THE EFFECT OF BOARD DIRECTORS COMPOSITIONS PRACTICES ON FINNANCIAL INNOVATION ON ETHIOPIAN COMMERCIAL BANKS

MSc. THESIS

MUSLIHA MUSTEFA UMER

WOLKITE UNIVERSITY, WOLKITE, ETHIOPIA

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JULY, 2021

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MUSLIHA MUSTEFA UMER

A THESIS SUBMITTED TO WOLKITE UNIVERSITY

DEPARTMENT OF ACOUNTING AND FINANCE, COLLEGE OF BUSINESS AND ECONOMICS, SCHOOL OF GRADUATE STUDIES, WOLKITE UNIVERSITY,

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE IN ACCOUNTING AND FINANCE (ACOUNTING SND FINANCE)

JULY, 2021

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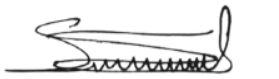
Sitina Akmel		_____
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ACKNOWLEDGMENT

I would like to express my sincere gratitude to Wolkite University for granting me the opportunity to pursue my MSC in Accounting and Finance study. I would like to passionately express my thankfulness to my major advisor Mrs. Sitina Akmel (Asst. Prof.), for her overall support and precious comments in every step of the development of this Thesis. The enthusiastic moral support, diligence and uncountable time attentiveness, material provision and overall guidance are highly appreciated. I cannot get a word to express my feeling gratitude to my co-adviser Mr. Muridu Siraj for his generous guidance and giving of all the necessary materials and his incalculable and unreserved advise and intellectual guidance.

I would like to forward my best regard to all selected Ethiopian commercial banks managers (especially board secretary) and employees who took their precious time to respond the interview questions and for their incalculable support.

Moreover, my warmest gratitude goes to Gummer Woreda for all financial support and it provided me for conducting this study. I feel deeply thankful to my Husband Mr. Aliyu Jemal for his unlimitted support, encouragement, suggestions and willingness during my study and wish the best all in His life.

STATEMENT OF DECLARATION

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Sitina Akmel  _____

Major **Advisor** **Signature** **Date**

Muridu Siraj _____ _____

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ACCRONYMS AND ABREVATION

AC	Audit Committee Size
AF	Age of the Firm (Banks)
ATM	Automated Teller Machine
BDM	Board Directors Meeting Frequency
BOS	Board Directors Size
BS	Bank Size (Firm Size)
CBE	Commercial Bank of Ethiopia
EDU	Educational Qualification of the Board of Directors
FN	Financial Innovation of the Bank (Innovation Score)
FRB	Females Representing In the Board
GDP	Growth domestic product
GTP	Growth & Transformation Plan
IPOs	Initial Public Offerings
NBE	National Bank of Ethiopia
OECD	Organization for Economic Cooperation and Development
OLS	Ordinary List Square
POS	Points of Sales
ROA	Return on Asset
ROE	Return on Equity

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ABSTRACT

One of the many challenges the business world is facing currently is installing sound and proper board directors composition in an organization. This might lead to economic failure if not managed and addressed properly and timely. This study aims at evaluating the effect of board director's compositions practices on financial innovation on Ethiopian commercial banks using five years data from the year 2016 to 2020. The study assessed the effect of corporate governance variables on financial innovation of Ethiopian commercial banks as measured by natural logarithm of e- banking products and services. To achieve the objectives of the study the researcher used descriptive research design. The Corporate governance variables used in this study were females representing in the board, educational qualification of board of directors, board size, audit committee size and board meeting frequency. In the study firm size and bank age were used as control variables. Mixed research approach was employed to understand the effect of corporate governance on financial innovation on Ethiopian commercial banks. The study uses both primary and secondary source of data. Primary data was collected through interview of board secretaries of Ethiopian commercial banks used in this study. The study used panel data and pooled regression model to analyze the relationship between corporate governance mechanisms and financial innovation using a data set of 15 Ethiopian commercial banks. The findings showed that, females representing in the board and educational qualification of board directors have positive and significant effect on financial innovation of the banks. On the other hand, audit committee size and board directors meeting had negative and significant effect on financial innovation of the banks. Based on the findings of the study, it can be concluded that female's directors in the board, educational qualification of board of directors, audit committee size and board directors meeting frequency influence financial innovation of Ethiopian commercial banks. Thus, the study recommends commercial banks should improve their board director's educational qualification by providing the chance to upgrade their academic status and increases the size of female's board directors to enhance financial innovation in the banks.

Key words: Board Meeting, Board Size, Corporate Governance, Digital Banking, Educational Qualification, Financial Innovation, Firm Size

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Today, the Banking sector plays a significant role in economic developments of the countries, gives important service and affects the lives of millions of people. Its service is unique both in social and economic points of view of a nation. Services organizations in general and financial services in particular are considered the key factor for growth and success of projects in both industrial and developing countries (Tarawneh, 2006).

Different scholars defined Corporate governance as the process and structure used to manage the organizations and it can be referred to as how those organizations are directed, controlled; how policies, laws are designed; and how control environment affect the overall performance of entrepreneurial activities in an economy (Alem, 2011).

The works of many authors the report that "Corporate governance is the system of rules, practices and processes by which a company is directed and controlled. Corporate governance essentially involves balancing the interests of a company's many stakeholders, such as shareholders, management, customers, suppliers, financiers, government and the community" (Kalifa, 2012; Kibrysfaw, 2013; Hlanganipai, 2014 and Godfrey, 2014).

According to Jensen and Meckling (1976), Good corporate governance is important to the proper functioning of the corporation and it improves economic efficiency and growth as well as enhances investor confidence and adds significant value to firm performance. On the other hand, weak or poor corporate governance structure affect the performance of the firm and also major cause of failure of many well performing companies such as Enron, WorldCom, and Tyco International. Accordingly, poor corporate governance can be conveyed by lack of integrity on the selection criteria for choosing leaders and managers who run corporations, lack adequate remuneration system to the management, inappropriate balance between executive and non-executive members of the

board. These leaders may lack experience, appropriate training and proper qualifications.

Consequently, the role of corporate governance in today's business environment is extremely large because it has a direct effect on the problems associated with the financial crisis of the company. The importance of corporate governance is distinguishing feature of the new economy. As economies are becoming knowledge and technology based, the corporate governance mechanisms elements are becoming fundamentals determinants of a firm's current and future performance as well as firm value and growth (Manini & Abdillahi, 2015). According to Jensen and Meckling (1976), corporate governance is inherently linked to innovation.

Nowadays business competence is influenced by a turbulent context, characterized by constant and unpredicted changes, where the introduction of new practices into the market, of all kinds, organizational, commercial, financial, institutional or technological, are becoming crucial tools to improve companies' competitiveness and survival. Thus, innovation has become a crucial element for the creation and improvement of competitive advantage in the long term (Becheikh *et al*., 2006; Johannessen *et al*., 2001).

The concept of innovation comes from the Latin word "innovatus", which presages to change or renovate. In this sense, the concept of innovation can both designate the action of modifying what already exists or of creating and introducing something new within the company such as a product, a concept, a service or a process (Guéry, 2006).

The basic definitions and types of innovation (sometimes referred to as "shapes" or "typology" of innovation) are given by the Organization for Economic Cooperation and Development (OECD) in a series of manuals. The latest revision of these manuals is the Oslo Manual which defines innovation "the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations" (OECD, 2005).

The role of innovations in the economic development is indisputable. The general definition of innovations explains that they appear when new ideas, solutions and instruments are implemented in order to change the conditions of business entity and to improve its situation. The application of innovations increases the competitiveness of a business entity and creates value for its owners (Dabic, Cvijanovic and Gonzalez-Loureiro, 2011; Grudzewski, Hejduk, Sankowska and Wańtuchowicz, 2010).

The sustainable growth of the modern business entity is impossible without the proper innovation management accompanied by the knowledge, information, reputation and trust management. At the beginning, the term "innovation" was used to describe the changes in the technological solutions, creating new combinations of productive means, generating the above-the-average rates of return and thus enhancing the dynamic development of the overall economy (Targalski, 2006).

The traditional approach to technological innovations, introduced by J. Schumpeter, distinguish the following groups of innovations: (1) new products, (2) new methods of production, (3) opening new markets, (4) new sources of supply of raw materials, (5) new organization forms and business structures and (6) new methods of management (Dabic *et al.*, 2011).

Based on this approach, the OECD methodology was developed focusing on four groups of innovations: (1) product, (2) process, (3) marketing and (4) business organization (OECD, 2005). The new developments in these four categories are treated as innovations, if they are perceived as new for the entity implementing them, which means that these solutions can be already known and applied in other entities or organizations (Anderloni and Bongini, 2009).

Different definitions of innovation included in the literature. "Innovation has been consistently defined as the adoption of idea or behavior that is new to the organization (Bon & Mustafa, 2013). However, a lot of researchers used the term financial innovation as an act of creating new financial instruments, technologies, institutions, and markets, and of drawing profit from them. Financial innovation can be defined as the creation and popularization of new financial products,

processes, markets, and institutions (Tufano, 2003; Mishra, 2008; Sánchez, 2010; Delimatsis, 2011; Gubler, 2011; Lerner and Tufano, 2011). This definition suggests that financial innovation is a process that can be managed and governed to achieve desired results (Tidd *et al*., 2005; Tidd and Bessant, 2009).

A unique definition can hardly be found for financial innovation. For Frame and White (2002), "Financial innovation represents something that reduces costs, reduces risks or provides improved product/service/instruments". According to Solans "Financial innovation refers both to technological advances which facilitate access to information, trading and means of payment, and to the emergence of new financial instruments and services, new forms of organization and more developed and complete financial markets.

To be successful financial innovation must either reduce costs and risks or provide an improved service that meets the particular needs of financial system participants" (ECB, 2003). Financial innovation is thus primarily defined as product and organizational innovation, which allows cost or risk reduction for the single bank and/or an improvement of the services for the financial system as a whole. At macroeconomic level, for example, the introduction of the Euro represented a significant "financial innovation" with respect to the monetary policy, to markets, and to firms

Despite this, there is limited research on the process and governance of financial innovation. Few years ago, interest has grown on the subject of the influence of corporate governance mechanisms on innovation.

1.2 Statements of the problem

As the time passes, the demand for using E-banking services was increases. Such services were driven by safety of their money as well as interest accruing from such savings. The application of computer technology to the complex internet banking technology known as the E-banking was expected to bring about efficient service delivery and improved performance of the banks, however, it is unprecedented to note that only little have been achieved by the banks despite the application of the E-banking, most banks still witness crowd and long queue on daily bases at the banking hall, the suppose cashless society has almost remain a

mirage in many part of the nation since people still carry around volumes and large cash value (Kehinde, 2015).

Today, Ebanking in Ethiopia is at the infancy stage as many transactions are still being carried out manually. Similarly, the dream of commercial bank of Ethiopia strives to create a cashless society by offering different e-banking products that provides a better avenue of accessing banking services without necessary visiting banking hall. The customers of commercial bank of Ethiopia E-banking product users in the country are extremely disappointed and complained the service delivery of the bank, especially while they are using ATM for cash withdrawal (www.ethiopianreporter.com). In addition, complaints have also been raised on failures at point of sale terminals (POS) in store or installed at supermarkets whenever access to the central server fails.

The results of different studies showed that one of the many challenges the business world is facing currently is installing sound and proper board directors composition in an organization. This might lead to economic failure if not managed and addressed properly and timely. The messing up of big international organizations like WorldCom had provided concrete and costly lesson to the business world. The OECD principles on board responsibilities state that the corporate governance framework should ensure the strategic guidance of the company, the effective monitoring of management by the board, and the board's accountability to the company and the shareholders.

Today business competence is influenced by a turbulent context, characterized by constant and unpredicted changes, where the introduction of new practices in to the market, of all kinds, organizational, commercial, financial, institutional, or technological, are becoming crucial tools to improve companies' competitiveness and survival (Aghion, *et al*., 2006).

Now a day, in orders to succeed in the long term in the business, firms have to seek innovative technologies. Corporate governance plays a very important role in maintaining the safety and soundness of financial system and the banking sector in particular. It gives way to balanced risk taking and enhances business prudence, prosperity and corporate accountability with ultimate objective of

realizing long term shareholders value, as well as customers and other stakeholders' interest (NBE Directives, SBB/62/2015).

According to the Oslo Manual, the concept of innovation can be defined as "the introduction of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations" (OECD, 2005).

Most of the literature focuses on two methods for measuring innovation, the most common being to consider inputs (any efforts made by the company to be more competitive and more innovative, which are usually represented either by expenditure on Research and Development (R&D) as a percentage of the company's total sales, or by the number of people involved in research and development activities as a percentage of the company's total employees) and outputs (the result of the innovative activity measured as the number of patents registered or in process of registration by the company).

Despite of most of the prior studies have tried to analyze the influence of corporate governance on company performance and value, others (some recently) have shown that corporate governance is one of the main determinants for innovation and technological change (Tylecote and Visintin, 2007). Over recent years, interest has grown in the influence of governance mechanisms on innovation decisions taken by the management (Tribo *et al.,* 2007; Wu, 2008; Latham and Braun, 2009; Belloc, 2012; Block, 2012; Balsmeier *et al.*, 2014; Zhang *et al*., 2014; Tsao *et al*., 2015). Amongst others, these authors argue that innovation efforts and results depend on factors that are influenced by corporate governance, such as ownership structure, shareholder identity or the functioning of the board of directors, educational qualification, gender diversity, board subcommittee and other board related matters.

Many research works have been done in Ethiopia concerning corporate governance in banks. Firehiwot K. (2016) found that corporate governance has significant role in good performance of the banking industry. Yohannes T.,(2016) did a study on the effect of corporate governance policy enforced by National Bank of Ethiopia, regulator of financial institution, on the performance of private commercial

banks in Ethiopia. The finding showed that the corporate governance have significant effect on bank performance. Similar study was conducted by Getachew H. (2014) showed that that corporate governance variables have significant effect on financial performance insurance firms in Ethiopia. However, their major finding indicates merely that corporate governance is important for banks better performance. Further, very few studies have been done in Ethiopia concerning effect of corporate governance and its effect on innovation. Despite the unquestionable advantage of corporate governance (board director's composition) in clarifying financial innovation, the effect of board director's composition on financial innovation is still researchable area in developing world, particularly in Ethiopia.

Hence, apart from this conducted research works the researcher found a gap on board director's composition and its effect on financial innovation in Ethiopian commercial banks (both private and government owned banks). This Study therefore is aimed at filling this gap by answering the following research question; what is the effect of corporate governance on financial innovation of Ethiopian private and government owned commercial banks.

1.3 Objective of the Study

1.3.1 General Objectives of the Study

The main objective of this study was to evaluate effect board director's compositions practices on the financial innovation of Ethiopian commercial banks.

1.3.2. Specific Objectives of the Study

- ☞ To evaluate board directors composition practices of the commercial banks
- ☞ To assess the effect of female directors in the board on financial innovation in Ethiopian commercial banks
- ☞ To determine the effect of educational qualification of board directors on financial innovation of Ethiopian commercial bank.
- ☞ To examine the effect of board size on financial innovation of Ethiopian commercial banks

- ☞ To assess the effect of audit committee size in the board on financial innovation of the Ethiopian commercial banks
- ☞ To assess the effect of board meeting frequency on financial innovation of Ethiopian commercial banks

1.4 Significance of the study

As mentioned above in the main objective of the research, the aim was to evaluate effect of board directors compositions on financial innovation of Ethiopian commercial banks and it may gives to commercial banks by recognizing significant corporate governance variables and how these variables affect financial innovation of Ethiopian commercial banks. It may also serve as a source for other researchers who want to make depth study about the effect board director's composition and its effect on financial innovation. Further, the study might be supportive to customers, managers, board directors, creditors in the banking industries who are interested in long-term strategies in financial innovation as the new borderline in commercial banking.

1.5 Scope of the study

The conceptual scope of this study concerned on the effects of corporate governance on financial innovations on Ethiopian commercial banks. The study covered all commercial banks that were in full digital banking operation by study period. The scope of study was limited to fifteen Ethiopian commercial banks that were adopted digital banking over study periods. Study limited to the following Ethiopian commercial bank; Abay bank, Abyssinia Bank, Addis International Bank, Awash International Bank , Birhane International Bank, Buna International Bank, Cooperative Bank of oromia, CBE, Dashen Bank, Lion International Bank, Nib International Bank, Oromia International Bank, United Bank, Wogagen Bank and Zemen Bank.

1.6 Limitation of the study

The researcher encountered different limitations that were likely to obstructed access to information required by the study. The researcher faced problems of time as the research was being undertaken in a short period with limited time for

doing a wider research. The researcher also faced a challenge in acquiring secondary data from the audited annual reports of the selected Ethiopian commercial banks since some of these banks did not release several aspects corporate governance or lack published audited annual reports at the time of this research. In addition the corporate governance variables that are selected to study are limited to females representing in the board, directors‟ educational qualification, board size, number of board auditor, meeting frequency of board and other variables used as control variables. Therefore, the researcher tried to overcame the limitation of the corporate governance variables by using the primary data in addition to the secondary data.

1.7 Organization of the study

The study was organized into five chapters. Chapter one discussed the introduction part. It contains the background to the research study, presents the statement of problem, objectives significance of the study, scope of the study and limitation of the study. Chapter two contains theoretical review, empirical review of previous studies, hypothesis development and conceptual framework of study. Chapter three outlines the research methodology adopted in this study. Chapter four discusses about the data analysis and interpretation of the outputs. Chapter five outlines the summary of the finding, conclusions, recommendations and further research suggestions.

CHAPTER TWO

LITERATURE REVIEW

This chapter presents the synthesis of theoretical review, empirical review, summary, knowledge gap and conceptual framework. The theoretical review aims at giving theoretical overview of the variables and help in defining and understanding corporate governance and its effect on financial innovation. The empirical review section is a review of different literatures that are related to the study. The last part is the summary, knowledge gap and conceptual framework.

2.1 Theoretical review

Many corporate governance theories have been developed concerning the nature and significance of corporate governance. The most important corporate governance theories are the resource dependency theory, agency theory, stewardship theory and stakeholders‟ theory. According to Agency and stakeholder theories, corporate governance is associated with the principal-agent or agency problem. Both theories dictate that corporate governance is a mechanism designed to minimize agency conflict in the business environment. And resource dependency theory corporate governance is a mechanism to interact the business organization with different resources in the environment.

2.1.1 Agency Theory and its Limitations

Agency theory refers to a set of propositions in governing a modern corporation, which is typically characterized, by large number of shareholders or owners who allow separate individuals to control and direct the use of their collective capital for future gains. These individuals, typically, may not always own shares but may possess relevant professional skills in managing the corporation. The theory offers many useful ways to examine the relationship between owners and managers and verify how the final objective of maximizing the returns to the owners is achieved, particularly when the managers do not own the corporation’s resources. McColgan (2001) gave a very broader view of agency theory and corporate governance. The major interest of his research was to cover the area that where the interests of managers diverge from those of the interests of

shareholders. The existence of divergent and sometimes conflicting objectives between managers and shareholders has given rise to the design of many concepts and mechanisms to ensure that the cost associated with such divergent interest is minimal.

One of the proposed arrangements is corporate governance and it is not surprising that agency theory has been the dominant paradigm in the corporate governance literature (Coleman, 2007). Habbash (2010) stated agency theory as the most popular and has received greater attention from academics and practitioners. The agency theory is based on the principal agent relationships. The separation of ownership from management in modern corporations provides the context for the functioning of the agency theory. In modern corporations the shareholders (principals) are widely dispersed and they are not normally involved in the day to day operations and management of their companies rather they hire mangers (agent) to manage the corporation on behalf of them.

As applied to corporate governance it is the shareholder who is cast as the 'principal' and the problem, following the separation of ownership and control (Berle and Means, 1932), is how the principal can ensure that his 'agents' company directors serve the shareholders interests rather than their own. Either in the form of 'shirking' which in the governance context can be seen in terms of a lack of attention to maximizing shareholder returns, or in terms of 'self-interested opportunism' accruing wealth to themselves rather than shareholders the principal is vulnerable to the self-interest of their agents. The remedies to this conception of the agency problem within corporate governance involves the acceptance of certain 'agency costs' involved either in creating incentives/sanctions that will align executive self interest with the interests of shareholders, or incurred in monitoring executive conduct in order to constrain their opportunism.

Consequently, an agency-theory based knowledge system of corporate governance, while accounting for possible benefits arising from the governance-resources linkage, forms but one part of the validating logic of corporate governance, to accommodate what is accepted as the notion of corporate governance today, namely, "the determination of the broad uses to which

organizational resources will be deployed and the resolution of conflicts among the myriad participants in organizations" (Daily *et al.*, 2003).

As these assumptions have been read onto corporate governance, and informed its reform in recent decades, they have resulted in what are now an almost universal set of techniques and practices designed to control the conduct of executives both within the corporation and externally (Walsh and Seward 1990). Inside the company, boards have essentially two means to exercise control over executives; they can fire them and they can give them incentives share options, long-term incentive plans. For these levers to work, however, boards must be populated with 'independent' non-executives who are willing and able to monitor executive performance, particularly where there are potential conflicts of interest.

The separation of the role of chief executive from that of the non-executive chairman has been part of this; in the language of Cadbury it is intended that this ensures that no one individual has 'unfettered' powers of decision. The creation of audit, remuneration, and nominations committees all staffed by independent non-executives, is also common and ideally ensures both the proper use of incentives and a high degree of monitoring of executive performance and decision-making. To these internal controls are added a range of external controls. Foremost here has been the focus on enhanced 'disclosure', and the 'transparency' that this allows, principally of financial performance but recently also of social and environmental performance (Dissanike 1999, Zadek, 2001). The intention is that the share market is thereby better informed such that all relevant information is impacted into the share-price (Fama, 1980, Barker, 1998). There is also a market for corporate control (Cosh *et al*., 1989) that ideally allows weak management teams to be displaced by strong teams that will run companies to better effect for shareholders. In recent years at least at a policy level there has also been concern that shareholders in the form of the large institutional investors taking on their responsibilities as owners (Myners, 2002) through exercising proper scrutiny and influence both publicly and through their private contacts with investors (Roberts *et al*., 2003).

2.1.2 Stewardship theory

This theory was originated from sociology and psychology. The stewardship theory as situations in which managers are not motivated by individual goals. In the theory, the model of man is based on a steward whose behavior is ordered such that pro -organizational, collectivistic behaviors have higher utility than individualistic, self-serving behaviors. Where the interests of the steward and the principal are not aligned, the steward places higher value on cooperation and seek to attain the objectives of the organization (Davis, Schoorman, and Donaldson, 1997).

According to Muth and Donaldson (1998), Stewardship theory is a theory opposed Agency theory and based on this view the managers are 'steward' rather than entirely self-interested. It recognizes a range of nonfinancial motives for managerial behavior, that agency theory failed to recognize, which includes (1) the need for achievement and recognition, (2) the intrinsic satisfaction of successful performance, and (3) respect for authority and the work ethics**.** The theorists assume a strong relationship between the success of the organization and the principal's satisfaction. The essential assumption underlying the stewardship theory is that the behaviors of the executive are aligned with the interest of the principals. In sum, this theory assumes that managers are trustworthy and work non-negligently to attain high firm profit and shareholders' returns. Thus Stewardship theory argues that the board should have a significant proportion of inside directors to ensure more effective and efficient decision making (McKnighta and Weir, 2003) and other control mechanisms are not necessary in disciplining management.

2.1.3 Resource dependency theory

This theory focuses on the role of board directors in providing access to resources needed by the firm or the company. The resource dependency theory also stated that directors play an important role in providing or securing essential resources to an organizational functioning, firms performances and its survival. Moreover, the director bring resources to the firm, such as information skills, access to key

constituents like suppliers, buyers public policy maker, social group and legitimacy(Ayuso & Argandona, 2007).

This theory stated that the board of directors could support the management in areas where in-firm knowledge is limited or lacking. The resource dependence model suggests that the board of directors could be used as a mechanism to form links with the external environment in order to support the management in the achievement of organizational goals (Wang, 2009). The agency theory concentrated on the monitoring and controlling role of board of directors whereas the resource dependency theory focus on the advisory and counseling role of directors to a firm management. Recently, both economists and management scholars tend to assign to boards the dual role of monitors and advisers of management. However, whether boards perform such functions effectively is still a controversial issue (Ferreira, 2010).

Within a corporate governance framework, the composition of corporate boards is crucial to aligning the interest of management and shareholders, to providing information for monitoring and counseling, and to ensuring effective decision-making (Marinova *et al*., 2010). The dual role of boards is recognized. However, board structure has relied heavily on agency theory concepts, focusing on the control function of the board (Habbash, 2010). At the same time as the stakeholder theory focuses on relationships with many groups for individual benefits, resource dependency theory concentrates on the role of board directors in providing access to resources needed by the firm (Abdullah and Valentine, 2009).

2.1.4 Stakeholders' theory

Any definition of a stakeholder must take into account the stakeholder organization relationship. The best definition of this is by Freeman, who in 1984 defined a stakeholder as: ‘Any group or individual who can affect or be affected by the achievement of an organization’s objectives’. The stakeholder theory originated from the management discipline and gradually developed to include corporate accountability to a broad range of stakeholders. Stakeholder theory is an extension of the agency theory, where the agency theory expects board of

directors to protect only the interests of shareholders. However, stakeholder theory extends the narrow focus of agency theory on shareholders ‟ interest to stakeholders to take into account the interests of many different groups and individuals, including interest groups related to social, environmental and ethical considerations like suppliers, employees, business partners and soon (Freeman *et al*., 2004).

According to stakeholder theory decisions made regarding the company affect and affected by different parties in addition to stockholders of the company. Hence, the managers should on the one hand manage the company to benefit its stakeholders in order to ensure their rights and their participation in decision making and on the other hand the management must act as the stockholder's agent to ensure the survival of the firm to safeguard the long term stakes of each group. As a result, whether corporate governance should focus exclusively on protecting the interests of equity holders in the corporation, or should expand its focus to deal with the problems of other stakeholders (Asenafi, Kelifa and Yodit, 2013).

The theory has also an implication on the effect of corporate governance on financial innovation in commercial banks. Financial innovations in the banking industry include card banking, internet banking, mobile banking, agency banking and the like. The banks have relationships with the vendors (internet-banking platform vendors) and business partners (Agency banking) who are stakeholders. The theory focuses on managerial decision making and recognizes that interests of all stakeholders have intrinsic value and no sets of interests are assumed to dominate the other (ACCA, 2018).

2.2. Innovation

As cited Schumpeterian concept, innovation is related to changes (large-scale (radical) or small (incremental) that have a significant impact on the structural changes in individual industries and market segments. In this approach, new production methods are not necessarily based on new scientific discoveries. The first use of technologies that have already been used in other industries can also be attributed to new methods. Since innovation is associated with the processes of

manufacturing of the product and its use, the contents of this concept in international literature is based on different principles and each cluster of definitions has its specific characteristics (Linton, 2002).

The basic definitions and types of innovation (sometimes referred to as “shapes” or “typology” of innovation) are given by the Organization for Economic Cooperation and Development (OECD) in a series of manuals. The latest revision of these manuals is the Oslo Manual which defines innovation “the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations” (OECD, 2005).

Godin (2008) defines 12 concepts of innovation that can be described as follows: A. **Innovation as process of doing of something new**, innovation as imitation, innovation as invention, innovation as discovery; B. **Innovation as human abilities to creative activity**: - innovation as imagination; - innovation as ingenuity; - innovation as creativity; C. **Innovation as change in all spheres of life**: - innovation as cultural change; - innovation as social change; - innovation as organizational change; - innovation as political change; - innovation as technological change;

A. Innovation as commercialization of new product

Dooley (2009) describe Innovation, as a conduit of change, is the specific tool of entrepreneurs, the means by which they exploit change as an opportunity for a different business or a different service. The application of practical tools and techniques that make changes, large and small, to products, processes, and services that results in the introduction of something new for the organization that adds value to customers and contributes to the knowledge store of the organization (O'Sullivan & Dooley, 2009).

According to Rogers (2003), innovation is an important for understanding the links between innovation and the newness. He also defines innovation as “an idea, practice, or object that is perceived as new by an individual or other unit of adoption”. This definition clarifies the essence of the term “new” on the basis of

hypotheses' about the independence of "novelty" from the life time of innovation, the environment in which it operates and the characteristics of an adopter of innovation. In accordance with this definition, the criterion of "novelty" of innovation is determined by the choice and the perception of innovation of its adopters (followers). This means that the idea, object or practice is considered innovative during the period of its perception as "new" by the representative adopters. However, the idea, object or practice is classified as an innovation, regardless the fact that other followers in the system cannot attribute this idea, object, or the practice of innovation because of their earlier acceptance or knowledge about the innovation.

In this context, it is also understood that the availability of information and knowledge on innovation does not distort the criteria of "novelty" and innovation is perceived as "something new" by the representative follower up to the moment of its use in practice. In the development of Rogers` concept of re-invention Walker in his research has synthesized the definition of innovation (Walker, 2006). According to him, innovation is "a process through which new ideas, objects, and practices are created, developed or reinvented and which are new and novel to the unit of adoption"

In the simple terms, innovation involves the exploitation of new ideas. Innovation is term that may refer to process, an attribute, or an end result. There is a difference between innovation and invention. Innovation should not be equated to invention; an invention may not necessarily lead on to innovation.

A convenient definition of innovation from an organizational perspective is given by Luecke and Katz (2003) stated *"Innovation as the introduction of a new thing or method Innovation is the embodiment, combination, or synthesis of knowledge in original, relevant, valued new products, processes, or services". Moreover* innovation to occur, something more than the generation of a creative idea or insight is required: the insight must be put into action to make a genuine difference, resulting for example in new or altered business processes within the organization, or changes in the products and services provided. A further characterization of innovation is as an organizational or management process. Davila *et al*. (2006) explained, *"Innovation, like many business functions, is a*

management process that requires specific tools, rules, and discipline". It should be noted, however, that the term 'innovation' is used by many authors rather interchangeably with the term 'creativity' when discussing individual and organizational creative activity. As Davila *et al.* (2006) comment,

"Often, in common parlance, the words creativity and innovation are used interchangeably. They shouldn't be, because while creativity implies coming up with ideas, it's the "bringing ideas to life" . . . that makes innovation the distinct undertaking it is."

2.3. The importance of the financial system in the modern economy

The modern economy cannot exist without the efficient financial system that is defined as the collection of markets, institutions, instruments and regulations through which the financial securities are traded, interest rates are determined and financial services are produced and delivered around the world (Pietrzak, Polański and Woźniak, 2008; Rose and Marquis, 2009). The financial system is regarded as one of the most important creations of the modern society and it is described as an integrated part of the economic system and by this – a significant part of the social system (Pietrzak *et al.*, 2008).

According to Michalopoulos *et.al* (2009), financial innovations are not a new phenomenon, as they have been accompanying the technological innovations from the very beginning. It is commonly known that financial and technical innovations are bound together and they evolve together over a time. As the Author, financial innovations provide mechanism to finance innovative technological projects when traditional sources of funds are unavailable due to high investment risk. Moreover, the technological and economic progress resulting in the higher complexity of business processes and new types of risk forces the financial system and financial markets to adapt to the changes, to be modernized according to the new requirements of the business entities and to the challenges of the modern world.

Financial innovations in the modern financial system, has no unified definitions. In recent time different researcher defined financial innovations from narrow

meaning perspective, mainly the product innovations (Al-Kaber, 2010; Anderloni and Bongini, 2009; Fabozzi and Modigliani, 2003; Frame and White, 2009). According to the Authors, the main features of the product financial innovations can be listed as follows: 1) they can be entirely new solutions or just traditional instruments in which new elements of construction have been introduced improving their liquidity and increasing the number of their potential applications as they are better suited to the circumstances of the time, 2) they can be used as substitutes to the traditional financial instruments improving the financial situation of the business entities using them, 3) they cannot be easily assigned to one particular segment of the financial market, 4) they can be used to hedge against the intensive volatility of the market parameters, 5) they can be used in a form of complex instruments including several simple, traditional financial instruments, 6) they can be used in a form of new financial processes or techniques or new strategies that primary use these new products.

2.2. Corporate Governance

Various scholars and practitioners define 'corporate governance' differently. 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." This definition encompasses not only the formal rules and institutions of corporate governance, but also the informal practices that evolve in the absence or weakness of formal rules. According to Chenuo (2014), Corporate Governance refers to the manner in which the power of a corporation is exercised in the corporation's total portfolio of assets and resources with the objective of maintaining and increasing shareholder value and satisfaction of other stakeholders in the context of its corporate mission.

Broadly, corporate governance refers to all issues related to ownership and control of corporate property, the rights of shareholders and management, powers and responsibilities of the Board of Directors, disclosure and transparency of corporate information, the protection of interests of stakeholders that are not shareholders, enforcement of rights, etc. Corporate governance systems depend upon a set of institutions such as laws, regulations, contract enforcements and

norms that create self-governing firms as the central element of a competitive market economy. It is important to recognize that effective corporate governance relies to some extent on compliance with laws, but being fully compliant does not necessarily mean that a company is adopting sound corporate governance practices. Significantly, the Cadbury Report was published in the UK shortly after the collapse of Maxwell Communications plc, a large publishing company. Many of the actions that brought about the collapse, such as the concentration of power in the hands of one individual and the company borrowing from its pension fund in order to achieve leveraged growth, were legal at the time (OECD, 2004).

Moreover, the Organization for Economic Co-operation and Development published its 'Principles of Corporate Governance' in 2004 and have since become an international benchmark for policy makers, investors, corporations and other stakeholders worldwide.

The principles are nonbinding and do not aim at detailed prescriptions for national legislations. They are evolutionary in nature and should be reviewed in light of significant changes in circumstances. These are; Rights of shareholders: The corporate governance framework should protect shareholders and facilitate their rights in the company. Basic shareholder rights should include the right to secure methods of ownership registration, transfer shares, obtain relevant & material information on the corporation on timely and regular basis, participate & vote in general shareholder meetings, elect & remove members of the board and share in the profit of the corporation.

Currently, corporate governance is a buzzword in the business world (Mulili and Wong, 2011) and an evolving field, which have gained popularity (Adekoya, 2011). It is acknowledged to play an important role in the management of organizations (Mulili and Wong, 2011). Nevertheless, it is under-researched in Africa (Okeahalam, 2004) and in developing countries (Tsamenyi *et al*., 2007). Effective corporate governance practices are essential to achieving and maintaining public trust and confidence in the banking system, which are critical to the proper functioning of the banking sector and economy as a whole. Poor corporate governance may contribute to bank failures, which can pose significant

public costs and consequences due to their potential impact on any applicable deposit insurance systems and the possibility of broader macroeconomic implications (Basel Committee on Banking Supervision, 2006).

2.3. Corporate Governance in Ethiopia

Ethiopia has established basic corporate governance rules (commercial code) for share companies in the early 1960. Hence, the foundation of corporate governance has been in place for almost fifty years. The code included corporate laws, bankruptcy laws, disclosure law, auditing, and basic structure, duties, and responsibilities of shareholders, board of directors, and managers (Alemayehu, 2008). The emergence of corporate governance as an area of study is a recent phenomenon and the clear scope of corporate governance is not settled. Despite similarities in the objectives it seeks to achieve, corporate governance is structured in differently in different jurisdictions. There is no ready-made system of corporate governance that countries can easily implement (Sefara, 2015). In the past two to three years, the Ethiopian business environment gives little attention to corporate governance.

Representing the systems, laws and procedures that businesses operate with, corporate governance obtains considerable attention in global investment and trade spheres. Often, negotiating countries use them as important considerations to build their deliberations on (Tura, 2012). Currently, Ethiopia has launched an ambitious Growth & Transformation Plan (GTP) to double its current GDP by 2015 E.C while these figures are promising indicators of the country's economic progress, private & public investment is crucial in the country's economic development objectives. Economic development, which is a key prerequisite for reducing poverty and creating wealth, presupposes the fundamental requirements of effective regulatory framework and good corporate governance (Tura, 2012).

Many studies showed that, Ethiopia have 'transplanted' most of its modern legal codes including the commercial code of 1960 from the then continental European legal codes. These codes contain the general rules on corporate governance in Ethiopia. Other proclamations and directives were enacted to supplement the general rules of in commercial code. The commercial code recognizes board of

directors, shareholders meeting and auditors as the three main organs of management of share companies. Shareholders are allowed to serve as members of the 'one-tier' board of directors in Ethiopia share companies. The shareholder meetings are called to pass resolutions on important matters of share companies; finally the auditors are appointed and entrusted with the task of examining the financial records of share companies (Sefara, 2015). On contrary, such provisions are inadequate to address specific issues in corporate governance related to board of directors such as separation of roles of non-executive directors' remuneration (Tura, 2012).

According to Sefara (2015), the general company law rules under the commercial code are often overruled or augmented by special rules of the same code or other separate proclamations and directives. Financial share companies are subject to special laws in addition to the general rules embodied under the commercial code. Hence, the banking business proclamation NO.592/2008 and Bank business proclamation No.764/2012 govern banks and Bank companies respectively.

According to Addis (2013), many Investors across the world consider corporate governance as an important indicator for investment decisions. Decisions, such as acquisition, partnership, joint ventures, merger or outsourcing, will all be defined by the strength and weakness of the corporate governance of companies in the business sphere. Moreover, know lager that mediates should have a detail understanding of the corporate governance of businesses in their respective countries, therefore, they often align their deliberation in a way that does not harm, perhaps even benefits, the companies in their countries. On the other hand, corporate governance is provided with little attention, both by policymakers and businesspeople.

2.4 Corporate governance on financial innovation

According to Alegre (2004), the cognitive paradigm of governance sees the firm as a repertory of knowledge and competencies. As such, mechanisms of GOV foster the ability of a company to accumulate knowledge, to develop distinct competencies, and eventually to promote innovation. In few empirical studies the idea of corporate governance mechanism and innovation was linked. The first

researchers who link corporate governance and innovation were (Jensen and Meckling, 1976). These authors stated that the idea of corporate governance as a set of disciplinary mechanisms is inherently linked to innovation, as it involves the adequate distribution of powers and decision-making across all management bodies of the firm.

Moreover, other authors also cited in different papers and they explained that for a company to innovate; it must be able to build new knowledge, and therefore, must engage in a collective and cumulative organizational learning process, which necessitates establishing a mechanism for adequate distribution of decision-making called GOV (Van Essen *et al*., 2012). Finally, the researchers on the idea of corporate governance and innovation overlooked from two perspectives.

Innovation as the result of a good corporate governance system. This concept delivers to a firm the best potential for value creation by focusing on skills and innovation capabilities (Alegre et al., 2004; Van et al., 2012).
Supported by researchers like (Lin et al., 2011), who view corporate governance as a prerequisite to installing a sound innovation ecosystem.

2.5 The relationship between corporate governance and financial innovation: Empirical evidence

Today, the attention of many researchers inclined on the subject of the influence of corporate governance mechanisms on innovation. Plenty of empirical studies stated that innovation efforts depend mainly on how well mechanisms of corporate governance are implemented within organizations. These authors enumerate couple of mechanisms, namely, ownership structure and type of shareholder and the functioning of the board of directors (Chizema and Kim, 2010; Tylecote and Visintin, 2007; Chemmanur and Tian, 2017).

On the other hand, the previous empirical studies have shown contradicting finding and diminished results. As a matter of illustration, the researcher included the study of Chemmanur and Tian (2017), which show that firms with anti-takeover provisions tend to innovate more. The study conducted by Sapra *et al.* (2014) demonstrates a U-shaped relationship. As the works of the author,

innovation occurs when there are very few or too many anti-takeover provisions. They stated that the convex link is because of the long-term process of innovation. According to these authors, a positive link is conditioned by setting up a long-term incentive package for executives.

The studies of other researchers from abroad showed that, Innovation is affected by the incentives provided by internal as well as external governance mechanisms such as the market for corporate control. The finding of Aghion (2009) showed that, higher institutional ownership leads to greater innovation. He found a positive relationship between block holder ownership and firm-level innovation. The study conducted by Nyathira (2012) revealed that there exist a positive relationship between financial innovation and firm performance. Using regression analysis and correlation analysis, the study results indicated that the independent variables (RTGS and ACH) could predict the financial performance of commercial banks. Study results showed that financial innovation in payment systems resulted into improved financial performance. Other study conducted by Wanjama (2014) on the Effect of Corporate Governance on Financial Innovation of banks showed that, there is positive relationship between most corporate governance variables(board size, board diversity, board independence, committees number and firm size) and the dependent variable (innovation score).

Furthermore, the work of Manso (2011), which analyses the impact of compensation mechanisms and senior management mandates on innovation. In this study, the author suggested that managers would be motivated to innovate if companies set up incentives such as long-term stock options, severance agreements and other devices that encourage entrenchment. The empirical studies on the effect of the composition of the board of directors, (Brunninge *et al*., 2007; Shapiro *et al.*, 2015) state that the independence of the board of directors has a positive effect on strategic changes and innovation. While, Balsmeier (2014) find rather mitigated results. They found that those independent directors with extensive experience who sit on the boards of high tech companies have a positive and significant impact on the number of applications for patents.

However, they caution that the monitoring and advice of external directors does not always have a positive effect on research and development (R&D)

investment. Furthermore, they indicate that the main role of the independent board members is to discipline strategic decisions rather than promoting R&D activities. Understandably, the findings of these studies represent a novelty if we compared them to the existing literature. The finding of (Love, 2011; Jensen and Meckling, 1976; Hart, 1995; Wirtz, 2006) showed that corporate governance is an indication to promote innovation and some of the recent empirical studies show the exact opposite (Hallara and Mrad, 2010; Bollaert *et al*., 2010).

Finally, review of empirical and theoretical studies shows not only mitigated results but also the lack of studies that explore the impact of other corporate governance on financial innovation. As such, the researcher aims by this study to evaluate the impact of corporate governance on financial innovation, in Ethiopian commercial bank.

2.6 Hypothesis development

Female Directors in the Board Vs financial Innovation

The benefits of women representation in the boardroom are extensive to the top management team for a number of reasons. Based on survey data, Rosener (1995) finds that women's leadership style is more interactive and participatory by encouraging input and information sharing from others, and by establishing and keeping open communication channels with their subordinates. While, Ravasi and Schultz (2006), showed that women are less hierarchical and more collaborative than men and they tend to manage businesses in a more democratic way. Moreover, empirical evidence revealed that women are more risk averse (Palvia *et al.*, 2014), better at monitoring (Adams and Ferreira, 2009), and more long-term oriented when it comes to strategy making (Reguera, 2015). Although relatively few studies examine gender diversity in top management mostly because of the lack of data on women in top management teams (Adams and Funk, 2011), existing empirical research support these arguments. In this the theory and empirical evidence indicate that characteristics of the 'feminine presences in the board and management style' and associate with greater collaboration, nurturing, information sharing and enhanced decision making are conducive to business performance, and suggest the following relationship

between women's representation in top management teams and financial innovation.

H1: Females representing in the board has a positive and statistically significant effect on financial innovation

Directors' Educational Qualification Vs financial innovation

Education diversity could be explained as different set of task relevant skills, knowledge and abilities possessed by team members as a function of their educational background (Dahlin *et al.*, 2005). According to upper echelon theory (Hambrick and Mason, 1984), to make a crucial decision for the firm such as decision in strategic measure, the demographic characteristics such as age, tenure and other characteristics are probably the important factors that will influence the decision-making (Zee and Swagerman, 2009). In line with that, Carsen (2004) suggest that upper echelon theory supports that the demographic characteristics of top managers or BODs and the organizational decision-makers have substantial effects on firm's performance. It should be noted that education background is one of demographic characteristics of the board (Jung and Ejermo, 2014).

The Overall, empirical evidence showed that the educational level of board members determines abilities and level of knowledge of the boards members. Moreover, the works of Barroso (2011), Dalziel (2011), Lin (2011), Escribá (2009), Wincent (2010) showed that, the educational level of board member have direct impact on innovation. They suggesting that the companies whose board member have higher educational level will greater cognitive complexity, grasping new ideas, adopting new behavior, define problems better and searching for creative solutions to complicated problems, have a more thorough understanding of R&D processes and of external environments, so will be better equipped to implement R&D activities.

Dalzie *et al.* (2011) showed that the numbers of directors who have degrees from elite institutions positively impact research and development expenditures. Similarly the founding of Madalina *et al.* (2017) revealed that a educational qualification (post graduate) has positive association in innovation and financial

performance. They also found that the proportion of board members holding degrees in financial fields is higher in bigger firms and firms with more concentrated ownership.

H2: Educational qualification of board of directors has a positive and statistically significant impact on financial innovation

Board size VS financial innovation

Many empirical studies showed that board size had different impact on innovation. Board size has both a positive and negative relations with innovation are possible. The literature from the works of Jackling and Johl (2009), Goodstein (1994), Haynes and Hillman (2010) and Shapiro (2015) found that board size have positive relationship with financial innovation, suggesting that a company with larger number of directors increases the overall experience of the company and a more directors increase the company's access to a greater number of external resources, including the technological and financial ones that are essential for innovation. Therefore, a large board of directors can improve a company's capacity to deal with uncertainty in the environment and can increase links with other partners.

On the other hand, other empirical studies show a negative relationship between board size and financial innovation. There view, suggests that a larger board may prevent it from being effective in its strategic decisions because, for example, there is greater diversity of opinions which may lead to conflict and mistrust among directors (Amason and Sapienza, 1997), and to difficulties for meeting frequently or for coordinating different points of view (Goodstein *et al*., 1994; Yermack, 1996; Ruigrok *et al*., 2006).

H3: Board size of has a negative and statistically significant impact on financial innovation

Audit Committee Vs financial Innovation

The board of directors is an important component in corporate governance that reconciles the interest of all stakeholders. They set the company strategic

direction and ensure compliance with laws and regulations. Further, the board of director are also required to make sure the independence, professional scepticism and ethical consideration of the external auditor. Salawu (2017) concludes that there is a positive relationship between audit quality and reporting and disclosure practices. Audit quality is reliable evidence amongst the most basic issues in audit practice today. Audit quality has been characterized as the joint likelihood that a current material blunder is identified and reported by an auditor (Jordan *et al*., 2017).

Firms with greater natural instability (greater information asymmetry between the firm and outcasts) is motivated to talk their characteristic quality by enlisting an extra solid, top-notch auditor. This contention has primarily been made inside the connection of Initial Public Offerings (IPOs) and hence the evidence shows there is diminished proof spatial property (i.e. less under pricing) once opening up to the world about large brand auditor (Salehi *et al., 2018).*

A large audit committee may suffer from the problem of free riders, from previous studies; the performance of the audit committee was determined by the number of audit committee members. These variables have been tested in previous studies conducted by (Xie *et al*., 2003).

The results of other empirical studies showed that the size of the audit committee and to devote more resources is more likely to oversee financial reporting and internal control systems within a firm hence high performance (Anderson *et al.*, 2004) and facilitate discussions between the audit committee members (DeZoort and Salterio, 2001). Empirical evidence shows that companies with greater audit committee size prefer to suspicious auditor switches (Archambeault and DeZoort, 2001) and more likely to have lower costs of debt (Anderson *et al.,* 2004). The exchange, the effect now requires their registrants to have at least three directors on the audit committee, hence a strong relationship between audit committee size and innovation.

Similarly, Pincus show that firms with larger audit committees are expected to devote greater resources to monitor the process of “reporting” accounting and finance. In the same furrow, Anderson (2004) found that large size audit

committees can protect and control the process of accounting and finance with respect to small committees by introducing greater transparency with respect shareholders and creditors which has a positive impact on the financial innovation of the company. According to the study by Bahreni and Zain (2013), it showed that when audit committee size is larger, effectiveness of the audit committee is more and it helps the members of audit committee to solve and discuss issues more effectively. Arguments supported by other researchers showed that problems in communication, solving of issues, coordination and decision making will increase when audit committee size is larger. Aldamen *et al.* (2011) reveals that smaller audit committees with more experience and better educational qualifications are more likely to be associated with positive firm performance. In Ethiopia banking industry, Ferede (2012) found that large number of audit committee has a negative and significant effect on financial performance. He added that Limiting audit committee size to reasonable number improves audit committee effectiveness.

H4: Audit committee has negative and statistically insignificant impact on financial innovation

Frequency of board meeting vs financial innovation

Meeting frequency refers to how many time Board members meet within a year. Measuring the intensity and effectiveness of corporate monitoring and discharging is the frequency of board meetings (Jensen M., 1993). Meeting Frequency has a significant negative impact on ROA and an increasing in meeting frequency will reduce the profitability of the firm (Danoshana and Ravivathani, 2013). The works of Akpan (2015) showed that board meetings has negatively and significantly relate with company performance. The study conducted by Amran (2011) revealed that increase in meeting frequency would decrease firm performance. On contrary the empirical studies conducted by Karamanou (2005) showed that, frequency of board meeting and management earnings forecasts has positive relationship. The author in the study used 157 sample of firms in Zimbabwe from 2001-2003.

Moreover, Mangena and Tauringana (2008) report a positive relationship between board meeting frequency and corporate performance. The same results were recorded in the study of Ntim and Osei, 2011), suggesting that corporate performance and board meeting frequency has statistically significant and positive association. This implies that the board of directors in South Africa that meet more frequently tend to generate higher financial performance. Moreover, Ntim and Osei (2011) found a statistically significant and positive association between the frequency of corporate board meetings and corporate performance, implying that South Africa boards that meet more frequently tend to generate higher financial performance.

H5: Frequency of board meeting has positive and significant effect on financial innovation

Size of the Firm

The adoption of innovation is associated to size of the firm and age of the bank. Larger firms seem better suited to innovate, because innovation implies fixed costs that can be more efficiently recovered if a firm is large (Schumpeter, 1943). Similar firms could be better innovators due to superior managerial control and less bureaucracy (Scherer and Ross, 1990). Size of the bank relative to the market is important. Higher market share increases the incentive of banks to innovate (Bhattacharyya and Nanda, 2000).

2.7 Empirical studies and summaries of the review

This section of literature review concentrates on previous studies that have been conducted in relation to this study. In the context of Ethiopia, even if there is limited number of research work on the evaluation of the effect of corporate governance on commercial bank financial performance there were mixed results concluded by previous studies pertaining to the relationship between corporate governance mechanisms and financial performance. The important empirical studies are summarized below in this section.

Yasser (2011) provide evidence on the effect of corporate governance on firm performance using 792 companies listed on Karachi Stock Exchange from 2003

to 2008 in Pakistani. Tobin's Q, return on assets, operating cash flow has been used as a measure of firms' performance; dummy variable for family-controlled firm, Board composition, director's educational qualification, Directors professional qualification, leadership structure and frequency of board meetings were the independent variables of the study. Moreover, debt, firm age and firm size were the control variables of the study. The study revealed that there is significant difference between families and non-family controlled firms" performance when measured by Tobin Q, return on asset and operating cash flow.

For non-family controlled companies, the board governance variables such as board composition, director's educational qualification, director's professional qualification, leadership structure have improved the firm performance. In addition, debt, firm size and firm age affect a firm's performance. It was evidenced that corporate governance does play a vital role in influencing Pakistani companies' financial performance.

An empirical study done by Juan (2016) developing a systematic literature review on the relationship between corporate governance and innovation. The main objective of the study was to determine the relevance that the academic world has given to the study of the relationship between corporate governance and innovation and to identify the key aspects of this relationship that deserve further investigation. The finding showed that the main topics discussed include ownership concentration & the composition and structure of board of directors, whose impacts on innovation have been analyzed with scarce consensus. The study did not look at corporate governance as a determinant of financial innovation. It did not use empirical studies on the variables of corporate governance and innovation.

Al-Manaseer (2012) was investigated the effect of corporate governance on performance using 15 Jordanian banks from the year 2007 to 2009 with a total of 45 bank observation. The study employed pooled data, and OLS estimation method with panel methodology. Return on asset, return on equity, profit margin and earnings per share were the dependent variables of the study and board size, board composition, CEO status, foreign ownership and bank size were the

independent variables of the study. The study revealed a significant negative relation between board size and banks performance as measured by ROE and earnings per share but insignificant negative association of board size with ROA and profit margin was found. Bank size was negatively related with ROA, ROE and profit margin but only significant with profit margin. The study also reveals a positive association between board composition and foreign ownership and bank performance. In addition, CEO status has a negative influence. Finally, the researchers suggest extending the study period. Due to this recommendation by the researcher, it needs to study further in the area by using long period of year's data.

Sapra (2014) did an empirical study by developing a theory to show how external and internal corporate governance mechanisms affect innovation. They predicted a u-chap relation between innovation & external takeover pressure, which arises from the interaction between expected takeover premia and private benefits of control. They found strong empirical support for the predicted relation. This study did not examine relationship between corporate governance and innovation.

The study conducted by Adam (2014) states, the effect of corporate governance on innovation in Kenya. She did the study based in Kenyan banks with a target population of 43 commercial banks. She used secondary data sourced printed reports and from the year 2010 to 2014. The study found that corporate governance existed in all the banks but the board structures varied with bank. She also found out that board size, board independence and board diversity to have significant effect on the financial innovation whereas the size of the bank and number of committees has an insignificant effect. In conclusion in this study, corporate governance has a significant impact on innovation. The study did not include educational qualifications of directors and it includes size of the banks as corporate governance variables.

The study Yohannes (2016) provide evidence on the effect of corporate governance policy enforced by National Bank of Ethiopia, regulator of financial institution, on the performance of private commercial banks in Ethiopia. The author used Primary and secondary source of data from 14 private banks in Ethiopia the year 2011 to 2016 used for the study. Deductive research approach

and various statistical techniques used for the analysis. The study result showed that the corporate governance variables could have significant effect on bank performance (Return on Asset). This Study did not show the effect of corporate governance on financial innovation of private commercial banks in Ethiopia

Kibrysfaw (2013) provided evidence on the effect of different corporate governance mechanisms on the performance of nine commercial banks of Ethiopia covering the period of 2005-2012. The author in his study employed panel data regression analysis to test whether the selected corporate governance variables have an impact on firms' financial performance. The results of the study showed that the board ownership and liquidity ratio have negative but insignificant effect on the firm performance; similarly, board size has negative but insignificant impact on ROA. In case of composition, there is negative and significant effect of proportion of non-executive board on bank performance. Correspondingly, CAR and reserve requirement from regulation proxies had negative and significant effect on the performance of Ethiopian commercial banks. Availability of audit committee on board and deposit ratio has positive and significant effect on ROA.

The regression result also shows that positive and significant effect of concentrated ownership on the performance of banks. Lastly, the result shows positive and significant impact of deposit to total asset ratio on the performance of banks by using market mechanism. The study was also recommends further research could be possible to come up with a better insight and several extensions to this study are possible. So, it can be more robust, if future researchers conduct a study on this area by increasing the number of observations through the use of large sample size and long year's data, and by incorporating other corporate governance variables. Even if the researcher covers from both internal and external corporate governance variables, the relationship between internal corporate governance mechanisms and firms' financial performance needs also be further explained.

The works of Habtamu (2012) gives information on the effect of corporate governance on the performance of banks. The study applied panel data of seven Ethiopian commercial banks that covered for the period of 2004/05 to 2009/10.

The paper used independent sample t-test and pooled OLS panel data regression models to investigate the effect of some internal corporate governance variables on major profitability indicator i.e., ROA and ROE. The estimation results showed that, board size, gender diversity in boardroom and CEO experience are found to have negative effect on the financial performance of banks measured using ROA and ROE. Audit committee and board meeting frequency are found to positively affect ROE, with no effect on ROA. Finally, board composition is found to have no effect on both financial performance measures.

The study of Getachew (2014) offers evidence on the impact of corporate governance on firm performance. The main objective of this study was to examine the relationship between corporate governance and the firm performance of selected Ethiopian insurance companies. The data was collected from 10 insurance companies in Ethiopia from the year 2008 to 2012. The study result showed that, board gender diversity, firm size and leverage positively influence the financial performance o selected insurance firms in Ethiopia and they are significant based on return on equity; whereas board size and board composition has statistically insignificant impact on financial performance, but board size influence negatively and board composition influence positively the financial performance of selected insurance firms in Ethiopia. The study did not cover other financial institutions such as banks since only insurance were studied. It did not look the effect of corporate governance on innovation of private commercial banks in Ethiopia.

Furthermore, the previous studies conducted on the area of corporate governance have not looked at the cause and effect relationship between corporate governance and financial innovation in commercial banks. Many researchers focused on determinants of the financial performance of commercial banks in Ethiopia from internal corporate governance practice perspective Olani & Getinet (2015); Ashenafi (2013) give attention to corporate governance and its impact on bank performance; Abdurazak (2017) deliberate on corporate governance and its effect on financial performance of the Ethiopian private commercial banks; Kalifa (2012) and Temam (2018) focus on the effect of financial innovation on financial performance of commercial banks in Ethiopia; Minga (2008) and

Facade (2010) attempted to analyze the effect of corporate governance on bank performance. While, there are few studies conducted on the area of corporate governance and its effect on financial innovation.

The studies conducted by Wanjama (2014) focused on the effect of corporate governance on financial innovation of commercial banks in Kenya. In the study the author applied abstraction method and used only secondary data source from the annual report of Kenya commercial banks from 2010-2014. In the paper the researcher used board size, board independence, board diversity and number of board committee as independent variable. On the other hand, the author used score of innovation as dependent variable and bank size as control variable. The regression result of the study showed that board size and board diversity have positive effect on financial innovation of the banks. On the other hand, board independence and committee numbers in the board have negative effect on financial innovation of Kenyan commercial banks.

In Ethiopia, similar studies were conducted on effect of corporate governance on financial innovation of Ethiopian private commercial banks. The studies of Wondwossen (2018) provide information on Corporate Governance and Its Effect on Innovation in the Case of Private Commercial Banks in Ethiopia. In his work the author used female representation in the board, board size, educational qualification of the board directors and board independence as independent variables. The author used financial innovation measured by innovation score of number of ATM and POS machine as dependent variable and there is no constant variable in the study. In the study he included only nine private commercial banks and collected data from only secondary data source. The author used SPSS statistical tools to analyze the data included in the study. The regression results of the author showed that females representing in the board and board size have a positive effect on financial innovation of Ethiopian private commercial banks used in the study. While, educational qualifications of the board of directors and board independence have negative effect on financial innovation. Alene (2019) conducted similar studies with many corporate governance variables. In this study, board size, board gender diversity, industry related educational qualification, specialized subcommittee, meeting frequency of the board directors

and owner ship dispersion used as explanatory variables and financial innovation (innovative investment/R & D spent) as dependent variable. The author used bank size, profitability and leverage as control variable. The author employed both primary (questionnaire) and secondary data source (published annual report). The random effect regression result in the study showed that, board size, board gender diversity, industry related educational qualification, specialized sub committee and board meeting frequency have positive effect on financial innovation. On contrary, ownership dispersion has a negative effect on financial innovation of Ethiopian commercial banks used in the study.

As far as the knowledge of the researcher there is a few research work conducted on corporate governance and its effect on financial innovation in Ethiopian private commercial banks. But, there is variation in measurement of financial innovation and methodological differences among the authors. Thus, this study was intend to fill these gaps and tries to evaluate board directors composition and its effect on the financial innovation of Ethiopian commercial banks.

Independent variables	**Dependent variable**	**Control variable**
☞ Females representing in the board (FRB) ☞ Educational qualification of the board directors (EDU) ☞ Board size (BOS) ☞ Audit committee size(AC) ☞ Board directors meeting frequency (BDM)	☞ Financial innovation (FN) ☞ **Measured by** ☞ Natural logarithm of (ATM, Pos , machine Internet banking users ,mobile banking users and Agent banking	☞ **Bank size** (measured by natural logarithm of total assets of the banks) (BS) ☞ Bank age (counting the age of the banks) (AF).

Figure 1: Conceptual Framework of the of the study

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

This chapter particularly gives a brief description of the research method that is employed to gain information related to the effect of Board director's composition on financial innovation in Ethiopian commercial banks. The chapter includes research approach; research design implemented, sample and target population used in the study, the source of data and data collection procedures, types of data analysis, model specification and description of variables were discussed.

3.1 Research Design and Approach

Research design is plans and the procedures for research that span the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation. This plan involves several decisions, and they need not be taken in the order in which they make sense to the researchers. MacMillan and Schumacher (2001) define it as a plan for selecting subjects, research sites, and data collection procedures to answer the research question(s). They further indicate that the goal of a sound research design is to provide results that are judged to be credible. For Durrheim (2004), research design is a strategic framework for action that serves as a bridge between research questions and the execution, or implementation of the research strategy. Moreover, research design is a master plan that specifies the methods and procedures for collecting and analyzing the needed information. As well, research design provides a framework or plan of action for the research (Zikmund and Griffin 2009). To achieve the objectives of the study the researcher used descriptive research design. The purpose of a descriptive study is to provide a picture of a situation, person or event or show how things are related to each other and as it naturally occurs. However, descriptive studies cannot explain why an event has occurred and is much suitable for a relatively new or unexplored research area.

Research approach is classified into quantitative research approach, qualitative research approach and mixed research approach. Qualitative research is an

approach for exploring and understands the meaning individuals or groups ascribe to a social or human problem. The process of research involves emerging questions and procedures, data typically collected in the participant's setting, data analysis inductively building from particulars to general themes, and the researcher making interpretations of the meaning of the data. The final written report has a flexible structure. Those who engage in this form of inquiry support a way of looking at research that honors an inductive style, a focus on individual meaning, and the importance of rendering the complexity of a situation.

Quantitative research is an approach for testing objective theories by examining the relationship among variables. These variables, in turn, can be measured, typically on instruments, so that numbered data can be analyzed using statistical procedures. The final written report has a set structure consisting of introduction, literature and theory, methods, results, and discussion. Like qualitative researchers, those who engage in this form of inquiry have assumptions about testing theories deductively, building in protections against bias, controlling for alternative explanations, and being able to generalize and replicate the findings.

Mixed methods research is an approach to inquiry involving collecting both quantitative and qualitative data, integrating the two forms of data, and using distinct designs that may involve philosophical assumptions and theoretical frameworks. The core assumption of this form of inquiry is that the combination of qualitative and quantitative approaches provides a more complete understanding of a research problem than either approach alone. Therefore, this approach is an appropriate method for this study since the study includes both quantitative and qualitative (interview) data.

3.2 Research Approach Adopted

The major objective of this study was to evaluate the effect of board director's composition on financial innovation of Ethiopian commercial banks. To achieve the objective and to answer the research problem, the study tends to be mixed approach, which enabled the researcher to find the effect of board directors' composition on financial innovation in Ethiopian commercial banks.

Moreover, the information available from primary source (interview) and secondary (from different previous works, annual reports, previous NBE directives) sources were prepared and adjusted to analyze and critical evaluation of the data. The study employed different approach to collect/gather data consecutively to best understand research problem. The data collection also involved gathering information from different written document (document review) as well as text information (e.g., on interviews) from board secretary at their head quarter office.

3.3 Research population

The population for this research comprised of all Ethiopian commercial banks in Ethiopia, out of which researcher consider about 15 Ethiopian commercial banks in Ethiopia namely Abay, Addis, Abyssinia, Awash, Birhan, Buna, Commercial Bank of Ethiopia, Cooperative bank of Oromia, Dashen, Lion, Nib, Oromia, United, Wogagen and Zemen Banks by using purposive sampling techniques. All these banks have clear and recent related data concerning the research topic. On the other hand, the remaining banks (Debub global and Enat bank) have no data on digital banking, since they are late to introduce digital banking; they were not included in the study.

3.4 Source of Data and Collection Methods

Concerning sources of data, the study uses both primary and secondary data source. The secondary source of data was collected from annual reports of the Ethiopian commercial banks. Five years data were used in the study, from the period (2016 to 2020). The primary data was collected with interview question. The interview question mainly focused on effect of board directors' composition variables and financial innovation question (digital banking). Information about board of directors' composition was collected from board secretary and digital banking from e-banking department.

3.5 Data analysis

To accomplish the aim of the study the researcher analyzed the raw data collected from the Ethiopian commercial banks (data collected from primary and secondary

sources). The annual reports of the banks of the past five years (2016-2020) were analyzed using panel data from which pooled OLS model is an appropriate model. Moreover, a panel model maintains the same individuals or objects and measures some quantity about them over time. As aforementioned in research approach, the study used mixed research approach so that quantitative data analysis was undertaken by using Eveiws 8 software. The data collected through the abovementioned tools has been analyzed using the method known as descriptive statistics, Pearson correlation analysis and pooled OLS regression methods. The descriptive statistics has been used to quantitatively describe the important features of the variables using mean, maximum, minimum and standard deviations.

Moreover, Pearson correlation analysis has been used to identify the relationship among the variables and is used merely to observe the direction and magnitude of relations among variables. .

Pooled OLS regression analysis was also used to test the hypothesis and to explain the relationship between board of director's composition and financial innovation measures by controlling the influence of selected variable.

As we know there are three main types of panel data analysis (estimators). These are fixed effects models, constant coefficients models (pooled OLS), and random effects models. In panel data analysis the term fixed effects estimators used to refer to estimator for the coefficients in the regression model including non-time invariants intercept for each subject. The fixed effect model is the differences across cross-sectional units that can be captured in differences in the constant term and the intercept term of the regression model varies across the cross sectional units. On the other hand, in the random effect model, the individual effects are randomly distributed across the cross-sectional units and in order to capture the individual effects, the regression model is specified with an intercept term representing an overall constant term. Pooled regression model is one type of model that has constant coefficients, referring to both intercepts and slopes. For this model researchers can pool all of the data and run an ordinary least squares regression model (Seddighi, 2000).

The Hausman specification test was employed to differentiate between random and fixed effects models by testing for correlation between the x variables and the individual random effects εi. But the random effect is not appropriate for this model. Further, Wald specification test was employed to differentiate between fixed effect model and pooled OLS model. Based on the Wald test result, pooled OLS model was chosen for this study.

3.6 Model specification

The Innovation equation for the study was formulated as follows:

$$\boldsymbol{Y = ß0 + ß1\,X1 + ß2X2 + ß3X3 + ß4X4 + ß5X5 + ß6X6 + ß7X7 + u}$$

$$\boldsymbol{FN = ß0 + ß1\,(FRB) + ß2(EDU) + ß3(BOS) + ß4(AC) + ß5(BS) + ß6(AF) + ß7(BDM)7 + \varepsilon i}$$

Where;

FN=financial innovation

FRB= females representing in the board
EDU=educational qualification of board of directors
BOS= board size
AC= number of audit committee in the board
FS= firm size (bank size)
AF=age of firm (bank age)
BDM=board director meeting frequency
U= Standard Errors

ß0=intercept and ß1, ß2, ß3, **ß4, ß5,** ß6 **and ß7 are** coefficients of the variables

3.7 Definition of the Variables and Measurement

3.7.1 Definition and Measurement of Dependent Variable

Financial Innovation

Financial innovation is a process of creating new products, services or process related to the finance sector. They occur with the advancement in financial instruments and payment systems with time. Financial innovation is measure by natural logarithm of e- banking products and services (ATM Machine, POS machine, Agent banking, internet banking and mobile banking) in Ethiopian commercial banks.

3.7.2 Definition and Measurement of Independent Variables

Females' Director in the Board:

It is one of the alternate used for the board of directors' composition and it is measured as the total number of female directors in the board members in each financial year. According to (Belkhir, 2008), Board gender diversity is considered to improve company performance since it provides new insights and perspectives. Female board members will bring diverse viewpoints to the boardroom that is not possible with all male directors (Jensen, 1986). The study expects board gender diversity has a significant and positive effect on adoption of financial innovation by commercial banks.

Educational Qualifications of Directors:

It is measured by the proportion of board members who had post graduate degree to the total number of board members. Educational qualification is vital for measure of board of directors' composition successfulness. Moreover, board members have a university degree (including post graduate) or equivalent skills, board members have sufficient human capital in order to understand and analyze information that is provided by management (Rose, 2007). Educational qualifications of individual board members are very important for board decision making (Amran 2011; Yasser; 2011). The monitoring role expected to be effectively implemented if the board members are qualified and experienced. The researcher expects that there is a significant positive association between directors‟ educational qualifications and the Ethiopian commercial bank financial innovation.

Board Size

It is refers to the total number of directors on the board of each firm which include chairman of the financial year. It is measured by counting the total numbers of board directors of each financial year. Agency theorists argue that a larger board is more likely to be watchful for agency problem as a greater number of people are reviewing management actions (Jensen, 1986). A larger board is also assumed to bring a greater opportunity for more links and greater access to resources will result from more links. From stewardship theory perspective, however, it is not the size of the total board that matters but the size of insiders in the board because inside directors are assumed to bring superior information to the board on decisions (Jensen, 1986).Considering agency theory, the study expects board size has a significant and positive effect on adoption of financial innovation by commercial banks.

Number of audit committee

Audit committee size: simply it is the number of audit committee. Size of audit committee affects banks' financial innovation. It is likely that small size audit committees effectively communicate in the financial reporting process and problems to be resolved easily. Audit committee plays a key role in assisting the board to full fill its oversight responsibilities in areas such as entities, financial reporting, internal control system, risk management system and internal and external audit functions. It is measured by counting the number of auditor presented in the board members.

Board meeting frequency

Meeting Frequency of Board: Refers the number of meeting how much time board meets on a year during the period under review. The researcher expects the number of board meeting has a negative effect on the Ethiopian commercial banks on financial.

3.7.3 Control variables

Firm size (bank size)

It is measured as the logarithm of total asset. The ratio represents the owner ship of asset by banks. High asset owner ship enables banks to offer more financial service at low cost.

Bank Age (Firm Age)

FA is bank age measure by counting the number of the years from its establishment.

3.8. Model Validity

Diagnostic test is made to make sure that the model assumption is violated or not and to find reliable results from the study. In this research an attempt is made to test normality, heteroscedasticity, multicollinearity and autocorrelation (serial correlation). To test the normality assumption whether it is violated or not in this study, the researcher applied the Jarque-Bera (JB) test. It is a test made to check normal distribution of the residuals.

To test for the presence of heteroscedasticity, the popular Breusch Pagan test was employed. It is a test made to check whether error terms variance is constant (homoscedasticity) or not (heteroscedasticity). Moreover, to examine the possible degree of multicollinearity among the explanatory variables, variance inflation factor (VIF) was used. The presence of autocorrelation (serial correlation) was tested by Durbin-Watson test of autocorrelation. Durbin-Watson is a test for first order autocorrelation, i.e., it tests for a relationship between an error and its immediate previous value.

Hausman test is also employed to choose the appropriate model between fixed effect and random effect model. Again, wald test was employed to differentiate between fixed effect model and pooled OLS model. Finally, pooled OLS model is found to be an appropriate model for these studies.

CHAPTER FOUR

RESULTS AND DISCUSSION

The preceding chapters presented the background of the study, literature review and the research methodology adopted in the study to achieve the objectives of the study and to test the research hypotheses thereon. This chapter deals with organization, analysis and presentation of data collected from primary source (interview) and secondary data from annual reports. The data collected was analyzed and interpreted in line with the objective of the study which was; to evaluate the effect board of directors' composition on financial innovation of Ethiopian commercial banks.

4.1 Board of Directors composition

4.1.1 Females representing in the board

Females representing in the board was obtained by counting the number of female board members. The results showed that 66.67% of the banks have 1-2 female board directors, 20% of the banks with 3 female directors in the board while about 13.33 % of the banks with no female board directors. This figurative representation implies that the number female directors in the boards are very low as compared to male board directors in Ethiopian commercial banks in the .study period.

Moreover, interview were employed to know the presences of female directors in the board and most of the respondents (86.7%) said "yes", justified that there are female directors in the board with a very small proportion as compared with male board directors in Ethiopian commercial banks. The remaining respondents (13.3%) said "no" justified that there is no female directors at all.

Table 1: Female Representing in the board

Females representing in board(FRB)	Number of bank	Percent age
0	2	13.33%
1-2	10	66.67%
2-3	3	20%
Total	15	100%

Source: study data from spread excel sheet, 2021.

4.1.2. Educational qualification

The findings showed that among Ethiopian commercial banks included in this study about 40% of board banks had 0.8-0.9 proportion of the board members had post graduate degree. This indicates that 80%-90% of the board directors held post graduate degree. The tables below also showed that 26.67% of the banks had 0.7-0.8 proportional postgraduate, 13.13% of the banks had 0.6-0.7 and 0.9-1 proportional postgraduate in the board. The 0.9-1% informed that there are banks nearly all board member held second degree and more. In general from the table we can understand that majority of the board member in Ethiopian commercial banks are holder of postgraduate degree.

Interview question were asked to board secretary about educational qualification of board of directors. Almost all replied that in the board there is high mixture of educational qualification and from the reply of the respondent most of the board member are holder of postgraduate degree.

Table: Educational qualification of the board of directors

EDU(Proportion of PG)	Frequency	%
0.4-0.5	1	6.67
0.5-0.6	0	0
0.6-0.7	2	13.33
0.7-0.8	4	26.67
0.8-0.9	6	40
0.9-1	2	13.33

(Source: study data from excel)

4.1.3. Board size

The response of the interview question on board directors composition (particularly) board size of the bank showed that, 33.33% of the banks had a board size (8-9), followed by 26.67% of the banks had board size (10-11), 20% of the banks had board size (11-12).more over 20.1 % banks had covered by three banks each have 9-10 board size, 12-13 board size and 13-14 board size respectively. Therefore at most all banks have considerable board members and comparable the directives of the NBE.

Subjective interview question was also asked whether the respondents believe the number of board size is appropriate or not. All of the board secretaries (respondents) said “yes” justified that currently most of the Ethiopian commercial banks had an appropriate numbers of board directors. As the replied of the respondents stated that too large and too small board size has its own draw bank and not approved by NBE. Therefore currently, Ethiopian commercial banks obey the rule and directives of NBE. No.SBB/71/2019.

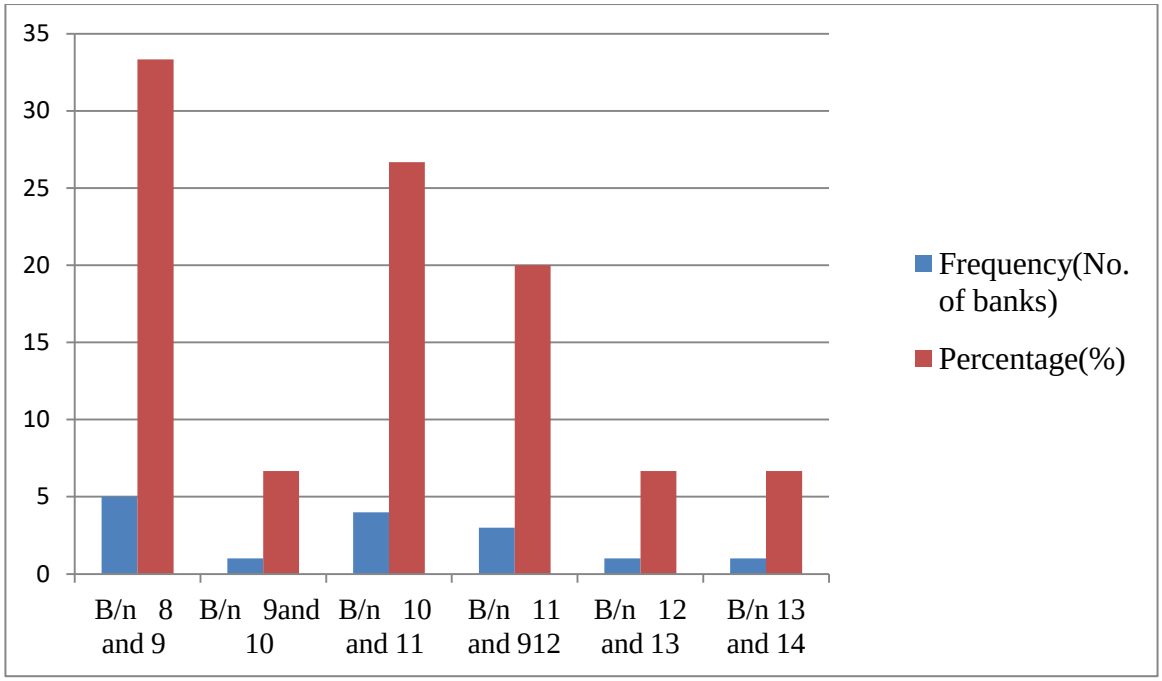

Figure 2: Size of Board of Directors

(Source: study data from excel)

4.1.4. Audit committee size

The table below showed that about 93.3% of Ethiopian commercial banks included in this study had three audit committees. On the other hand 6.67% of banks had four audit committee in their board. The interview question was also asked whether the respondents view regarding the number of audit committee in board. As they replied that the board audit committees has three members and the number adequate, but the important point is their composition in terms of qualification and experience. From this the number of audit committee is appropriate in Ethiopian commercial bank.

Table 2: Audit committee

Audit committee size	No of banks	Percentage (%)
3	14	93.33%
4	1	6.67%
Total	15	100%

Source: primary and secondary source, 2021.

4.1.5: Board meeting frequency

The results of the study showed that 60% of the banks held 13-14 board meeting per year, 33.33% banks conducted 12-13 board meeting with in the financial year. The remaining banks (6.67%) conducted about 14-15 board meeting per year. The overall meeting frequency in the result of the study tells us that Ethiopian commercial banks obey the rule of NBE directives hence it said that board should conduct at least 12 meeting per year.

Respondents were asked about board meeting frequency and majority of the respondent said that the board directors held meeting once in a month regularly and if there is any urgent case the board held irregular meeting. Therefore, from this the board directors conducted 12 regular meeting per year.

Table 3: board meeting frequency

Board meeting frequency	Banks	%
12-13	5	33.33
13-14	9	60
14-15	1	6.67

Source: study data (from both primary and secondary data

4.1.6: Financial Innovation Score

The graph below shown that, majority of the Ethiopian commercial banks (33.33%) had an innovation score of 6.76-10.5. The results also revealed about (26.67%) of Ethiopian commercial banks had an innovation score of 10.51-14.26. the remaining (40%) of Ethiopian commercial banks had 3-6.75 and >14.27 innovation score with 20% each respectively. Moreover, some Ethiopian commercial banks like Addiss Bank, Buna and Zemen Banks had very low Innovation score which was below 7 innovation score. Because they were late to adopt digital banking system compared to other Ethiopian commercial banks. The other Ethiopian commercial banks like Abay Bank, Bank Of Abyssinia, Birhane Bank, Coperative Bank of Oromiya , Dashen Bank, Lion Bank, Nib Bank, Oromiya International Bank And Wogagen Bank had better innovation score than the aforementioned three banks with innovation score of 7-14. On the other hand the remaining three Ethiopian commercial banks; namely Awash International Bank, Commercial bank of Ethiopia and united bank had higher innovation score than all other Ethiopian commercial banks.

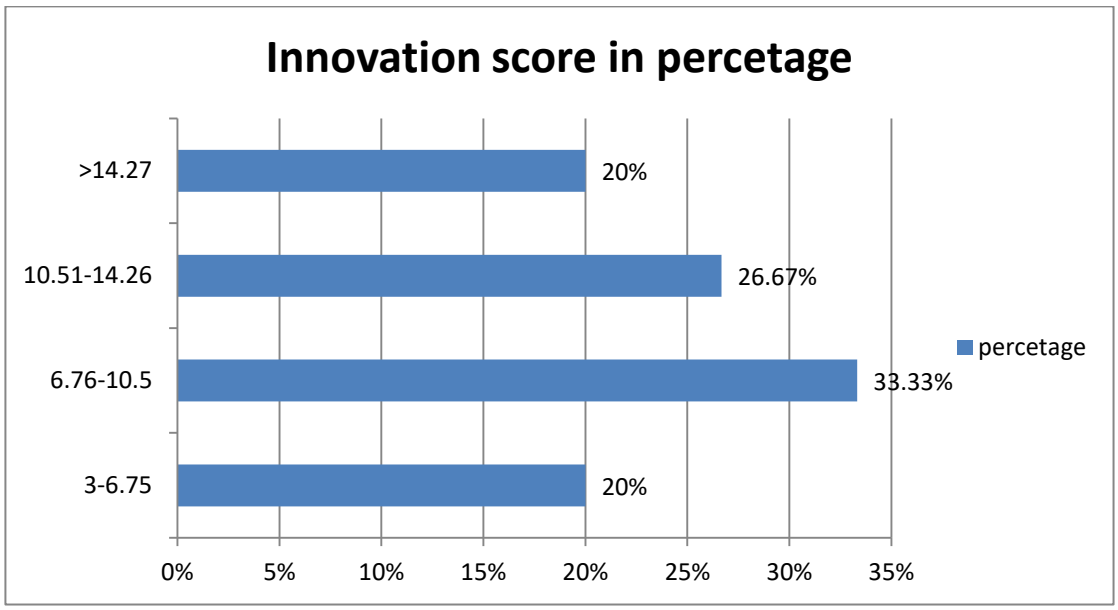

Figure 3: Innovation score

(Source: Study data from excel**)**

4.2. Descriptive statistics

In the study board of directors' composition variables were females representing in the board, educational qualification of the board directors, board size, number of audit committee in the board and frequency of board directors meeting. The results in this study included the dependent variable (financial innovation) and control variables (firm size or bank size and age of the bank) of the Ethiopian commercial banks from 2016- 2020. According to the directives of NBE (No. SBB/71/2019) a bank shall have at least nine directors.

The directives also stated that, the board shall comprise of female directors provided that eligible candidates are available among share holders. The board shall set up and put in use rules for the manner of conducting board meeting. A board meeting shall be held at least once in a month on the date and at the venue fixed in accordance with the rules for manner of conducting board meetings.

A director shall attend in person at least seventy five (75%) the board meeting of a bank with in a financial year. Failure to do so, there is good case accepted by ordinary general meeting of share holders shall result in automatic cancellation of his set from the board (NBE No. SBB/71/2019). The directive also acknowledged industry related and management related educational qualification and which stated that the board directors must comprises at List College or university degree and more. The audit subcommittee shall comprise at least three directors. At least one member shall have accounting or auditing experts or experiences in the field of finance.

Table 4: Descriptive Statistics

	FN	FRB	EDU	BOS	AC	BS	AF	BDM
Mean	10.6324	1.6267	0.783	10.49	3.08	10.455	16.33	13.3067
Median	11.3700	2.00000	0.80000	11.0000	3.00000	10.3400	13.0000	13.0000
Maximum	20.350	4.00000	1.00000	16.0000	4.000	11.8700	56.0000	15.0000
Minimum	1.1700	0.0000	0.4160	8.0000	3.0000	9.390	4.00000	12.00
Std. Dev.	5.5807	1.02368	0.14827	1.62225	0.27312	0.57189	11.8872	0.78797
Skewness	-0.031	-0.117	-0.636	0.58559	3.09628	1.01306	2.00775	0.07135
Kurtosis	1.8090	2.49298	2.84821	3.30945	10.5869	3.59148	7.13964	2.53172
Jarque-Bera	4.4447	0.97515	5.13574	4.58583	299.718	13.9221	103.940	0.74890
Probability	0.1083	0.614113	0.07669	0.10097	0.00000	0.00095	0.00000	0.68767
Sum	797.43	122.000	58.7247	787.000	231.000	784.140	1225.00	998.000
Sum Sq. Dev.	2304.7	77.5467	1.626762	194.7467	5.520000	24.20307	10456.67	45.94667
Observations	75	75	75	75	75	75	75	75

Source: Eviews 8 output, 2021

The descriptive statistics for study showed that, the average financial score or innovation of Ethiopian commercial bank is 10.63240 with a maximum value of 20.35, minimum value of 1.17 and with 5.5 standard deviation values. This showed that, there are banks with financial innovation score 20.35 and there are other banks with very small innovation score (1.17). The standard deviation value for financial innovation of these banks was 5.5; this showed that there is a wide dispersion in innovation score. In other words most of the Ethiopian commercial banks are relatively engaged in financial innovation.

Regarding females representing in the board the result revealed that, a mean value of 1.62667, maximum value of 4, minimum value of zero (0) and standard deviation of 1.02368 respectively. This numerical value indicated that, there are banks with 4 female boards' directors and there are banks with no female directors in the board in Ethiopian commercial banks. Compared to the mean value, the standard deviation value showed that, there is narrow dispersion of females directors in the board. The overall status of females representing in the board is small as compared to male directors in the board of Ethiopian commercial banks.

The study also examined the effect of educational qualification of board directors on financial innovation. In this study educational qualification of the board members measured by proportion of post graduate to total board members of the Ethiopian commercial banks used in the study. The mean value of board members who had post graduate is 78% which indicate that directors of the Ethiopian commercial banks taken in this study had considerable qualified board members. The proportions of board members educational qualifications shows 14% standard deviation which is more or less low as evidenced by a maximum and minimum values of 100 and 41%. In general there is a wide dispersion in educational qualification among board of directors in Ethiopian commercial bank.

In the independent variable, the average size of board for Ethiopian commercial banks is 10 members (mean=10.49) with a minimum board members of 8 and maximum board member of 16. This implies that there are banks with 16 board members and there are banks with 8 board members. The minimum values (8)

implies that it deviate the directives of the NBE No. SBB/71/2019) since the directives stated that a board shall have at least nine board members for all Ethiopian commercial banks. Standard deviation value 1.1622 suggests that there is wide dispersion in the board size of the Ethiopian commercial banks.

Regarding to audit committee size, the Ethiopian commercial banks have a mean value of 3.08 with a minimum of 3 audit committees and a maximum of 4 audit committee members. There are banks with 4 audit committee and there are banks with 3 audit committee. The standard deviation is 0.273120 which is less than the mean value and this indicates that most banks have 3 audit subcommittee members.

The study also scrutinized the effects of board directors meeting on financial innovation of Ethiopian commercial banks. Moreover, the result of study in the above table shows that the mean value of meeting frequency of board, as measured by the number of board meeting conducted by board of directors for the study period was 13 (mean=13.3066), with a maximum of 15 meeting held per year and a minimum of 12 meeting held per year. On the other hand, the standard deviation for explanatory variable was 0.7879, which implies there is a wide variation in board meeting held per year of in the past five year of Ethiopian commercial banks used in the study.

Concerning the control variables, the mean value of firm size (bank size) as measured by the natural logarithm of total asset is 10 (10.452) with having a maximum value of 11.87 and minimum values of 9.39. Furthermore, the standard deviation of Ethiopian commercial banks size is 0.59. This standard deviation values indicates that there is wide dispersion in the size of the Ethiopian commercial banks included in the study. The other control variable used in this were age of the firm(bank) , as measured by counting the age of the bank , with the average age is 16 year(mean=16.33), the maximum age recorded in the study 56 years and the minimum age used in the study was 4 year. The standard deviation value is 11.88; this indicates that Ethiopian commercial banks have widest dispersion in their age.

4.3. Correlation coefficient

Correlation analysis was used to determine the nature of the relationship between study variables. The Correlation coefficient allowed determining the strength of a linear association between two variables and it is represented by r, the values range from +1 to -1. The result of the study showed that, female's directors representing in the board (FRB) has a Pearson correlation of -0.162 and a p-value of 0.166. This correlation coefficient value implies that female's directors representing in the board (FRB) has a perfect negative effect on financial innovation (FN) of Ethiopian commercial banks in the study period. Beside this, the effect is insignificant at 95% and 99% confidence level since the p-value is greater than 0.05 and 0.01(p- value=0.166). In the contrary, educational qualification of the board's directors (EDU) has a Pearson correlation coefficient of 0.244 and p-value of 0.035. This value implies that EDU has perfect positive and significant effect on financial innovation of the banks. As the p-value less than 0.05, it is significant at 95% confidence level and its effect is insignificant at 99% confidence level since p-value greater than 0.01.the Pearson correlation of board size(BOS) is -0.256661 and the p-value is 0.026. So, that BOS has a perfect negative and significant effect on financial innovation since the p-value is less than 0.05. The p-value in this result revealed that, BOS is significant at only 95% confidence level and BOS is not significant 99% confidence level because 0.026 is greater than 0.01(99%confidence level).

The Pearson correlation of number of audit committee is (-0.262) and it has perfect negative effect on financial innovation of the commercial bank of Ethiopia at study period. Moreover, study results showed that AC has significant effect on the dependent variable of the study since the p-value less than 0.05 and greater than 0.01(p-value=0.023, significant at 95% confidence level). Moreover, board director meeting frequency (BDM) has positive and insignificant effect on financial innovation. The correlation coefficient of BDM is 0.11 and the p-value of 0.347 since it is greater than 0.05 it is insignificant at 95% and 99% confidence level. In this study the effect and correlation of the two control variables (bank size and age of the bank) were assessed. The Pearson correlation analysis values of the two variables showed that, both have positive and significant effect on

financial innovation of Ethiopian commercial banks with Pearson correlation of bank size (BS) 0.622 and age of the bank / firm (AF) has 0.606 Pearson correlation value. Further, both have 0.0 p-values as a result they are statistically significant at 99% and 95% confidence level.

Table 5: correlation coefficients

		FN	FRB	EDU	BOS	AC	BS	AF	BDM
FN	Pearson Correlation	1	-.162	.244*	-.257*	-.262*	.622**	.606**	.110
	Sig. (2-tailed)		.166	.035	.026	.023	.000	.000	.347
	N	75	75	75	75	75	75	75	75
FRB	Pearson Correlation	-.162	1	.145	.413**	.253*	-.294*	-.249*	.010
	Sig. (2-tailed)	.166		.214	.000	.028	.010	.031	.933
	N	75	75	75	75	75	75	75	75
EDU	Pearson Correlation	.244*	.145	1	-.279*	.135	-.053	.057	.016
	Sig. (2-tailed)	.035	.214		.016	.249	.650	.629	.892
	N	75	75	75	75	75	75	75	75
BOS	Pearson Correlation	-.257*	.413**	-.279*	1	.123	-.211	-.243*	-.078
	Sig. (2-tailed)	.026	.000	.016		.292	.069	.035	.508
	N	75	75	75	75	75	75	75	75
AC	Pearson Correlation	-.262*	.253*	.135	.123	1	-.373**	-.246*	-.241*
	Sig. (2-tailed)	.023	.028	.249	.292		.001	.034	.037
	N	75	75	75	75	75	75	75	75
BS	Pearson Correlation	.622**	-.294*	-.053	-.211	-.373**	1	.764**	.399**
	Sig. (2-tailed)	.000	.010	.650	.069	.001		.000	.000
	N	75	75	75	75	75	75	75	75
AF	Pearson Correlation	.606**	-.249*	.057	-.243*	-.246*	.764**	1	.469**
	Sig. (2-tailed)	.000	.031	.629	.035	.034	.000		.000
	N	75	75	75	75	75	75	75	75
BDM	Pearson Correlation	.110	.010	.016	-.078	-.241*	.399**	.469**	1
	Sig. (2-tailed)	.347	.933	.892	.508	.037	.000	.000	
	N	75	75	75	75	75	75	75	75

Source: Output of eviews 8, 2021

4.4. Normality assumption (The disturbances are normally distributed):

Normality may be the most common assumption in applying statistical procedures as in the classical linear regression model where the (unobserved) disturbance vector ε is assumed to be normally distributed. It is well known that departures from normality may lead to substantially incorrect statements in the analysis of economic models. Thus, a test on normality based on the (observable) regression residuals is an absolute ”must” in any regression analysis. One of the most famous tests for normality of regression residuals is the test of Jarque anBera (1980, 1987), which has gained great acceptance among econometricians. The test statistic JB is a function of the measures of skewness (S) and kurtosis (K) computed from the sample. Under normality, the theoretical values of S and K are 0 and 3, respectively.

Specifically, the test matches the skewness and kurtosis of the data to see if it matches a normal distribution and the normal distribution has a skew value is zero (this implies that it is perfectly symmetrical around the mean) and the kurtosis of three. The p-value is 0.17 which is insignificant for the model and the researcher failed to reject the null hypothesis, which says the residual value is normally distributed. Moreover, kurtosis is $\underset{\sim}{}$2 which is near to 3. Therefore, there is no normality problem on the data used for this study. On the other hand the researcher accepts H0 and rejects H1.

H0: Residuals are normally distributed

H1: Residuals are not normally distributed

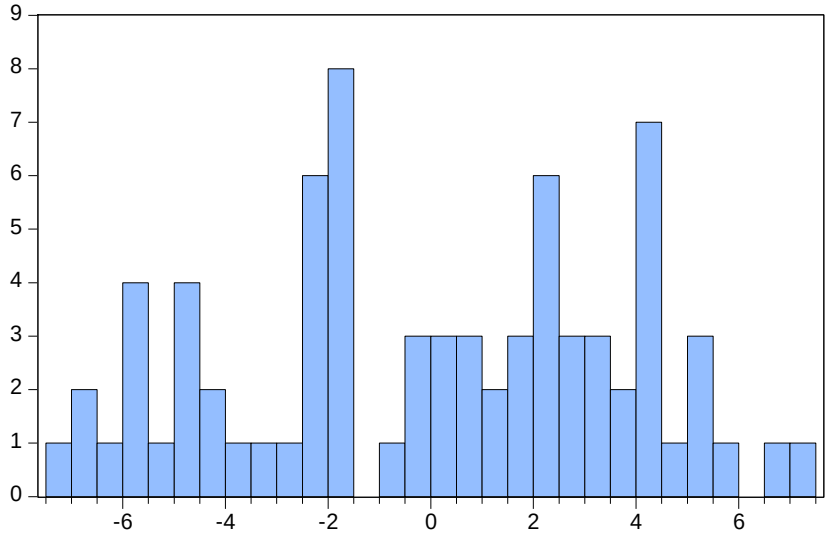

Figure 4: Normality test

(Source: Output of Eviews 8, 2021)

4.5. The assumption of Hetroskedacisity

Heteroskedasticity is usually defined as some variation of the phrase "non-constant error variance", or the idea that, once the predictors have been included in the regression model, the remaining residual variability changes as a function of something that is not in the model (Cohen, West & Aiken, 2007; Field, 2009; Fox, 1997; Kutner, Nachtsheim, & Neter, 2004). According to Brooks, (2008), it has been assumed that the variance of the disturbance term is constant, σ2; this is known as the assumption of homoscedasticity. If the disturbances do not have a constant variance, they are said to be hetroscedastic.

Breusch Pagan was introduced by Trevor Breusch and Andrian Pagan in 1979. It is used to test for heteroskedacisity in linear regression model and assumes that the error terms are normally distributed. It also test whether the variances of the errors from a regression is dependent on the values the independent variable. As a result, Breusch Pagan test is used to detect the existence of heteroskedasticity. The rejection criteria of the test is the probability of the chi^2 must be greater than 0.05 to not reject the null hypothesis of constant variance. Results of Breusch Pagan heteroskedasticity test do not reject the null hypothesis of constant variance error term as prob>chi2: 0.7889> 0.05 in the Model.

As a result, the model is more than the standard value 0.05; therefore there is no problem of heteroskedasticity in the study model. Generally the researcher accepts H0 and rejects H1.

H0: error variances are equal

H1: error variance is not equal

Table 6: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.527972	Prob. F(7,67)	0.8103
Obs*R-squared	3.920817	Prob. Chi-Square(7)	0.7889
Scaled explained SS	1.549837	Prob. Chi-Square(7)	0.9805

Source: Output of Eviews 8

4.6. Multicollinearity test

In multiple regression analysis, the term multicollinearity indicates to the linear relationships among the independent variables. Collinearity indicates two variables that are close perfect linear combinations of one another. Multicollinearity occurs when the regression model includes several variables that are significantly correlated not only with the dependent variable but also to each other (Young, 2017). Multicollinearity is the event of great inter-correlations among the factors in a multiple regression model. Multicollinearity can prompt skewed or deluding results when an investigator endeavors to decide how well every factor can be utilized most viably to foresee or comprehend the response variable in a statistical model (Frank, 2001).

According to brooks (2008), in any practical context, the correlation between explanatory variables will not be zero, although this will generally be relatively being in the sense that a small degree of association between explanatory variables will almost always occur but will not cause too much loss of precision. However, a problem occurs when the explanatory variables are highly correlated

with each other. Multicollinearity is checked by using variance inflation factors (VIFs). The rule of thumb for VIF values to tolerate simple correlation between explanatory variables is a VIF value less than 10 (Brooks, 2008). Accordingly, the inflation factors of the variables in this study are below 10, this implies multicollinearity is not a serious problem in this study. The results of the study showed that the variance inflation factor of the study lay between 1 and 3; this figurative representation revealed that there is no disturbance of multicollinearity in the study.

Table 7: VIF Results to check multicollinearity

	Coefficient	Uncentered	Centered
Variable	Variance	VIF	VIF
FRB	0.289342	5.169048	1.452328
EDU	11.61531	35.79322	1.223052
BOS	0.113673	62.19562	1.432910
AC	3.480586	161.5332	1.243603
BS	1.720868	915.8912	2.695927
AF	0.004028	7.942200	2.726044
BDM	0.457763	394.8487	1.361397

Source: Output of Eviews 8 2021

4.7. Assumption Autocorrelation (serial correlation)

In the study, assumption of classical linear regression model is autocorrelation was employed. This assumption test was conducted to test whether the errors are linearly independent of one another or uncorrelated with one another. If the errors are correlated with one another, it would be stated that they are auto correlated (serially correlated) (Brooks, 2008). A test of this assumption is therefore required. Again, the population disturbances cannot be observed, so tests for

autocorrelation are conducted on the residuals, û. This assumption was tested by Durbin-Watson (DW) test of autocorrelation. Durbin-Watson is a test for first order autocorrelation, i.e., it tests for a relationship between an error and its immediate previous value. One way to motivate the test and to interpret the test statistic would be in the context of a regression of the time t error on its previous value.

According to Brooks (2008), if the Dubrin-Waston test approaches to 2, it is an indication of no autocorrelation. But if the value of the test is 0, it implies the existence of perfect positive autocorrelation. On the other hand if the value approaches 4 there is perfect negative autocorrelation. The result of the test shown in the regression output of the model below implies that the null hypotheses were not rejected for the model so there is no problem of autocorrelation.

The Modified Durbin Watson test results are 1.80, this results approach to 2, and these imply that there is no autocorrelation problem in the model. Therefore, the study has no evidence to reject the null hypothesis of no autocorrelation. However, D-W tests only for a relationship between an error and its immediate previous value. Therefore, in addition to D-W test it is desirable to conduct Breusch Godfrey Serial Correlation LM test to examine a joint test for autocorrelation that will allow examination of the relationship between error term and several of its lagged values at the same time (Brooks, 2008). Thus, Breusch-Godfrey test was also conducted for the model and found no problem of autocorrelation for the model, meaning that p-value of the test resulted 0.07 which is greater than 0.05.

Table 8: Breusch-Godfrey Serial Correlation LM Test:

F-statistic	**1.802817**	**Prob. F(6,57)**	**0.1148**	
Obs*R-squared	11.64361	Prob. Chi-Square(6)	0.0704	
Test Equation: **Dependent Variable: RESID** **Method: Least Squares**				
Sample: 3 75 **Included observations: 73** **Presample missing value lagged residuals set to zero.**				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-7.256700	19.39461	-0.374161	0.7097
FRB	0.156780	0.506918	0.309280	0.7582
EDU	1.895560	3.203421	0.591730	0.5564
BOS	-0.073016	0.319917	-0.228234	0.8203
AC	-0.554641	1.813979	-0.305759	0.7609
BS	0.350750	1.360747	0.257763	0.7975
AF	0.017740	0.065475	0.270945	0.7874
BDM	0.481175	0.693001	0.694336	0.4903
FN(-1)	-0.348078	0.173153	-2.010233	0.0491
FN(-2)	0.119459	0.156415	0.763731	0.4482
RESID(-1)	0.580426	0.235640	2.463191	0.0168
RESID(-2)	0.167856	0.183088	0.916801	0.3631
RESID(-3)	0.025554	0.151822	0.168317	0.8669
RESID(-4)	-0.182975	0.144138	-1.269450	0.2094
RESID(-5)	0.125039	0.150380	0.831491	0.4092
RESID(-6)	-0.022688	0.142769	-0.158917	0.8743
R-squared	0.159502	Mean dependent var	-1.41E-14	
Adjusted R-squared	-0.061682	S.D. dependent var	3.444090	
S.E. of regression	3.548721	Akaike info criterion	5.561999	
Sum squared resid	717.8248	Schwarz criterion	6.064018	
Log likelihood	-187.0130	Hannan-Quinn criter.	5.762062	
F-statistic	0.721127	Durbin-Watson stat	1.805506	
Prob(F-statistic)	0.753151			

Source: output of eviews 8, 2021

Table 9: **Wald test**

Test Statistic	**Value**	**Df**	**Probability**
F-statistic	2.664324	(2, 53)	0.0790
Chi-square	5.328649	2	0.0696

Source: output of eviews 8, 2021

4.8 Discussion on Regression Result and Hypothesis Testing

Under this section, specifically the researcher analyzed in detail the regression result of pooled effect model. The current study shows that all variables in the

affect financial innovation of Ethiopian commercial banks. More specifically, the pooled regression result indicates that female representing in the board and educational qualification of the board of director has positive and significant impact on the financial innovation. Besides, auditor size and board directors meeting frequency has negative and significant effect on financial innovation of Ethiopian commercial banks. However, there are findings that are in contrary to the expectations of the researcher, findings that are consistent with the results existing in the literature and findings that are inconsistent with the existing result in the literature. These are discussed below

Table 10: Pooled regression effect

Dependent Variable: FN

Method: Pooled Least Squares

Date: 04/23/21 Time: 11:19

Sample: 2016 2020

Included observations: 75

Cross-sections included: 8

Total pool (balanced) observations: 600

Variable	Coefficient	Std. error	t-Statistic	Prob.		
C	-8.408303	6.278568	-1.339207	0.1810	-45.66003	28.84343
FRB	0.399804	0.180960	2.209354	0.0275	-0.673859	1.473467
EDU	9.164115	1.146547	7.992793	0.0000	2.361470	15.96676
BOS	-0.154721	0.113424	-1.364088	0.1731	-0.827684	0.518243
AC	-2.518950	0.627629	-4.013440	0.0001	-6.242769	1.204869
BS	4.147442	0.441317	9.397883	0.0000	1.529041	6.765842
AF	0.174604	0.021350	8.178097	0.0000	0.047930	0.301278
BDM	-1.925156	0.227613	-8.458026	0.0000	-3.275619	-0.574693
Effects Specification Pooled effect regression						
R-squared	0.550867	Mean dependent var	10.63240			
Adjusted R-squared	0.545556	S.D. dependent var	5.548000			
S.E. of regression	3.740041	Akaike info criterion	5.489314			
Sum squared resid	8280.843	Schwarz criterion	5.547940			
Log likelihood	-1638.794	Hannan-Quinn criter.	5.512136			
F-statistic	103.7279	Durbin-Watson stat	1.004693			
Prob(F-statistic)	0.000000					

Source: output of eviews 8, 2021

The overall test of the model

Prob(F-statistics)=0.00000
H0: all explanatory variables are statistically significant

H1: all explanatory variables are not statistically significant

The results of the study in above table, the R2 for the pooled OLS model is 55.09% the adjusted R2 is 54.56%, which means that 55.09% of the variation in financial innovation (FN) was explained by the explanatory and control variables used in this study and 45.44% of variation in financial innovation is due to other many factors that are not incorporated in this study. The R2 and the Adjusted R2 result implies as a measure of goodness of fit. Since R^2 and adjusted R^2 greater than 50%, in this study our data fit our model well. Moreover, the probability of F-statistics of the model has a value of 0.0000. This implies that the probability value of the F-statistic of the model is less than 0.05. As result the null hypothesis was accepted.

4.8.1. Females representing in the board (FRB)

One of the explanatory variables of the model is female representing in the board and which is the one measure of board of directors practice in banks and results of the study presented as follows;

H1: Females representing in the board has a positive and statistically significant effect on financial innovation

Females representing in the board has a positive and statistically significant effect on financial innovation of Ethiopian commercial banks. The coefficient parameter (β) for females representing in the board is 0.3998 with p-value of 0.02775. Other factor remains constant, a one or more increase females representing in the board results a 0.3998 increase in financial innovation on average. As a result the H1 states that females representing in the board has a positive and statistically significant is accepted and rejected the null hypothesis. Similarly, the results of the former researchers showed that females representing

in the board has a positive and significant effect on financial innovation. The role of women on boards directors and find that women enhance the quality of decision making and financial innovation (Ferede, 2012; Bathula, 2008; Rashid, *et al.,* 2010).

In the same way, agency theory, stakeholder and resource dependency theories which states that women have better oversight and monitoring capacity and that they bring valuable resources and ensures the benefit of stakeholders and leads to efficiency and better performance. From an agency theory perspective, women often bring fresh perspective on complex issues, and this can help correct informational biases in strategy formulation and problem solving. They have better oversight, display participative leadership which is expected to lead to better innovative outcomes.

In opposite to the finding of the study, the works of Davies (2000) and Rhoades (2001) showed that women directors in the board has negative and significant result and it signifies that women board of directors have no positive impact in improving financial innovation than the men board of directors.

In interview question (Question part 2 No.1), about 86.6% of respondents reflected that existence of females board member create the chance for diversity of ideas and experiences from which innovation idea can be derived. They also provide innovative ideas to avert risks than male. On the other hand the remaining 13.4% of the board secretaries said the presence of female directors will not improve banks financial innovation unless they are qualified and competent. Further, their impact on financial innovation depends on factors such as experience, education qualification and assertiveness of female directors.

4.8.2 Educational Qualification of the Board of Directors and financial innovation

H2: Educational qualification of board of directors has a positive and statistically significant impact on financial innovation

Educational qualification of the directors in the board has a positive and significant effect on financial innovation of Ethiopian commercial banks. The

coefficient of the explanatory variable (educational qualification is 9.16 with p-value of 0.000). Other factor remains constant a one percent increase in educational qualification of board of directors results a (9.1641) increase in financial innovation on average. This implies that H2 states that Board member's educational qualification has a positive and significant impact on financial innovation of Ethiopian commercial banks is accepted and rejected the null hypothesis. Coefficient of educational qualification 9.16 indicates that holding other variables constant, on average 1% increase in educational qualification will result in 9.16% change in financial innovation in Ethiopian commercial banks.

More of the number of directors who held post graduate degree increase financial innovation also increases. In consistent with this, the study conducted by Jean-Philippe (2017) found that board educational qualification has positive impact on innovation and he stated that educational qualification is needed to enhance innovation. Similarly, Dalzi (2011) found that the numbers of directors who have post graduate degrees from influential institutions has positive impact financial innovation. In addition, the research conducted by Madalina (2017) shows a positive association between the proportion of board members holding a post graduate degree in financial fields and market based performance. They also found that the proportion of board members holding degrees in financial fields is higher in bigger firms and firms and firms with more concentrated ownership.

Moreover, this result supports the finding discovered by Amran (2011); Ferede (2012). They argues that directors with higher education are better in managing the business operation and controlling agency problem than less educated this reduce agency cost. Educational qualification affects the oversight and monitoring role of boards of directors.

The board secretaries were also interviewed about educational qualification of the board of directors (subjective interview question part two No.2). All board secretaries (100%) justified that educationally qualified board member have got diversity of experiences to come up creative and innovative ideas relating to financial innovation of the banks. In addition they share ideas about challenges they faced and actions they took in their previous job.

4.8.3. Board size and Financial Innovation

H3: Board size has a negative and statistically significant impact on financial innovation

Board size has negative and insignificant relationship with financial innovation of Ethiopian commercial banks. The coefficient of the independent variable (board size) is (-0.1547) with the p-value of 0.1781. Other factor remain constant a one or more increase in board size results a 0.1547 decrease in financial innovation on average. From this value we can understand that the **H3 states** that Board size has a negative and significant impact on financial innovation of Ethiopian commercial banks is rejected and accepted the null hypothesis states that Board size has a negative and statistically in significant impact on financial innovation of Ethiopian commercial banks. In contradict; the previous studies conducted in abroad found that board size has found that a positive relationship between board size and financial performance. They also stated that board size with large number enhance the companies, particularly banks performance in Pakistan (Maria *et. al*., 2014) and Adam (2014) found that board size had positive relationship with financial innovation in banks. the studies does not support the previous studies of Vefeas (1999), Amidu (2007), and Uadiale (2010), as their finding indicates that larger boards are significantly positively associated with firm performance.

All banks board secretaries were interviewed about the effect of board size on financial innovation of the banks (interview question part 2 No. 3). They replied that too large and too small board is not appropriate to run the responsibility of the board members. Banks need to have considerable number of directors in order to perform their task successfully. Moreover, the informants also said that minimum (nine) board size was better to promote critical, actual and intellectual reflection and participation among members which apparently might led to effective corporate decision making, monitoring and improved financial innovation. The result of the analysis of qualitative data supports this study.

4.8.4. Audit Committee Size and financial innovation

H4: Audit committee has a negative and statistically insignificant impact on financial innovation

The effect of Audit committee size (AC) in this study is negative and significant. The coefficient of the audit committee found to be (-2.5189) with the p-value 0.0001. Other factor remain constant a one or more increase in number of audit committee in the board results a 2.5189 decrease in financial innovation on average. Consequently, the H4 that states that audit committee has negative and statistically insignificant impact on financial innovation in Ethiopian commercial bank is rejected and accepted the null hypothesis, that audit committee has negative and statistically significant impact on financial innovation in Ethiopian commercial bank. Similarly, the study conducted by Ferede (2012) found that large number of audit committee has a negative and significant effect on financial performance. In his result, he also mentioned that the Limiting audit committee size to reasonable number improves audit committee effectiveness.

The board secretaries were also interviewed to reflect their views regarding the size of audit committee impact on financial innovation. For the interview question, majority of the board secretaries (66.7%) said that the audit committee has impact on financial innovation without regardless of their size. They justified that one of the focus area of audit is IT audit hence can pave to the use of updated technologies. Moreover, based on the findings of audit work the subcommittee can bring new ideas (innovation) for the benefit of the company. The remaining other (33.3%) said that the size of audit subcommittee are not too large and not too small. In order to bring effective financial innovation, the number of audit committee must be three as directives of national bank of Ethiopia.

4.8.5 Board directors meeting frequency and financial innovation

H5: board director meeting has positive and statistically significant impact on financial innovation

Meeting frequency refers to how many time Board members meet within financial year. Measuring the intensity and effectiveness of corporate monitoring

and discharging is the frequency of board meetings (Jensen M., 1993). Meeting Frequency is one of a measure of board of directors' composition that affects the adoption financial innovation. Board meeting has negative and statistical significant impact on financial innovation of Ethiopian commercial banks. The coefficient of the board meeting is found to be (-1.9251) with p-value of (0.000). Other factor remain constant a one or more increase in board director meeting results a 1.9251 decrease in financial innovation on average. Therefore, H5 that board director meeting has positive and statistically significant impact on financial innovation is rejected and accepted the null hypothesis. In line with this, the finding of the study conducted Akpan (2015) found that board meetings negatively and significantly relate with company performance. Moreover, other prior study conducted on public companies in Malaysia demonstrates that the higher the number of meetings the worse the firm performance (Amran, 2011).

While, the finding of Karamanou (2005) contradict this study and found that board meeting has positive and significant effect on innovation firms in Zimbabwe. The studies conducted in south Africa, showed that board meeting frequency has significant and positive impact on firm innovation (Mangena and Tauringana, 2008) .

The informants were interviewed about their view regarding the impact of board meeting frequency on the financial innovation of banks (interview Question part two no. 4). More than (65%) of board secretaries reflected that high meeting frequency generate high financial innovation. While the remaining (34.5 %) said that high board meeting frequency waste the working time and it reduces the financial innovation of the bank. The general justification of the respondents on this issue was board that at least meet once in month can better follow up the overall activities of the banks.

4.8.6 Firm size and financial innovation (control variable)

Firm size in this study measured by Logarithm of Total asset, and the coefficient of firm size in the study found to be (4.1474) with p-value (0.000). These numerical values revealed that firm size has a positive and statistically significant on financial innovation of Ethiopian commercial banks included in the study. In

the other word the coefficient of the firm revealed that holding other variables constant, on average a one % increase in the size of the firm will result in 4.15% increase in financial innovation.

4.8.7 Firm age and financial innovation (control variable)

The second control variable used in this study was firm age (bank) has positive and statistically significant effect on financial innovation at 95% confidence level. The coefficient of bank age in the study 0.174604 with the p-value is 0.000. The coefficient for firm age (bank age) means that holding other variables constant, on average a one year increase in firm age will result in 17.46% change in financial innovation in Ethiopian commercial banks.

4.8.8 Summary of the Finding and Discussion

In summary, the results indicated that the direction and the extent of effect of board of directors' composition on the financial innovation measure have being evaluated. All board of directors' composition variables does not influence the financial innovation indicator in the same direction and their degrees of association may also vary. The researcher used digital banking that indicated whether Ethiopian commercial bank adopted financial innovation in order to enhance its income, increase service quality, minimize wastage of time and minimize cost of service for both the bank and their clients.

Table 11: Summary of Hypothesized and Actual Impact

Independent Variables	Measurement	Hypothesized	Actual effect
Females representing in the board	Total number of female directors in the board member	Positive and significant	Positive and significant
Educational qualification of board of directors	Proportion of board number who had post graduate degree to the total number of board member	Positive and significant	Positive and significant
Board size	Counting the total number of board directors of each financial year	Negative and significant	Negative and insignificant
Auditor size in the board	Counting the number of auditor presented in the board member	Negative and insignificant	Negative and significant
Board directors meeting frequency	Counting the number of meeting held by board directors of each financial year	Positive and significant	Negative and significant

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

Board of directors' composition is one of the main determinants of innovation in banking industry. Over recent years, there is an increasing interest in research on board of directors' composition and innovation in Ethiopian commercial banks. On the other hand, very few research works were conducted on board of directors' composition and its impact on financial innovation of Ethiopian commercial banks. The issue of board of directors' composition on financial innovation is very important and researchable topic in the context of Ethiopia but not well studied in the country.

Some researchers have attempted to identify the effect of board of directors' composition on financial innovations. However, the results of the prior studies have provided varying evidence related to the effect of board of directors' composition on financial innovation. Moreover, most of these research works have been conducted in developing countries with only private based banks. Based on the aforementioned, the general objective of this study was to evaluate the effect of board of directors' composition on financial innovation of Ethiopian commercial banks (both private and government owned) banks. To achieve the proposed objective, the researcher used descriptive research design and mixed research approach. The quantitative data were collected through secondary data source (annual report) from 2016 to 2020 and qualitative data were collected through interview question of concerning bodies (board secretaries and e banking department directors). The collected data were analyzed by using panel least square using statistical package EViews 8.

In order to analyze the result of the study, pooled regression model was developed, so that in the study financial innovation was dependent variable and measurement of board of directors' composition (females representing in the board, board size, educational qualification of the board of directors, the number of audit committee in the board member and meeting frequency of board of

directors) were used as independent variables. Bank size and bank age are used as control variables in the study. The results of pooled regression model showed that females representing on the board had a positive and significant effect on financial innovation, which is not the same from some previous studies. On the other hand, the study consistent with other a lot of prior researches, found that females representing in the board had positive and statistically significant effect on financial innovation.

Amazingly, Educational qualification had positive and statistically significant effect on financial innovation, which was in line with prior expectation and consistent with the theory. Board size had negative insignificant effect on financial innovation of Ethiopian commercial banks. The finding is inconsistent with prior researchers found that board size had positive and significant effect on financial innovation. Correspondingly, auditor size in the board of directors had a negative and statistically significant effect on financial innovation in Ethiopia commercial banks, which was in line with expected result. The study revealed that auditor size will negatively influence the financial innovation of both private and government owned commercial bank. The finding is consistent with previous studies that large number of audit committee has a negative and significant effect on financial innovation. Similarly, board meeting frequency had negative and significant effect on financial innovation. The finding is similar with prior studies conducted abroad that board meetings negatively and significantly relate with company performance and innovation. On the other hand, the results contradict with the studies of other African researchers, founds that board meeting had positive and significant effect of board of directors practice effectiveness which improve performance and innovation ability of the companies.

Regarding the control variables, both firm size and bank age had positive and statistically effect on financial innovation. From these results, increase the bank size and bank age will increase the financial innovation of Ethiopian commercial banks. Finally, in the conclusion females representing in the board of directors, educational qualification of board of directors, firm size, bank age, and audit committee size and board director meeting frequency influence financial innovation of Ethiopian commercial banks.

5.2 Recommendation

The findings of this study indicated that the variables of Females representing in the board (FRB), Educational qualification of the board of directors(EDU), auditor size(AC), Board director meeting frequency(BDM), Bank size(FS) and Bank age(AF) were significantly related to financial innovation of Ethiopian commercial banks. Therefore, Ethiopian commercial banks should pay greater attention to these significant variables in evaluating effect of board of directors' composition on financial innovation. The following recommendations are made based on results of this study.

- ☞ It is noted female in the board shows very minimum in number. It would therefore be of great importance that Ethiopian commercial banks attract female directors in the board since they generate innovative ideas, which improve the banks service delivery. .
- ☞ Since educational qualification of board directors positively affects the financial innovation of Ethiopian commercial banks, it is recommended that Ethiopian commercial banks should significantly use the knowledge of board of directors for the banks innovative purpose by motivating them to enhance the service delivery.
- ☞ Auditor committee size has a significant negative effect on the financial innovation of Ethiopian commercial banks. It is therefore recommends that Ethiopian commercial banks should make their audit committee size to minimum (three) as per the directives of NBE to improve their financial innovation.
- ☞ It is showed that board director meeting frequency has negative and significant effect on financial innovation Ethiopian commercial banks. Therefore, it is recommended that banks should meet as per directives of national bank of Ethiopia to increase financial innovation of Ethiopian commercial banks.
- ☞ It was found that the older the banks, the better the financial innovation and the larger size, also the better the financial innovation. Therefore, it is recommended that the younger bank increase alternative digital banking system to increase their financial innovation.

Lastly the following summary points are suggestion for further research in the area of corporate governance and innovation;

- This study centered entirely merely the Ethiopian commercial banks that are listed at the National Bank of Ethiopia and this may not be the actual representation of the effect of board directors' composition the financial innovation of other financial sectors.

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APPENDIX

Appendix 1: innovation score of Ethiopian commercial banks from 2016-2020

Table 12: Innovation score

Innovation score					
	Years from 2016-2020				
Bank	2016	2017	2018	2019	2020
Abay	9.86	13.19	14.02	14.45	15
Addis	1.17	1.44	5.699	6.02	8.27
Abyssiya	8.67	11.78	13.36	16.28	16.74
Awash	13.47	15.14	18.05	18.81	19.5
Birhan	5.75	7.51	7.92	8.46	11.68
Buna	1.17	1.79	3.06	6.7	7.26
CBE	17.21	17.89	18.16	18.52	18.82
Cooperative	6.34	7.16	16.31	17.33	20.35
Dashen	5.32	5.23	10.28	11.65	11.99
Lion	4.54	6.16	6.63	12.02	16.76
Nib	7.54	11.37	12.31	12.83	13.46
Oromiya	2.35	6.6	7.66	7.99	10.56
United	17.14	17.65	17.55	17.99	18.44
Wogagen	4.46	4.74	12.18	13.05	13.95
Zemen	1.3	1.5	2.04	5.67	6.52
Average	7.086	8.61	11.01527	12.518	13.95333

APPENDIX 2

Table 13: Collected data summary

BANKS	BANKS ID	YEAR	FN	FRB	EDU	BOS	AC	BS	AF	BDM
Abay	1	2016	9.86	2	0.88	9	3	9.79	5	13
Abay	1	2017	13.19	2	0.88	9	3	9.93	6	13
Abay	1	2018	14.02	2	0.875	8	3	10.09	7	12
Abay	1	2019	14.45	1	0.88	9	3	10.18	8	12
Abay	1	2020	15	1	0.88	9	3	10.3	9	12
Adiss	2	2016	1.17	1	0.9167	12	4	9.39	4	12
Adiss	2	2017	1.44	3	0.9	11	4	9.53	5	13
Adiss	2	2018	5.69	3	0.9	11	4	9.62	6	13
Adiss	2	2019	6.02	2	0.9	10	4	9.74	7	13
Adiss	2	2020	8.27	2	0.667	12	4	9.81	8	12

Abyssinya	3	2016	8.67	0	0.667	9	3	10.23	19	14
Abyssinya	3	2017	11.78	0	0.778	9	3	10.4	20	13
Abyssinya	3	2018	13.36	0	0.778	9	3	10.5	21	14
Abyssinya	3	2019	16.28	0	0.667	9	3	10.58	22	14
Abyssinya	3	2020	16.74	0	0.778	9	3	10.61	23	12
Awash	4	2016	13.47	2	0.667	12	3	10.47	21	14
Awash	4	2017	15.14	1	0.83	12	3	10.62	22	14
Awash	4	2018	18.05	1	0.818	11	3	11.74	23	14
Awash	4	2019	18.81	1	0.818	11	3	10.87	24	13
Awash	4	2020	19.5	3	0.667	12	3	10.95	25	13
Birhane	5	2016	5.75	2	0.727	11	3	9.86	5	13
Birhane	5	2017	7.51	2	0.727	11	3	10.02	6	14
Birhane	5	2018	7.92	3	0.727	11	3	10.5	7	15
Birhane	5	2019	8.46	3	0.8	10	3	10.28	8	13

Birhane	5	2020	11.68	4	0.818	11	4	10.33	9	13
Buna	6	2016	1.17	4	0.75	16	3	9.83	6	13
Buna	6	2017	1.79	3	0.64	14	3	9.99	7	13
Buna	6	2018	3.06	3	0.615	13	3	10.11	8	13
Buna	6	2019	6.7	2	0.538	13	3	10.16	9	14
Buna	6	2020	7.26	2	0.538	13	3	10.27	10	12
CBE	7	2016	17.21	0	0.889	9	3	11.2	52	14
CBE	7	2017	17.89	2	0.889	9	3	11.58	53	15
CBE	7	2018	18.16	2	0.9	10	3	11.69	54	15
CBE	7	2019	18.52	2	0.8	10	3	11.77	55	15
CBE	7	2020	18.82	2	1	10	3	11.87	56	14
Cooperative	8	2016	6.34	2	0.909	11	3	10.03	10	14
Cooperative	8	2017	7.16	2	0.909	11	3	10.23	11	14
Cooperative	8	2018	16.31	2	0.909	11	3	11.47	12	13

Cooperative	8	2019	17.33	2	0.909	11	3	10.62	13	13
Cooperative	8	2020	20.35	2	0.909	11	3	10.72	14	13
Dashen	9	2016	5.32	0	0.667	9	3	10.45	20	13
Dashen	9	2017	5.23	0	0.667	9	3	10.54	21	13
Dashen	9	2018	10.28	0	0.556	9	3	11.66	22	13
Dashen	9	2019	11.65	0	0.556	9	3	11.75	23	14
Dashen	9	2020	11.99	0	0.556	9	3	11.83	24	14
Lion	10	2016	4.54	1	0.727	11	3	9.91	9	13
Lion	10	2017	6.16	2	0.727	11	3	10.04	10	14
Lion	10	2018	6.63	2	1	11	3	10.16	11	12
Lion	10	2019	12.02	2	1	11	3	10.31	12	12
Lion	10	2020	16.76	1	0.818	11	3	10.5	13	12
Nib	11	2016	7.24	2	0.45	11	3	10.2	16	13
Nib	11	2017	11.37	2	0.416	12	3	10.32	17	13

Nib	11	2018	12.31	2	0.416	12	3	10.42	18	13
Nib	11	2019	12.83	1	0.5	12	3	10.49	19	14
Nib	11	2020	13.46	1	0.5	12	3	10.55	20	12
Oromia	12	2016	2.35	2	0.92	13	3	10.05	7	14
Oromia	12	2017	6.6	2	0.909	11	3	10.21	8	14
Oromia	12	2018	7.66	1	0.83	12	3	10.37	9	14
Oromia	12	2019	7.99	1	0.846	13	3	10.5	10	13
Oromia	12	2020	10.56	0	0.769	13	3	10.53	11	13
United	13	2016	17.14	2	1	8	3	10.23	17	13
United	13	2017	17.65	2	1	9	3	10.34	18	13
United	13	2018	17.55	2	1	9	3	10.44	19	14
United	13	2019	17.99	1	1	9	3	10.55	20	14
United	13	2020	18.44	1	1	8	3	10.63	21	13
Wogagen	14	2016	4.46	0	0.778	9	3	10.2	18	13

Wogagen	14	2017	4.74	0	0.779	9	3	10.32	19	14
Wogagen	14	2018	12.18	3	0.818	11	3	10.43	20	14
Wogagen	14	2019	13.05	3	0.818	11	3	10.47	21	14
Wogagen	14	2020	13.95	3	0.818	11	3	10.5	22	13
Zemen	15	2016	1.3	2	0.75	8	3	9.86	6	13
Zemen	15	2017	1.5	2	0.75	8	3	9.98	7	13
Zemen	15	2018	2.04	2	0.778	9	3	10.09	8	14
Zemen	15	2019	5.67	2	0.778	9	3	10.17	9	14
Zemen	15	2020	6.52	2	0.778	9	3	11.26	10	13

APPENDIX 3

WOLKITE UNIVERSITY

COLLAGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF ACCOUNTING AND FINANCE

Interview questions I (over all corporate governance of the bank)

Dear Respondent

My name is Musliha Mustefa Umer. I am attending MSC in Accounting and Finance program at Wolkite University. Right now I am conducting a research on the title '***Corporate Governance and its Effect on Financial innovation of all Ethiopian Commercial Banks***' as a partial fulfillments of the requirements for the Masters of Accounting and Finance, Wolkite University , College of Business and Economics. Therefore, you are kindly requested to fill in and return the interview questions. The information you supply would be used for academic purpose only and will be kept confidential.

1. How to evaluate corporate governance practice of the bank?

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2. Is there female director/s representing in the board member?

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3. What is your view regarding the number of audit committee in the board?

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4. Do you think the size of the board director's member is an appropriate?

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5. Do you think the board director member has a good mixture of educational qualification?

Interview question II (corporate governance and its effect on financial innovation)

1. Do you think the presence of female board of directors (in terms of board diversity) helps improve the banks financial innovation?
   How? ----------
2. Do you think the educational qualification of directors have any significant effect on financial innovation of the bank?

   Please give your reasons----------

3. Do you believe that increasing or decreasing board size has a significant effect on financial innovation?
   How? ----------
4. Do you believe that number of audit sub-committees in the board has a significant effect on financial innovation?
   How? Please justify it----------
5. Do you believe that the presence of board director meeting has a significant effect on financial innovation?

   How? ----------

6. In your view what is the trend analysis of digital banking in the bank? ----------
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Table 14: summary of the interview question

S/N	Questions		2015/ 16	2016/ 17	2017/ 18	2018/ 19	2019/ 20
1	How many females' directors are there in the board?						
2	Number of board Members who had college degree or Higher?	BA Degree					
		MA/MSc					
		Ph.D and other					
3	Numbers of audit sub-committee under the board of the bank?						
4	The number of board directors in the bank?						
5	Trends and status of digital banking in the bank	Mobile banking users					
		Internet banking users					
		Agent banking users					
		POS machine					
		ATM machine					

Thank You for Your Cooperation!!! **2021**