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**Top Management Team Structure and Firm
Financial Performance: Evidence from Listed US
Companies**

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ABSTRACT:

This thesis examines the impact of the structure of the top management team (TMT) on the financial performance of U.S. firms. This study analyses the extent to which there is a significant influence on the business profitability by important structural attributes of TMTs (team size, gender diversity and CEO duality) through the Upper Echelons Theory. Here, Return on Equity (ROE) and Return on Assets (ROA) are used to measure firms financial performance. The study applies panel regression analysis with year and industry fixed effects using data from 2011 to 2020.

The result show that the gender diversity in the TMT is positively associated with financial performance while the TMT size shows negative relationship with firm's profitability. Whereas the dualism of CEOs does not always have a statistically significant association and consistent impact on business financial performance. There appears to be little effect of firm age, but firm size and leverage have a range of effects between the control factors.

Altogether, the findings indicate that not every aspect of TMT structure equally influences the firm outcomes, which to some degree confirms the Upper Echelons Theory. The study contributes to the literature on corporate governance by delivering empirical evidence on top management structure along with promoting gender diversity at the top management level of the U.S. companies. These results can also be useful to the corporate leaders and legislators who are developing effective governance systems to enhance the performance of businesses.

KEYWORDS: Top Management Team (TMT), Upper Echelons Theory, Return on Equity (ROE), Return on Assets (ROA).

Contents

1	Introduction	5
1.1	Background and Motivation	6
1.2	Purpose of the Study	8
1.3	Hypothesis	10
1.4	Limitations of the Study	11
2	Literature Review	13
2.1	Theoretical Review	13
2.2	Empirical Review	15
2.3	Research Gap	23
3	Methodology and Data Analysis	25
3.1	Research Design	25
3.2	Data Collection and Sample	26
3.3	Measurement of Financial Performance	27
3.4	Measurement of TMT Structure	28
3.5	Control Variables	29
3.6	Regression Models	31
4	Results	33
4.1	Descriptive statistics	33
4.2	Correlation Analysis	34
4.3	Regression Analysis using ROA as dependent variable	36
4.4	Regression analysis using ROE as dependent variable	38
4.5	Robustness check	40
5	Summary and Conclusions	44
5	References	47
	Appendix: List of Companies	51

Tables

Table 1. Descriptive Statistics	33
Table 2. Correlation Analysis	35
Table 3. Multicollinearity Analysis	36
Table 4. Regression Analysis using ROA as a dependent variable.	37
Table 5. Regression using ROE as dependent variable	39
Table 6. Regression result after including Cxo_ratio and excluding Female_ratio with dependent ROA.	42
Table 7. Regression result after including Cxo_ratio and excluding Female_ratio with dependent ROE.	43

1 Introduction

Top Management Teams (TMTs) occupy the highest position in the leadership of an organization, and they play a significant role in shaping the overall strategic direction and financial performance of firms. A typical TMT consists of senior executives such as the Chief Executive Officer (CEO), Chief Financial Officer (CFO), Chief Operating Officer (COO), and other key functional leaders who are involved in making key decisions about an organization. Top management team structure denotes how these executives are organized and composed of such factors as team size, gender diversity, roles and responsibilities of the leader and distribution of authority.

The responsibility of top management teams is very diverse and highly influential. The TMTs have the primary responsibility of formulating business strategies creating long term goals and ensuring that organizational resources are utilized effectively. It is their decision which makes major investments, growth, innovation and risk management all of which have a direct impact on firm financial performance (Certo et al., 2006). TMTs also prevent the responsibility of maintaining a watch on organizational activities ensuring that the rules are adhered to and sound corporate governance practices are maintained.

The theoretical foundation of the TMT research is the Upper Echelons Theory developed by Donald C. Hambrick and Phyllis A. Mason (1984). The theory predicts that organizational outcomes are an indication of the experiences, values, and cognitive foundations of senior executives. The managers apply their individual perceptions to analyze complex events and the interpretations that influence strategic decisions that ultimately affect the firm's performance. Thus, organizational differences in outcomes can be based on the variations in TMT composition in age, education, tenure, gender, and such functional background (Hambrick & Mason, 1984).

1.1 Background and Motivation

Recent studies have focused more on the impact of the internal composition of top management teams (TMTs) on firm performance as an expansion of the importance of TMTs in determining organizational financial outcomes. In a modern business environment, organizations have been depending more on the synergy of the skills that the top management teams of the companies rather than only on their CEOs. According to the Upper Echelons Theory, since executives know how to respond to an external environment based on their experiences and values, management traits can theorize organizational outcomes to a certain degree (Hambrick and Mason, 1984). This means that firm performance variations could be caused by differences in the composition of TMT.

One of the most discussed aspects of the TMT structure is diversity which includes differences in gender, education, experience, and functional background. Diversity in the top management teams is often perceived to be beneficial due to its ability to introduce various opinions into the decision-making process. It can enhance innovation and improve the quality of strategic decisions (Pham and Lo, 2023). Diversity based on gender has attracted much attention over the recent years as firms are encouraging more women to involve in boardroom dynamics and corporate performance (Kevin Campbell & Antonio Minguéz Vera, 2010). According to recent empirical research gender diversity is positively correlated with financial performance (eg., Erhardt et al.) However, others research shows negative or inconclusive of the correlation (Smith et al. 2006; Caspar Rose 2007).

Another important factor in the TMT structure is the team size that determines the number of executives involved in the strategic decision-making process. Larger teams can offer a greater range of skills and knowledge, and it can impact the performance of the company and the quality of the decision made. However, it is also true that larger teams might experience coordination issues and more complex communication, which can slow down the decision-making process. Smaller teams, however, may be more unified and effective though they may lack a variety of different perspectives. Due to this,

the relationship between the team size and the firm performance remains obscure, and it requires empirical research (Pham and Lo, 2023; Homberg and Bui, 2013).

Leadership structure also plays a major role in the effectiveness of TMTs besides team size and diversity. The role of the CEO is highly important since they often play a large role in strategic decisions. The most significant aspect of leadership structure is CEO duality where the CEO serves as a chairman of the board. Even though CEO duality can bring good leadership and unity, other members of the team may find their input limited and reduce accountability. Ma et al. (2021) suggest that TMT diversity is related to the firm's performance, which is moderated by the CEO-TMT power imbalance, and that the leadership dynamics should be considered to understand the organizational outcomes.

Similarly, Financial measures such as Return on Equity (ROE) and Return on Assets (ROA) are common measures of firm performance since they demonstrate the level of profitability and efficiency of the firms. But firm specific characteristics such as size, age and leverage play an important role. Leverage on the other hand is financial risk and could affect profitability. These aspects indicate the importance of considering firm characteristics and TMT structure in assessing performance outcomes (Wagdi and Fathi, 2024; Pham and Lo, 2023).

The range of literature on TMT structure is growing, with findings of past studies being inconsistent and even contradictory. There is some evidence that the TMT diversity and firm performance have a positive correlation, and other researchers refer to negative or negligible effects (Homberg and Bui, 2013). Also, much of existing studies is also confined to specific countries or industries and these constraints the generalizability of findings. This creates a very specific research gap and underlines the need to conduct further research with a broader scope of datasets.

Moreover, the current research aims at investigating the relationship between certain attributes of the top management team design, such as diversity, team size with the financial performance of the firm based on varied sets of data. In such a way, this research will serve as an add to the existing body of knowledge, as well as having

practical implications which can be used by managers and policymakers interested in enhancing the level of organizational effectiveness.

1.2 Purpose of the Study

The connection between top management team (TMT) structure and firm performance has received significant attention in the field of corporate governance. Recent research is done on the group behavior of top management teams in comparison to previous research which emphasized the importance of individual leaders. This change is strongly influenced by the Upper Echelons Theory which argues that the experiences, attitudes and cognitive orientations of top executives determine organizational outcomes (Hambrick and Mason, 1984). Thus, differences in TMT structure including differences in team size, diversity, and leadership processes are expected to influence the firm's financial performance.

One of the key problems with the existing literature is the inconsistent findings on the impact of TMT diversity on firm performance. Some studies have found that diversity can enhance the quality of decisions because it introduces a number of perspectives and encourages a greater degree of creativity and strategic flexibility (Pham and Lo, 2023; Wagdi and Fathi, 2024). Nevertheless, additional studies indicate that diversity can cause such issues as reducing team cohesiveness, conflicts, and communication barriers, which can negatively affect the firm's performance (Homburg and Bui, 2013). All these contradictory findings indicate that TMT diversity as well as firm performance are involved in a complex relationship that could be affected by situational factors such as managerial framework, organizational culture, and industry characteristics.

Along with diversity, the magnitude of the top management team has also been identified to affect the firm's performance greatly. Larger teams may have a greater range of information, skills, and experience which may enhance the quality of strategic decisions. They might, however also face coordination challenges and make less efficient decisions that ultimately affects firm financial performance. Small teams, in turn may be more efficient and unified but lack the number of various perspectives. The size of the

ideal team may not exist at all as earlier studies have shown discrepancies in the impact of team size on firm performance (Haleblian and Finkelstein, 1993; Certo et al, 2006). Such ambiguity complicates the understanding of the effects of TMT structure on the outcomes of firms.

Another important issue is the leadership organization, that is the Chief Executive Officer (CEO) position within the TMT. CEO duality has been widely addressed in the literature and is where the CEO also serves as chairman of the board. Some studies (Dalton et al., 1998; Ma et al., 2021) have found that CEO duality may lead to poor corporate governance and a reduction in accountability while others have argued that it can create strong leadership and accelerated decision making. The power balance between the CEO and other team members can have a significant influence on how decisions are formed and whether team diversity is able to improve firm financial performance. This highlight shows the significance of considering the issue of leadership dynamics when examining the relationship between the TMT structure and firm financial performance.

Also, the study will contribute to the ongoing academic debate regarding the effectiveness of diversity within the top management teams. This research seeks to determine whether diversity in TMTs enhances firm performance or the effects depend on other situational factors through a presentation of empirical evidence based on a US firms dataset. This progresses a more refined understanding of the influence of diversity on the effectiveness of an organization.

This research will provide managers, investors, and policymakers with insightful information. By understanding the impact of TMT structure on firm performance, organizations can develop stronger leadership teams and improve corporate governance processes. The results can be utilized by firms, such as to determine the impact of CEO duality, promote diversity in the management positions, or determine the size of management teams. Investors can also rely on this information when deciding on investments to make based on the quality of the management team of a firm.

Accordingly, this study provides answers to following question:

What is the impact of TMT structures (Firm size, CEO Duality and Female ratio) on the financial performance of listed US firms?

1.3 Hypothesis

The previous studies demonstrated different findings when examining relationship between TMT structure and firms financial performance. The Upper Echelons Theory asserts that the characteristics of the top management team and business performance are directly affected by the composition (Hambrick and Mason, 1984). Prior research has found that TMT structural features and business financial performance have positive and neutral relationships (Homberg and Bui, 2013; Pham and Lo, 2023). Hence, to observe the correlation between them the major hypothesis of the study are as follows:

H1: Top management team structure has a significant impact on firm financial performance.

The study also investigates the independent contribution of each structural attribute to financial performance to better understand which elements drive the expected relationship. Prior research affirms that the structural composition of the TMT influences decision-making quality and strategic outcomes (Hambrick and Mason, 1984; Ma et al., 2021). Hence, the main hypothesis is broken down into three sub-hypotheses for clarity:

H1a: Top management team size has a significant impact on firm financial performance. It is believed that larger TMTs bring more expertise, experience, and knowledge to the strategic decision-making process that can enhance the quality of decisions and ultimately financial success. Nevertheless, these benefits can be negated by coordination challenges and slow decision-making as the team sizes increase (Pham and Lo, 2023; Homberg and Bui, 2013). This hypothesis allows testing the orientation and strength of the team size performance relationship in the present world environment as empirical studies on this relationship are inconclusive.

H1b: Gender diversity in the top management team has a positive impact on firm financial performance.

Gender-diverse top management teams are expected to offer more perspectives on the strategic decision-making process and improve the quality of decisions and corporate governance practices. Studies indicate that organizations that have a higher number of women in top management have generally better financial results, risk-taking is more balanced, and increased transparency (Wagdi and Fathi, 2024).

H1c: CEO duality has a significant impact on firm financial performance

CEO duality in which the Chief Executive Officer and the Chairman of the Board is a highly controversial point of TMT leadership structure. Studies claim that CEO duality offers effective leadership guidance and enables aggressive strategic move which can be helpful to firm performance. Critics, however contend that dual roles decrease independence of boards and limit the checks and balances required by the boards, good governance, which may compromise financial performance (Ma et al., 2021).

1.4 Limitations of the Study

The relationship between the top management team (TMT) structure and firm financial performance is a controversial and complex topic in corporate governance and strategic management research. There are limitations that are bound to happen despite the potential of this study to provide substantial empirical evidence based on a global dataset due to data constraints, methodological choices, and the scope of the research.

The research has the following limitations:

- i. The research is founded on a sample of only the listed US companies.
- ii. There is a limited sample of industries that only some industries are selected such as the communication services, consumer discretionary, and consumer staples which might not be representative of other industries with different structural and competitive attributes.

- iii. TMT variables are also few (team size, gender diversity, and CEO duality) and other significant variables like tenure, education, and experience are not taken into account.

2 Literature Review

The role of top management teams has attracted a significant amount of focus in the discipline of both corporate governance and strategic management over the last few decades. The corporate environment is becoming increasingly complex through globalization, technical development, competition in the market, and pressure of the stakeholders thus requiring the top leaders to make strategic business decisions on behalf of the firms. Consequently, the role of TMT composition and structure on organizational outcomes and financial performance are increasingly gaining the attention of scholars.

Top management teams can be counted on to make major strategic decisions that will have a direct effect on profitability and long-term sustainability including investment planning, expansion plans, risk management, innovation, and resource allocation. Earlier studies have found out that the team size, gender diversity, tenure, functional background, and leadership structure can have a significant influence on the effectiveness of decision making and ultimately the effectiveness of a firm (Hambrick and Mason, 1984). In this way, this literature review aims to describe the primary theoretical reviews and previous empirical reviews regarding the relationship between the TMT structure and the firm's performance. The first section primarily focuses on the theoretical underpinnings of the study, particularly the Upper Echelons Theory and the other supporting theories. The following parts provide a summary of previous empirical data conducted in other industries and countries and touch upon the connections between the key variables employed in the present research. This review provides the scholarly basis of studying the influence of TMT attributes on the firm's financial performance of publicly traded corporations.

2.1 Theoretical Review

Upper Echelons Theory explains the relationship between Top Management Team (TMT) structure and firm financial performance (Hambrick & Mason, 1984). This theory states that organizational effectiveness is inversely proportional to top executive's contexts and

demographic characteristics including their experience to make strategic decisions for a firm.

Another relevant theory for this study is Agency Theory which illustrates the separation of ownership and control of large corporations, with managers acting as agents and shareholders acting as the principals (Berle and Means, 1932; Jensen and Meckling, 1976). An additional theoretical debate surrounding TMT structure involves separation of ownership and control, whereby managers have the potential to be self-serving rather than focusing on shareholders' wealth despite their power to make decisions on their behalf. The concentration of power and leadership, especially CEO duality, is also relevant to TMT structure. CEO duality concentrates power in a single individual by having the company CEO duality also serve as Chairperson of the Board. Agency theory explains why CEO duality could produce poorer firm performance through less accountability for the chairman, reduced board independence, and increased agency costs, outweighing the advantages of more stable leadership and faster decision making. Thus, governance processes and leadership structure provide important insights into theorizing the relationship between TMT structure and firm financial performance.

Similarly, the Resource Dependence theory of the firm is also the theoretical framework for the study. According to Resource Dependence Theory, reliance on external resources such as capital, market information, stakeholder relationships and planned network is vital for organizations survival and growth. Top management teams are responsible for obtaining and managing these resources. Their human capital, network ties and professional experiences are important for obtaining critical resources (Pfeffer & Salancik, 1978). Executives with diverse educational and functional backgrounds may provide firms with better access to valuable resources and calculated opportunities, thereby improving their performance.

Also, another theoretical perspective of TMT structure and firm performance is the Resource Based View theory, developed by Jay Barney (1991) and states that firms can gain a long-term competitive advantage when they have resources that are valuable, rare, inimitable, and non-substitutable. The Top Management Team (TMT) is seen as a

distinct set of human capital such as knowledge, skills, experience and managerial expertise in this context and is considered a key strategic asset.

2.2 Empirical Review

Among the earliest empirical investigations of the TMT size effects on the firm's performance, the one conducted by Haleblan and Finkelstein (1993) found out that TMT size is positively related with performance based on data of US firms operating in dynamic business environments. This suggests that larger teams might process more environmental information and react more skillfully to complicated and quickly changing situations. The study indicates that different resources of knowledge are particularly crucial in firms that are highly unpredictable and dynamic, and the advantages of team size are the most evident. The authors argued that the informational advantages can be reduced in the stable environment because of the coordination costs of larger teams, but the vice versa applies to the chaotic environment (Haleblan & Finkelstein, 1993).

Pham and Lo (2023) employed cross-national data of numerous industries to examine the relationship between diversity in the top management team and firm performance. They concluded that, through letting firm performance gain access to a larger range of knowledge, team size significantly influences the quality and extent of strategic decisions. The research found that there was a positive relationship between moderate TMT size and the firm performance measured using both ROA and ROE. Their findings also revealed that high functionality and gender diversity in the team augment the advantages of team size.

The findings of Tan, Wu, and Chu (2024) who had investigated the impacts of wage difference and TMT diversity on innovation performance among Chinese listed firms showed contradictory findings. These findings suggest that the expansion of top management teams creates a declining or even negative impact on firm performance at some point. Whereas, Ali Ahmadi, Nejia Nakaa and Abdelfettah Bouri (2018) studied the relationship between the characteristics of the CEOs, the composition of the boards, gender diversity and company performance among listed companies in France. The

study suggests that independent directors and the characteristics of the board have a positive effect on company performance based on ROA and ROE. The findings also revealed that there was a significant relationship between CEO duality and the company's performance which validated the presumptions of Stewardship Theory. The research concluded that an effective board composition and leadership team structure are key aspects of enhancing a company's financial performance, according to Ahmadi et al. 2018.

The results by Carter, Simkins and Simpson (2003) also demonstrated that there is a positive correlation between the proportion of women on the board and the value of the firm based on Tobin's Q which resulted a significant relationship between them. Post and Byron (2015) furthered this research into a cross-national context by reviewing over 140 studies from a variety of institutional settings in a meta-analysis. They concluded that the representation of women on boards is positively associated. Their data also showed that firms with high levels of environmental uncertainty benefit most from gender diversity in terms of performance.

A literature search of empirical studies of CEO duality can provide further details on the differential performance consequences of holding more than one leadership position. Rechner and Dalton (1991) found that in a six-year study of large U. S. firms, firms with separate CEOs and chairpersons had superior performance in various financial indicators (ROE, ROA, profit margins) compared to firms with CEO duality. Their findings provided some of the first empirical evidence, systematically collected, of the possible trade-offs involved in the benefits of accountability versus the benefits of efficiency that can come from unified command. Boyd (1995), on the other hand, used a meta-analytic method and discovered that contextual factors modulated the link between CEO dualism and firm performance, which was not always negative. In particular, the study found that CEO duality was positively associated with performance in environments of limited resources, as the combination of leadership decision-making and focus reduced operational uncertainties and enabled faster decisions on strategy.

Based on the data of firms in developing economies, Wagdi and Fathi (2024) analyzed the effect of the diversity of TMT members on financial performance and firm value. Based on their results, firm financial performance indicators such as ROA and ROE had a positive relationship with gender diversity in top management. The authors argued that female executives contribute to the complementary cognitive type that enhances the quality of group decisions and that the heterogeneous executive team can negotiate the institutional and informational complexity of dynamic market environments more effectively. This study of developing nations indicates that the diversity-performance relationship between genders cannot be restricted to only rich countries with developed capital markets and governing structures.

Wu, Richard, Triana, and Zhang (2021) used a multiteam systems method to investigate how gender diversity affected the board of directors and top management team's performance. In their analysis, gender diversity at both levels was positively associated with the firm's performance, and the benefits were increased when diversity occurred at multiple leadership levels simultaneously. The researchers also found that the positive effects of gender diversity were influenced by organizational context, including the dynamism within the industry and the intensity of competition, and the benefits of diversity are most apparent in environments that require greater inventiveness and adaptability to issues.

Dezsó and Ross (2012) presented one of the most comprehensive analyses of female representation in top management roles and the performance of companies which have women in those top roles in a panel data setting of S&P 1500 firms. Their findings show that the greater the number of women in the TMT, the more important they were to firm performance, particularly in firms that focus on innovation; in those firms, where a diversity of cognitive perspectives is most significant for the development of strategic value, having more women in the TMT is important. The authors used a difference-in-differences technique to properly control for endogeneity, supporting a causal interpretation of their results.

According to Khan et al. (2021), the size of Malaysian boards, with or without CEO duality roles and the presence of non-executive directors all play significant and interrelated roles in the financial performance of the company. The study focused on agency theory provides further evidence that the composition of the board influences the financial performance of Malaysian listed companies, using the dynamic panel approach where the governance variables are endogenous. Also, Guest (2009) explored the relationship between the size of the board and business performance using a large sample of publicly listed companies in the United Kingdom. The empirical results indicate that board size has a negative correlation with business performance, suggesting that businesses with larger boards are less efficient.

Homberg and Bui (2013) conducted a comprehensive meta-analysis of the effects of TMT diversity, including gender diversity, on the firm's performance. They found that the overall effect of TMT diversity was positive but there was high heterogeneity in studies. Contextual moderators which included the type of industry, approach of measurement, and cultural context, played a significant role in determination of the extent and direction of the effect. It is worth noting that the studies conducted in Anglo-Saxon countries consistently revealed that gender diversity positively affects it. This is directly connected to the present research since companies are American enterprises. The authors attributed this trend by indicating that institutional contexts in Anglo-Saxon countries possess stronger systems of governance and market accountability that augment the positive impact of diverse leadership.

In their cross-national investigation, Pham and Lo (2023) especially looked at gender diversity in addition to other types of TMT diversity. Their study found that gender diversity compared better than functional and educational diversity in relation to contribution to ROA and ROE, and thus has become one of the most credible positive predictors of firm performance. The authors attributed this conclusion to the unique governance and oversight services of female leaders, who are typically associated with risk management practices that are more conservative, the greater stakeholder participation, and the increased disclosure practices. Also, as female executives acquire

firm-specific knowledge and gain more power in organizational cultures and decision-making rules, their research showed how gender diversity effects are compounded in the long run.

Additional evidence is provided by Crossland and Hambrick (2007), who examined how national institutional systems influence the relationship between executive characteristics and firm performance. Their study found that in less constrained institutional systems, such as the United States, individual executive characteristics including gender and background have a stronger influence on firm performance than in more constrained systems where external governance mechanisms are more prescriptive. Whereas, prior research indicates that gender heterogeneity and CEO duality may have a negative effect on Russian bank's financial performance. While, other TMT factors were found to be positive or neutral as revealed by Elena Prosvirkina and Boris Wolfs (2021).

CEO duality is one such critical feature of the leadership configuration of top management teams, whereby the same individual is Chairman of the Board and Chief Executive Officer. The theoretical debate on CEO duality is framed by the agency theory which argues that having both roles in the same person increases power and reduces accountability (Jensen & Meckling, 1976; Fama & Jensen, 1983), and stewardship theory, which argues that a single person in the CEO position can make more efficient and faster strategic decisions (Donaldson & Davis, 1991). This theoretical contradiction is echoed in empirical literature in which studies give conflicting and often mutually contradictory findings.

A seminal meta-analysis of the connection between firm financial performance and leadership structure, including CEO duality was carried out by Dalton, Daily, Ellstrand, and Johnson (1998). Their review of the various published research over a number of decades and institutional settings showed that there were no systematic findings that CEO duality was always associated with either positive or negative financial results. The authors reached the conclusion that the impact of the leadership structure on the firm performance is strongly dependent on other organizational characteristics and external

conditions, including the team size, the concentration of ownership, and the quality of the larger governance framework. This finding led to more empirical investigations that consider contextual moderators and challenged the popular view that the concept of CEO dualism is inherently harmful to firm performance.

Ma, Ge, and Wang (2021) examined the moderating role of CEO-TMT power differences on the relationship between TMT intrapersonal functional diversity and firm performance. Based on their study, the connection between CEO dualism and TMT diversity had a significant influence on firm performance. Specifically, TMT diversity advantages did not have much impact on performance when the power of the CEO was high compared to other TMT members. This paper highlights the importance of considering CEO dualism as a moderating factor determining the translation of TMT composition to organizational performance as opposed to being a predictor of firm performance by its own. The broader power distribution dynamics and team politics within the executive leadership framework are inseparable, according to the study, with the governance implications of CEO duality.

Certo et al. (2006) also studied upon CEO dualism in their meta-analysis of TMT structure and the firm's performance. Based on their findings, the consequences of CEO duality on performance are contextual, and they might vary based on the competitive issues of the firm, industry characteristics and the stage of life cycle in which the firm is operating. Unified leadership could bring efficiency advantages to stable and established industries by reducing decision latency and creating coherence in strategic direction. The reduced accountability associated with CEO duality can be detrimental to the firm's performance in dynamic industries that require rapid re-setting of strategy and in any case when the dual job compromises the independent oversight role of the board.

Bhagat and Bolton (2008) examined the relationship between corporate governance, especially board leadership structure and firm performance using long-term statistics of U.S. companies. As they note, the relationship between CEO duality and other governance practices and performance can be more complicated than it has been assumed. The analysis has found out that it was the overall quality of governance that

had the greatest impact on firm financial performance and not any specific structural feature. According to this perspective, the concept of CEO duality is not to be looked independently but in conjunction with other governance and management characteristics. The authors have also indicated that the endogeneity of the governance decisions contributes to the fact that it is more complicated to make conclusions regarding causality since firms can select specific leadership forms depending on the anticipated impact on performance.

Nina Opstrup and Anders Villadsen (2015) explored the relationship between financial performance of Danish municipalities and gender diversity in top management teams. The study used longitudinal data that stated gender-diverse top management teams had a beneficial impact on financial performance with better collaboration and cooperation within the TMT structure. Whereas Eero Peni (2014) also tested the connection between CEO and chairperson characteristics using a sample of S&P 500 companies with company performance. The study revealed positive correlation between the business performance and the female representation of CEO and Chairperson suggesting that gender difference in leadership can influence the Firm performance.

Zohaib Zahid, Jijian Zhang, Furman Ali and Fakhar Shahzad (2025) examined the role of CEO duality as a moderating variable between board diversity and corporate performance in China's manufacturing firms. The study used panel fixed-effect regression models and covered the years 2008–2022 discovered that CEO duality negatively moderates the association between board diversity and firm success. Nevertheless, the results also showed that extremely diverse boards can improve company performance and lessen the detrimental effects of CEO duality. To be robust, the authors employed alternative board attribute measures and a two-step system generalized method of moments (GMM) approach (Zahid et al.,2025).

Demsetz and Villalonga (2001) employed a large sample of American firms to explore further the relationship between the ownership structure and the firm performance. Their study pointed out that none of the features of governance, including leadership structure, can be expected to predict performance reliably unless endogenous firm

characteristics and selection effects are considered. This finding justifies the methodological importance of the inclusion of firm-specific factors such as team size, leverage, and age in the study of the impacts of CEO duality on firm performance.

Similarly, Demsetz and Villalonga (2001) stressed the importance of firm size as an important control variable in the study of performance and governance. Their examination of the American companies confirmed that size is associated with increased absolute profitability as well as more complex forms of governance, which is both a confounding variable and an addition to the advantage of management structure. Also, larger firms have higher chances to be in multiple product and geographic locations and possess access to professional managerial expertise, which can provide benefits of natural diversity, which can support steady and higher profitability. Due to this reason, it is theoretically and empirically imperative that firm size be considered as a control variable within a study examining the impact of TMT structure on firm performance.

Also, the impact of the CEO duality on corporate financial performance has been investigated by Khaled Elsayed (2007). The Least Absolute Value (LAV) regression analysis was used in the study and firm performance was evaluated by Return on Assets (ROA) and Tobin's Q. The results showed that the CEO duality does not have a consistent effect on firm performance but rather depends on the organizational context and industry. The study also revealed that CEO duality could have a positive effect on low-performing firms since it might enhance the efficiency of leadership and decision-making coordination (Elsayed, 2007). Similarly, Nicole L. Erhardt, James D. Werbel, and Charles B. Shrader (2003) examined the association between board diversity and the financial performance of large U.S. companies. This study focused on the demographic diversity, especially the gender and ethnic diversity of the board of directors and how this diversity relates to financial performance measured by Return on Assets (ROA) and Return on Investment (ROI). The results indicated a positive relationship among board diversity and financial performance and concluded that boards of directors with higher levels of diversity in their leadership have more effective boards and better financial results (Erhardt, Werbel, & Shrader, 2003).

2.3 Research Gap

Based on the literature reviewed above, it is possible to conclude that there are no uniform findings across the existing studies. An overview of the literature on top management team (TMT) structure and firm financial performance developed so far shows that time series or cross-sectional data has been used as the basis of most studies. These studies have attempted to examine the effects of TMT characteristics such as team size, gender diversity, and CEO duality on the financial performance of firms using various econometric approaches. Nonetheless, these studies have largely relied on traditional regression methods and have evaluated whether data fit fixed or random effect models. Different research reports have been reviewed in this study, and both direct and inverse relationships between outcome variables and predictor variables are demonstrated in those literatures. Hence, Mei Yu (2023) explains that Variations in business performance metrics, research designs, sampling methods and methods of dealing with endogeneity issues are the primary reasons behind the mixed findings from previous research. The study also suggests that future researchers should employ various firm performance assessments, a longitudinal research design and an integrative framework to better control the direct and moderating factors.

According to Jukka (2020), studies on top management teams (TMTs) have correlated executive composition with firm performance but most have been inconclusive and have tended to focus specifically on diversity or on basic measures of performance such as ROA. The study situates the study in relation to several gaps in this upper echelon's literature (Jukka, 2020).

In addition, most related literature reviewed presents varied studies that have been conducted in the listed firms of both developing and developed countries. Although, there are rather large volumes of studies that have explored the determinants of firm performance in relation to board composition and executive leadership, the majority of these studies have been conducted in developed economies with only a limited number of studies having been conducted in the context of globally listed companies across multiple industries simultaneously. Therefore, considering available knowledge, the

number of studies focusing on TMT structure in consumer-oriented industries such as communication services, consumer discretionary, and consumer staples remains limited.

Moreover, many previous studies have not been based on a comprehensive measure of top management team structure that incorporates team size, gender diversity, and CEO duality within the same analytical model. Similarly, the finding states that more empirical research is needed to be carried out due to the intricate relationship between TMTs (demographics and heterogeneity) and firm's financial performance (Mohammed Aboramadan, 2021). The aim of this research thus is to fill the gap in the definition of the relationship between the dependent variables that are return on assets (ROA) and return on equity (ROE) with the independent variables that are TMT size, female ratio and CEO duality based on available recent data of US companies from 2011 to 2020.

3 Methodology and Data Analysis

The studied literature review shows that there is still a gap of knowledge in the relationship between top management team structure and financial performance. This part of the thesis discusses how the relationship between top management team and the financial performance of the listed US companies was studied.

3.1 Research Design

To examine the relationship between the top management team (TMT) structure and financial performance of firms, this research aims to employ a quantitative and explanatory research design on a sample of listed companies in the US. The quantitative method is appropriate since it enables an objective and systematic empirical test of the relationship between variables through a statistical and econometric method. The research is grounded on the Upper Echelons Theory (Hambrick and Mason, 1984) that argues that the character and structure of top management teams can influence organizational financial performance.

The research adopts a deductive approach where theories and past empirical research are applied in making hypotheses which are tested through secondary data. With a panel data method, the research is a mixture of time-series data (2011 to 2020) and cross-sectional between enterprises data. It enhances the strength of the analysis by considering the time-varying unobserved firm-specific heterogeneity and captures changes occurring over time. The research employs a systematic data analysis process consisting of regression modelling, correlation analysis and descriptive statistics to achieve the objectives of the research. The main characteristics of the variables are defined at the beginning by the descriptive statistics that comprise such metrics as mean, standard deviation and range. This assists in identifying potential outliers or anomalies to the dataset and provides an overview of the distribution and variability of both financial performance measures as well as TMT structural attributes.

Second, the correlations matrix between the variables are analyzed. This step assists in identifying the direction and strength of correlations of variables and the potential multicollinearity issues that may lead to the inaccuracy of regression predictions. Correlation coefficients which are nearer to -1 and +1 represent stronger associations. Finally, the paper measures the TMT structure and business financial performance relationships at the Ordinary Least Squares (OLS) regression analysis with year and industry fixed variables. The model predicts the connections of variables that are specific to time (specifically, macroeconomic changes) and industry-specific (specifically, industry-specific characteristics) because of incorporating fixed effects.

3.2 Data Collection and Sample

The overall data used in this study was the secondary data obtained from an organizational structure database developed by Albert, Eklund, and Tang (2025) and published by the Strategic Management Journal. The data set can be effectively employed in an empirical study on corporate governance, organizational structure and company performance analysis as it presents large-scale and reliable data regarding top management team (TMT) structures of global listed firms.

Academic research on the impact of managerial structures on corporate financial performance and strategic decision-making is increasingly using the database. The data set consists of indicators in the firm level and a wide scope of variables regarding the composition of TMT, executive functions, hierarchical systems and demography. Its global presence enables researchers to make cross-national and cross-industry comparisons. Also, other variables were collected using Orbis database.

Firstly, the sample of companies was selected by three industries that were closely related: communication services, consumer staples, and consumer discretionary. The industries were selected as consumer-oriented and relatively close to the market dynamics thereby reinforcing the validity of cross-company comparisons. Second, the timeframe was kept within a period of 2011-2020 providing a balanced panel of 10 years to capture the stable and dynamic economic trends.

Further filtering was applied on the basis of data consistency and completeness. Only firms with consistent and comprehensive data of all relevant variables throughout the study were included. To ensure the validity and reliability of the analysis, the firms that lack sufficient data regarding the financial and TMT structure, inconsistent reporting, or lack of observations were excluded to avoid biases that could be caused by missing or unbalanced datasets. After filtering samples, the study collected 390 firm year observations throughout the course of 10 years.

3.3 Measurement of Financial Performance

The dependent variable used in this study is firm financial performance as it demonstrates the efficiency of organizational structure and managerial decisions. To evaluate the financial performance, the ratios used in the study are Return on Equity (ROE) and Return on Assets (ROA), consistent with the recent empirical research in the areas of corporate governance and organizational structure. These measures serve as an indicator of the operational performance of a firm. Due to their ability to consistently and comparably measure firm-level profitability and management efficiency in enterprises and industries, these indicators are widely used (Zhang, 2024).

ROA is a measure of how well an enterprise utilizes all its assets in generating profits. It is an important indicator of the operational performance demonstrating how effectively the management manages to transform the resources into profits. Also, it is widely used due to its ability to get less affected by external market fluctuations and is a measurement of internal firm performance (Bhagat & Bolton, 2008; Demsetz & Villalonga, 2001). A higher ROA shows better managerial performance and more efficient use of assets. ROA is calculated as:

(1) Return on Assets (ROA) =

$$\frac{\text{Net Income}}{\text{Total Assets}}$$

ROE is also a widely used metric of financial performance. Return on Equity (ROE) is the measurement of the profitability of the investment contributed by shareholders and it indicates how effectively the company can create value to its owners. The direct relationship between shareholder value creation and corporate performance created by ROE is the reason why it is quite often applied in empirical studies. ROE is a major measure of the area of governance-performance, and it is extensively popular to examine the impact of managerial decisions on business performance (Bhagat and Bolton, 2008). ROE is calculated as:

$$(2) \text{ Return on Equity (ROE)} = \frac{\text{Net Income}}{\text{Total Equity}}$$

3.4 Measurement of TMT Structure

The organizational structural dataset developed by Albert et al. (2025) provided the independent variables used in this thesis representing an important aspect of Top Management Team (TMT) Structure. This dataset provided detailed firm level information on Top management executives roles and hierarchical positions including classifications such as Senior Vice President (SVP), Executive Vice President (EVP), Senior Executive Vice President (SEVP), Director (DIR), Senior Director (SDIR), Managing Director (MD), Senior Managing Director (SMD), Senior Executive (SE), Vice President (VP/VC), Senior Vice President (SVC), President, Board members, Chief Executive Officer (CEO), and other C-level executives (CXO), as well as functional categorizations such as primary, support, and business unit (BU) roles.

These segments allow a detailed representation of the organizational structure which is illustrated on the hierarchical structure and role distinction of the top management. These role-based categories are not used as individual variables, but they are utilized to offer aggregate measures of TMT structure.

In this work, three variables are operationalized: female ratio, TMT size and CEO duality. The size of the top management team is calculated by the number of the total

executives of each firm-year of observation. All executive positions in the data set such as CEO, CXO, president, and vice president, director, and other senior management positions combined to form this measure. As a result, TMT size represents the breadth of management resources in the firm by encompassing the aggregate size, variability, and complexity of the executive structure.

(3) TMT size = Total number of top management executives.

The measure of CEO duality is a binary (dummy) variable that is constructed based on the data, a score of 1 refers to the CEO doubling as Chairman of the Board, a figure of 0 indicates otherwise. This variable shows the centralization degree of the governance structure of a firm and reflects leadership concentration.

The number of female executives on the top management staff is defined as the female ratio and is calculated with the use of the gender composition data of the dataset. It is computed by the total number of working Female executives divided by the total TMT size for each firm year observation.

(4) Female Ratio =

$$\frac{\text{Number of Female}}{\text{TMT Size}}$$

By merging these roles in significant variables, the study captured valuable structural attributes of top management teams relevant in analyzing their impact on the financial performance of firms (Albert et al., 2025).

3.5 Control Variables

To avoid the possible biasing of the estimated relationship between top management team (TMT) structure and firm financial performance by omitted variables, this research incorporates several firm-specific control variables that were widely recognized in the literature as being significant determinants of firm performance. In this research, the

control variables are firm size, leverage, and firm age. To consider the structural and financial differences between organizations, previous empirical studies on corporate governance and financial performance have always incorporated the variables like firm size, leverage and firm age as significant controls (Demsetz & Villalonga, 2001).

The firm size is the natural logarithm of total assets. In empirical studies, the use of logarithmic transformation is often used to reduce skewness and ensure comparability between large and small organizations. As larger firms have more economies of scale and significant access to financial resources as well as greater market power, the size of the firm is an important determinant of financial performance. One of the most important control variables in the corporate governance research is firm size because past empirical findings have shown that the firm size has a significant impact on profitability and performance outcomes (Demsetz and Villalonga, 2001; Goddard et al., 2005).

(5) Firm size = Natural log of Total Assets

The leverage ratio used to measure the level of dependence on debt to finance its operations is calculated as the debt to total assets. Capital structure is significant in the determination of the performance of a firm as leverage may pose both negative and positive effects. On one hand, debt may be used as a discipline tool because it reduces agency costs and encourages managers to work more efficiently. On the other hand, excessive leverage increases the risk of finances to the company. Theoretical and empirical research has shown that the connection between leverage and business value is complex, and therefore the leverage should be introduced as a control variable to isolate the effect of management characteristics. (Margaritis and Psillaki, 2010).

(6) Leverage =

$$\frac{\textit{Total Debt}}{\textit{Total Assets}}$$

One of the control variables is firm age, calculated as the number of years since the period of incorporation of the firm. The level of organizational experience, knowledge and reputed background accumulated over the years is represented in the age of the firm. Older businesses can be improved by establishing best practices, stronger ties with stakeholders and enhancing market credibility. Conversely, the younger firms may be more flexible, innovative and open to growth and hence they may have different performance results. Since, it incorporates life-cycle effects and organizational maturity, past studies show that the age of the company is one of the key elements of business behavior and performance (Coad et al., 2013).

(7) Firm Age = Year of Observation – Year of Incorporation

Consequently, the study will focus on a limited set of well-known control variables firm size, leverage, and firm age that are most relevant to the research setting to maintain model parsimony, avoid redundancy and ensure credible and interpretable findings.

3.6 Regression Models

The two fundamental regression models are used in this thesis using financial performance measurement indicators that are Return on Assets (ROA) and Return on Equity (ROE). The main aim of this study is to examine the role of the Top Management Team (TMT) in determining financial performance of firms. The research narrows down to investigate the impact of traits as CEO duality, TMT size, and gender diversity (female ratio) on financial performance. It is done using a multivariate regression analysis. To capture the unobserved variability over time and industries the regression models are estimated by pooled Ordinary Least Squares (OLS) with fixed effects of years, and industry.

Model I

$$(8) ROA = \alpha + \beta_1 TMT_Size_{i,t} + \beta_2 CEO_Duality_{i,t} + \beta_3 Female_Ratio_{i,t} + \gamma' Controls_{i,t} + \delta_t + \theta_j + \varepsilon_{i,t}$$

Model II

$$(9) ROE = \alpha + \beta_1 TMT_Size_{i,t} + \beta_2 CEO_Duality_{i,t} + \beta_3 Female_Ratio_{i,t} + \gamma' Controls_{i,t} + \delta_t + \theta_j + \varepsilon_{i,t}$$

Here,

$ROA_{i,t}$ and $ROE_{i,t}$ are the dependent variables. Hence, $\beta_1 - \beta_3$ represents the coefficients correspond to variables of interest (TMT characteristics), i represents firms, t represents years (2011-2020), and j represents industries. δ_t captures year fixed effects, θ_j captures industry fixed effects and $\varepsilon_{i,t}$ is the error term. Finally, Controls include Firm age, Leverage and Log (Total Assets).

4 Results

This chapter presents the empirical findings of the study. First, descriptive statistics are presented to obtain a summary of the properties of the variables. Second, correlation analysis is employed to examine the relationships between variables and identify potential issues of multicollinearity by also using the VIF test table using table 3. Finally, to determine how TMT structure influences firm performance, the regression analysis is performed using two different performance variables ROA and ROE. The results are shown using tables 4 and 5. Hence, robust test is also used to examine if the results hold when one variable is switched with another independent variable.

4.1 Descriptive statistics

The descriptive statistics including all data and variables used in the study are presented in Table 1.

Table 1. Descriptive Statistics

Variable	Mean	Median	Std. Dev.	Minimum	Maximum	Skewness
ROA	6.8212	6.0800	5.8893	-39.170	31.000	-0.40056
ROE	43.197	20.430	85.894	-133.04	593.54	4.0475
tmt_size	11.869	9.0000	10.608	3.0000	72.000	3.0558
ceo_duality	0.54359	1.0000	0.49874	0.0000	1.0000	-0.17503
female_ratio	0.17965	0.16667	0.13165	0.0000	0.80000	0.59896
l_total_assets	4.9746	5.2756	0.97019	0.0000	5.9636	-1.7604
l_firm_age	3.6635	3.5553	0.77948	0.69315	4.8040	-0.51950
leverage_	0.29385	0.29303	0.15369	0.017911	0.66379	0.18813

The descriptive statistics table includes several measures of central tendency, dispersion, and distribution. Here, the mean figure of Return on Assets (ROA) is 6.8212% with a large variability of -39.170% to 31.00%. This wide gap, however, indicates that there are great differences in business performance. The skewness value is slightly negative which means that some firms have relatively lower levels of performance. The mean Return on Equity (ROE) on the other hand is much higher of 43.197%, it is extremely variable

ranging from -133.04% to 593.34% and the skewness is mostly positive. Previous research has argued that the presence of high performing firms and the differences in governance structure often results in highly biased firm performance indicators such as ROE (Demsetz and Villalonga, 2001). Similarly, Gomers, Ishii, and Metrick (2003) note that managerial decision diversity and the quality of governance often lead to high variance in firm-level performance indicators.

The average TMT size of the key independent variables is 11.869, which implies moderate-sized executive teams. The positive skewness and dispersion are also quite high, meaning there are still few companies with much larger management teams. TMT size influences strategic coordination, decision-making, and business performance. It is also a symbol of the organizational complexity (Tan, Wu, and Chu, 2024).

The CEO duality mean value of 0.54359 shows that CEO duality exists in more than half of the companies. This depicts the fact that various firms have varying TMT structures. Whereas the female ratio is 0.17965 which demonstrates that there are relatively few women in the top management teams. The positive skewness response implies that there is not a lot of gender inclusion in most businesses, while only few firms have relatively high gender diversity. (Wu, Richard, Triana, & Zhang, 2021). Finally, leverage ratios of the companies average have almost a symmetric distribution of 29.38% and relatively low variability indicating that the capital structure is similar among businesses.

4.2 Correlation Analysis

This section covers the Correlation matrix regarding the results of the correlation analysis of the dependent, independent and control variables used in the study shown in table 2.

Table 2. Correlation Analysis

	ROA	ROE	TMT_ size	Ceo_ duality	Female_ ratio	L_total _assets	L_firm _age	Leverage_ _age
ROA	1							
ROE	0.5142	1						
Tmt_size	0.0240	-0.0018	1					
Ceo_duality	0.1073	0.1661	0.1155	1				
Female_ratio	0.1769	0.2011	-0.0213	0.0246	1			
L_total_assets	0.1128	0.0844	0.1927	-0.0937	-0.0187	1		
L_firm_age	0.0527	0.0950	0.2557	0.1333	0.1650	0.1440	1	
Leverage_	0.0824	0.4142	0.0174	0.0206	0.1270	0.1853	0.0886	1

The table. 2. examines the correlation between financial performance across TMT characteristics and company-specific variables. Here, how profitability measures (ROA and ROE) relate to such aspects as gender diversity, CEO duality, and top management team (TMT) size are studied. Most explanatory variables have positive correlations with financial performance measures (ROA and ROE). Also, firms that have more female in the top management appear to be performing a bit better.

Specifically, positive relationships are present between female ratio and ROA and ROE. However, the connections remain low. On the other hand, firms that engage in CEO duality also show positive relationships with ROA and ROE. The positive but moderately strong correlation indicates that financial characteristics tend to place more leverage on companies that have high ROE. Furthermore, the business size demonstrates weak yet positive correlations with ROA and ROE means that bigger firms might have insignificant resource access and operation efficiency benefits.

The correlations among the independent variables are not strong enough to create multicollinearity problems. Hence, to test the issue of multicollinearity between variables, this study conducted a variance inflation factor (VIF) test for checking the problem of multicollinearity in table 3. Since the results showed that values are less than 10, no problem of multicollinearity was observed. This indicates that the variables

represent different aspects of business behavior and could be included in the regression analysis at the same time without having a significant impact on the outcomes.

Table 3. Multicollinearity Analysis

Variables	VIFs
tmt_size	1.591
ceo_duality	1.105
female_ratio	1.089
leverage_	1.231
l_total_assets	2.297
l_firm_age	1.170

The results of this table 3 show that all variables have a VIF below 10 indicating that multicollinearity among the variables does not exist.

4.3 Regression Analysis using ROA as dependent variable

The results derived from the empirical part are presented in this section. As described in the methodology section, firstly the ROA is used as a measure for accounting-based performance to observe relationships of TMT traits and firms financial performance.

Table 4. Regression Analysis using ROA as a dependent variable.

<i>Variables</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
tmt_size	-0.115959	0.0403092	-2.877	0.0066	***
ceo_duality	1.29906	0.894589	1.452	0.1547	
female_ratio	6.94118	2.98964	2.322	0.0257	**
leverage_	-2.42720	4.29396	-0.5653	0.5752	
l_total_assets	1.43037	0.651315	2.196	0.0343	**
l_firm_age	-0.193333	0.581579	-0.3324	0.7414	
Year fixed effect	yes	yes	yes	yes	
Industry fixed effect	yes	yes	yes	yes	
Mean dependent var	6.821154	S.D. dependent var	5.889338		
R- Squared	0.174326	Adjusted R-Squared	0.136593		

The regression model in table 4 employs robust standard errors to obtain reliable results from statistical inference and includes firm specific effects in addition to year and industry fixed effects. The findings show that ROA is negatively and statistically significantly impacted by TMT size ($\beta = -0.1159$, $p < 0.01$).

On the other hand, ROA is also positively and statistically significant correlation to top management positions of women ($\beta = 6.9412$, $p < 0.05$). This suggests that companies with a higher proportion of female employees tend to outperform their male dominated counterparts in profitability and return rates.

Hence, the CEO duality coefficient is positive but statistically insignificant ($\beta = 1.2991$, $p > 0.10$) indicating that there is no significant effect on business performance in this sample when the CEO and board chair functions are combined for this study. This suggests that profitability may not be solely determined by leadership structure.

Similarly, the firm size has a positive and statistically significant effect on ROA ($\beta = 1.4304$, $p < 0.05$) indicating that larger firms tend to perform better. This may reflect economies

of scale, better access to financial resources, and more efficient operations. Whereas firm age and leverage both have a negative but statistically insignificant relationship with ROA. This insignificant effect indicates that asset profitability in this model is not considerably impacted by increasing debt levels. Also, older firms do not always perform better or worse than younger firms.

By introducing fixed effects of year and industry, which respectively adjust for time-specific and industry-specific observed performance influences on enterprises. The robustness of these results is greatly enhanced. According to the R-squared value of 0.1743, independent variables in this model can explain approximately 17.4% of all variations in ROA that in robust test is examined if this makes any effect on results.

4.4 Regression analysis using ROE as dependent variable

With the objective to provide a more thorough evaluation of connection of governance structures and firm values. The second section expands the research by also using ROE as another performance metric.

The regression results analyzing the association between corporate governance factors, business performance as determined by Return on Equity (ROE), and top management team (TMT) characteristics are shown in this section. Strong standard errors are employed to ensure credible statistical inference, and the model includes firm level control variables besides year and industry fixed effects.

Table 5. Regression using ROE as dependent variable

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
tmt_size	-1.51186	0.798682	-1.893	0.0660	*
ceo_duality	25.2547	14.6489	1.724	0.0928	*
female_ratio	91.1048	45.6689	1.995	0.0533	*
leverage_	180.203	81.2008	2.219	0.0325	**
l_total_assets	4.30025	6.62578	0.6490	0.5202	
l_firm_age	0.655583	7.23176	0.09065	0.9282	
Year Fixed effects	yes	yes	yes	yes	
Industry Fixed effects	yes	yes	yes	yes	
Mean dependent var	43.19690	S.D. dependent var		85.89398	
R-Squared	0.270208	Adjusted R-Squared		0.236857	

The results from table 5 show somehow consistent patterns. The results demonstrate a negative relationship which is weakly significant ($p < 0.10$) between ROE and the size of top management team (tmt_size). According to this, an increased number of teams can lead to coordination problems, reduced decision-making speed and increased administrative costs that can reduce productivity and eventually affect the profits of equity holders. On the other hand, ROE is positively and marginally significantly impacted by CEO duality ($p < 0.10$). This indicates that firms that have a CEO who doubles up as the chairman of the board could yield slightly more returns to the shareholders. Likewise, ROE and female representation in top management (female_ratio) are positively and marginally significant ($p < 0.10$). This is an indication that more gender diverse businesses tend to do a bit better.

Regression findings show that leverage is the only control variable which has a statistically significant positive effect on ROE meaning that the higher the debt level in a company, the higher the returns to the shareholders. This observation can be attributed to financial theory which argues that leverage enhances equity returns by using borrowed capital.

Conversely, both firm age and size exhibit significant positive, yet statistically insignificant relationships with ROE which implies that increased operational experience or scale size does not necessarily indicate an increase in shareholder returns. These advantages do not appear to be carried over to improved equity performance in this sample although more experienced and stable organizations might be older and larger enterprises may enjoy economies of scale.

The findings are stronger since the year, and industry fixed effects were incorporated in the regression model factored in the time-specific and industry-specific factors. The independent variables in the model account for about 27.0% of the variation in ROE according to the R-squared value of 0.2702. Similar to the firm-level research, the adjusted R-squared (0.2369) is a moderate value of explanatory power.

4.5 Robustness check

To ensure the accuracy of the results, additional analytical considerations were implemented on both models including the variance inflation factor determining the extent of multicollinearity. Robust standard error clustered at the firm level were employed to explain the potential heteroskedasticity and intra company correlation. Also, to justify the use of the chosen estimate method, the Hausman test is utilized to determine the model definition.

Additional robustness tests were conducted to ensure robustness to the findings. To ensure that the results depend on the specific measure, the female ratio from the models is replaced with another ratio i.e CXO ratio calculated as number of Chief Officer (e.g. COO, CFO) divided by TMT size. Specifically, for the first robustness test model, ROA is stated as a function of TMT size, CEO duality, and CXO ratio using the full set of control variables with year and industry fixed effects. Similarly, the second robustness test model has the same combination of explanatory and control variables as ROE is the dependent variable in the model.

MODEL III

$$(10) ROA = \alpha + \beta_1 TMT_Size_{i,t} + \beta_2 CEO_Duality_{i,t} + \beta_3 CXO_Ratio_{i,t} \\ + \gamma' Controls_{i,t} + \delta_t + \theta_j + \varepsilon_{i,t}$$

MODEL IV

$$(11) ROE = \alpha + \beta_1 TMT_Size_{i,t} + \beta_2 CEO_Duality_{i,t} + \beta_3 CXO_Ratio_{i,t} \\ + \gamma' Controls_{i,t} + \delta_t + \theta_j + \varepsilon_{i,t}$$

The robust results offered valuable information about the connection between company performance and TMT composition. The positive and statistically significant effect of the female ratio on ROA in the baseline model suggests that greater gender diversity in top management team increases the performance of the company. However, the correlation remains positive but loses statistical significance when the robustness model was used to replace the female ratio with the CXO ratio. This implies that presence of female in top management team causes the positive impact in the firm performance.

More importantly, other significant variables do not vary in the two models. Larger management teams may be less efficient as evidenced by the ongoing negative and statistically significant link between TMT size and business performance. CEO duality remains insignificant. The control factors do not have significant effects with leverage and the age of firms, and the firm size (calculated by the logarithm of total assets) has a positive and significant impact.

Table 6. Regression result after including Cxo_ratio and excluding Female_ratio with dependent ROA.

<i>Variables</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
tmt_size	-0.108001	0.0465181	-2.322	0.0257	**
ceo_duality	1.41303	0.910737	1.552	0.1291	
cxo_ratio	1.82324	3.02269	0.6032	0.5500	
leverage_	-2.09480	4.48724	-0.4668	0.6433	
l_total_assets	1.42744	0.694820	2.054	0.0469	**
l_firm_age	-0.0503241	0.596229	-0.08440	0.9332	
Year Fixed Effects	yes	yes	yes	yes	
Industry Fixed Effects	yes	yes	yes	yes	
Mean dependent var	6.821154	S.D. dependent var	5.889338		
R-squared	0.154623	Adjusted R-Squared	0.115990		

To determine how sensitive the results were to different measures of leadership structure, the robustness test was performed by substituting the CXO ratio for the female ratio in both models. The findings indicate that leverage remains positive and statistically significant at the 5% level in both models which proved that it remains a strong factor of business performance. TMT size and CEO duality are not very decisive but are moderately significant that is why the impact of these factors is rather consistent. The governance variables however display a clear difference: the CXO ratio is not statistically significant in the robustness specification but the female ratio is found to be borderline significant in the main model.

Table 7. Regression result after including Cxo_ratio and excluding Female_ratio with dependent ROE.

<i>Variables</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
tmt_size	-1.72004	0.914879	-1.880	0.0678	*
ceo_duality	25.7758	14.9278	1.727	0.0923	*
cxo_ratio	-16.4971	46.2866	-0.3564	0.7235	
leverage_	184.813	82.6139	2.237	0.0312	**
l_total_assets	5.10909	7.80101	0.6549	0.5165	
l_firm_age	3.20319	7.70859	0.4155	0.6801	

5 Summary and Conclusions

This study is mainly focused on US firms and aimed to identify the influence of top management team composition (TMT) specifically team size, gender diversity and CEO duality on profitability of globally listed corporations. The study is grounded in Upper Echelons theory and is based on the idea that the composition and characteristics of TMT affect strategic decision making and consequently financial performance. The U.S. companies provide a particularly relevant background to our study as they tend to be highly competitive, transparent and investor-driven and their corporate governance frameworks are closely monitored. In these situations, the leadership structure and TMT design have a significant impact on shareholder value, efficiency and profitability that has been studied here. Therefore, the hypothesis of the study was that the TMT structural characteristics will make a significant difference in the performance of companies measured by Return on Equity (ROE) and Return on Assets (ROA). Regression analysis was conducted using panel data and a robustness test was conducted to test the sensitivity of the findings by replacing the female ratio with another control variable i.e. CXO ratio.

To some extent, the assumption that TMT structure can greatly determine the financial performance of US companies is confirmed by empirical evidence from this study. The results show that the influence of TMT structure is complex and differs according to individual components. Firm performance is found to be negatively related to TMT size, particularly in the ROA model where the impact is statistically significant. Also, more effective use of leverage and smaller more productive management teams can increase a company's profitability effectively. The presence of larger TMTs can become a hindrance to coordination and strategic decision-making when it comes to US-listed corporations which often possess complex organizational structures and multiple management tiers. This is especially relevant to fast-paced businesses such as technology and finance where fast and sound decision-making is important to maintaining a competitive advantage. Therefore, overly big management teams may have a detrimental impact on profitability and organizational flexibility.

Gender diversity in the TMT is positively related to the firm's performance with statistically significant results in the ROA model and marginal significance in the ROE model. The concept of diversity, equity, and inclusion (DEI) has become increasingly discussed in the framework of the U.S. corporate governance and numerous companies advocate gender diversity on the executive level. As the results of the study show such activities may be realistically financially rewarded. Gender-diverse TMTs in U.S. companies are more likely to include more perspectives in strategic decision-making, leading to enhanced innovation, better governance, and more balanced risk management. These factors are particularly important in the case of multinational organizations as understanding the perspectives of numerous stakeholders can enhance financial performance.

On the other hand, CEO duality demonstrates unstable and small impacts on the company's financial performance. Although the concept of CEO duality is a common governance system among the U.S. companies, the empirical results of the study do not powerfully prove the impact on the performance of the firms since the variable is largely insignificant in all the models. It means that it is not necessarily the case that improved financial performance can be achieved due to the prevalence of CEO duality.

This results from this thesis also explains that traits of TMT that influences the financial performance of U.S. companies which in theory is consistent with the Upper Echelons Theory. Although the positive impact of gender diversity highlights the relevance of diverse perspectives in strategic decision-making, the adverse impact of the size of TMT indicates the limitation of big executive teams in complicated organizational scenarios. Since higher diversity could enhance the control of the agencies and reduce agency conflicts between the shareholders and the management, the findings also partly confirm the Agency Theory.

The practical implications of the study are of relevance to the American policy makers and corporate decision makers. To stay effective and flexible in changing market conditions, companies should first carefully consider how big their TMT should be.

Second, the promotion of diversity in leadership teams could contribute to the achievement of improved governance and profitability outcomes because gender diversity and business success are favorably correlated. This reinforces the business argument of inclusive leadership and is in line with the growing emphasis of diversity programs in American companies. Third, the conflicting results about CEO duality suggest that businesses should take a flexible approach to leadership structure, considering their unique organizational setting, governance requirements and strategic goals.

Overall, this paper has indicated that the structure of the top leadership team has a great impact on the financial performance of U.S. companies. The results show that different TMT structural elements suggest varied effects on profitability. TMT size has a negative effect on performance, gender diversity has a positive effect on performance, and CEO dualism does not have any effect. The robust study also discusses the importance of evaluating the variables when determining the effects of governance. In general, the results indicate that the process of enhancing profitability in U.S.-registered companies requires a successful organizational structure and leadership team especially in new and competitive global markets.

5 References

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Appendix: List of Companies

AMAZON INC	ARCHER- DANIELS- MIDLAND CO
AUTONATION INC	CLOROX CO/DE
BEST BUY CO INC	COCA-COLA CO
BRUNSWICK CORP	CONSTELLATION BRANDS
COOPER TIRE & RUBBER CO	HERSHEY CO
DANA INC	KIMBERLYCLARK CORP
EBAY INC	PEPSICO INC
FORD MOTOR CO	KROGER CO
GENERAL MOTORS CO	COSTCO WHOLESALE CORP
GENUINE PARTS CO	ALPHABET INC
GOODYEAR TYRE & RUBBER CO	VERIZON COMMUNICATIONS INC
GRAHAM HOLDINGS CO	AT&T INC
HARLEY DAVIDSON INC	IAC/INTERACTIVE CORP
HOME DEPOT INC	DISNEY(WALT) CO
LENNAR CORP	COMCAST CORP
LOWE'S COS INC	OMNICOM GROUP
NEWELL BRANDS INC	INTERPUBLIC GROUP OF COS
NIKE INC –CL B	EW-SCRIPPS –C LA
RALPH LAUREN CO	TEGNA INC
ALTRIA GROUP INC	