

**GENDER DIVERSITY IN TOP MANAGEMENT AND FIRM PERFORMANCE IN
KENYA**

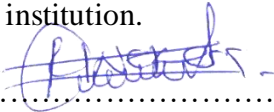
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DECLARATION

This project is my original work and has not been presented for examination or award of degree in any institution.

Sign..........Date.....26/11/2021.....

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This Research project proposal has been submitted for examination with my approval as the university supervisor

Sign.......... Date..November 30, 2021.....

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Abstract

This paper analyses the relationship between gender diversity in top management and firm performance. It investigates the moderating role of the business environment and their interaction on top manager gender and firm performance in Kenya. The specific objectives were to assess the relationship between gender diversity in top management and firm performance and the moderating effect of business environment on the relationship between gender diversity and firm performance informed by Human Capital theory. The study uses the Cobb-Douglas empirical model estimated using Ordinary Least squares. The variables were the gender of the top manager, firm productivity, firm size, exports, firm ownership, formal research and development, business environment, and formal training. However, the Instrument Variable- Two-Stage Least Squares (IV-2SLS) technique handled the endogeneity issues. The study finds that there is a neutral relationship between female in top management and firm performance except for the medium sized firms where the relationship was negative. In addition , all the moderating effects of business factors such as power outages , bribes, informal competition , influenced the firm performance negatively .The study therefore recommends the need to include more women in top management position of firms , since women managed-managed firms perform as well those managed by men.

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Contents

DECLARATION	ii
Abstract.....	iii
Acknowledgements.....	iv
List of Tables	vii
List of Figures	viii
List Of Abbreviations And Acronyms.....	ix
1.0 Chapter One: Introduction.....	1
1.1 Background information	1
1.2 Kenya policy on women representation.....	1
1.3 Kenya Performance in Gender Gap.....	1
1.4 Problem Statement.....	2
1.5 Research Objectives.....	4
1.5.1 General Objectives.....	4
1.5.2 Specific objectives.....	4
1.6 Significance of the study.....	4
2.0 Chapter Two: Literature Review	6
2.1 Introduction	6
2.2 Theoretical Literature.....	6
2.2.1 Agency Theory	6
2.2.2 Resource Dependent Theory	7
2.2.3 Upper Echelons Theory.....	7
2.2.4 Human Capital Theory	8
2.3 Empirical Literature.....	8
2.3.1 Positive Relationship between female participation in management and performance of the firm	9
2.3.2 Negative correlation (Female Participation in senior positions and organizational performance)	10
2.3.3 No Correlation (female participation in management and company performance)	11
2.3 Overview of the Literature	12
3.0 Chapter Three: Methodology	14
3.1 Introduction	14
3.2 Theoretical Framework	14
3.3 Empirical Methodology	17

3.4 Data Types and Sources.....	18
3.5 Diagnostic Test.....	19
4.0 Chapter four: Results and Findings.....	21
4.1 Introduction.....	21
4.2 Descriptive Statistics and Pre-estimation tests	21
4.3 Econometrics results and discussion	23
5.0 Chapter five: Summary, Conclusions, And Recommendations	35
5.1 Introduction.....	35
5.2 Summary of the study.....	35
5.3 Conclusions.....	35
5.4 Policy Recommendations.....	35
5.5 Areas for further study.....	36
References.....	37

List of Tables

Table 1. Descriptive Statistics	22
Table 2: Gender and firm level productivity (sales per worker) OLS	23
Table 3: Gender and firm level productivity (sales per worker) IV-2SLS	25
Table 4: Moderating role of share of female employees (OLS)	27
Table 5: Moderating role of share of female employees (IV-2S)	28
Table 6: Gender and Firm productivity: Moderating role of businesses environment-OLS	30
Table 7: Gender and Firm productivity: Moderating role of businesses environment-IV-2SLS	31

List of Figures

Figure 1: Percentage of Female Top Manager in Respective Sectors	21
Figure 2: Percentage of Female Top Manager in Respective FirmSize	22

List of Abbreviations and Acronyms

OLS- Ordinary Least Square

ROA- Return on Investment

ROE- Return on Equity

TMT –Top management Team

SME-Small Medium Enterprise

IV-2SLS- Instrument Variable- Two-Stage Least Squares

1.0 Chapter One: Introduction

1.1 Background information

For the past three decades, the nexus between women's participation in executive brass and the firm's performance has been a subject of discussion and research amongst economists, researchers, and policymakers. These discussions around women's representation and performance have resulted from empirical results showing the underrepresentation of women in senior management. Various talks in media houses and government institutions have not been left behind in this critical discussion. Some researchers such as (Nguyen and Faff; 2006; Francisco, 2015; Faccio et al., 2016; Moreno-Gómez et al., 2018) points out that women participation in upper brass contributes to company success, while others such as (Adams and Ferreira, 2009; Mnguez-Vera and Martin, 2011; Matsa and Miller, 2013) depicts an inverse correlation between the two. The 21st -century workforce is characterized by a unique labor force in terms of gender, ethnic background, and race. In the recent past, various organizations have employed a workforce that comprises relatively many women. These women have taken a leading role in turning around the working culture and motivating the workforce to perform and produce good results. The women leaders have been appointed to boards of various organizations. Their influence in these positions cannot be underestimated. The board of directors for any firm has a significant role in company management. It is in charge of directing, leading the business, and guarding the interests of the company's shareholders (Abdullah, 2004). These boards place a crucial role in managing daily activities and functioning of firms and checking performance.

Women's labour force stood at 48% in 2019, down to 51% in 2000. In addition, women are deemed to spend more time in unpaid work, likened to men. The women in the world are paid less than men, hence widening the earning gaps; that is why various countries have made multiple reforms in the past decades to ensure that women participate fully in economic activities. It is estimated that women have barely three-quarters of men's legal rights. Some countries have put in place some laws that actively prevent women from entering the workforce. Hence, these laws exploit the participation of females in Labor as well the economic inclusion.

Furthermore, it is estimated that women are a 9% low probability of owning an account with a bank or a financial institution than men. The digital financial service benefits women since they will have avenues to control and boost their businesses, but they miss this service since they lack

an account. However, according to a World Bank study, women entrepreneurs' company revenues account for an average of 65 per cent of their family income in Kenya. These enterprises employ mostly females, strengthening their multiplier financial impacts on the country's economy and households

Various international organizations, such as the World Trade Organization, the United Nations Development Program, and the World Bank, have highlighted gender-related cross-cutting issues that must be addressed. For instance, the World Bank has various programs to ensure that women are empowered, boost women's entrepreneurship, and promote women's health care. The World Bank launched the Women Entrepreneurs Finance Initiative that provides access to credit, supports women-led firms, and provides technical assistance (World Bank, 2017). The Sustainable Development Goals (SDG 5) highlights strategies to promote females' rights, discourage discrimination, and amplify gender equality issues by 2030.

1.2 Kenya policy on women representation

Chapter (IV) of the Kenyan constitution describes the Bill of Rights, which explains explicitly that every individual in Kenya is equal before the law and, therefore, has equal rights and a need to be protected by the Kenyan Law. Hence, men and women must have a right to equal opportunities, for instance, employment opportunities. Under the same chapter, under clause VI, the constitution states the same gender cannot occupy not more than two-thirds of elective positions. In addition, it is the responsibility of The State Department for Gender in the Ministry of Public Service, Youth, and Gender to promote women empowerment and gender equality in Kenya. The National Gender and Development Policy also outlines the National plan for gender equality in Kenya. In addition, the Kenya Vision 2030 blueprint through the social pillar speaks on equality and gives suggestions on tackling gender mainstreaming issues. Vision 2030 explicitly mentions the gender concerns such as equity in resource allocation and power distribution among the male and female genders.

Furthermore, policies such as The Matrimonial properties 2013, the Marriage act 2014 and the Land act 2016, and Land Act 2016 consider women issues. Community Health Policy and the sessional paper No. 2 of 2017 highlights the Kenya Health policy. These policies ensure that maternity services are free to provide safe deliveries and proper care for Mothers and Children. Therefore, Kenya recognizes that empowering women is vital in achieving gender equality in addition to sustainable development. Kenya has special funds meant for women, youth, and persons with disabilities. These funds include the Uwezo Fund, the Youth Enterprise Fund that gives loans to young people, and Women Enterprise Fund that provides micro-finance support for women. The Access to Government Procurement Opportunity Programs ensures that 30% of the opportunities in the procurements sector are reserved for youth, women, and the vulnerable. In addition, the National Government Affirmative Action Fund promotes programs that target to social and economic empowerment of youth, women, and persons with special needs. The National Policy on Prevention and Response to Gender-Based violence of 2014 gave rise to the Protection against Domestic Violence Act, 2015. The policy ensures that women are not subjected to Gender-Based violence.

1.3 Kenya Performance in Gender Gap

The 2021 global Gender Gap report ranked Kenya's position 95 out of 156 (WorldEconomicForum,2021). Kenya was also ranked position 84 in Women Participation in

economic Activities. The female gender owns only 30% of SMEs, while the men hold the lion's share (KNBS, 2018). Furthermore, according to the Kenya National Bureau of Statistics (2019), businesses owned by females employ more women, hence bringing more women into the workforce than firms by men. In Kenya's social, political, and economic sectors, hegemonic masculinity reigns supreme. In most areas, females have inferior responsibilities and are excluded from autonomous decision-making and resource control. Males are often considered the primary breadwinners in their households, and they have decision-making authority, define priorities, and decide how resources are distributed. The female representation in Kenya is as follows according to Gender Gap Index, 16.9% women in parliament, 13.2% female firm ownership, and 18.1 % women in top management (Wainainah, 2021). In addition, in National Assemblywomen chairs only 11.1 percent of the committees. The counties –the County Executive Committee members, Machakos and Nyeri counties have the largest representation of women (56.6%) while Kakamega county has the lowest (18%). 32% of the cabinet members are females, and 23% of the diplomatic corps are females.

Furthermore, two governors (4 per cent), seven deputy governors (15 per cent), and five county assembly speakers (10.6 per cent) are women (KNBS, 2018). According to the Nairobi Securities Exchange's 61 listed companies, the average score for gender equality is 26%. The other sectors women representation is as follows, 49% of magistrates, 36% of the county commissioners, 33% of the members of the National assembly, and 57% of the practising lawyers. Also, there are no women Kadhis, and only 5.3 per cent are chiefs while 8.6 per cent are assistant chiefs. Gender gaps in decision-making are much more pronounced in the private sector. Only four out of 62 CEOs (or 6%) of firms listed on the Nairobi Stock Exchange are female, and only three of these companies (or 5%) have a female chair on their board of directors(NSE,2020). Also, the proportion of women's businesses remains low compared to men's businesses, with the Kenya National Bureau of Statistics (KNBS) reporting that women own roughly 30% of small and medium enterprises.

1.4 Problem Statement

Reports from international financial institutions, for instance, Catalyst Inc. (2020), McKinney (2015), Credit Suisse(2019), and Thomson Reuters (2019), show that by employing more women in the firms, the Gross Domestic Product of the country is increased (Agyemang & Schadewitz, 2019). In addition, Ozdemir (2020) found out that firms that have women on their boards have

performed better than those without in the areas such as return on equity, investment, sales company image, and corporate governance. Much empirical research has been conducted on the nexus between gender diversity in senior management and productivity. However, the findings have been unequivocal. According to several studies, there is a link between diversity in senior management and corporate success (firm productivity) (Carter et al., 2003; Erhardt, Werbel and Shrader, 2003; Nguye and Faff, 2006 and Joecks, Pull, and Vetter, 2013). Other research (Matsa and Miller, 2013; Adams and Ferreira, 2009; Mnguez-Vera and Martin, 2011) have demonstrated a negative nexus between boards diversity and senior management and business performance. The majority of these studies have been done in developed countries and the global north. Few studies have been done in Africa and sub-Saharan Africa; for instance, in South Africa, Lehobo (2011) found a direct correlation between gender diversity and corporate. In Kenya, Gacheri (2012), Wachudi(2013), and Tarus (2014) researched on the same. Wachudi and Mboya (2013) found no correlation between senior management diversity and company performance.

Article 21 of the Universal Declaration of Human Rights emphasizes everyone's right to participate in their country's administration, either directly or through freely elected representatives (United Nations, 1948). Generally, women get paid 58 per cent less than men, making 43 per cent less profit than men-run businesses. In addition, Male entrepreneurs are twice as likely as female entrepreneurs to have access to financial savings accounts and three times as likely to have access to mainstream loans. According to the KNBS (2019), most women have been relegated to low-wage jobs, while males have dominated higher-wage jobs, widening the opportunity gap. According to the data, women account for 60.6 per cent of households and 57.7% of social care acuties.

On the other hand, men have a 79.6% and 76.1 per cent share of high-paying manufacturing and real estate industries, respectively (KNBS, 2019). However, the statistics indicate that women in Kenya are underrepresented in the workplaces, politics, and other vital sectors. Two conflicting trends are at work in the slow progress toward narrowing the economic participation and opportunity gap. On the one hand, women's representation among skilled professionals continues to rise, progressing toward wage equality, albeit slower. On the other hand, general income gaps are still only partially bridged, and women continue to be underrepresented in leadership roles, with women accounting for only 27% of all management jobs (WEF, 2021). According to a study

on Gender Mainstreaming and Women Empowerment in Political Party Processes in Kenya, 78% of females make everyday purchases for their households. Still, they are excluded from the public sphere. Therefore, this exploits the participation of females in the labour force as well the economic inclusion. Hence, women, as a result of being underrepresented, participate less in crucial decision-making. Women's underrepresentation in critical decision-making sectors, such as legislative, leadership, and policymaking, to name a few, precludes them from having a significant impact on a variety of national and individual outcomes.

1.5 Research Objectives

1.5.1 General Objectives.

To investigate the relationship between gender diversity and firm performance for Kenya firms.

1.5.2 Specific objectives.

- I. To assess the relationship between gender diversity in top management and firm performance.
 - II. To assess the moderating effect of business environment on the relationship between gender diversity and firm performance
- II.I To provide recommendations towards the unfavorable business environment

1.6 Significance of the study

This research is intended at investigating the nexus between moderating effect of the business environment on the nexus between female participation in management and the company performance. The finding will contribute to the existing body of knowledge in Kenya as well as Sub-Saharan Africa.

The finding will help the government in designing policies that promote closing the gender gap. For instance, the gender gap index in Kenya in 2020 was 0.67, implying that 33% of the women are less likely to have the same opportunity as their male counterparts. In addition, the results will help the firm to support the workplace's female participation as per the Constitution 2010.

The study will also help the policymakers and academicians, for it adds to the body of existing literature in Sub-Saharan Africa. Many studies have been done in the developed world on gender and organizational performance, so this paper is significant because it investigates this in the

context of the developing country. In addition, the shareholders will appreciate the importance of employing a diverse workforce in the workplace.

Therefore, this research enriches the existing body of knowledge by studying the nexus between women's participation in upper-tier management and organizational success of Kenyan firms using the World Bank Enterprise Survey Data. Furthermore, the nature of business is put into account to examine these relationships. Reviewing how the business environment is a moderating factor on the nexus between female participation in top management and the company performance in the Kenyan context makes this paper unique.

1.7 Organization of the study.

The next section of this study is arranged as follows: Chapter two handles theoretical and empirical literature, while chapter three, the Theoretical methodology and empirical methodology for the data analysis.

2.0 Chapter Two: Literature Review

2.1 Introduction

This section presents theoretical and empirical literature on the nexus between female participation in management and the firm's financial performance.

2.2 Theoretical Literature

Women's participation in top management is still a hot issue of discussion among various stakeholders, policymakers, and economic researchers. There has been a growing trend where women in the 21st century are in management roles in firms worldwide. Suppose gender diversity in the workplace improves the firm's economic status by realizing more profits. In that case, gender diversity is a good enabler for economic prosperity and firm performance in the workplace. Various theories describe the relationship between women's participation in management and firm performance. These theories are discussed below:

2.2.1 Agency Theory

This theory developed by (Ross 1973; Jensen and Merckling 1976) postulates that a contract exists between a principal and an agent. The agent in the agreement must perform a particular task or service on behalf of the Principle. Therefore, the decision-making authority is directly delegated to the agent.

As a result of imperfect information flows between the executives and the shareholders, the top executives and boards of a firm are provided with an excellent opportunity to filter and sieve information before sharing it with the potential shareholders. According to this theory, companies deem gender diversity a crucial mechanism in corporate management (Gallego-Álvarez et al., 2010). Furthermore, females on board tend to bring a unique and diverse approach to complex issues that affect a company, which helps the company rectify the information biases that occur in strategy management, leading to solutions to various company problems. Hence, female representation on board acts as a control mechanism since broader views can upsurge board independence (Reguera-Alvarado et al., 2015).

In addition, a more diverse board may give a window for asking many questions that may not necessarily come from the directors of companies. A diverse board may boost the firm's image and, in turn, have desirable consequences on the firm's performance, increase shareholder value,

and positively impact consumer behavior. A diverse board can also increase firm effectiveness leading to outstanding performance, and this is due to different perspectives of solving the firm problem hence enhancing concrete decision making. The women leaders in boards and management are also likely to put the interests of their shareholders and customers close to their hearts. Therefore, the agency theory aids in understanding the role played by diverse management and how it contributes to firm profits and eventually better performance.

2.2.2 Resource Dependent Theory

Resource dependent theory was developed by (Pfeffer 1972; Pfeffer and Salancik, 1978). The theory visualizes a firm as an open system that does not operate in a vacuum and depends on the external firms' and environment. Hence, the firms must engage in partnerships with the outside environment. These partnerships help the firm to build relationships with outside entities and environments. The board of directors of the firm and other senior management is depicted as a means to manage the external dependency of the firm. Therefore, the board and management manage to reduce transaction costs and manage the uncertainty that comes with the interaction with the external environment. Since the firms operate in an open system, they must acquire resources and other necessities from the outside environment creating an interdependency with outside entities (Pfeffer and Salancik, 1978; de Cabo et al., 2012). This theory values the roles other stakeholders play in giving a platform for the firm to get necessary resources by partnering with relevant constituencies (Lawal, 2012). In addition, this theory views the board of directors' boundary spanners of the organization. The board, therefore, is vital in bringing forth the necessary linkages with the external environment of the firm. A gender-diverse board since the female directors bring onboard unique skills, knowledge, and experiences different and distinct from their male counterparts (Jamali, Safieddine, and Daouk, 2007). According to Johnson (1996), the resource-dependent theory focuses on selecting representatives for firms that will provide a gateway for firms to gain resources. Access to resources is crucial for a firm's success. Furthermore, for firms to survive, the organization must exert control of access to resources in its environment. Therefore, a more gender-diverse board and management influence to a great extent the firm performance.

2.2.3 Upper Echelons Theory

This theory gives an overview of the relationship between the characteristics of upper executives and the decisions they make. The Upper Echelons theory pioneered by Hambrick and Mason in

the year 1984 helps to explain how diverse top management team contributes to organizational performance. The Top management characteristics include age, education, financial position, and socio-economic roots, among others. Gender diversity has been mentioned as one of these characteristics, and therefore this theory is ideal for this thesis.

The Upper Echelon theory outlines how the roles of top management impact organizational outcomes and success. The outcome of any organization is a direct reflection of any organization's top executives (Hambrick & Mason, 1984)). The theory asserts that females in top management have the knowledge, skills, and personal attributes that help expand the information and perspectives critical for decision-making. The company with diverse top management will therefore be able to benefit so much from these experiences that female managers possess.

The diverse top management has an impact on how the management of the firm is carried out. Managerial styles are usually affected by the composition of males and females in top management Croson and Gneezy (2009). Women in top management have been found to exercise inclusivity and handle the female workers to produce results (Dezsó and Ross, 2012). In addition, the female managers are open to communication and encourage the participation of others in making critical decisions.

2.2.4 Human Capital Theory

Bucker propagated this theory in the year 1964. The theory asserts that individual skills, experience, and education make their respective firm more productive. In addition, human capital contributes more to firm productivity than physical capital. Kesner (1988) notes that the firm's directors and senior management have unique human capital stocks such as skills and expertise beneficial to the firm. Females in workplaces face the significant challenge of not being promoted even though they may be having the same skills and qualifications as their male counterparts. A professional ceiling challenge exists for females worldwide. Therefore, the females who want to occupy senior positions must have higher human capital than their male counterparts. Hence, the female in top management leads to higher firm performance due to higher human capital.

2.3 Empirical Literature

The empirical literature is divided into three; the one that discusses the positive relationship between female participation and organization, the negative relationship between the two, and finally, there is no correlation between the two.

2.3.1 Positive Relationship between female participation in management and performance of the firm

The nexus between diversity in the board of management and corporate success was investigated by Erhardt, Werbel, and Shrader (2003). They, therefore, conducted a correlation and regression analysis on Fortune Magazine data (financial performance data) of the year 193-1998 of 127 US Public firms. The results depicted that diversity on board positively impacts the Return on Assets ROI and ROA. Using Tobin's Q, discovered a significant positive association between women's number on board and firm value (Carter et al., 2003).

In addition, Dwyer et al. (2003) researched the interaction between the participation of females in senior leadership and firm growth using the configurational and contingency methodology. The writer examined two main organizational variables: growth orientation and organizational cultures modeled against firm performance measures. The writer's researcher linked gender diversity to firm productivity. The finding was that a high number of women in management coupled with growth orientation and adhocracy culture type enhances organizational performance.

Dezsö & Ross (2012) researched the relationship between women's representation in top management and firm performance. Their research used a panel study. The variables were females' proportion in senior management, business performance using Tobi Q, innovation, firm age, leverage, capex intensity, age of capital stock, number of managers, and marketing intensity. The result was the top management female representation improves the firm performance.

Nguyen and Faff (2006) researched the nexus between firm market value and composition of gender and size at the board of directors for 500 sampled Australian public listed companies registered with the Connect4 database for the financial year 2000 and 2001. They used Tobin Q methodology and board size as independent variables and control variables such as the proportion of women outside board directors and total firm assets. The result was that the gender diversity board increased the company value as well as enhanced shareholder wealth. Comparative research, which followed the critical mass theory and the use of the data set from 151 publicly traded German companies from 2000 to 2005, explored the correlation between female representation in executive and productivity of the firm. The variables were the diversity in board and returned on equity. The result was that female participation in management had an undesirable consequence on the company's performance at the beginning, still, after reaching a "critical mass" of roughly 30% women, a more significant company performance than the board that contained

only men. The 30% women (critical mass) explains the board of directors that comprises three women, emphasizing contemporary research on a matching 'magic number' of female gender in senior management (Joecks, Pull, and Vetter 2013).

Post & Byron (2015) did a study on women in board and financial performance. The primary variables are female board representation, company financial performance using Return on Assets and Return on equity, board activities, and they deployed the meta-analysis methodology. The result was that women on boards are associated with positive accounting returns

Reinert et al. (2016) researched the female representation in senior positions and a firm's performance in the banking sector in Luxembourg. He used panel data from the year 1999-2013. The Variables were return on Equity, Return on Asset, Female management share, firm size, client deposit, total Staff expenditure, financial strength, and bank activity, .and concluded a positive correlation between female management and organizational performance. The results also show that females' participation in senior positions doubles performance during financial downturn than during normal market conditions.

2.3.2 Negative correlation (Female Participation in senior positions and organizational performance)

A couple of research papers discovered an inverse tie between female participation in senior management and company performance. For instance, Adams and Ferreira (2009) showed an inverse tie between female participation executive position quotas and the company value. They used an unbalanced panel methodology with the following vital variables; sales, Tobin Q, the board size, volatility, and return on asset. The conclusion was that gender diversity is ideal in firms that have weak shareholders.

Mínguez-Vera and Martin (2011), in their study on Gender diversity and management of SMEs in Spain, used the following variables; Return on Equity, Proxies of women participation in the board, percentage of women on board, and shareholders percentage. The research found that female participation on boards impacts negatively on firm performance. The female usually employs strategies that are not risky. Furthermore, the results imply that women on boards are cautious in their decisions and risk-averse.

Marta and Miller (2013) did a panel of Nordic companies on the female relationship style in corporate leadership. The study did a regression analysis on the labor and accounting variables. The results showed the firm profitability fell as a result of gender quotas.

Wellage and Locke (2013) studied women in board and financial performance for the firm of the Sri lank Public companies. The study used the generalized panel methodology, and the percentage of women on board, Blau index, and dichotomy dummy were the three main variables. An inverse correlation was gotten between the rate of females on board and the company value.

Darmadi (2013) studied female representation in an executive position and organizational performance using the firms listed on the Indonesian Stock Exchange. The study used a Cross-sectional regression model. The variables were a firm success (measured using ROA and Tobin Q) and the proportion of females in management, total assets, Blau heterogeneity index, and the biggest shareholder. The finding was that women in leadership result in negative firm performance.

Ujunwa (2012) did a study board features and financial performance in Nigeria. The study used Generalized Least Square Fixed- Effects and Random –Effects; the variables were company financial performance, panel (size, gender, duality, nationality, and skill), size of the firm, and firm age. The conclusion was that CEO duality, the board size, and gender diversity were inversely related to firm success.

2.3.3 No Correlation (female participation in management and company performance)

Cabrera-Fernández et al. (2016) examined the literature on board females' representation by focusing on various journals dealing with board women and firm performance. They later did a content analysis by grouping the theoretical literature and empirical findings. The finding depicts no nexus between women's participation in board and organizational performance.

Pletzer et al. (2015) researched female representation on boards and the company's financial success by using data from EBSCO. The study used the meta-analysis methodology, and the variables were the percentage of women and the company's performance financially. The finding was that women's representation in corporate boards is not related to firm financial performance.

Marinova et al. (2016) examined female representation in management and the firm's success in Danish and Dutch boardrooms. The study utilized data from Denmark and Netherlands for public listed firms. The two-Stage Least Square method was deployed to test company performance and female board participation. The result was that there is no association between female participation on board and company performance.

The association between female participation in upper management and the boards and business performance has been studied in the examined empirical literature, but their findings have not been clear. This study adds to the empirical literature by evaluating if the business environment impacts the relationship between a top manager's female participation and firm success.

2.3 Overview of the Literature

Many arguments favor the inclusion of females in senior and upper-tier management to enhance firm performance; however, the previous empirical studies have given mixed results on the nexus between women's representation in company senior-level supervision team and firm success. A couple of empirical bodies of knowledge have established that inclusion of women in the senior positions results in higher company performance (Dwyer et al., 2003; Nguyen and Faff; 2006; Dezsö & Ross, 2012; Post & Byron, 2015; Joecks, Pull, and Vetter 2013; Reinert et al., 2016). However, some researchers have found an inverse association between a woman in upper executives and company success (Adams and Ferreira, 2009; Mnguez-Vera and Martin, 2011; Ujunwa, 2012; Matsa & Miller, 2013; Darmadi, 2013; Wellage and Locke, 2013). Other studies depict no correlation between a female in upper executive brass and the firm's performance, implying that the women in executive positions have zero impact on organizational success (Pletzer et al., 2015; Marinova et al., 2016; Cabrera-Fernández et al., 2016). The mixed results from the empirical studies above result from different instruments, data sets, and backgrounds.

This paper, therefore, will contribute to the literature by probing female participation in an executive position and business economic outcomes. The will use a unique econometric estimation technique, Ordinary Least Square and Instrument Variable- Two-Stage Least Squares (IV-2SLS), unlike other previous studies (Darmadi, 2013; Wu et al., 2017). The IV 2SLS helps to counter the reverse causality problem and in addition to addressing the endogeneity issues.

In addition, this paper contributes to the literature by examining the moderating effects of business environment factors such as corruption, power outage, access to credit, and informal competition and their link on female participation in top-tier executive and corporate performance. In most of the previous studies, the moderating effects of the business environment were not linked. The business environment factors were included in the theoretical model and hence tested empirically.

Unlike the previous studies, which focused on a financial measure of performance such as Tobi Q and return on assets (Nguyen and Faff (2006), Dezsö & Ross, 2012), this study uses the non-financial measure (sales growth).

3.0 Chapter Three: Methodology

3.1 Introduction

This section presents the theoretical framework, data sources and description, and empirical methodology.

3.2 Theoretical Framework

In this study, Cob-Douglas production function from the Human capital theory was used. This theory asserts that firms combine Capital and Labor to yield a homogenous final good (Y). Hence, the nexus between production inputs and production output is modeled by this theory. It, therefore, estimates the ratios of inputs to one another to produce an efficient output.

The volume of goods and services produced is assumed to depend on the business environment where the firm is operating. Therefore, the government can influence the business environment while the gender diversity on top management is unique in each firm. Therefore, based on the firm's environment, it is explicit that the volumes of goods produced by firms are highly impacted. Firms operating in a seamless environment are likely to perform better and be more productive than those operating in an environment with disturbance (Okumu & Sunday, 2020). Cob-Douglas production theory assumes a constant return to scale where $\alpha+\beta+\gamma=1$. Hence, the initial theoretical model is

$$Y = AK^\alpha L^{1-\alpha} G^\gamma \quad (1)$$

Where:

Y denotes total firm production

A denotes total factor productivity

K denotes the firm capital

L denotes the firm Labor

The production function equation above can be differentiated twice, with positive marginal product and diminishing marginal substitution rate. In addition, the; labor inputs are assumed to be heterogeneous. At the same time, $x=0$ represents other workers while $x=1$ denotes the managers of the firms. Based on De Giorgia et al. (2015), we get the following equation 2 for Labor.

$$L_X = [\theta_{fx} L_{fx}^{\rho x} + \theta_{mx} L_{mx}^{\rho x}]^{\rho x} \quad (2)$$

Where m and f denote male and female labor force, respectively, θ is a parameter that denotes productivity that is assumed to be dependent on manager and gender.

The elasticity of substitution between male and female labor force is defined as a change in the choice of the female (male) labor force in reaction to a change in the relative price of the male (female) labor force, which can be stated in the following way:

$$\delta_x \equiv \frac{1}{1 - \delta_x}, \delta_x \in (-\infty, 1)$$

It is explicit that male and female Labor are gross substitutes then $\sigma_x > 1$ ($\rho_x > 0$) and $\sigma_x < 1$ ($\rho_x < 0$) if the two are the gross compliments.

Assuming a competitive market, therefore the generalized marginal productivity of labor ω_{xg} can be expressed

$$\frac{\delta Y}{\delta L_{xg}} = \omega_{xg} = (1-\alpha) \frac{k^\alpha}{L_x^\alpha} G^\gamma L^{\frac{1-\rho_x}{\rho_x}} \theta_{xg} L_{gx}^{\rho_x-1} \quad (3)$$

A log-linearization of equation 3 yields the estimable equation below.

$$\ln \left\{ \frac{\omega_{fx}}{\omega_{mx}} \right\} = \ln \left\{ \frac{\theta_{fx}}{\theta_{mx}} \right\} - \frac{1}{\rho_x} \ln \left\{ \frac{L_{fx}}{L_{mx}} \right\} \quad (4)$$

Where $\ln \left\{ \frac{\omega_{fx}}{\omega_{mx}} \right\}$ It is a proxy for labor productivity, which is the log of sales per worker (Productivity). The ratio of annual sales to total full-time employees at the end of the preceding fiscal year is used to calculate sales per worker. To eliminate the influence of extreme valuing, we use the logarithm of labor productivity rather than nominal values. From the equation above, $\ln \left\{ \frac{\theta_{fx}}{\theta_{mx}} \right\} = \beta_0$ depicts intercept, while $x=0$, hence $\ln \left\{ \frac{L_{fx}}{L_{mx}} \right\}$ proxied by the top manager's gender, which is '1' if the top manager's Gender (Gender) is male, otherwise 0 and a coefficient corresponding to it. The highest-ranking executive is referred to as the top manager. If they work as the firm's manager, this person may be the owner. The study focuses on female management rather than female ownership because it has been suggested that female decision-making is more strongly associated with productivity than female ownership participation.

In addition, where $x=1$, then $\ln \left\{ \frac{L_{fx}}{L_{mx}} \right\}$ is represented by the proportion of female workers in the labor force (Femworker) and the coefficient $\beta_2 = \frac{1}{\rho}$. As a result, the empirical equation is

$$Productivity = \beta_0 + \beta_1 Gender + \beta_2 Fem + \eta + \varepsilon \quad 5$$

Where ε is the error term, gender is the top manager, whether male or female and fem proportion of female workers and β_1 measures how much productivity changes when a manager is male compared to a female manager. β_2 measures how much productivity changes given the proportion of female workers in the total workforce. η_j represents unobserved sector heterogeneity, μ_c represents unobserved country heterogeneity, ε_{ijc} is an idiosyncratic error term that may vary between firms, sectors, and countries and is assumed to be independently distributed with $E(\varepsilon_{ijc}) = 0$.

In above equation β_1 compares the margin of change of productivity between the male and female manager while β_2 calculates the margin of change of productivity changes due to the proportion of female workers in the total labor force, η denotes the unobserved heterogeneity, ε is the error term which may differ between firms and sector, the error term is independently distributed with $E(\varepsilon) = 0$. Various factors affect firm productivity in Kenya, such as electricity outage, corruption, business environment, informal competition, and credit access. Therefore, by incorporating business environment indicators as a control variable, the **theoretical framework model equation** is expressed as follows

$$Productivity = \beta_0 + \beta_1 Gender + \beta_2 Fem + \theta' BE + \eta + \varepsilon \quad (6)$$

Where

Gender is top manager, whether male or female,

Fem proportion of female workers,

BE denotes the vector of business characteristics such as corruption, credit access, informal competition, technology, and electricity outage.

Corruption is calculated as a percentage of firm sales paid informally to government leaders that go unaudited and unreported. In addition, credit access is captured whether a firm has an avenue of credit access and assumes the value of 1 if the firm has credit access and zero; otherwise. Informal competition is captured in the context of whether the Kenya firm faces competition from informal and unregistered firms and takes the value one if competition exists and zero otherwise. Therefore, incorporating the business environment's effect and their nexus between gender of top manager and productivity gives the following expression.

$$Productivity = \beta_0 + \beta_1 Gender + \beta_2 Fem + \theta' BE + \varphi'(Gender * BE) + \eta + \varepsilon \quad (6)$$

(Gender *BE) represents the interaction between the top manager gender and business environment, φ denotes a vector of coefficients that depicts the moderating effects of business environment on nexus between top manager gender and firm productivity.

In addition, the impact on female workers on the nexus between top manager Gender and firm productivity is examined.

$$Productivity = \beta_0 + \beta_1 Gender + \beta_2 Fem + \theta' BE + \varphi'(Gender * BE) + \theta'(Gender * Fem) + \eta + \varepsilon \quad (7)$$

Where θ is the vector of coefficients indicating the moderating effect of female worker proportion on the relationship between top manager gender and firm productivity.

3.3 Empirical Methodology

To achieve the objective of this study, Equations 5, 6, and 7 in the above theoretical framework were estimated to give to the following equations.

$$Productivity = \beta_0 + \beta_1 Gender + \beta_2 Fem + \theta' BE + \varphi' X + \mu + \eta + \varepsilon \quad (8)$$

$$Productivity = \beta_0 + \beta_1 Gender + \beta_2 Fem + \theta' BE + \varphi'(Gender * BE) + \varphi' X + \eta + \varepsilon \quad (9)$$

$$Productivity = \beta_0 + \beta_1 Gender + \beta_2 Fem + \theta' BE + \theta'(Gender * Fem) + \varphi' X + \eta + \mu + \varepsilon \quad (9)$$

The vector X above denotes firm-specific features such as managerial experience, firm size, firm age, ownership, formal training, quality certification, research and development, and export status. Small firms with employees between 15-19, medium firms with employees 20-99, and larger firms with employees of at least 100. Therefore the firm size denotes a categorical variable small, medium and large. The difference between the year of the survey and the year the firm began operations is the firm's age. Firm age is given in logarithms to reduce the potential of extreme values biasing regression findings. The number of years a firm's manager has spent in that area of business is referred to as managerial experience. Firms were also asked if they had formal training programs for permanent, full-time staff during the previous fiscal year. Formalized training is a dummy variable that takes the value "1" if a company has formal training programs and "0" otherwise. The term "ownership" refers to the ownership of shares in a company. If a foreigner, a resident, or the government owns 50% of a company's stock, the company is classified as foreign, domestic, or government-owned, correspondingly. As a result, business ownership is a categorical variable with values of "0," "1," and "2," depending on whether the majority of the shares are

owned by domestic, foreign, or government entities. A firm's answer to the query "what percentage of sales were exported?" informs the parameter "Export," which proxies export status. If the percentage of sales exported (directly and indirectly) is more than zero, the variable export is set to 1; otherwise, it is set to 0. In addition to market research surveys, research and development track whether a company spent money on formal research and development efforts (Okumu & Sunday, 2020). If yes, it returns a value of "1," otherwise it returns a value of "0. As a result, it is a vector of coefficients that describe how firm-specific features affect company productivity.

Pooled Ordinary Least Squares (OLS) methodology is used to estimate the models in equations (8), (9), and (10) understudies such as Du Riezz and Henrekson (2000), Gui-Diby et al. (2017), and Islam et al. (2018). We further evaluate if the interaction effect of gender and business environment on labor productivity differs by firm size and sector to account for heterogeneity difficulties.

3.4 Data Types and Sources

The study uses the data retrieved from World Bank Enterprise surveys for Kenya. The data is a panel in nature and was conducted in Kenya in the years 2007, 2013 and 2018 by World Bank. The World Bank Enterprise Surveys are nationally representative surveys of formal (registered) firms with at least five employees, excluding extractive industries and agriculture.

The measurement of the variable and their hypothesis is presented in Table 1 below

Variable	Measurement	Hypothesis
Productivity	total output per worker	-
Gender of the top manager	1 is man, 0 is female	Positive(Okumu & Sunday, 2020, Gui-Diby et al. (2017))
Firm size	Number of employees (15-19-small, 20-99 Medium , above 100 Large)	Positive ((Nyeadi et al., 2021))
Export	Percentage of sales exported (1- if the percentage of sales exported (directly and indirectly) is more than zero 1, 0 otherwise)	Positive(Aterido et al. ,2011)
Formal Research and Development	One yes if the firm has done R& D and 0 otherwise	Positive(Okumu & Sunday, 2020, Gui-Diby et al. (2017))
Firm Ownership	0-domestic, 1- foreign owned , 2- Government owned	Positive(Marlow & McAdam , (2013))
Formal training	One of the firms has formal training and 0 otherwise	Positive (Islam et al.,2018)

3.5 Diagnostic Test

In the empirical methodology, econometric analysis of equations 8 and 9 using the pooled Ordinary Least Square maybe suffer from the problem of selection bias and endogeneity due to bribes. Bribes are a form of informal payment done by the most productive firms to evade business hurdles. In this case, the pooled OLS estimators become **inconsistent and biased**.

The endogeneity issue is addressed by deploying the **Instrumental Variable –Two-Stage Least Squares (IV-2SLS) for equations 8 and 9**. The instruments used must not be correlated with the error term and be correlated with endogenous covariate. Hence, the instrument used is correlated only to the dependent variable through the endogenous covariate (Okumu & Sunday, 2020). Therefore, the sector–size average is ideal in this situation. An instrument is constructed by making use of sector –country –size average (informal payments). This instrument will exclude the

response made by the firm. Hence, the bribe payment answer is instrumented using the country-sector-size averages of the sales percentage of the bribe. The firm response of percentage of sales paid as a bribe is not included.

The decomposition, therefore, happens in two parts: the section that is dependent on the company's features (B_i) and a section that's dependent on the country-sector-sized bribe (B_{-ijcs})

$$B_{ijcs} = B_i + B_{-ijcs}$$

The item B_{-ijcs} is assumed to be exogenous since the productivity of the company I have no impact on B_{-ijcs} but (B_{-ijcs}) is thought to influence bribe payment behaviors of firm i , thus making B_{-ijcs} a better instrument.

For testing, if the bribe payment is endogenous, the Wu-Hausman and Durbin tests are deployed, while the Craigg-Donald test tests the strength of the instruments used.

4.0 Chapter four: Results and Findings

4.1 Introduction

This chapter presents descriptive statistics, Pre-estimation tests, and econometrics results and discussion.

4.2 Descriptive Statistics and Pre-estimation tests

Figure 1: **Percentage of Female Top Manager in Respective Sectors**

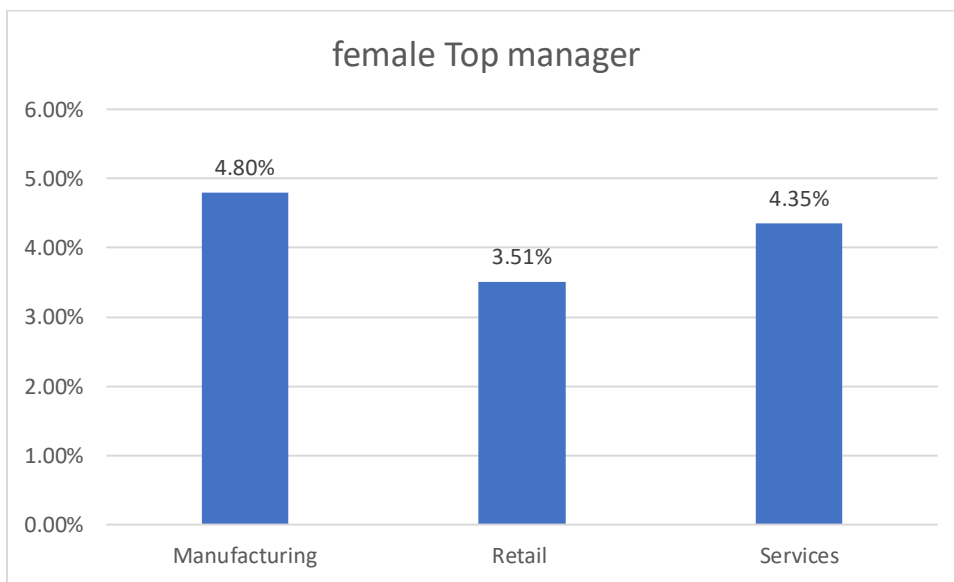


Figure 2: Percentage of Female Top Manager in Respective FirmSize

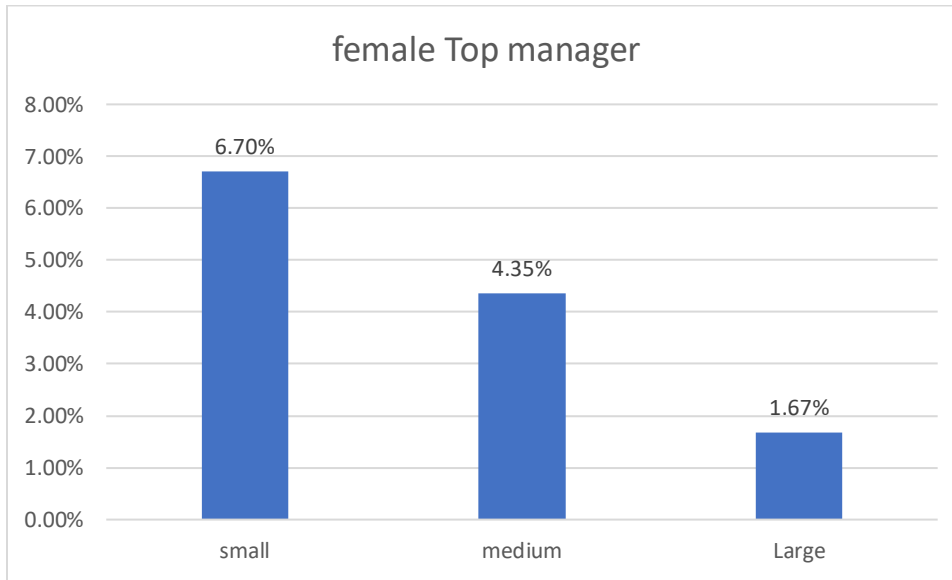


Table 1. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
sales_Worker	2,336	7648957	5.71e+07	-1.89e+08	1.72e+09
Female	1,679	.1274568	.3335834	0	1
credit	2,295	.3960784	.4891877	0	1
Bribe	2,127	1.994358	6.689928	0	100
power_outage	1,821	7.908072	11.48299	0	100
Electri_Ou~e	2,079	7.173641	12.77201	0	240
Manager_ex~e	2,336	15.96661	10.95385	0	60
Exports	2,336	6.489127	21.43671	0	100
Certificat~n	2,268	.212963	.409492	0	1
firm_age	1,679	22.28827	17.70074	0	124
Research	1,667	.2435513	.4293538	0	1
Manufactur~g	2,336	1.525257	.4994686	1	2
Services	2,336	.2649829	.4414186	0	1
Medium	2,336	.6832192	.9487018	0	2
Large	2,336	.666524	1.247391	0	3
training	2,070	.4183575	.4934087	0	1
Competition	1,783	.6057207	.4888324	0	1
Foreign	2,336	.0843322	.2779449	0	1
Sector	2,336	1.739726	.8501803	1	3

The descriptive statistics indicate that total firms were 2336. Small firms were 1019 (43.62%), medium firms were 798 (34.16%), and Large firms were 519 (22.2%). On the sector, manufacturing firms were (1227 (52.53%)), Retail were 490 (20.90%), and other service were 619 (26.50%). Out of all these firms 12.7% of the firms have a female top manager. However, 4.8%, 3.51%, and 4.35% of the manufacturing sector, retail and services had a female top manager respectively as per above the figure 1. In addition 6.7%, 4.35%, 1.67% of the small, medium and Large firms respectively had a female top manager as per the figure 2. Furthermore, table 1 above indicates that the average sales per firm are Ksh 7646957 per year 39.6% of the firms have a line of credit, while only 24.3% participate in the research and

development. In addition, large firms constitute 22.2 % of the total firms while medium firms constitute 34.6%. 59.6% of the firms experience informal competition, while 8.4% of the firms are foreign-owned. The summary results are depicted in Table 1. On the pre estimation, Breusch-Pagan / Cook-Weisberg test for heteroscedasticity was used, and the results indicated constant variance across the model (prob > chi2 = 0.7334)

4.3 Econometrics results and discussion

Table 2: Gender and firm level productivity (sales per worker) OLS

VARIABLES	Overall	Small	medium	Large	Manufacturing	Retail	Service
Top Manger Female	-0.086 (0.158)	0.044 (0.229)	-0.429* (0.221)	0.391 (0.567)	0.196 (0.266)	-0.192 (0.347)	-0.409** (0.203)
Female_workers	-0.000 (0.000)	-0.005 (0.005)	-0.015*** (0.003)	0.000* (0.000)		0.000 (0.000)	-0.000 (0.000)
power_outage	-0.020*** (0.004)	-0.024*** (0.005)	-0.013** (0.005)	-0.022** (0.011)	-0.013** (0.006)	-0.036*** (0.009)	-0.014** (0.006)
Line of credit	0.067 (0.102)	0.130 (0.156)	0.186 (0.153)	-0.222 (0.259)	0.008 (0.151)	0.215 (0.223)	0.039 (0.171)
Bribe	-0.005 (0.006)	-0.004 (0.010)	-0.005 (0.009)	0.007 (0.026)	-0.012 (0.008)	0.017 (0.013)	-0.005 (0.010)
Manager_experience	0.017*** (0.005)	0.025*** (0.008)	0.012 (0.008)	0.011 (0.011)	0.008 (0.007)	0.017 (0.012)	0.034*** (0.011)
Exports	0.001 (0.002)	-0.001 (0.003)	0.002 (0.004)	0.001 (0.004)	0.003 (0.002)	0.001 (0.007)	-0.002 (0.005)
Certification	0.689*** (0.142)	0.735*** (0.278)	1.088*** (0.218)	0.427* (0.252)	0.591*** (0.180)	0.194 (0.521)	1.032*** (0.257)
Firm_age1	0.249*** (0.074)	0.309*** (0.101)	0.240* (0.123)	0.097 (0.190)	0.283** (0.114)	0.405** (0.165)	0.103 (0.116)
Research	0.055 (0.120)	0.186 (0.197)	-0.178 (0.177)	0.260 (0.257)	-0.004 (0.164)	0.673* (0.399)	-0.019 (0.199)
Medium	0.028 (0.055)				0.230*** (0.085)	-0.173 (0.139)	0.020 (0.090)
Large	0.008				0.194***	-0.326*	-0.092

	(0.052)				(0.072)	(0.183)	(0.085)
training	0.119	0.046	0.224	0.102	0.252	0.203	-0.089
	(0.108)	(0.158)	(0.169)	(0.277)	(0.155)	(0.252)	(0.178)
Competition	-0.029	0.042	-0.123	0.005	-0.177	0.138	0.030
	(0.102)	(0.163)	(0.155)	(0.238)	(0.145)	(0.257)	(0.175)
Foreign	0.351	1.414***	-0.607*	0.461	0.465	0.659	-0.151
	(0.236)	(0.401)	(0.332)	(0.407)	(0.328)	(0.542)	(0.369)
Sector	-0.006	0.178*	0.072	-0.312**			
	(0.059)	(0.093)	(0.098)	(0.128)			
Constant	13.320***	12.615***	13.397***	14.560***	12.990***	13.224***	13.458***
	(0.264)	(0.362)	(0.438)	(0.642)	(0.343)	(0.457)	(0.319)
Observations	1,021	425	368	228	517	186	318

Table 3: Gender and firm level productivity (sales per worker) IV-2SLS

	(1)	(2)	(3)	(5)	(4)	(6)	(7)
VARIABLES	Overall	Small	medium	Large	Manufacturing	Retail	Service
Bribe	0.221* (0.122)	0.069 (0.093)	0.649 (0.678)	0.142 (0.360)	0.079 (0.081)	-0.433 (1.335)	1.114 (1.408)
Female	-0.165 (0.223)	-0.086 (0.289)	0.593 (1.188)	0.396 (0.577)	0.318 (0.274)	0.053 (1.122)	-3.033 (2.742)
Female_workers	-0.000 (0.000)	-0.007 (0.006)	-0.024 (0.016)	0.000 (0.000)		0.000 (0.000)	-0.000 (0.001)
power_outage	-0.043** (0.019)	-0.030*** (0.010)	-0.114 (0.157)	-0.027 (0.018)	-0.028 (0.018)	-0.015 (0.063)	-0.037 (0.052)
credit	0.107 (0.137)	0.194 (0.175)	0.620 (0.601)	-0.377 (0.475)	0.041 (0.158)	0.278 (0.573)	0.736 (0.994)
Manager_experience	0.011 (0.007)	0.022** (0.009)	-0.027 (0.046)	0.013 (0.012)	0.008 (0.007)	0.033 (0.049)	-0.012 (0.062)
Exports	0.003 (0.003)	0.000 (0.004)	0.009 (0.013)	-0.001 (0.007)	0.004 (0.003)	-0.001 (0.010)	0.016 (0.025)
Certification	0.637*** (0.219)	0.732** (0.295)	0.364 (1.355)	0.519 (0.358)	0.505** (0.212)	-0.213 (1.274)	2.053 (1.582)
Firm_age1	0.330*** (0.105)	0.359*** (0.124)	0.851 (0.783)	-0.022 (0.374)	0.240* (0.123)	0.118 (0.833)	1.259 (1.406)
Research	-0.111 (0.202)	0.116 (0.230)	-0.815 (1.043)	0.258 (0.263)	-0.065 (0.180)	0.421 (0.853)	-1.491 (2.369)
Medium	-0.002 (0.082)				0.189* (0.102)	-0.430 (0.741)	-0.109 (0.612)
Large	0.050 (0.066)				0.202*** (0.072)	-0.482 (0.456)	0.213 (0.514)
training	0.113 (0.165)	-0.015 (0.183)	1.082 (1.345)	0.065 (0.282)	0.328* (0.175)	0.667 (1.133)	-1.247 (1.473)
Competition	-0.069 (0.134)	0.066 (0.173)	-0.087 (0.591)	-0.094 (0.394)	-0.215 (0.155)	0.604 (1.315)	0.941 (1.804)
Foreign	0.337 (0.350)	1.564*** (0.428)	-1.671 (2.255)	0.486 (0.401)	0.380 (0.383)	0.503 (0.731)	2.033 (2.962)
Sector	-0.021 (0.074)	0.161 (0.099)	0.196 (0.326)	-0.311** (0.131)			
o.Female_workers					-		
Constant	13.091*** (0.352)	12.492*** (0.385)	11.361*** (2.479)	14.908*** (1.078)	13.145*** (0.412)	13.910*** (1.965)	9.298* (5.397)
Observations	1,021	425	368	228	517	186	318
R-squared		0.113		0.018	0.064		
Robust standard errors in parentheses							
*** p<0.01, ** p<0.05, * p<0.1							
N	1,021	425	368	228	517	186	318
Rsquare		0.113		0.018	0.063		
Durbin(p value)	0.015	0.409	0.0165	0.673	0.2303	0.468	0.0006
Hausman P value	0.017	0.418	0.0186	0.685	0.237	0.49	0.0008
Cragg-Donald	7.44	4.417	1.083	2.00248	12.0878	0.1401	0.633

This study's objectives were achieved using the Pooled OLS; after that, results were compared to IV-2SLS for the endogenous variables. The econometric analysis also focused on the business environment factors such as informal competition, corruption, power outages, and access to credit. These factors interacted with the manager gender and their effects examined in the firm sector and firm size. The econometric results for the Pooled OLS are presented in Tables 2, 4, and 6. The IV-2SLS were presented in Tables 3, 5, and 7 with bribe as endogenous variables.

The gender of Top managers and productivity was examined while controlling for firm-specific features such as firm age, investment in research and development, sector, firm size, the share of female employees, managers' experience, export status, and formal training. The instrumental variable results show endogeneity since the p-value for Durbin and Wu-Hausman was less than 0.05. Hence, the discussion was centered on Table 3 of the IV-2SLS.

There is no significant difference between the male-managed firms and the female-managed firms from the table. The results from the IV-2SLS in Table 3 are used since the Durbin, and Wu-Hausman tests are less than 0.05 confirming the presence of endogeneity. The results are therefore consistent with Pletzer et al. (2015), Marinova et al. (2016), and Pletzer et al. (2015). The three studies found out that there is no relationship between women participation in top leadership and firm performance. However, from the pooled OLS, the female managed firms were 42.5% less productive for medium sized firms than the male managed firms. The medium-sized results, therefore, are in line with the Islam et al. (2018), Darmadi (2013), Okumu & Maweje (2020).

However, some studies, such as Reinert et al. (2016) and Post & Byron (2015), found a positive relationship between female managed firms and productivity. The contrary results may be due to different data sets and other methodologies in examining the performance. For instance, Reinert et al. (2016) researched the female representation in senior positions and a firm's performance in the banking sector in Luxembourg using panel data from 1999-2013. The Variables were return on Equity, Return on Asset, Female management share, firm size, client deposit, total Staff expenditure, financial strength, and bank activity. Reinert et al. (2016) results showed that females' participation in senior positions doubles performance during financial downturn than normal market conditions.

Table 4: Moderating role of share of female employees (OLS)

VARIABLES	(1) Overall	(2) Small	(3) Medium	(4) Large	(5) Retail	(7) Service
Male#share of Female_employees	-0.000 (0.000)	-0.006 (0.005)	-0.014*** (0.003)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Female#Femaleemployees	-0.007 (0.006)	-0.015 (0.041)	-0.009 (0.008)	-0.008 (0.010)	0.015 (0.036)	-0.008 (0.007)
power_outage	-0.020*** (0.005)	-0.021*** (0.006)	-0.017* (0.009)	-0.035** (0.013)	-0.031*** (0.010)	-0.014** (0.006)
credit	0.080 (0.134)	-0.016 (0.172)	0.460** (0.226)	-0.326 (0.409)	0.273 (0.220)	0.007 (0.165)
Manager_experience	0.030*** (0.008)	0.033*** (0.010)	0.026* (0.014)	0.031 (0.024)	0.019 (0.012)	0.036*** (0.010)
Exports	-0.002 (0.004)	0.003 (0.006)	-0.020*** (0.006)	-0.001 (0.006)	0.001 (0.007)	-0.002 (0.005)
Certification	0.784*** (0.230)	0.861** (0.364)	0.800* (0.438)	0.944** (0.413)	0.034 (0.536)	1.007*** (0.248)
Firm_age1	0.186** (0.092)	0.295*** (0.110)	0.212 (0.177)	-0.123 (0.264)	0.381** (0.158)	0.103 (0.113)
Research	0.153 (0.170)	0.198 (0.233)	0.038 (0.295)	-0.013 (0.393)	0.604 (0.379)	0.020 (0.190)
Medium	-0.042 (0.074)				-0.202 (0.145)	0.032 (0.088)
Large	-0.114 (0.077)				-0.252 (0.183)	-0.060 (0.081)
training	-0.067 (0.141)	-0.126 (0.185)	0.127 (0.250)	0.243 (0.455)	0.070 (0.249)	-0.120 (0.171)
Competition	0.064 (0.141)	0.210 (0.196)	0.023 (0.238)	-0.245 (0.418)	0.067 (0.252)	0.071 (0.169)
Foreign	0.165 (0.294)	1.084*** (0.328)	-0.692 (0.581)	-0.596 (0.581)	0.720 (0.543)	-0.079 (0.350)
Sector	-0.310** (0.141)	-0.429** (0.172)	-0.141 (0.276)	0.056 (0.518)		
Constant	14.249*** (0.463)	14.127*** (0.536)	13.743*** (1.005)	14.021*** (1.811)	13.317*** (0.422)	13.370*** (0.297)
Observations	527	286	162	79	196	331
R-squared	0.161	0.233	0.211	0.202	0.169	0.174

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

527	286	79	228	79	196	331
0.16	0.233	0.202	0.018	0.202	0.168	0.174

Table 5: Moderating role of share of female employees (IV-2S)

VARIABLES	(1) Overall	(2) Small	(3) Medium	(4) large	(5) Retail	(6) service
Bribe	0.430 (0.596)	-0.005 (0.181)	-2.457 (7.123)	0.860 (1.612)	-0.573 (2.175)	1.106 (1.394)
Male#share of Female_employees	-0.000 (0.000)	-0.007 (0.006)	0.037 (0.149)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.001)
Female#Femaleemployees	-0.010 (0.012)	-0.019 (0.159)	-0.035 (0.095)	-0.010 (0.016)	0.100 (0.351)	0.001 (0.031)
power_outage	-0.034 (0.023)	-0.020 (0.014)	-0.131 (0.367)	-0.061 (0.045)	-0.007 (0.109)	-0.041 (0.055)
credit	0.223 (0.323)	-0.060 (0.234)	-0.834 (5.314)	-1.855 (2.914)	0.297 (0.732)	0.660 (0.970)
Manager_experience	0.016 (0.022)	0.035*** (0.012)	0.141 (0.376)	0.001 (0.083)	0.041 (0.083)	0.006 (0.027)
Exports	0.003 (0.009)	0.003 (0.007)	-0.002 (0.066)	-0.005 (0.016)	-0.003 (0.016)	0.020 (0.025)
Certification	1.223** (0.611)	0.974** (0.402)	-1.709 (8.370)	2.329 (2.751)	-0.326 (1.849)	2.025 (1.552)
Firm_age1	0.565 (0.523)	0.305 (0.201)	-3.755 (12.611)	-0.497 (0.730)	-0.003 (1.489)	1.177 (1.348)
Research	-0.198 (0.673)	0.195 (0.256)	6.442 (23.227)	1.510 (3.014)	0.306 (1.365)	-1.632 (2.457)
Medium	0.029 (0.208)				-0.559 (1.391)	0.010 (0.625)
Large	0.018 (0.243)				-0.523 (0.715)	0.275 (0.537)
training	-0.422 (0.561)	-0.035 (0.313)	0.310 (2.547)	-0.731 (2.057)	0.840 (2.019)	-1.100 (1.397)
Competition	0.144 (0.351)	0.244 (0.202)	1.050 (4.719)	-0.446 (1.015)	0.733 (2.058)	1.147 (1.958)
Foreign	0.718 (0.889)	1.014* (0.543)	-1.348 (2.722)	-0.312 (1.047)	0.512 (0.824)	1.881 (2.795)
Sector	-0.494	-0.428**	2.274	-0.268		

Constant	(0.376) 13.231***	(0.171) 14.036***	(7.008) 19.419	(0.888) 16.305***	14.121***	8.582 (5.900)
	(1.487)	(0.750)	(19.689)	(5.264)	(3.531)	
Observations	504	271	159	74	186	318
R-squared		0.253				
Robust standard errors in parentheses						
*** p<0.01, ** p<0.05, * p<0.1						
N	504	271	159	74	186	318
Rsquare	0.16	0.253	0.079			
Durbin(p value)	0.15	0.968	0.095	0.254	0.462	0
Hausaman P value	0.15	0.969	0.0186	0.313	0.483	0
Cragg-Donald	0.68	1.167	0.109	0.633	0.081	0.642

They were furthermore checking on the results of the proportion of the female workers and firm performance. The OLS in Table 4 above results that the proportion of female workers and their interaction with female top manager are neutral in their relationship to company performance. In addition, the results across the sector depicted the same thing. However, in Medium-sized firms, the proportion of female workers and their interaction with female top manager results into a 1% significant drop in the firm's performance.

On the other hand, the male manager and the share of the proportion of the female employees, the results depicted no association between the interaction of the percentage of female employees and male manager and the firm performance. However, under the medium-sized firms, the ratio of the female employees resulted in a 1.4% decrease in the firm's performance in the male-managed firms 0.1 significance level.

Table 6: Gender and Firm productivity: Moderating role of businesses environment-OLS

	(1)	(3)	(4)	(5)	(9)	(11)	(10)
VARIABLES	Overall	Small	Medium	Large	Manufacturing	Retail	Service
Male#poweroutage	-0.019*** (0.004)	-0.028*** (0.005)	-0.007 (0.006)	-0.021** (0.010)	-0.017*** (0.006)	-0.016** (0.006)	-0.033*** (0.012)
Female#poweroutage	-0.012 (0.008)	-0.009 (0.009)	-0.016 (0.017)	0.057* (0.030)	-0.006 (0.012)	-0.015* (0.008)	-0.027 (0.040)
Male#informal competition	-0.263** (0.105)	-0.174 (0.163)	-0.315* (0.178)	-0.112 (0.229)	-0.476*** (0.154)	-0.066 (0.178)	0.047 (0.258)
Male#Bribe	-0.003 (0.006)	-0.007 (0.014)	-0.007 (0.008)	0.026 (0.026)	-0.006 (0.009)	-0.006 (0.012)	0.017 (0.014)
Female#Bribe	-0.027*** (0.010)	-0.018* (0.011)	-0.048* (0.028)	-0.488*** (0.049)	-0.003 (0.064)	-0.029*** (0.010)	-0.008 (0.036)
Female#informal competition	-0.263** (0.105)	-0.174 (0.163)	-0.315* (0.178)	-0.112 (0.229)	-0.476*** (0.154)	-0.066 (0.178)	-0.065 (0.258)
Constant	14.609*** (0.097)	14.466*** (0.155)	14.511*** (0.163)	14.961*** (0.197)	14.762*** (0.141)	14.258*** (0.161)	14.647*** (0.243)
Observations	1,068	435	388	245	551	330	187
R-squared	0.033	0.051	0.028	0.047	0.040	0.034	0.044
Robust standard errors in parentheses							
*** p<0.01, ** p<0.05, * p<0.1							

Table 7: Gender and Firm productivity: Moderating role of businesses environment-IV-2SLS

	(1)	(4)	(7)	(9)	(13)	(15)	(18)
VARIABLES	Overall	Small	Medium	Large	Manufacturing	Retail	Service
Male#poweroutage	-0.042** (0.020)	-0.036*** (0.011)	-0.200 (0.512)	-0.026 (0.018)	-0.041** (0.019)	-0.031** (0.013)	-0.095 (0.287)
Female#poweroutage	-0.008 (0.009)	-0.007 (0.009)	0.016 (0.062)	0.060* (0.032)	-0.005 (0.013)	-0.037 (0.042)	0.065 (0.254)
Female#informal Competition	-0.316** (0.135)	-0.177 (0.171)	-0.318 (1.004)	-0.285 (0.539)	-0.503*** (0.175)	0.255 (0.444)	-0.333 (1.596)
Female#Bribe	-0.247* (0.139)	-0.107 (0.112)	-1.132 (2.367)	-0.768 (0.651)	-0.149 (0.113)	0.226 (0.488)	-2.731 (8.927)
Male#Bribe	-0.575 (0.410)	-0.226 (0.310)	-0.225 (-0.309)	-0.711 (3.107)	-1.169 (0.837)	-5.955 (26.330)	-0.634 (0.564)
Male#Informal competition	0.065 (0.160)	0.219 (0.302)	0.218 (-0.302)	-0.045 (0.230)	-0.242 (0.177)	1.033 (4.632)	0.603* (0.341)
Constant	14.515*** (0.137)	14.408*** (0.174)	13.719*** (1.612)	14.968*** (0.207)	14.744*** (0.166)	14.698*** (0.273)	11.507 (9.137)
Observations	1,068	435	388	245	551	187	330
Robust standard errors in parentheses							
*** p<0.01, ** p<0.05, * p<0.1							
Durbin(p value)	0.04	0.05	0.08	0.66	0.05	0.43	0.02
Hausman P value	0.04	0.05	0.08	0.66	0.05	0.43	0.02
Cragg-Donald	6.9	15.87	3.62	1.324	4.61	0.049	1.8

In Tables 6 and 7 above, the results of the moderating effects of the power outages on both female and male managed firms. The results indicate that, in the overall model, the productivity of the male-managed firms reduces by 1.9 %. At the same time, the power outages have no significant effects on the general model of female-managed firms. In terms of firm size disintegration, productivity reduced by 2.8%, 2.1% in small and large sized firms respectively. In addition power outages reduced productivity significantly by 1.7%, 1.6%, and 3.3% in manufacturing, retail and

service sector respectively. The reduction was were significant at both 1% and 5%. The power outages in the medium male managed firms had no impact on productivity. The power outages affected the large and small female managed firms, reducing overall sales significantly by 5.7% and 1.5%, respectively. Power outages implies that the employees not undertaking their tasks and thus the production process is put into a halt .On the focus, environmental factors such as power outages impact the firm productivity negatively. The overall model in the Table 3 shows that power outages significantly reduced productivity by 4.3% and 3.1% for small-sized firms. The results for the medium and large firms were insignificant. The reason may be that these firms have an alternative power source. The impacts of power outages is more explicit on the male managed firms than the female managed firms. For instance, in the male-managed firms, power outages significantly reduce productivity by 4.2% in the overall model, 3.6% in the small-sized firms, 4.1% manufacturing sector. In contrast, in the female-managed firms, the power outages only affect the large industry

On the variable bribe, the econometrics results indicated that the bribe reduces firms' sales by 22.1%, but the results are insignificant among the small, medium, large, and firm sectors manufacturing, and retail.

On moderating the role of bribes and their relationship to firm performance, bribes reduced the overall sales of female managed firms by 2.7 %, as per Table 6. On the firm's size, sales were significantly reduced by 2.7%, 4.8%, and 48% in small, medium and large sized firms respectively due to bribes. The bribe adversely affected the retail industry; hence, the sales declined by 2%. The interaction between a bribe and the male manager was neutral on the performance of the firm. The male-managed firms were therefore not much affected by the bribes as the Table 6 above. In addition, the informal payments reduced overall productivity by 2.7% at 1% significant level in female-managed Therefore, these results can be supported by the empirical finding by Bbaale & Okumu (2018). The corruption in both female-managed firms and male managed usually results in delays in providing the necessary resources. It also tends to increase the red rapes hence increasing avenues for harvesting more bribes.

Informal competition has no impact on the firms across all the categories as shown in Table 2 and Table 3 above. Hence, these results are consistent with Ali & Najaman (2015) and Ospina & Schiffbauer (2010), who asserts that more intense informal competition results in higher

productivity. However, on examining the moderating role of gender and firm productivity and moderating part of the business environment, the results are pretty different. The variable was created by interacting the dummy variable of the top manager and the dummy variable of the competition. In the overall category, the female managed firms are 26.3% less productive in an informal competition. In addition, informal competition reduces productivity by 47.3% for the female-managed manufacturing sector and 31.5% for the service sector, as in Tables 6 and 7. For the male-managed firms, the informal competition reduces the firm productivity by 26.3% on the overall model. In addition, the productivity declines by 31.5% for the medium, and 47.6% for the manufacturing, according to Tables 6 and 7. In large and small firms, the results are insignificant. The reasons may be that small firms have a small market reach and they are well known by their customers hence the informal competition may not affect so much. In addition, large firms have a fair share of the markets and therefore they used sophisticated technology to do thorough advertisements thus ensuring that they eliminate the informal competition.

The line of credit has a positive effect but not significant on the firm productivity. For instance, in Table 5, a line of credit significantly increases productivity by 46% in medium-sized firms. Hence, this shows firms that access credit are more productive than those which do not.

The other control variable analyzed is the formal training. The results are expected since, in the manufacturing sector, skills are required to improve the firm manufacturing efficiency. Hence, the firm formal training significantly increase productivity by 20.2% in the manufacturing firms. Therefore, this result is consistent with Islam et al. (2018), who purports that formal training increases the firm productivity capacity.

Manager experience has a positive impact on the firm productivity, especially in the female-managed small-sized firm. In this case, each additional year of manager experience increases the productivity by 2.2% for small-sized firms. In addition, the overall model shows a positive relationship between the management experience and firm productivity, although the results are not significant.

Overall, the firm with quality certification performed better than those without certification. Overall, model firms with internally recognized certification significantly performed better by 63.7% than those without certification. In addition, quality certification is significantly associated with a 73.8% increase in firm productivity in small firms. Also, in the manufacturing sector, quality certification increases business sales by 50.5%. Quality certification allows firms to access

markets, even in the international markets, which increases sales. The firms with quality certification may experience little disruption from the government and other agencies due to disruption.

In addition, from the results, firm age has a positive impact on the firm's productivity. The overall model in table 3 indicates that healthy age increases the productivity of small-sized firms by 29.5% and the manufacturing sector by 38.1%. As firms grow, they keep improving on past mistakes and finding more accessible routes for doing business. Therefore, the firms evade significant obstacles that may be a hindrance to the firm growth. In addition, the cost of production tends to reduce as the firm age increases due to efficiency.

Generally, foreign-owned firms are more productive than domestic-owned firms. The small foreign-owned firms are 141.4% significantly more productive than the domestic-owned firms. Foreign-owned firms are associated with technology and valuable skills transfer, which explains why they perform better than domestic ones. The same case is with the variable the research and development. On the variable export, the results showed a positive but not significant influence on the firm productivity. However, medium-sized firms were found to be more productive than large firms, as per Table 2. Lastly, the firms with a line of credit performed better than those without a line of credit. This implies that lack of line of credit influences firm productivity negatively.

5.0 Chapter five: Summary, Conclusions, And Recommendations

5.1 Introduction

This chapter summarizes the study, conclusion, policy recommendation, and areas for further research.

5.2 Summary of the study

This study investigated the gender diversity in the top and firm performance in Kenya. The study also investigated the moderating roles of the negative business environment and its relationship on the gender of top managers and firm performance. This study used the pooled OLS as well the IV-2LS techniques to get the econometric results. Some of the business environment factors are power outages, informal competition, bribes, and access to credit. The results indicate a neutral relationship between the female in top management and firm performance for the overall model. However, only in the medium-sized firms, the female participation top resulted in negative firm performance.

Regarding the moderating roles of the negative business environment factors, power outages negatively impact the firm performance. However, the male-managed firms were adversely affected by power outages than the female-managed firms. Secondly, informal payments (bribes) reduce the sales volume by a sizeable margin. Consequently, the female-managed enterprise was adversely affected by the informal payment than male-managed firms. Informal payments also tend to increase the red rapes hence increasing avenues for harvesting more bribes. It also tends to increase the red rapes hence increasing avenues for harvesting more bribes. Furthermore, informal competition reduced the productivity for both the male and female firms at almost the same margins.

5.3 Conclusions

This study found out that female participation in the top management has a neutral relationship with the firm performance except for the medium-sized firms. In addition, there was a negative relationship between the moderating role business environment factors and its interaction with the gender of top manager and firm performance.

5.4 Policy Recommendations

Based on the finding of this study, all the relevant stakeholders should work shoulder to shoulder to ensure that more women participate in the firm performance. This study noted that only 12.7% participate in firm management, which may be the reason for getting neutral results on female management and firm performance. In addition, the government and all stakeholders involved

should ensure that there is a constant power supply to avert losses due to power outages. Therefore, designing policies geared towards utility expansion to integrate the distributed assets into the central grid will help a lot. Furthermore, policies should be put in place to support the formal business to fight unscrupulous informal competition. Also, the government all the day should heavily punish businesses operating without formalization of their business. The government should fight corruption and support the upcoming business by giving credit and grants.

5.5 Areas for further study

This study was only limited to firms captured by the world bank Surveys only in Kenya. Further research can be done on the influence of Female participation in top management and board of directors and firm performance in the East African community.

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