953. Fixed asset not registered was positively correlated to firm size and customer demand with correlated coefficient of 0.7679 and 0.1944 respectively. Finally Customer demand was positively correlated to firm size with correlated coefficient of 0.4653.

4.3 Testing for violation of assumptions of classical linear regression model (CLRM)

The third part of this chapter was testing the classical linear regression model/CLRM assumptions. In this study five basic assumptions were made relating to the classical linear regression model /CLRM such as the error have zero mean of $E(\epsilon_t)=0$, the variance of the errors is constant and finite over all values of x_t or $\text{Var}(\epsilon_t) = \sigma^2 < \infty$, the error are linearly independent of one another or $\text{cov}(\epsilon_i, x_t)=0$, there is no relationship between the error and corresponding x variate or $\text{cov}(\epsilon_t, x_t)=0$ and the ϵ_t is normally distributed or $\epsilon_t \sim N(0, \sigma^2)$. Test of these assumptions were needed to show that the number of desirable properties of estimation technique, ordinary least squares (OLS), in the study were met and hypothesis tests regarding the coefficient estimates could validly be conducted. The CLRM were carried out to ensure that the data, which says that return on equity, was function of independent variables such as Firm size, Customer Demand, Growth rate, Power loss, fixed asset not capitalized, Audit Quality, Financial characteristics and Tobin's Q fits the basic assumptions of classical linear regression model. Therefore before running the regression model for return on equity the researcher was testing the following CLRM assumptions.

4.3.1 Test for average value of the error term is zero ($E(\epsilon_t) = 0$) assumption

The first assumption that is required to be tested in this study is that the average value of the errors is zero. This assumption states that given the value of X , the mean, or expected, value of the random disturbance term, ϵ_i , is zero and/or it means the conditional mean value of ϵ_i is zero (Gujarati, 2004). According to Brooks (2008), the prevalence of a constant term in the regression equation will prevent this assumption of the average value of the errors is zero from being violated. Since the multiple regression model or equation in this study included constant term, the assumption of average value of the errors is zero was not violated.

4.3.2 Test for Heteroskedasticity Assumption ($\text{Var}(\epsilon_t) = \sigma^2$)

The second CLRM assumptions which is conducted in this study is testing heteroskedasticity which stated that given the value of X , the variance of ϵ_i is the same for all observations. That is, the conditional variances of ϵ_i are identical (Gujarati, 2004). If the errors do not have a constant variance, they are said to be heteroskedastic as explained by Brooks (2008). To test this assumption the white test was used having the null hypothesis of heteroskedasticity.

Both the F-statistic and Chi-Square versions of the test statistic gave the same conclusion that there is no evidence for the presence of heteroskedasticity, since the p-values were in excess of 0.05. Therefore as Table 4.3 below shows that the test results for the regression analysis's p-values are considerably in excess of 0.05, it can be say that there is no evidence for the presence of heteroskedasticity. And the table below indicated that, both F-statistics and p-value fails to reject the null hypothesis.

Table 4.3 Heteroskedasticity Test: white

The null hypothesis: H_0 = there is no heteroskedasticity

Alternative hypothesis H = there is heteroskedasticity

F-statistic	0.068725	Prob. F(8,4)	0.9992
Obs*R-squared	9.7475	Prob. Chi-Square(8)	0.9874
Scaled explained SS	0.60076	Prob. Chi-Square(8)	0.9997

Source: Output of Eviews 6

Test for normality (Bera-Jarque test)

Another important diagnostic test conducted in this study was the normality assumption (i.e the normally distributed errors). Its normal distribution is not skewed and is defined to have a coefficient of Kurtosis of 3. A normal distribution is symmetric and said to be mesokurtic. This assumption is required in order to conduct single or joint hypothesis tests about the model parameters (Brooks, 2008). In this study the normality assumption was tested by one of the most commonly applied tests for normality which is called the Bera-Jarque test. Bera-Jarque formalizes this by testing the residuals for normality and testing whether the coefficient of skewness and kurtosis are zero and three respectively. Skewness measures the extent to which a distribution is not symmetric about its mean value and kurtosis measures how far the tails of the distribution are. Figure 4.1 below revealed that the data is normally distributed and residuals are normally distributed since the histogram is bell-shaped and the Jarque-Bera statistic of 0.818059 has a probability of 0.6643. This implies that, the inference made about the coefficient estimates was significant.

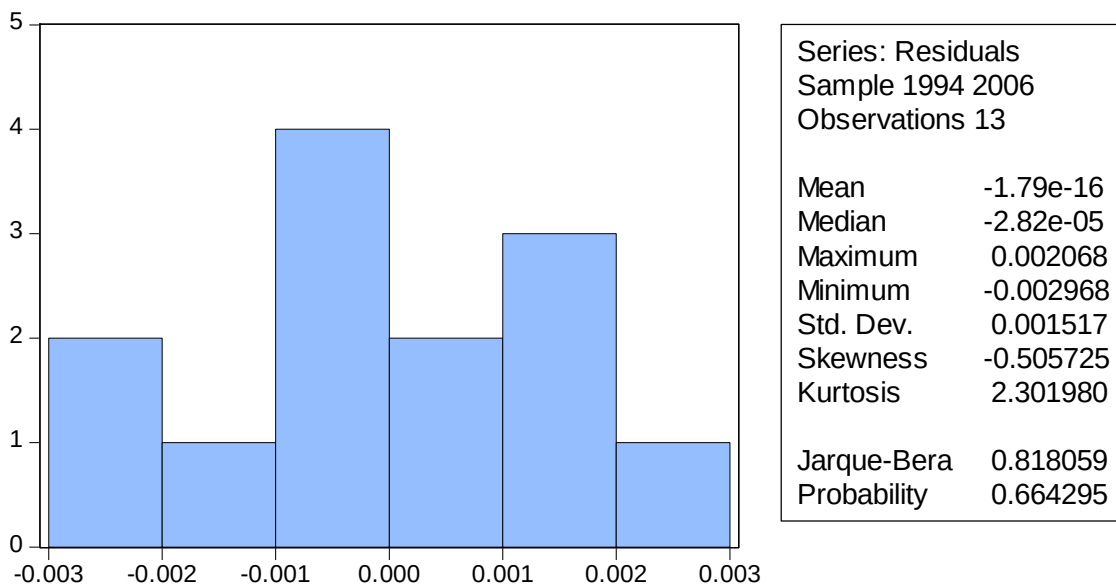
The means value that the p-value given at the bottom of the normality test screen should be higher than 0.05 to not reject the null hypothesis at 5% level of confidence. If the residuals are normally distributed, the histogram was bell-shaped and then the Bera-Jarque statistic is significant. Therefore, From Figure 4.1 below, it can be seen that normality assumption holds and the disturbances are normally distributed because the p-value of Jarque-Bera test is greater than 5% significance level and the coefficient of kurtosis is 2.3019 which close to 3 and the skewness is also close to zero with coefficient of -0.505725.

So, the null hypothesis was rejected which says that error terms don't follow normal distribution. The researcher in this study concluded that there is no the problem of normality on ROE at 5% level of confidence.

Ho: The residuals do not follow a normal distribution

Hi: The residuals follow a normal distribution

Figure 4.1 Histogram of normally test



Source: Output of Eviews 6, annual report of audited financial statement of EEP Co. from 1994-2006

Test for Multicollinearity

Another important CLRM assumption is multicollinearity. This assumption deals with the relationship that exists between the independent variables. In this test the pair wise correlations between variables are lays between ± 1 . According to Cameron and Trivedi (2009) Multicollinearity condition exists where there is high, but not perfect correlation between two or more explanatory variables. According to Brooks (2008), perfect multicollinearity occurs when there is an exact relationship between two or more independent variables. And it is usually observed only when the same explanatory variable is inadvertently used twice in a regression. When this happened, it is not possible to estimate all of the coefficients in the model.

Therefore, in this study the researcher has checked for the independent variables are not correlated with one another assumption. If there is no relationship between the independent variables, they would be said to be orthogonal to one another which means there is no evidence that one independent variable affects the other. If the independent variables were orthogonal to one another, change by adding or removing a variable (Brooks, 2008). And again this author says that small degree of association between independent variables will almost always occur but will not cause too much loss of precision in a real world practice. But a problem occurs when the explanatory variables are very highly correlated with each other, and this problem is known as multicollinearity.

The following hypotheses were tested in the study for assumption of absence of multicollinearity.

Ho: There is multicollinearity among the independent variables

Hi: There is no multicollinearity among the independent variables

Authors (Such as Cooper and Schendlar, 2009, Malhotra, 2007, Hair Et al., 2006) suggested the different level of acceptable of the degree of correlation among the independent variables. If the correlation coefficient below 0.9, it may not cause serious multicollinearity problem (Hair et al., 2006). Cooper and Schendlar (2009) stated that the correlation coefficient between independent variables should not exceed 0.8 can show a healthy relationship between the variables. This indicates that there is no consistent argument on the level of correlation that causes serious multicollinearity problem. As indicated in table 4.4 below, the minimum correlation coefficient of -0.90231 is observed between firm size and Tobin's Q of the EEPCo and also the maximum correlation coefficient of 0.799877 are existed between financial characteristics and fixed asset not registered.

This figure does not violated the acceptance level stated by above explained three authors, Malhotra (2007), Cooper and Schendlar (2009) and Hair et al. (2006), criterion. Therefore based on the Eviews 6 statistical software package outputs there is no multicollinearity problem in this study since all the correlation coefficient values are below 0.9.

Table 4.4 Multicollinearity test result between each independent variables

Variable:	FSZ	CDD	FANR	ADQ	PLSS	FCH	GR	TSQ
FSZ	1							
CDD	0.465341	1						
FANR	0.767909	0.194429	1					
ADQ	-0.34339	0.195268	-0.33543	1				
PLSS	0.33771	0.533777	0.078268	0.047536	1			
FCH	0.741775	0.236514	0.799877	-0.34576	0.052117	1		
GR	0.423881	0.792622	0.042018	-0.05405	0.665259	0.110726	1	
TSQ	-0.90231	-0.32346	-0.71921	0.316306	-0.13957	-0.55528	-0.34385	1

Source: Output of Eviews 6

Test for autocorrelation

The final CLRM assumption to be tasted in this study is the test for autocorrelation which was tested by using Durbin - Watson (1951). Durbin-Watson demonstration may help to verify the residual from a linear regression or multiple regression analysis. The Durbin-Watson diagnostic test is one way of testing for autocorrelation. It tests for first order autocorrelation, a relationship between an error and its immediately previous value, (Brooks, 2008). In this assumption if the covariance between the errors terms over time or cross-sectional for that type of data is zero, It would be stated that they are ‘autocorrelated’ or that they are ‘serially correlated’. A test of this assumption is therefore required, because most regression problems involving time series data exhibit positive autocorrelation, the hypotheses usually considered in the Durbin-Watson test are;

$$U_t = \rho u_{t-1} + v_t$$

Where, $v_t \sim N(0, \sigma^2 v_t)$ and ρ is the coefficient of autocorrelation. The DW test statistic has null and alternative hypotheses. The null hypothesis says that the errors at time $t-1$ and t are independent and the alternative hypothesis says that the errors at time $t-1$ and t are not independent. So,

$H_0: \rho=0$ (no autocorrelation)

$H_1: \rho \neq 0$ (autocorrelation)

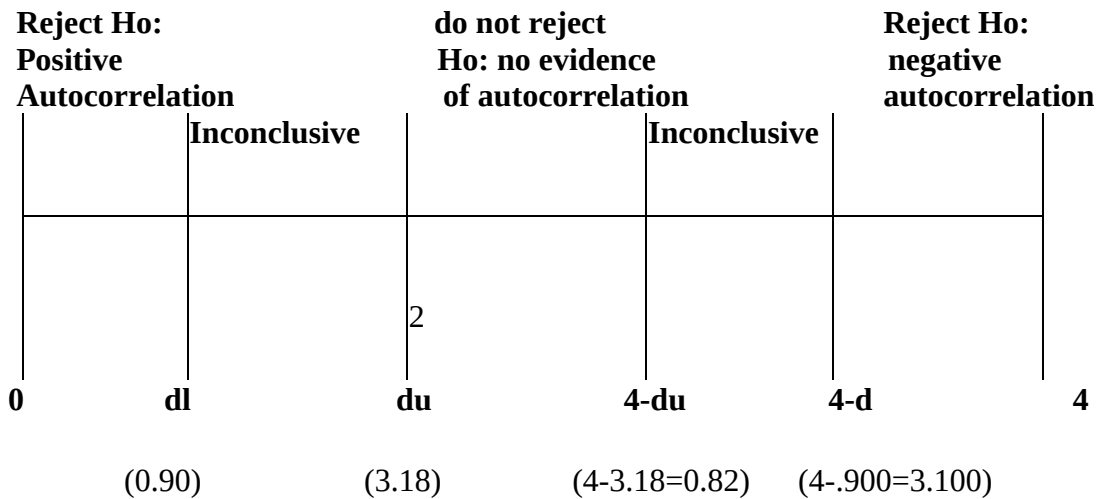
Table 4.5 Autocorrelation Test: Durbin Watson

Variables	Durbin Watson test result
All explanatory variables (Firm size, Customer Demand, Growth rate, Power loss, fixed asset capitalized, Audit Quality, Financial characteristics and Tobin's Q)	1.813256

Source: Output of Eviews 6

According to Brooks (2008) if the Durbin Watson result is near to two, it shows that there is no autocorrelation problem. In the above table DW test result was 1.813256, therefore there is no evidence for the existence of serious autocorrelation problem in this study since the result is nearest to two. According to Brooks (2008), DW has two critical values: an upper critical value and a lower critical value, and there is also an intermediate region where the null hypothesis of no autocorrelation can neither be rejected nor not rejected. The rejection, non-rejection, and inconclusive regions are shown on the number line in figure 4.2. So, the null hypothesis is rejected and the existence of positive autocorrelation presumed if DW is less than the lower critical value; the null hypothesis is rejected and an existence of negative autocorrelation is presumed if DW is greater than 4 minus the lower critical value; the null hypothesis is not rejected and no significant residual autocorrelation is presumed if DW is between the upper critical value and 4 minus the upper limits; the null hypothesis is neither rejected nor not rejected if DW is between the lower and the upper limits, and between 4 minus the upper and 4 minus the lower limits.

Figure 4.2 Rejection and Non-Rejection Regions for DW Test



The study used the dL and dU values for 13 observations. As it can be seen from the appendix, 13 observations with 8 explanatory variables at 1% level of significance, the dL and dU values are 0.90 and 3.18 respectively. The DW values for return on equity for 13 observations were 1.813256. The DW value of ROE lies in the inconclusive region where the null hypothesis of no autocorrelation can neither be rejected nor not rejected. Durbin-Watson statistic can be difficult to interpret and it is difficult to judge the presence of autocorrelation if the value lies in the inconclusive region. Thus, the null hypothesis of no autocorrelation is within the inconclusive region of the number line. Therefore, there is no evidence for the presence of autocorrelation in this study.

Results of regression analysis

To test the formulated hypotheses, the relationships between return on equity which is the dependent variables of the model and the explanatory variables representing Firm size, Customer Demand, Growth rate, Power loss, fixed asset not capitalized, Audit Quality, Financial characteristics and Tobin's Q were examined using ordinary least square (OLS) regression. Under the following regression finding the beta coefficient may be negative or positive; but whatever it is, beta indicates that each variable's level of influencing on the dependent variable which is return on equity. P-value also indicates at what percentage or precession level of each variable is significant. On the other hand R-squared values indicate the explanatory power of the model and also the adjusted R-squared value which takes into account the loss of degrees of freedom associated with adding extra variables were inferred to see the explanatory powers of the independent variables in the regression model.

Choosing Fixed effect (FE) Versus Random effect (RE) models

According to Gujarati (2004), if T (the number of time series data) is large and N (the number of cross-sectional units) is small, there is likely to be little difference in the values of the parameters estimated by fixed effect model/FEM and random effect model/REM. Hence the choice here is based on computational convenience. Since the number of time series (i.e. 13 year) is greater than the number of cross-sectional units (i.e. 1 EEPCo.), FEM is preferable in this study. According to Brooks (2008); Verbeek (2004) and Wooldridge (2006), it is often said that the REM is more appropriate when the entities in the sample having been randomly selected from the population, but a FEM is more conceivable when the entities in the sample effectively constitute the entire population/sample frame. Hence, the sample for this study was not selected randomly and equals to the sample frame FEM is appropriate.

Empirical model: As presented in the third chapter the operational panel regression model used to find the statistical significant determinants of corporate governance in Ethiopian electric power corporation measured by ROE was as follows;

$$\text{ROE}_{it} = \beta_0 + \beta_1 (\text{TSQ})_{it} + \beta_2 (\text{FSZ})_{it} + \beta_3 (\text{CDD})_{it} + \beta_4 (\text{FANR})_{it} + \beta_5 (\text{ADQ})_{it} + \beta_6 (\text{PLSS})_{it} + \beta_7 (\text{FCH})_{it} + \beta_8 (\text{GR})_{it} + u_{it}$$

After running the equation using E-views 6, the regression model output was as follow

$$\text{ROE}_{it} = 0.94934 - 0.033381 \text{ PLSS} - 0.03867 \text{ FSZ} + 0.183908 \text{ FANR} - 0.109907 \text{ FCH} + 0.060304 \text{ GR}$$

The regression model output was resented in the table 4.6. It shows the coefficient, standard error, t-values and p-values for explanatory variables. And also shows R-squared, Adjusted R-squared, standard error of regression, Probability (F-statistic) for regression, Durbin-Watson statistic and number of observations included in the study. The R-squared statistics and Adjusted R-squared statistics of the model were 93.0% and 79.22% respectively. The result of Adjusted R-squared statistics shows that the change on dependent variables (ROE) was explained 79.22% by the independent variables (Such as Firm size, Customer Demand, Growth rate, Power loss, fixed asset not capitalized, Audit Quality, Financial characteristics and Tobin's Q) or the changing power of independent variables for the change in dependent variables was 79.22%.

Therefore, only 20.78 % of change on dependent variables (ROE) was explained by other factors which are not modeled in this study. The probability (F-Statistic) value of 0.0000 indicates that strong statistical significance, which enhanced the reliability and validity of the model.

Determinants of corporate governance which is measured by net income to total equity (ROE) are presented for the corporation. Table 4.6 shows that the coefficient of firm size (FSZ), audit quality (ADQ), Power Loss and financial characteristics (FCH) against return on Equity (ROE) were negatively. This is -0.03867, -0.000966, -0.109907 and -0.033381 respectively. This indicates that there was an inverse or negative relationship between the above mentioned four independent variables and ROE. This implies that the increase of those variables will cause a decrease in ROE. However, fixed asset not registered (FANR), customer demand (CDD), Tobin's Q (TSQ) and growth rate (GR) has a positive relationship; it means increase these variables leads increase return on equity. Tobin's Q, Customer demand and Audit quality had no significant impact on the corporate governance of EEPCo up to 10% significance level. On the other hand the remaining independent variables fixed asset not registered (FANR), Financial characteristics (FCH), Firm size (FSZ) has significant impact on corporate governance at 1% significant level; growth rate (GR) has significant impact on corporate governance at 5% significant level and Power loss (PLSS), had a significant impact on corporate governance of EEPCo at 10% significant level. Both fixed asset not registered and growth rate has positive impacts that cause an enhancement in the good corporate governance. But; the remain three significant variable affects corporate governance of EEPCo. negatively.

Table 4.6 Fixed effect regression result for all explanatory variables

Dependent Variable: ROE				
Method: Least Squares				
Date: 05/20/15 Time: 17:40				
Sample: 1994 2006				
Included observations: 13				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.94934	0.198211	4.789537	0.0087
FSZ	-0.03867***	0.007986	-4.842531	0.0084
CDD	0.002403	0.015518	0.154867	0.8844
FANR	-0.183908***	0.034637	5.309561	0.0060
ADQ	-0.000966	0.004371	-0.221089	0.8359
PLSS	-0.033381*	0.015893	-2.100401	0.0936
FCH	-0.109907**	0.025394	-4.328138	0.0124
GR	0.060304**	0.021762	2.771129	0.0503
TSQ	0.019735	0.017035	1.158489	0.3111
R-squared	0.930729	Mean dependent var		0.011285
Adjusted R-squared	0.792186	S.D. dependent var		0.005765
S.E. of regression	0.002628	Akaike info criterion		-8.839155
Sum squared resid	2.76E-05	Schwarz criterion		-8.448037
Log likelihood	66.45451	Hannan-Quinn criter.		-8.919548
F-statistic	6.717977	Durbin-Watson stat		1.813256
Prob(F-statistic)	0.00000			

Source: Output of Eviews 6, annual report of audited financial statement of EEP Co. from 1994-2006

*, ** and ***denotes significance level at 10%, 5% and 1% respectively.

Hypothesis testing

In the previous section of this chapter presented mainly the outputs of the econometrics models which include, statistical descriptions, testing CLRM assumptions, and the correlation results of explanatory variables and in depth regression analysis. The data are analyzed in light of the specific hypotheses stated in the first chapter of the study. Hence, the analysis focused mainly on the results of the regression analysis for the selected factors that have an impact on Ethiopian Electric Power corporation corporate governance. The hypothesis test for each of the explanatory variables is presented as follows.

Customer demand

HP0: Customer demand has negative relationship with corporate governance of EEPCo.

HP1: Customer demand has negative relationship with corporate governance of EEPCo.

The table of fixed effect regression result for all explanatory variables above show the customer demand has indirect relationship with firm corporate governance that determined by ROE, which is negative and statistically insignificant with coefficient of 0.24% and t- statistics of 0.154867. Thus, any increase in customer demand is accompanied with increase in corporate governance. This relationship suggests the presence of economies of scale at the organization and shows that the increase in the large number of customer, the less its ability to manage its resource and pay more citizen cost to make the service cheapest and reachable thus it reduce its good governance. Or further, the negative coefficient which is -0.012 between EEPCo customer demand and corporate governance clearly indicated that when the company product consumer increases the corporate governance is invers. According to Jim See et al (2013) as customer demand increase, customers demand options from their utilities that allow them to manage their energy costs as well as the environmental impacts of meeting their energy needs will increase. Customers have no understanding of, no interest in, and decreasing tolerance for the causes of declining electric service reliability and quality. This makes the sector difficult to manage; larger demand of the country is lesser service than smaller firms of the country in harnessing economies of scale in transactions. Then reject the null hypothesis which states, there is a positive relationship between customer demand and corporate governance of EEPCo. Customer demand was one of independent variables used and hypothesized in the study as per table 4.6; positive relationship is shown between customer demand and return on equity. Customer demand which is measured by the difference between last year Electric sales and this year Electric sales to this year Electric sales has positively insignificant impact on ROE.

Firm Size

HP0: Firm size has positive relationship with corporate governance of EEPCo.

HP1: Firm size has no positive relationship with corporate governance of EEPCo.

The results in table 4.6 above show an indirect relationship with firm size and corporate performance that determined by ROE, which is negative and statistically significant with coefficient of -0.03867

and t- statistics of -4.842531. Thus, any increase in firm size is accompanied with decrease in corporate governance. This relationship suggests the presence of economies of scale at the organization and shows that the larger the size of the firm, the less its ability to manage its resource and thus it reduce its good governance. Or further, the negative coefficient which is -0.03867 between EEPCo size and corporate governance clearly indicated that when the company size increases the corporate governance is invers. But, according to Chatrudee Jongsureyapart (2006) and Eunjung lee et al. (2004) has a positive relationship between corporate governance and firm size; larger firms of the country are better placed than smaller firms of the country in harnessing economies of scale in transactions. Then reject the null hypothesis, there is a negative relationship between firm size and corporate governance of EEPCo. Firm size was one of independent variables used and hypothesized in the study as per table 4.6; had negative relationship with corporate governance at 1% level of significance and measured by natural logarithm of total assets, it has negative significant impact on ROE.

Growth rate

HP0: Growth rate has positive relationship with corporate governance of EEPCo.

HP1: Growth rate has no positive relationship with corporate governance of EEPCo.

One of the factors that determine corporate governance of Ethiopian electric power corporation is growth rate. The beta coefficient of the variable was 0.060304. The beta shows growth rate has positive impact in the equity performance of the corporation. This variable is significant influence on corporate performance because its level of significance is 5%. Therefore growth rate has positive significant impact on corporate governance of EEPCo. Hypothesis reflecting positive connection between growth rate and corporate governance is agreement with the findings of Hoy (1992), as positive correlation is presented. Therefore, the null hypothesis is not rejected.

Fixed asset not reregistered

HP0: Fixed asset not registered has negative relationship with corporate governance of EEPCo.

HP1: Fixed asset not registered has no negative relationship with corporate governance of EEPCo.

The results in table 4.6 above show that fixed asset not registered has direct relationship with firm corporate governance that determined by ROE, which is negative and significant with coefficient of 0.183908 and t- statistics of 5.309561. Thus, any increase in fixed asset not registered is accompanied with a decrease significantly in corporate governance. This relationship suggests the presence of economies of scale at the organization and shows that the larger the size of the asset, the less its ability to manage its resource and thus it reduce its good governance. Or further, the negative correlation which is -0.1839 between EEPCo fixed asset not registered and corporate governance clearly indicated that when the company Asset increases the corporate governance is decreases. Larger firms of the country are better placed than smaller firms of the country in harnessing economies of scale in transactions. This variable is significant influence corporate performance, because its p-value is <5% significant level. Then not reject the null hypothesis which states, there is a negative relationship between fixed asset not registered and corporate governance of EEPCo. Fixed asset not registered p-value is greater than 5% that measured by total asset of job completion submitted – asset capitalized to total asset, it has negative and significant impact on ROE.

Audit quality

HP0: Audit quality has positive relationship with corporate governance of EEPCo.

HP1: Audit quality has no positive relationship with corporate governance of EEPCo.

The beta coefficient of the variable was -0.000966. The beta shows audit quality has negative impact in the corporate governance of EEPCo. This variable is insignificant influence corporate performance because its p-value is >10% significant level. Therefore audit quality has negative and insignificant impact on corporate governance of the corporation. According to Lin and Hwang (2010) the quality audit is required to cut down the danger of material misstatement or omission and the stage of creative accounting and earning management.

The research conducted by Gardner, Hussin, Sanusi, Sulong and McGowan (2013) found that there is a positive relationship between audit quality and corporate governance. Therefore, the researcher found no consistency with these researchers. But as the data analysis shows the null hypothesis is rejected.

Power Loss

HP0: Power Loss has negative relationship with corporate Governance of EEPCo.

HP1: Power Loss has negative relationship with corporate Governance of EEPCo.

The table of fixed effect regression result for all explanatory variables above show the power loss has indirect relationship with firm corporate governance that determined by ROE, which is negative and statistically significant with coefficient of -0.033381 and t- statistics of -2.100401. Thus, any increase in power loss is accompanied with decrease in corporate governance. This relationship suggests the presence of economies of scale at the organization and shows that the increase in the large power loss, the less in return on equity; means less production to customer, pay more citizen cost, less control of resource to make the service cheapest and reachable thus it reduce its good governance. Or further, the negative coefficient which is -0.033381 between EEPCo power loss and corporate governance clearly indicated that; when the company product loss increases the corporate governance is invers. According to Er.Vinay Gupta (2013), argue that the power loss of a country negatively influence the corporate decision; because, Power Systems not all the electricity generated reaches paying consumers because of inefficiencies and improper managerial practices: that bias the decision. This makes the sector difficult to manage; larger loss of the company is lesser service to country and harnessing economies of scale in transactions. Accept the null hypothesis which states, its level of confidence is <10%. Power loss which is measured by Power supplied – power sold has negative significant impact on ROE.

Financial characteristics

HP0: Financial Characteristics has positive relationship with CG of EEPCo.

HP1: Financial Characteristics has no positive relationship with CG of EEPCo.

The seventh independent regression result for all explanatory variables above show the financial characteristics has indirect relationship with firm corporate governance that determined by ROE, which is negative and significant with coefficient of -0.109907 and t- statistics of -4.328. Thus, any increase in the financial characteristics is accompanied with decrease in corporate governance. This relationship suggests the presence of high debt in the corporation leads to pay more cost of debt and increases outsider controlling interests; it shows that the increase in the debt, the less in return on equity thus it reduce its good governance. Or further, the negative coefficient which is -0.109907 between EEPCo financial characteristics and corporate governance clearly indicated that when the company debt increases the corporate governance is invers. The growth potential would also be related to better governance since those firms with high growth rates have more to lose from a lack of investment capital, and would try to satisfy outside investors with better governance as Durnev and Kim (2003) have argued. A higher debt ratio implies a larger amount of interests and principals to be paid periodically, and the management would be under pressure to ensure enough cash flow to cover the debt payment, which can be done through more efficient management (Grossman and Hart (1982)). Accept the null hypothesis which states, there is a negative relationship between financial characteristics and corporate governance of EEPCo. Financial characteristics was one of independent variables used and hypothesized in the study as per table 4.6; negative relationship is shown between financial characteristics and return on equity. A financial characteristic which is measured by Total Debt to Total Asset has negative significant impact on ROE.

Tobin's Q

HP0: Tobin's Q has positive relationship with corporate governance of EEPCo.

HP1: Tobin's Q has positive relationship with corporate governance of EEPCo.

The last factors that determine corporate governance of Ethiopian electric power corporation is Tobin's Q. The beta coefficient of the variable was 0.019735. The beta shows Tobin's Q has positive impact in the equity performance of the corporation.

This variable is insignificant influence financial performance because its p-value is >10% significant level. Therefore Tobin's Q has positive significant impact on corporate governance of EEPCo. Hypothesis reflecting positive connection between Tobin's Q and corporate governance that similar to with the findings of Wiwattanakantang (2000), Caylor (2004), Alba, Clasesens and Djankov (1998), Chatrudee Jongsureyapart(2006) , as positive correlation is presented. Therefore, the null hypothesis is rejected.

The result of the regression analysis is summarized as follows;

Table 4.7. Summary of actual and expected signs of explanatory variables on the dependent variable.

Name of variables	Notation	Expected impact on corporate governance	Actual impact on corporate governance and null hypothesis
Firm size	FSZ	Positive	Negative, significant and reject
Customer demand	CDD	Negative	Positive and insignificant
Fixed Asset Not Registered	FANR	Negative	Negative, significant and Accept
Audit Quality	ADQ	Positive	Negative and insignificant
Power Loss	PLSS	Negative	Negative, significant and Accept
Financial Characteristics	FCH	Positive	Negative, significant and Reject
Growth rate	GR	Positive	Positive, significant and Accept
Tobin's Q	TSQ	Positive	Positive and insignificant

CHAPTER-FIVE

CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the conclusions drawn based on the results obtained from the previous chapter followed by recommendations and indications for further research.

5.1 CONCLUSION

The study aimed to investigate factors determines corporate governance of Ethiopian electric power corporation. The time series data regression model via fixed-effect method was used to analyze 13 years data which is from 1994 to 2006 E.C. In this study, ROE was selected as the dependent variable. The purpose was to measure the impact of EEPCo independent variables such as (Firm size, Customer Demand, growth rate, Power loss, fixed asset not capitalized, Audit Quality, Financial characteristics and Tobin's Q) on corporate governance in the framework of eight separate hypotheses.

The descriptive statistics shows that pertaining to company independent variable, firm size has the highest mean value which is 23.46 and growth rate has the least mean value which is 0.128033. Firm size is the highest volatile variable which has the standard deviation of 0.719041 and power loss is the lowest volatile variable which has the standard deviation of 0.077716.

Correlation analysis indicates that ROE was positively or negatively correlated with all of the independent variables with a coefficient 0.94934; whereas it was correlated positively with Audit quality and Tobin's Q with correlation coefficient is 0.3240 and 0.50. Growth rate, customer demand, fixed asset not registered, power loss, financial characteristics and firm size were negatively correlated with ROE. The highest correlation coefficient is 79.99% which was between financial characteristics and fixed asset not registered. However, the lowest correlation coefficient is -90.23% which was between firm size and Tobin's Q.

The finding from the regression analysis also found that most of the independent variables have significant to determine corporate governance except customer demand, Tobin's Q and audit quality having negative relationship out of Tobin's Q and audit quality.

The above argument shows that if audit quality and Tobin's Q increase, corporate performance will increase with insignificant level. It means that when internal and external audit result of financial and technical report quality increase the corporation financially and operationally perform well; which cares on each investment and resource controlling.

Generally the study reflects from eight determinates the three were not significant (customer demand, audit quality and Tobin's Q) and the remain five variables are significant (Firm size, growth rate, fixed asset not registered, power loss and financial characteristics) with negative relationship. Therefor increase in these variables decreases the corporate governance of Ethiopia Electric Power Corporation. Increase in firm size leads the firm decrease in decision making, lack of internal control and increase in material misuse; when power loss increase the corporate governance will be decreases with average man of 22.69%. Fixed asset not registered is similarly decrease the return of the corporation by it depreciation amount as of its service; increase in debt to total asset leads to decrease corporate governance; because, higher debt ratio implies a larger amount of interests and principals to be paid periodically, and the management would be under pressure to ensure enough cash flow to cover the debt payment.

5.2. Recommendation

Based on the conclusion of the study, the following possible recommendations were forwarded by the researcher.

The power loss, fixed asset not registered, financial characteristics, and firm size have negative and significant impact on corporate governance of EEPCo. the negative sign of fixed asset not registered implies that increase in the variable leads to decrease the corporate governance of EEPCo.; so the organization should have to register asset as per job completion and soon the asset operated. Likely, when power loss increase in corporation the less in return on equity that measure corporate governance, the corporation should have to rehabilitate the longstanding transmission lines, distribution lines and substations; additionally the firm work nearly on non-technical losses. The most important variable that has a negative impact on corporate governance is firm size; this shows increase in firm size has less controllability of resource, less in leadership transformation, service is not equally distributed to customer; so; like the developed country company should have to split in different companies this also answer the growth rate of the companies.

The last important determinant factor is financial characteristics, the result of this variable shows that when debt of the company increase the decision of the outsider become increase, so the company should reduce foreign debt and use locally to minimize currency exchange, external factors.

5.3. Indications of future research

This study examined determinant factors of corporate governance in EEPCo. The employed variables explanatory power, adjusted r^2 , was .9307 which indicates that some important variables which determine the corporate governance of organization might have been left for the researchers in the future. Therefore, future researchers can model and investigate both quantitative and qualitative variables like Employee contribution, transformational leadership, organizational structure, accountability and other variables that examine their impact on corporate governance of Ethiopian Electric Power Corporation by employing mixed research methodology for better insight on the issues.

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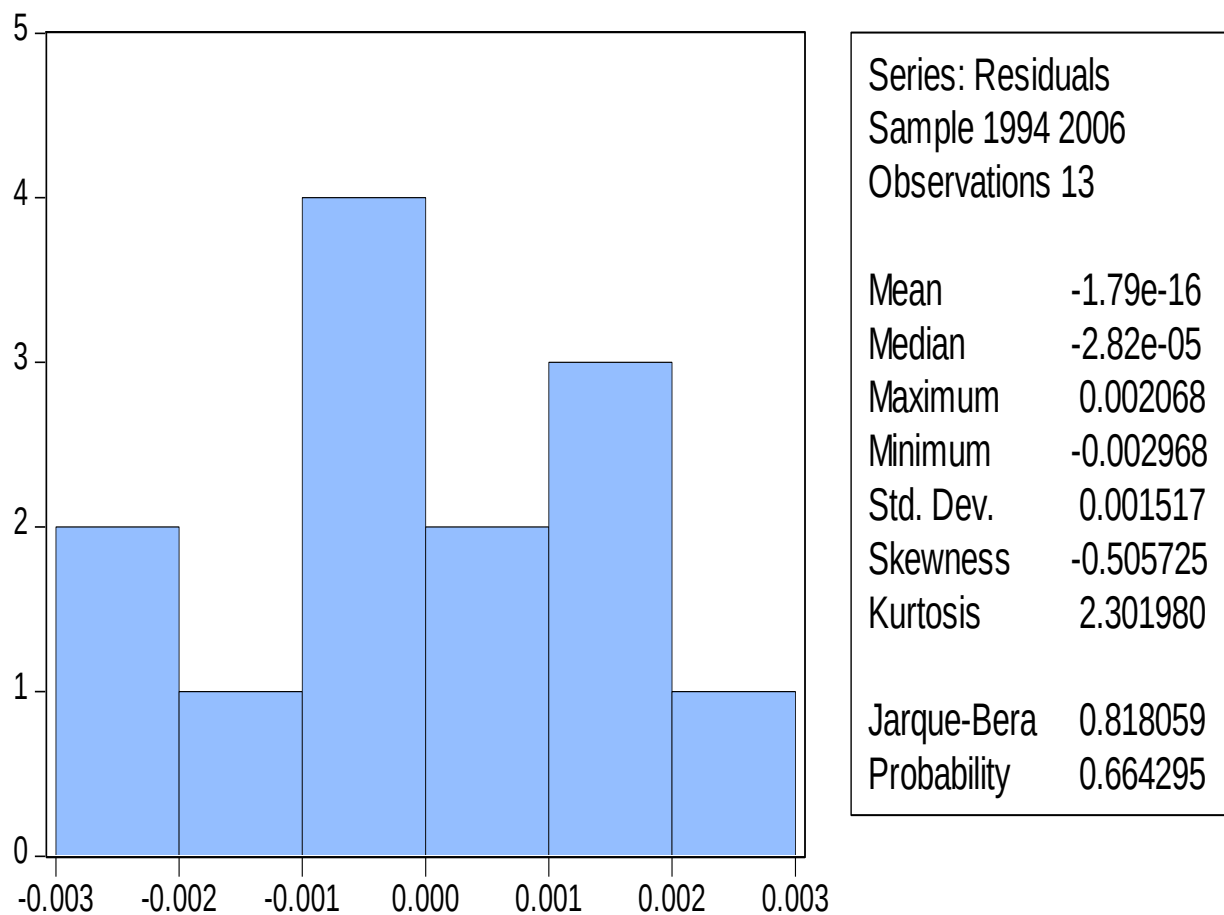
APPENDIXES

Appendix I: Ratio Data

Tada ratio Summery								
ROE	FSZ	CDD	FANR	ADQ	PLSS	FCH	GR	TSQ
0.01809	22.46589	0.02753	0.11782	0.70000	0.25000	0.36311	0.02401	1.52118
0.01441	22.82681	0.02931	0.12046	0.75000	0.20000	0.31580	0.02579	1.27004
0.00955	22.83955	0.12400	0.07009	0.75000	0.10000	0.35556	0.16132	1.26184
0.01539	22.92359	0.09488	0.11236	0.75000	0.25000	0.36771	0.12690	1.18778
0.01182	23.26645	0.20637	0.12385	1.00000	0.24000	0.35004	0.19693	1.10202
0.01562	23.65336	0.25574	0.12813	1.00000	0.30000	0.25574	0.23909	1.07885
0.01013	23.75488	-0.04305	0.24637	0.75000	0.25000	0.38179	0.06934	1.00825
0.00978	23.82872	0.12206	0.37163	0.75000	0.11000	0.48310	-0.04508	1.01337
0.02086	23.88543	-0.00384	0.49034	0.75000	0.11000	0.56797	-0.00193	1.01181
0.00011	24.21800	0.21175	0.38134	0.75000	0.25000	0.58628	0.19874	1.02768
0.01128	24.48516	0.30593	0.45702	0.75000	0.35000	0.61160	0.27542	1.00760
0.00532	24.53948	0.12394	0.38533	00.00	0.24000	0.50321	0.21616	0.85891
0.00435	24.59100	0.22342	0.44380	0.75000	0.30000	0.51690	0.17774	0.96902

Source: Annual report of audited financial statement of EEPCo. from 1994-2006

Appendix II: Normality Test



Source: *Output of Eviews 6*, Annual report of audited financial statement of EEPCo. from 1994-2006

Appendix III correlation result all dependent and Independent variables

Variables	ROE	FSZ	CDD	FANR	ADQ	PLSS	FCH	GR	TSQ
ROE	1								
FSZ	-0.57717	1							
CDD	-0.42548	0.465341	1						
FANR	-0.33262	0.767909	0.194429	1					
ADQ	0.324057	-0.34339	0.195268	-0.33543	1				
PLSS	-0.20498	0.33771	0.533777	0.078268	0.047536	1			
FCH	-0.40651	0.741775	0.236514	0.799877	-0.34576	0.052117	1		
GR	-0.44275	0.423881	0.792622	0.042018	-0.05405	0.665259	0.110726	1	
TSQ	0.499699	-0.90231	-0.32346	-0.71921	0.316306	-0.13957	-0.55528	-0.34385	1

Source: *Output of Eviews 6*, Annual report of audited financial statement of EEPCo. from 1994-2006

Appendix IV: regression result for dependent variables

Dependent Variable: ROE

Method: Least Squares

Date: 05/20/15 Time: 17:40

Sample: 1994 2006

Included observations: 13

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.94934	0.198211	4.789537	0.0087
FSZ	-0.03867	0.007986	-4.842531	0.0084*
CDD	0.002403	0.015518	0.154867	0.8844
FANR	-0.183908	0.034637	5.309561	0.0060*
ADQ	-0.000966	0.004371	-0.221089	0.8359
PLSS	-0.033381	0.015893	-2.100401	0.1036***
FCH	-0.109907	0.025394	-4.328138	0.0124*
GR	0.060304	0.021762	2.771129	0.0503**
TSQ	0.019735	0.017035	1.158489	0.3111
R-squared	0.930729	Mean dependent var		0.011285
Adjusted R-squared	0.792186	S.D. dependent var		0.005765
S.E. of regression	0.002628	Akaike info criterion		-8.839155
Sum squared resid	2.76E-05	Schwarz criterion		-8.448037
Log likelihood	66.45451	Hannan-Quinn criter.		-8.919548
F-statistic	6.717977	Durbin-Watson stat		1.813256
Prob(F-statistic)	0.00000			

Source: Output of Eviews 6, annual report of audited financial statement of EEP Co. from 1994-2006

Appendix V: Descriptive Statistics Result

Variables	Dependent	Independent							
	ROE	FSZ	CDD	FANR	ADQ	PLSS	FCH	GR	TSQ
Mean	0.011285	23.63679	0.129081	0.265273	0.727	0.226923	0.435293	0.128033	1.101412
Median	0.011284	23.75488	0.123938	0.24637	0.750	0.25	0.381789	0.161318	1.027675
Maximum	0.020862	24.591	0.305931	0.49034	1.000	0.35	0.611605	0.275422	1.521176
Minimum	0.000112	22.46589	-0.04305	0.070094	0.000	0.1	0.255739	-0.04508	0.858907
Std. Dev.	0.005765	0.719041	0.107184	0.1586	0.239	0.077716	0.114683	0.102764	0.171604
Observations	13	13	13	13	13	13	13	13	13
Skewness	-0.261303	-0.14505	-0.00705	0.1298	-2.193	-0.47354	0.158975	-0.29437	1.08994
Kurtosis	2.490346	1.729879	1.911084	1.300569	8.0896	2.280603	1.701082	1.749108	3.815075
Jarque-Bera	0.288635	0.919404	0.642382	1.600873	24.447	0.766177	0.968652	1.035307	2.933787
Probability	0.865613	0.631472	0.725285	0.449133	5E-06	0.681753	0.616112	0.595917	0.230641
Sum	0.146711	307.2783	1.678052	3.448545	9.45	2.95	5.658812	1.664423	14.31836
Sum Sq. Dev.	0.000399	6.204245	0.137861	0.301848	0.6831	0.072477	0.157826	0.126726	0.353375

Source: Output of Eviews 6, annual report of audited financial statement of EEPCo. from 1994-2006E.C

Appendix VI: heteroskedasticity Test Result

Heteroskedasticity Test: White

F-statistic	0.068725	Prob. F(8,4)	0.9992
Obs*R-squared	9.7475	Prob. Chi-Square(8)	0.9874
Scaled explained SS	0.60076	Prob. Chi-Square(8)	0.9997

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 05/20/15 Time: 09:15

Sample: 1994 2006

Included observations: 13

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.84E-06	6.36E-05	0.091925	0.9312
FSZ^2	8.99E-09	1.03E-07	0.087717	0.9343
CDD^2	0.000214	0.000115	1.85757	0.1368
FANR^2	1.47E-05	2.93E-05	0.500981	0.6427
ADQ^2	-7.56E-06	6.77E-06	-1.117202	0.3265
PLSS^2	1.05E-05	3.63E-05	0.289578	0.7865
FCH^2	-2.84E-05	1.97E-05	-1.438915	0.2236
GR^2	-0.000199	9.91E-05	-2.010138	0.1148
TSQ^2	-9.94E-07	5.34E-06	-0.186071	0.8614
R-squared	0.749808	Mean dependent var		2.13E-06
Adjusted R-squared	0.249423	S.D. dependent var		2.52E-06
S.E. of regression	2.19E-06	Akaike info criterion		-23.0224
Sum squared resid	1.91E-11	Schwarz criterion		-22.6313
Log likelihood	158.6459	Hannan-Quinn criter.		-23.1028
F-statistic	1.498463	Durbin-Watson stat		3
Prob(F-statistic)	0.367593			

Source: Output of Eviews 6, annual report of audited financial statement of EEPCo. from 1994-2006

Appendix VII: Multicollinearity test result between each independent variables

Variables	FSZ	CDD	FANR	ADQ	PLSS	FCH	GR	TSQ
FSZ	1							
CDD	0.465341	1						
FANR	0.767909	0.194429	1					
ADQ	-0.34339	0.195268	-0.33543	1				
PLSS	0.33771	0.533777	0.078268	0.047536	1			
FCH	0.741775	0.236514	0.799877	-0.34576	0.052117	1		
GR	0.423881	0.792622	0.042018	-0.05405	0.665259	0.110726	1	
TSQ	-0.90231	-0.32346	-0.71921	0.316306	-0.13957	-0.55528	-0.34385	1

Source: Output of Eviews 6, annual report of audited financial statement of EEPCo. from 1994-2006