A STUDY OF THE RELATIONSHIP BETWEEN EXECUTIVE COMPENSATION AND CORPORATE FINANCIAL PERFORMANCE USING REGRESSION AND BOOTSTRAP APPROACHES

by

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Abstract

This study is based both on a positivist paradigm and an objectivist epistemology, and it was informed by theoretical perspectives. Specifically, the study investigated the issue of the relationship between executive compensation and corporate financial performance. The independent variables used to measure executive compensation were stock options, cash bonuses, and executives' salaries, while net profit was the dependent variable, the sole measure of corporate financial performance. The data were gathered for the years 2008 – 2012. The total research sample was 154 publicly listed corporations in U.S., and the research data were extracted from the SEC's EDGAR database. The sample was split into two halves; the data for the first half were used for building the research model, while the second half data were used to cross-validate the research model. The data were averaged for each variable over the five-year period to obtain a five-year average value which was used in the analysis. The study used a multiple regression to test the omnibus hypothesis, while a linear regression was used to test the individual hypotheses. Due to data deviation from normality, all variables were transformed. Because the assumptions of the linear regression did not hold, a bootstrapping statistics technique was used to test for a relationship between the independent variables and the dependent variable so as to the check the hypothesis test conducted using regression analysis. The results of the study were mixed. While the test using multiple regression showed some relationship, the use of bootstrapping techniques did not support any relationship. This result means that a modeling approach cannot transfer well to new models; thus, it cannot be used as a general model for determining a relationship between stock options, cash bonuses, executives' salaries, and net operating profit.

Dedication

To my wife, Edith Kenine, and to my daughter, Onyi Kenine

Acknowledgments

I would like to thank my mentor, Dr. Douglas Smith for his patience, guidance and timely feedback throughout the dissertation process. Also, I would like to extend my sincere appreciation to my committee members, Dr. Susan Smith and Dr. Raj Singh for their strong feedback that helped to enhance the quality of the dissertation.

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CHAPTER 1. INTRODUCTION

Introduction to the Problem

This study investigates the extent to which executive compensation is related to corporate financial performance. The study presents empirical evidence using secondary data to determine if there is a relationship between executive compensation (e.g., stock options, executives' salaries, and cash bonuses) and corporate financial performance (e.g., net profit). The study is important for boards of directors, shareholders, and regulatory institutions. These stakeholders require more recent empirical studies on the risks associated with too much or too little stock options incentives, cash bonus incentives, and executives' salaries. A clearer understanding of the implications of the size and mix of executive compensation will guide managers and boards of directors in setting executive compensation.

Executive compensation continues to grow despite the Securities and Exchange Commission's (SEC) reform of 1992, which approved executive compensation reform and full disclosure of top executives' compensation. While the real income of other levels of employees has decreased over time, there has been exponential growth in the total pay of top corporate executives. Shareholders are concerned about the lucrative packages of executives, which have little or no correlation with financial performance. Citing the works of Lucian Bebchuk and Jesse Fried (2004), Core, Guay, and Thomas (2005) stated that executive compensation was and is currently based on a corrupt pay-setting process, which is a product of managerial powers derived from CEOs' employment contracts and in most cases not beneficial to shareholders. To date, this process has been a source of concern for both practitioners and scholars.

As a result of exponential growth in executive employees' pay that does not correlate with financial performance, Goozner (2014) recommended paying chief executive officers (CEOs) for quality or outcome, represented by financial performance. The author suggested incorporating quality and outcome into the bonus portion of executives' pay, stating that bonus incentives should only be paid if CEOs meet financial benchmarks. Deckop's (1988) research found that there is a significant and positive relationship between executive compensation and corporate financial performance. These research outcomes support the proposition to tie executive compensation with performance in order to ensure correlation between executive compensation and financial performance.

There have been mixed reports on the influence of the elements of executive compensation on corporate financial performance. Jensen and Murphy's (1990) seminal work indicated that stock options (equity-based) incentives rather than cash-bonus compensations (non-equity incentive compensation) are the most appropriate to maximize firm value. Bergstresser and Philippon (2006) agreed and stated that stock options holdings motivate CEOs to manipulate earnings upward. On the other hand, McAnally, Strivastava, and Weaver (2008) indicated that managers with large stock options are more likely to miss the performance benchmark by reporting small initial losses and a small subsequent year-to-year earnings decline. This study will help clarify this confusion and determine if executive compensation incentives drive performance.

The prevailing executive compensation issues call for the need to investigate whether organizations currently align executive compensation with performance, using recent existing corporations' data for a five-year period from 2008 through 2012. This investigation will help determine if there is a relationship between executive compensation (e.g., stock options, bonus incentives, and executive salaries) and corporate performance (e.g., net profit). This is the primary goal of this study.

The study will add to the existing body of knowledge on the relationship between executive compensation and organizational performance. This will help organizations understand the effect of the equity-based and non-equity compensation incentives on performance.

Background of the Study

Executive compensation structures, policies, and practices differ across organizations. The three common compensation elements for corporate executives across all industries are stock options, cash bonuses (non-equity incentives), and salaries. However, despite the commonality of pay mixtures across most publicly listed companies, the outcome of empirical research on executive compensation and financial performance varies (Gomez-Mejia, Berrone, & Franco-Santos, 2010). The studies conducted by Hirschey and Pappas (1981) and Deckop (1988) found a significant and positive relationship between executive compensation and corporate performance, while the studies conducted by Tosi, Werner, Katz, and Gomez-Mejia (2000), Meeks and Whittington (1975), and Garen (1994) found little or no relationship between executive compensation and performance. Hence, Coombs and Gilley (2005) concluded that despite a variety of literature on executive compensation, little is known about the link between organizational financial performance and CEO compensation.

Most research on executive compensation and performance is based on agency theory. Since the shareholders cannot control the day-to-day activities of top executives in daily business decisions, shareholders use compensation as a controlling tool to align the interests of executives or directors with the interest of shareholders. Jensen and Murphy's (1990) seminal work stated that compensation policy is designed to give executives or managers incentives to choose and implement actions (accounting choices) that increase the shareholders' wealth (p. 226). The present study is based on Jensen and Murphy's (1990) seminal work, recognizing that pay policies are affected not only by technology and size of organizations but also by those who set the policies (Gomez-Mejia, et al., 2010).

Agency theorists argue that compensation substantially influences business executives' actions (Lambert & Larcker, 1984). Fama and Jensen (1983) and Tosi et al. (2000) agreed, but empirical research indicated mixed outcomes regarding the link between executives' compensation and financial performance. As a result, shareholders are in a constant dilemma, and they are confronted with the choice of either paying executives for performance or paying executives only base salaries like other employees. Mikovich, Gerhart, and Hannon (1991) concluded that research on this issue, specifically the link between executive compensation and financial performance, has not kept up with its importance and thus remains an "unplowed turf." This study will contribute to the existing body of knowledge in this field, which may help practitioners and researchers understand the effects of executives' pay structures, policies, and consequences of executives' actions driven by compensation.

Statement of the Problem

Some recent studies indicated that executive compensation is growing exponentially, but little is known about the relationship between executive compensation and financial performance. This lack of knowledge prompted recent public outcry during the 2008 recession because the public could not understand why executives of publicly listed corporations were still earning substantial income in a receding economy. Tosi et al. (2000) stated that financial performance accounts for less than five percent variance in executive compensation, while Finkelstein and Hambrick (1988) stated that executive compensation is partly a function of how much the executive is expected to contribute to the performance of an organization (p. 546). The present study will investigate these statements using current financial data to determine if there is a significant positive relationship between executive compensation and financial performance.

This study may interest shareholders or owners of corporations who are faced with the problem of choosing between paying executives for performance and paying regular base pay to executives like other employees. Moreover, this study may be of interest because despite the body of literature on executive compensation, little is known about the link between organizational financial performance and CEO compensation (Coombs & Gilley, 2005).

Purpose of the Study

The purpose of this study is to determine if stock options, cash bonuses, and executives' salaries are related to corporate financial performance.

The outcome of this study will contribute to scientific knowledge on executive compensation by using the key components of executive compensation as independent variables (IVs) and net profit, the indicator for financial performance, as the dependent variable (DV). This process will help determine if there is a relationship between the IVs and the DV.

Stock options are grants that give executives the right to buy their firm's stock at a specified price, usually below market price and for a specified term, to help attract, retain, and motivate corporate executives (Hall & Murphy, 2002). Cash bonuses are non-equity incentive compensation that are paid to a company's top executives every year to motivate them to improve the company's performance. Executives' salaries are the higher base pay paid to the top executive employees during the fiscal year.

Rationale

There is a large body of literature on executive compensation, but according to Coombs and Gilley (2005), little or nothing is known about the link between organizational financial performance and CEO compensation. Similarly, Mikovich et al. (1991) stated that the link between executive compensation and financial performance has not kept up with its importance; thus, the issue remains "unplowed turf." This study will attempt to fill this gap.

The outcomes of prior research on executive compensation and financial performance have been mixed and confusing. For example, Tosi et al. (2000) and

Whittington (1975) found only a small relationship between executive compensation and performance, while Hirschey and Pappas (1981) and Deckop (1988) found a significant positive relationship between executive compensation and corporate performance. The present study investigates these statements using recent secondary data on executive compensation and the financial performance of publicly listed companies.

Pay structures and policies have a significant effect on executives' behaviors and actions. Although the shareholders appoint the corporate executives, they are unable to control the daily activities of the executives or directors. Therefore, stockholders are interested in a study that would justify if compensation can be used as a control mechanism. This study attempts to provide direction on this important issue. The study is based on the premise that executive compensation packages should be designed in such a way that executives are paid for performance. Therefore, executive packages should decrease in periods of declining financial performance and increase in periods of higher financial performance.

Also, the study is based on the key executive compensation mix, which consists of stock options, cash bonuses, and executives' salaries. According to Gomez-Mejia, Tosi, and Hinkin (1987), executive compensation has three distinct components: cash bonuses, executives' salaries, and long-term income represented by stock options. The statement of financial accounting standards (SFAS) No. 123, as issued by the Financial Accounting Standards Board (FASB, 1995), accounts for stock-based compensation. The SFAS 123 recommended voluntary recognition of stock-based compensation estimates for the stock option expense (Johnston, 2006). Hence, corporations recognize the stock option expense in their financial statements. Therefore, the interest of managers and shareholders can be aligned using the three-part compensation mix to drive performance and subsequently increase shareholders' wealth.

Research Question

The following question will serve as the research question (RQ) for this study:

> *To what extent are stock options, cash bonuses, and executives' salaries related to corporate financial performance?*

Specifically, the research question investigates a directional relationship between three independent variables and a dependent variable; hence, a multiple linear regression approach is the most suitable research method to use. A multiple linear regression model is a linear model that describes how a y-variable relates to two or more x-variables (or transformations of x-variables).

This method is appropriate for this study since this study is about the relationship between financial performance (DV) and several specific independent variables (IVs). The response variable is financial performance (Y). The predictor variables of interest are stock options (X_1), cash bonuses (X_2), and executives' salaries (X_3). The general structure of a multiple linear regression model for this situation would be:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + E.$$

The equation $Y = \beta 0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$ describes the mean value of financial performance for specific values of stock options, cash bonuses, and executive salaries. The error term (E) describes the characteristics of the differences between individual values of financial performance and their expected values of financial performance.

Scope of Research Question

Within scope. The scope of the present study is to determine if there is a relationship between executive compensation (e.g., stock options, cash bonuses, and executives' salaries) and corporate financial performance (e.g., net profit).

Out of scope. It is outside the scope of this study to suggest or infer changes to executive compensation structures.

Relevance of Research Question

The research problem is the relationship between executive compensation and corporate financial performance. The research question addresses this relationship by researching the extent of the connection between executive compensation measures and net profit as an indicator of corporate financial performance. This research question meets the requirements of Vogt (2007) who stated that a good research question must be researchable and used to gather evidence through the iterative research processes between the research design, measurement, and analysis in order to answer the research question.

Hypotheses

In investigating the relationship between executive compensation and corporate financial performance, the following hypotheses are stated.

Omnibus Hypotheses

Using F statistics, this is an overall test to determine if the variance in a set of data for executive compensation (e.g., stock options, cash bonuses, and executives' salaries) in relation to corporate financial performance (e.g., net profit) is significantly more than the unexplained variance.

H01: Corporate financial performance is NOT related to stock options, cash bonuses, or executives' salaries.

HA1: Corporate financial performance is related to stock options, cash bonuses, or executives' salaries.

The omnibus hypothesis for multiple regression is assessed using an ANOVA *F*-test.

Null Hypothesis: The initial assumption is that there is no relation, which is expressed as:

$H0: \beta 1 = \beta 2 = \ldots = \beta k = 0.$

Alternative hypothesis: At least one of the independent variables is useful in explaining/predicting *Y* expressed as:

H1: At least one βi *is* $\neq 0$.

Individual Variable Hypotheses

H01: There is no significant relationship between stock options and corporate financial performance.

HA1: There is a significant relationship between stock options and corporate financial performance.

In the case of the null hypothesis above, a change in the value of stock options will not significantly change corporate financial performance provided that cash bonuses and executives' salaries remain constant.

H02: There is no significant relationship between cash bonuses and corporate financial performance.

HA2: There is a significant relationship between cash bonuses and corporate financial performance.

In the case of the null hypothesis above, a change in the value of cash bonuses will not significantly change corporate financial performance provided that stock options and executives' salaries remain constant.

H03: There is no significant relationship between executives' salaries and corporate financial performance.

HA3: There is a significant relationship between executives' salaries and corporate financial performance.

In the case of the null hypothesis above, a change in the value of executives' salaries will not significantly change corporate financial performance, provided that stock options and cash bonuses remain constant.

A linear regression model will be used to test these hypotheses.

Significance of the Study

There has been a mixed report on the influence of the elements of executive compensation on corporate performance. Jensen and Murphy (1990) indicated that stock options (equity-based) incentives rather than cash-bonus compensations are the most appropriate to maximize firm value. Bergstresser and Philippon (2006) agreed and stated that stock options motivate CEOs to manipulate earnings upward. On the other hand, McAnally et al. (2008) research on executive stock options, missed earnings' targets, and earnings management found that executives expecting large options grants may miss earnings' targets so as to maximize their personal wealth through stock price drops caused by declines in performance. This situation presents a case where the executives' personal interests and firm-level incentives conflict. This study will attempt to clarify this situation and determine if compensation incentives solely drive performance.

Using secondary data, this study will present empirical evidence to determine if there is a relationship between executive compensation (e.g., stock options, executives' salaries, and cash bonuses) and corporate financial performance (e.g., net profit). This study is important to boards of directors, shareholders, and regulatory institutions that require more recent empirical studies to help them understand the risks associated with too many or too few incentives through stock options, cash bonuses, and executives' salaries. A clear understanding of the implications of the size of executive compensation will guide managers and boards of directors in setting executive compensation and thus avoid the use of discretional current accruals to increase share prices (Balachandran, Chalmers, & Haman, 2008).

This study will also add to the existing body of knowledge on the relationship between executive compensation and organizational performance. The results will help organizations improve the compensation-setting process, recognizing the need for well-monitored and target- driven performance incentives.

Definition of Terms

Table 1. Independent and Dependent Variables and Measures

Variables	Type of Variables	Definition	Measure
Stock options	Independent	Dollar amount on income statement and the capitalized amount on the balance sheet for the top five executives. Stock options are based on performance.	Thousands
Cash Bonuses	Independent	Dollar amount of bonuses earned by top five executives, and are based on performance	Thousands
Executives' salaries	Independent	Total dollar amount earned by top five executives as base income. It is not contingent on performance.	Thousands
Financial performance	Dependent	Net profit (Gross profit minus operational expenses)	Millions

The three independent variables (IVs) are stock options, cash bonuses, and executives' salaries, and the dependent variable (DV) is corporate financial performance. The financial data required for the IVs are compensation data, and the data required for the DV are financial performance data regarding net profit. Table 1 gives the operational definition of each research variable and the unit of measurement.

Stock options are grants that provide executives the right to buy their firm's stock at a specified price, usually below market price and for a specified term, to help attract, retain, and motivate corporate executives (Hall & Murphy, 2002). The value of stock options is related to rewards. The cost of stock options for the top five executives is recorded on the income statement plus the capitalized amount on the balance sheet. Cash bonuses are performance-based incentives to perform (Bouwens & van Lent, 2006, p. 65), earned by the top five executives, which are recorded on income statements. Executives' salaries are a higher base pay for the top five executives, separate from bonuses, which are recorded as cost on income statements (Porter & Norton, 2011; Tulvinschi, 2013).

Assumptions and Limitations

The study relies entirely on secondary data obtained from the SEC's EDGAR (Electronic Data Gathering, Analysis, and Retrieval) database. The content of the financial reports and the aggregated data obtained are assumed to be correct because the law requires the CEO, CFO, and other responsible officers that generated the reports to guarantee that the reports submitted electronically to the SEC are correct. The assumption that compensation data retrieved from the SEC database is complete and correct may be difficult to prove. The reason for this difficulty is because of previous researchers' beliefs that it is impossible to capture all compensation data needed for a research study due to the size of data and the rigorous processes involved in data collection. Social scientists recognize the limitations of this assumption, and they have introduced rigorous research processes to help mitigate the effect of this assumption on the validity and reliability of research data. These processes include the cross-validation of a research model that was based on secondary data using different sets of data.

This study was also built on the assumption that five years of data may be sufficient to provide evidence of the relationship between executive compensation and financial performance. This assumption has no scientific basis; however, previous literature on executive compensation supports the use of five or more years of data. Sepe (2011) indicated that the firm-manager relationship is ongoing and lasts an average of five or more years, which gives managers sufficient time to undertake many business projects focused towards meeting performance-based targets. Also, Aggarwal and Samwick (2003) stated that approximately five years of sample data (1993-1997) from Standard and Poor's ExecuComp database is designed to be a true representative of the corporate sector. According to Aggarwal and Samwick (2003), the dataset for this period is ample to make a precise calculation of the extent to which financial performance is sensitive to executive pay. Thus, this may suggest why some previous studies on executive compensation and performance, such as Henderson and Fredrickson (2001) and Hartzell and Starks (2003), collected and analyzed six years of secondary data: 1985-1990 and 1992-1997, respectively. Therefore, a five-year span of data for this study, from 2008 to 2012, will be adequate to determine if there is a relationship between executive compensation and corporate financial performance.

Since there are three IVs and one DV, a multiple regression technique will be used to analyze data. Multiple regression, like other statistical techniques, is based on several assumptions such as the assumption that variables have normal distributions. When the assumptions are not met about the variables used in the analysis, the statistical test may not be trustworthy, which may be a result of type I or type II errors (Pedhazur, 1977). This may lead to serious biases and misleading conclusions (Osborne, Christensen, & Gunter, 2001). According to Osborne and Waters (2002), some assumptions of multiple regression are not "robust" and are susceptible to violation such as linearity, reliability, normality, and homoscedasticity, and therefore, these assumptions must be addressed by researchers. These assumptions were tested.

Multiple regression assumes normal distribution of variables, but variables with substantial outliers result in highly skewed variables. The normal distribution assumption will be tested using P-P plots or the Kolmogorov-Smirnov test. Outliers can be identified through visual inspection. Since the research sample is large, the outliers were removed.

The theory that guides this study is agency theory. Agency theory is partly based on the following assumptions:

- Executive pay is a positive function of a firm's financial performance.
- Executive pay falls between a minimum and maximum level on a continuum.
- Executives bear risks and are also risk averse; therefore, they make short-term decisions and adopt accounting measures to improve annual income or financial reports (Heron and Lie, 2007).
- Executive compensation is structured in such a way that, as the organization's financial performance increases, executive compensation increases as well, but it does not decline in periods of poor business performance.

Apart from the assumptions discussed, the study is built on the seminal work of Jensen and Murphy (1990), and other peer-reviewed research including the works of Gomez, Mejias, and Wiseman (1997) as well as Devers, Wiseman, and Holmes (2007) on the sensitivity of executive compensation to corporate financial performance.

Theoretical/Conceptual Framework

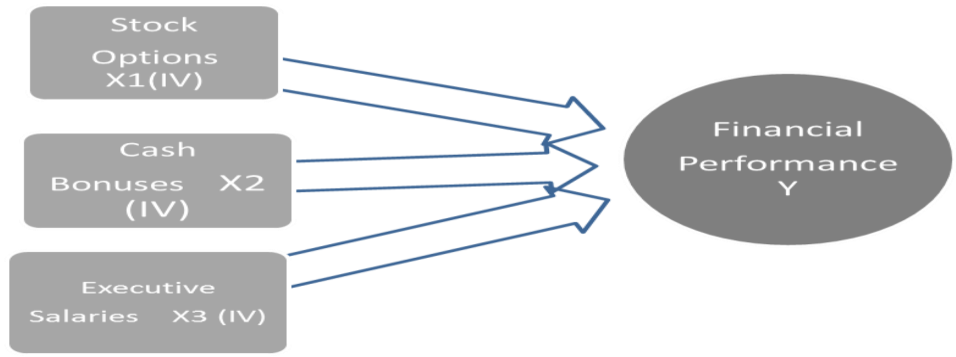

Figure 1. Theoretical Framework

Figure 1 shows the theoretical framework of the directional relationship between executive compensation and financial performance. Each element of executive compensation contributes to improved financial performance by motivating executives to take good business decisions and sound economic policies that are focused on maximizing stockholders wealth.

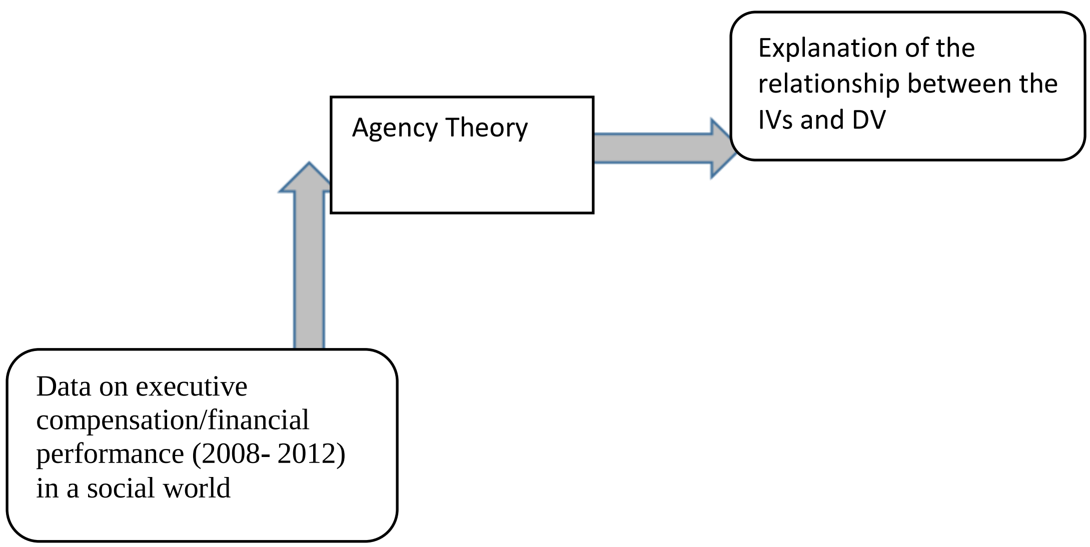

Figure 2. Theory as a Deductive Instrument

Figure 2 illustrates the deductive process of using agency theory to explain a relationship between variables. Agency theory is central in the measurement of corporate performance, and it provides the framework to investigate the influence of incentive contracts on performance (Eisenhardt, 1989; Jensen & Meckling, 1976). Therefore, agency theory was applied on executive compensation and performance data in order to deduce an explanation for the data.

Agency theory was derived from theory of the firm, which stipulates that the shareholders or the owners of a business employ the services of experienced executive employees or directors, who constitute the board of directors, to manage and control business operations on behalf of the shareholders. Executive employees or directors serve in a fiduciary capacity (Berle & Means, 1932); thus, they are agents of the owners of a firm (the firm's shareholders). To drive commitment, performance, and compliance to corporate goals, as well as to discourage undesirable executive employee behaviors, owners of businesses pay higher executive compensation.

Agency theory, like other theories, is comprised of concepts that are linked together such as executive compensation and financial performance concepts for the agency-based theory, which posits that a relationship exists between executive compensation and financial performance (Jensen & Murphy, 1990). A theory is needed to justify the expectation that a relationship exists between two or more variables (Smith, 2011). However, the concepts that constitute a theory may be difficult to measure or may not be testable because they are abstract ideas that may or may not be observable. Therefore, each concept of a theory may require the development of a construct to provide a measure if no existing measurable variables can be identified. For this research, the concept of "executive compensation" will be divided into measurable constructs or variables (e.g., stock options, cash bonuses, and executives' salaries), while the financial performance will be measured by the financial performance indicator of net profit.

Variables are observable items which can be assigned different values and are measurable. Executive compensation indicators such as stock options and cash bonuses are identifiable in a workplace and have values that can be assigned to them (e.g., payment of bonuses to executive employees). Constructs are generated from reliable responses to a questionnaire, which are used to provide indirect measures of concepts. Concepts are abstract ideas that may not be observable, and thus, they may be difficult to measure. Therefore, concepts must be operationalized to provide measurable indicators to serve as variables (Smith, 2011).

The variables derived from agency theory are developed into testable hypotheses. For example, there is no relationship between executive compensation (e.g., stock options, cash bonuses, and executives' salaries) and financial performance. For the null hypotheses, there is a relationship between executive compensation (e.g., stock options, cash bonuses, executives' salaries) and financial performance for an alternative hypothesis. This aligns the research question with the research theory that guides the study. This will help to obtain appropriate research data and determine the most appropriate research method (multiple regression) to analyze data and provide answers to the research question.

The predictor variables are executive compensation elements. The key variables that comprise executive compensation are stock options, cash bonuses, and executives' salaries (Gomez-Mejia et al., 1987). These are interval or continuous variables. The dependent variable is corporate financial performance, which is an interval variable, and is measured by net profit. Some corresponding research on corporate performance includes the work of Garvey and Milbourn (2003), Bosworth, Mehdian and Vogel (2003), and Young and Buchholtz (2002).

Stock options are grants that give the executives the right to buy their firm's stock at a specified price, usually below market price and for a specified term, to help attract, retain, and motivate corporate executives (Hall & Murphy, 2002). The cost of stock options for the top five executives is recorded on the income statement plus the capitalized amount on the balance sheet. Cash bonuses are performance-based incentives to perform (Bouweans & van Lent, 2006, p. 65), earned by the top five executives, which are recorded on income statements, while executives' salaries are higher base pay for the top five executives, separate from bonuses, which are recorded as cost on income statements (Porter & Norton, 2011; Tulvinschi, 2013).

Executive compensation that is based on stock options may help discourage unethical executive employees' behaviors and improve performance (Westphal & Zajac, 1994). Hence, agency theory advocates for stock option incentives as a way to align the interests of the directors with the interests of the shareholders (Devers, Cannella, Reilly, & Yoder, 2007), and cash bonuses and enhanced base pay as motivations for executives to drive performance (Finkelstein & Hambrick, 1988).

The study is a quantitative, non-experimental research design that uses a multiple regression technique to investigate any significant relationship between stock options, cash bonuses, and executives' salaries (independent variables) and corporate financial performance (dependent variable). The study is based on a positivist paradigm and an objectivist epistemology, which is informed by theoretical perspectives (Crotty, 2010, p. 18); it requires a quantitative research methodology approach (Yeganeh, Su, Virgile, & Chrysostome, 2004). Therefore, the study is normal social science research, which relies on tested research paradigms and past scientific achievements from a "scientific community of acknowledges" (Kuhn, 1996, p. 10).

The study seeks to investigate the financial relationship between the IVs and DV as shown by the conceptual framework diagram.

Organization of the Remainder of the Study

Chapter 2 of this dissertation reviews seminal and peer-reviewed literature on executive compensation, strategic pay choices, policy choices and design, and performance measures. The purpose of reviewing existing literature on these topics is to identify executive compensation mix, corporate financial performance, benefits and risks associated with executive compensation, and the determinant and consequences of executive compensation. This chapter will further identify and explain the dominant theories that guide this study, as well as the criteria for measuring performance and ethical behaviors in relation to executive compensation. Also, some key prior studies relevant to this research are reviewed and cited to justify the research. Finally, the research hypotheses are itemized and discussed.

Chapter 3 of the dissertation reviews the research methodology. This chapter includes a review of the study design, methodology and methodological model, population, and sampling, involving descriptions of the research population characteristics, sample frame, sample size, and sampling strategy. Data sources, data collection strategies, and data management strategies are explained in this chapter as well as the rationale of the statistical technique used for data analysis. The tests of the research variables for validity and reliability are presented and discussed in addition to the ethical issues associated with the research.

Chapter 4 presents data analysis and results. This chapter includes the testing of research hypotheses and the alternative statistics techniques considered when the parametric statistical techniques fail to establish significant relationships between the IVs and the DV. Also, the statistical model/equation is presented and explained.

Chapter 5, the last chapter of the dissertation, provides the platform for discussion, a summary of the research results or outcomes, and the conclusions. The recommendations for both practitioners and future researchers are also presented in this chapter.

CHAPTER 2. LITERATURE REVIEW

Introduction

The purpose of this chapter is to review some existing literature, including both scholarly research and non-research studies relating to executive compensation and corporate financial performance. The study is designed to use a behavioral-agency theoretical framework to explain the link between executive compensation and corporate financial performance. The seminal works of Jensen and Murphy (1990) provide the theoretical framework and methodological design for this research.

Figure 1 below provides a virtual view of how this chapter is structured, identifying the theories used to guide the study, and the seminal and peer reviewed work that provided rich literature and methodological guidance. This approach helped to identify gaps in the existing literature in this field of study.

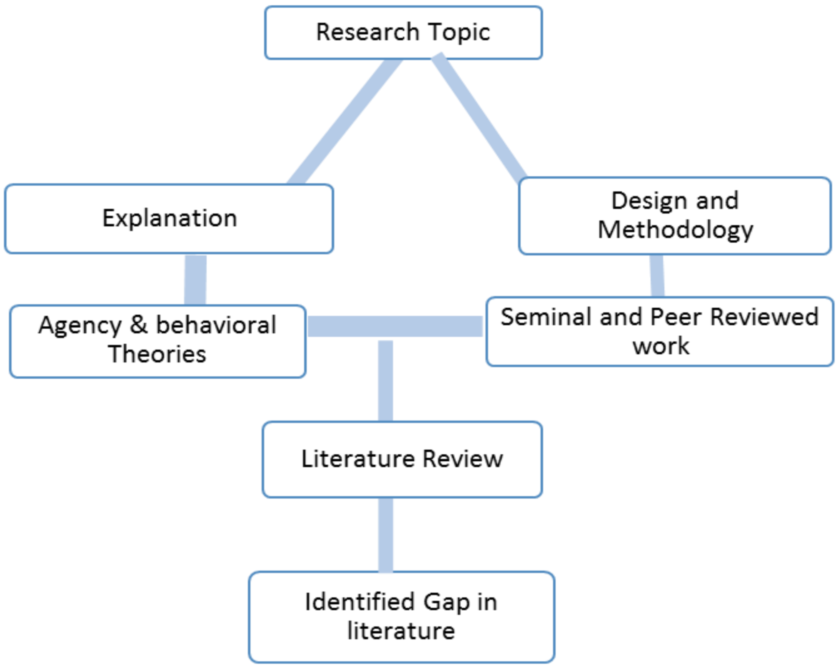

Figure 3. Literature Review Structure

Executive Compensation Framework

Executive compensation structures and reward systems play a major role in decisions made by corporate executives. Key business decisions such as policy choices and design are structured to enhance business growth for the personal gain of executives and sometimes for the benefit of the stockholders. According to Devers, Wiseman, et al. (2007), Devers, McNamara, Wiseman, and Arrfelt (2008), and Fong, Misangyi, and Tosi (2010), decisions made by executives are based on what they think will lead to personal gains. The philosophy behind pay policies made by executives percolates down to lower employees and changes their concept of success or performance because employees perform tasks according to corporate policies established by executives. This practice has resulted in a wide income ratio of 20 to 1 between the highest paid executives and lowest paid workers in the United States (Deya-Tortella, Gomez-Mejia, De Castro, & Wiseman, 2005). Therefore, the recurring question in the minds of stockholders, researchers, and the general public is the following: Does the current level of corporate financial performance justify the current level of executive compensation? This study in part addresses this concern.

The components of executive employees' pay consist of total cash received (e.g., salaries and bonuses) and non-cash receipts (e.g., stock grants and stock options). Bonuses and stock options are often tied to performance so as to motivate executive employees and enhance their commitment to organizational performance and success. Pay levels may affect employee attraction and retention, while pay mixes (i.e., the combination of basic salary with stock options and bonus incentives) have psychological, motivational, and behavioral consequences that are correlated with performance and business outcomes (Gerhart & Milkovich, 1990).

However, there are some factors that may have direct bearing on executive compensation such as the size of organizations, market conditions, pay scales within specific industries, personal credentials of executive employees, and hierarchical pay structures. According to Bebchuck and Grinstein (2005a), market conditions within an industry have the least impact on executive employees' actions, but such conditions have the greatest impact on executive remuneration. Since executive employee pay scales that are based on hierarchical organizational structures and credentials have minimal influence on executives' behaviors and actions, they are not considered in this research. Rather, the emphasis of this research is on pay mixes that drive executive employees' performance.

Generally, executive compensation components have remained stable for a very long time, but they are gradually shifting towards more incentive-based elements. Hence, executive salaries are not growing as much as bonus and stock options incentives. Tauber and Levy (2002) indicated that executive salaries have been on the decline. However, long-term executive incentives have been growing steadily and now account for over 60% of executive compensation. According to Harris and Bromiley (2007), the proportion of corporate value tied to long-term executive compensation has become substantial and is now the largest portion of executive employee pay. This situation accounts for the trend towards growth in corporate fraud, which is influenced by the desire of executive employees to enhance stock market prices for personal gain.

Executive salaries are the cash components of executive pay, which are based on executives' credentials, the size of organizations, and market dynamics. Specifically, executive salaries are the higher base pay or income earned by the top five executives, separate from cash bonuses. Executive employee salaries, bonuses, and stock option ratios are declining (Murphy, 1999). Most organizations now pay executives more by stock options and cash bonuses. According to Finkelstein & Hambrick (1988), cash bonuses and enhanced base pay for executives drive performance.

Cash bonuses (non-equity incentive compensation) are performance-based incentives to perform. They are measured as the additional wages paid to executives every year in order to motivate them to enhance corporate performance. According to Bouweans and van Lent (2006), cash bonuses are a proxy for "incentive intensity" to perform (p. 65). Moreover, cash bonuses are now an acceptable compensation element worldwide and across all industries. They are based on the previous year's performance and are measured by comparing set targets and actual performance.

Stock options are managerial and executive incentives given to entice commitment and induce performance from executive employees. Similar to bonus incentives, stock options are often linked to performance and may become vested after five to ten years. Stock options are grants that give the executives the right to buy their firm's stock at a specified price, usually below market price and for a specified term, to help attract, retain, and motivate corporate executives (Hall & Murphy, 2002). The public perception is that there is correlation between stock option compensation, financial performance, and share price appreciation in the stock market; hence, executive employees work tirelessly to ensure improved corporate performance, which indirectly increases stock market prices.

Unfortunately, during times when businesses are not performing well, corporate executives may be tempted to unethically intervene through manipulation of accounting choices outside the GAAP limit in order to report good performance. Therefore, the stock option proportion of executive compensation accounts for malfeasance in financial reporting (O'Connor, Priem, Coombs, & Gilley, 2006). To mitigate the problems associated with stock option incentives, some corporations grant restricted stock options, which may be withdrawn on certain conditions such as untimely departure and fraudulent actions.

Corporate Financial Performance

The relationship between executive employees and stockholders is based on a principal- agent relationship, which is derived from agency theory. Agency theory posits that stockholders who are owners of a business employ the services of experienced executive employees to manage and control business operations on their behalf. This situation means that executive employees serve in a fiduciary capacity (Berle & Means, 1932).

The seminal work of Berle and Mean (1932) reiterated that shareholders are owners, suppliers of capital, and risk bearers of corporations who employ and empower managers to control and run organizations as agents of principals (shareholders) within established rules and corporate norms. As agents of shareholders, managers' behaviors and actions are expected to be directed toward enhancing shareholder value, though that is most often not the case as executives' actions are focused more on ways of maximizing their personal gain (Tosi et al., 2000).

Matsumoto's (2002) study illustrated how managers consciously avoid poor or negative earnings, while Boschen, Duru, Gordon, and Smith (2003) demonstrated that good stock performance enhances long-term future gains for CEOs. The discretion and powers given to managers are sometimes abused by executive employees whose primary interests and commitments may be for personal gain. Based on these concepts, Ostas (2007) concluded that "human motivation is multifaceted and varied" because in some contexts people display "self-interested" behavior. In other situations, their behavior may be totally selfless (p. 573). This circumstance accounts for the double-edged executive employee attitude where executives display moral self-restraint and focus on maximization of shareholders' wealth at some times, while they use maximization of shareholders' wealth as a pretext for pursuing their own interests in other situations. Hence, behavioral and agency theories link executive employees' pay with performance. For this study, corporate financial performance is net income from business operations in a calendar or fiscal accounting year.

The theory of work behavior is based on the two major determinants of individuals' intrinsic motivation, which are personality traits and work environmental circumstances. According to Barrick, Mount, and Li (2013), an individual's motivation and work behavior are determined by the person's disposition and environmental circumstances. Theoretically, personality psychology accounts for "individuals characteristic patterns of thought, emotion, and behavior, together with the psychological mechanisms" (Funder, 2001, p. 198). Barrick, Mount, and Judge (2001) agreed, and they stated that it may be impossible to understand an employee's behavior without these two determinants. Hence, behavioral science researchers have focused their research on personality traits and environmental circumstances in seeking to explain their effects on work behavior.

As personality traits help to explain or predict employees' actions, work situations and circumstances also play an important role in employees' motivations and behaviors. Research by Barrick et al. (2013) demonstrated that purposeful work behavior emanates from individual personality traits, tasks, and work or social environments. Likewise, it is driven by goals to experience meaningfulness. These factors motivate actions and expectations that may result in work outcomes such as exhibiting productive, counterproductive, and withdrawal behaviors. Traits influence employees' choices, desires, and self-restraint. Counterproductive and withdrawal behaviors are behaviors that go against the legitimate interests or goals of organizations. Counter-productive behaviors may include unethical actions such as manipulation of accounting data or misappropriation of cash for personal gain.

Executive employees' compensation that includes stock options and bonus incentives are often involved in misrepresentation of financial statements through manipulation of accounting choices in order to report good corporate performance. This situation may positively affect prices of corporate stock in the stock market, but it is unethical. However, good performance reports help executive employees' yearly bonus payouts and future wealth through continuous growth in stock prices for shares obtained through stock option grants. O'Connor et al. (2006) stated that stock option grants induce CEOs to make long-term business decisions consistent with shareholders' wealth maximization goals but influence the likelihood of fraud through malfeasance in financial reporting.

According to Tosi et al. (2000), absolute performance represents the total dollar value of profit, pretax, or net profit; this accounts for the very high internal consistency of Cronbach's alpha = 0.97, 5 items (p. 311). Some researchers use more than one financial indicator to measure financial performance such as ROE, ROI, or ROA. However, these financial indicators are indirectly derived from absolute profit figures. The outcomes of research that used more than one financial performance indicator are complicated and confusing. Therefore, using one financial indicator at a time helps to provide straight-forward research outcomes rather than obtaining research outcomes that evoke a maze of analysis and are not useful for busy-working practitioners who desire simple and actionable conclusions.

Measuring Performance

There are many performance measures or criteria that researchers and practitioners rely on in making business decisions. Some of the measures include accounting ratios such as return on equity (ROE), return on investment (ROI), earnings per share (EPS), and return on assets (ROA) as well as income line items such as net profit and sales. According to Jensen and Meckling (1976) and Eisenhardt (1989), measurement of performance is the focus of agency-based research. Organizations measure performance in order to effectively manage stakeholders' expectations (Laplume, Sonpar, & Litz, 2008). However, to date, there is no single generally accepted performance measure as researchers or organizations use one or a combination of performance measures they think are appropriate for their studies/organizations. The lack of one generally accepted performance measure has resulted in variation in research outcomes; this accounts for the mixed research outcomes regarding the relationship between executive compensation and performance.

Corporate performance can be measured using financial and non-performance measures. Net profit, sales, return on assets, and return on investment are examples of financial performance measures, and customer satisfaction, quality of service, attitudes of employees, and human resources development are examples of non-financial measures. While Ittner, Larcker, and Randall (2003) as well as Merchant and Van der Stede (2007) argue that financial measures are effective for short-term decision-making, Ittner and Larcker (1998) as well as Sliwka (2002) recommended a combination of financial and non-financial measures for a long-term perspective. This recommendation was based on the premise that good customer relations, innovative ideas, and a strong human resources base help improve financial performance. However, a study conducted by Marginson, McAulay, Roush, & Van Zijl (2010) contradicted the assertion that the combination of monetary and non-monetary measures lead to long-term decision-making; instead, they indicated that the combination of both measures give rise to short-term decisions. Despite the contradictory outcomes, it can be deduced from the existing literature that financial measures and non-financial measures are important parameters for measuring performance, which may have short-term or long-term business implications.

Financial performance measures are quantitative, accounting measurement items, such as income-based line items like revenues or sales, operating income, net profit, earnings before interest and tax, and comprehensive income, as well as accounting ratios, such as return on investment (ROI), return on assets (ROA), and return on equity (ROE). According to Aliabadi, Dorestani, and Balsara (2013), income line items, such as sales, net profits, and revenues, or accounting ratios, such as return on investment (ROI), return on equity (ROE), and return on sales (ROS), are accounting performance measures that are based on U.S. Generally Accepted Accounting Principles (GAAP). GAAP were designed to enhance the use of performance indicators in making meaningful comparisons.

Income statement line items are used as performance indicators to measure performance within an organization, while accounting ratios are performance indicators used to compare performance across sections within an organization and across organizations. This distinction is the premise on why most researchers rely on accounting ratios as measures of financial performance. However, despite the usefulness of the accounting ratios to compare performance within and across industries, they are vulnerable to manipulation. For example, return on assets (ROA) is dependent on accounting choices such as depreciation, inventory valuation, and goodwill valuation, while earnings per share (EPS) are representative of an old financial measurement indicator prevalent in the 1970s that no longer drives performance (Gomez-Mejia et al., 2010). Likewise, net profit is vulnerable to accounting choices; hence, Benston (1985) argued that stock market returns relative to replacement costs are a better alternative in measuring performance.

Bromiley and Harris (2014) stated that researchers favor a performance indicator that measures real performance and is less vulnerable to accounting manipulation and measurement bias (p. 351). Therefore, following a comprehensive, comparative analysis of accounting measures that included ROA, ROS, ROE, and net profit, the authors found net profit as one of the top indicators to measure performance, but they were quick to note that net profit cannot be used as an indicator to compare performance across firms since firms are of different sizes and in different industries. On this strength, Bromiley and Harris (2014) favored the use of net profit as a measure of financial performance within an organization since net income or net profit are supported by existing literature on how managers practically assess or determine their organizations' performance.

To verify if there is a significant relationship between accounting and financial performance measures, Gentry and Shen (2010) examined the relationship between accounting profitability and market performance. Using data from the Compustat database from 1961 to 2008 to measure ROA, ROE, ROS, and RO, they found no strong evidence of convergence between these performance indicators. Similarly, Devalle, Onali, and Magarini (2010) studied the value relevance of accounting data after the adoption of the International Financial Reporting Standards (IFRS) in Europe using data from Frankfurt (in Germany), Madrid (in Spain), Paris (in France), Milan (in Italy), and London (in United Kingdom) stock exchanges for the period of 2002 to 2007. The study attempted to determine if the relationship between accounting and market value improved after the adoption of the IFRS in Europe, but through regression analysis, it found mixed outcomes. While the adoption of the IFRS in Europe had a positive effect in the United Kingdom and France, it had a negative effect in Spain, Italy, and Germany.

It can be deduced from the selected studies that performance measures are important to not only researchers but also practitioners. To researchers, performance measures are used to define the appropriateness of research variables in measuring the phenomenon being studied, particularly in quantitative studies. Alternatively, practitioners use performance measures as benchmarks to make business decisions in the areas of financing, investments, and growth.

Determinants and Consequences of Executive Actions

The general perception is that executives' actions are influenced by compensation and may be linked to financial performance. But in cases where this perception does not hold, executives may be wrongly penalized. According to Gomez-Mejia et al. (2010), penalizing executives when financial performance declines and rewarding them when financial performance improves can be demoralizing if corporate performance depends on factors beyond managerial control (p. 139). This assertion makes it paramount to understand the factors that have significant impact on financial performance. For example, while some agency theorists and researchers argue that there is a relationship between executive compensation and performance, Jensen and Murphy (1990) found no significant relationship between executive compensation and performance. This is contrary to the principal-agent relationship on which the executives-stockholders' relationship is modeled.

Despite the different approaches adopted by executive compensation researchers, the focus has been on determining the factors that influence organizational performance. The work of Hannan and Freeman (1977), Makri and Gomez-Mejia (2007) and Devers et al. (2007) was in the fields of organizational theory and related fields, but the works were focused on the determinants of corporate performance. While Chandler (1977) stated that executives' actions had great influence on performance, Hannan and Freeman (1997) thought otherwise, stating that environmental factors were the primary determinant. Variations in the outcomes of research on the determinants of corporate performance prompted further research.

Some subsequent investigations on the primary determinants of corporate performance found that executives' actions had no effect on performance in the short run, but they may have had a significant effect in the long run. For example, Hambrick and Finkelstein (1987), Weiner and Mahoney (1981), and Murray (1989) found no relationship between executives' actions and performance in the short-term, but all three of these studies noticed a major effect in the long run. Therefore, it can be inferred from these findings that variations in corporate performance in the short-term may be influenced by other factors external to managerial capabilities and actions. However, in the long run, both managerial actions and environmental factors may affect performance.

Organizational performance can be enhanced through earnings management, which involves choices in accounting methods such as depreciation, inventory valuation, and assets valuation. Earnings management may be within or outside generally accepted accounting principles (GAAP) as the choice of accounting methods within GAAP is not fraud since there is no intention to deceive (Erickson, Hanlon, & Maydew, 2006). However, accrual methods have some limitations in applications; therefore, not all earnings management is within GAAP. In the same way, not all accounting reinstatements are a result of fraud as some accounting reinstatements are not based on a prior intent to deceive. Reinstatements generating disagreements about the application of GAAP to specific transactions may constitute accounting fraud (Palmrose & Scholz, 2004). Figure 4 illustrates the moderating effects of executive actions on performance.

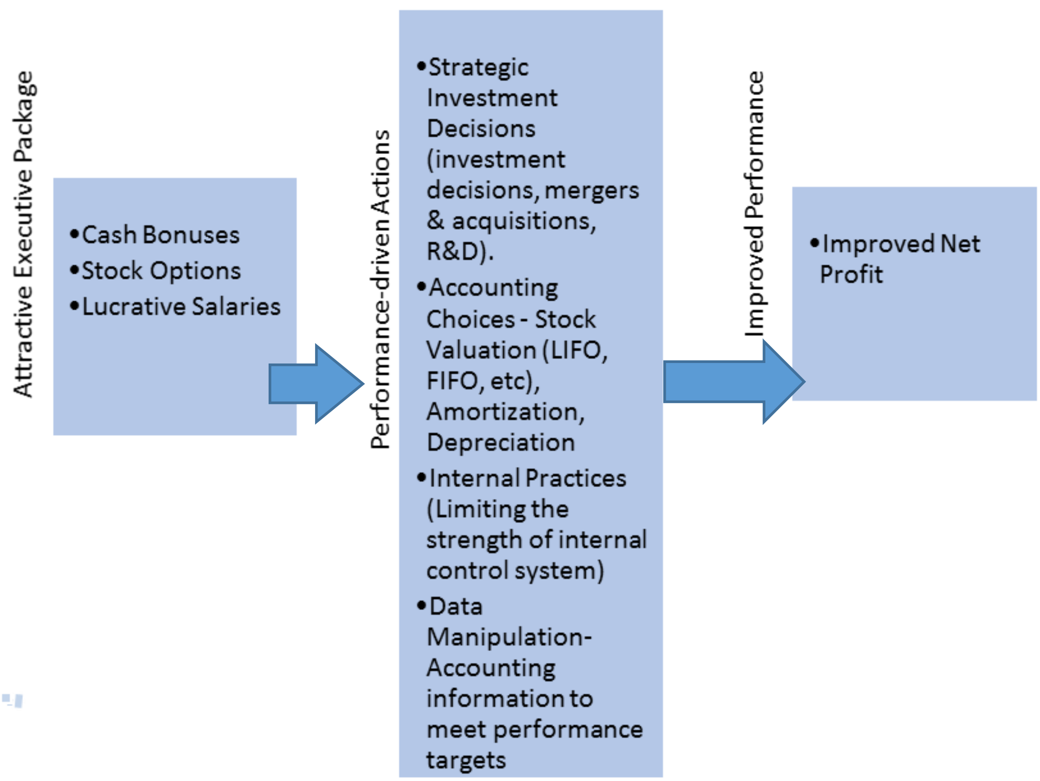

Figure 4. Effect of Executive Actions on Performance

Literature on Executive Compensation and Corporate Financial Performance

There are mixed outcomes from numerous studies on the influence of executive compensation on corporate financial performance. For example, Hirschey and Pappas (1981) and Deckop (1988) found significant and positive relationships between executive compensation and corporate performance, while studies conducted by Tosi et al. (2000), Meeks and Whittington (1975), and Garen (1994) found little or no relationship between executive compensation and performance. As a result, Coombs and Gilley (2005) concluded that little is known about the link between organizational financial performance and CEO compensation despite a variety of studies on the link between them.

Jensen and Murphy (1990) conducted a study matching compensation data from 1974 to 1986 with corporate performance data, eliminating missing data. The study found that there was no significant relationship between executive compensation and performance. A study conducted by Tosi et al. (2000) on the determinants of CEO compensation found that 40% of the variance in executive pay was determined by firm size, while less than five percent was explained by financial performance. The authors used executive salaries, bonuses, and long-term incentives as dependent variables and financial performance indicators as independent variables. The study was based on meta-analysis of 137 articles. The authors indicated that the Black-Scholes method was used to measure stock options, but in the absence of stock options for any corporation, total cash for salaries plus bonuses were used. Also, in the absence of cash bonuses and stock options, salaries were used as total cash (total compensation). Agarwal (1981) and

Finkelstein and Boyd (1998) demonstrated the use of total cash as a good proxy of total pay for executives.

Agarwal and Samwick (2003) studied performance incentives within firms and the effect of managerial responsibility, and they discovered that top management positions and levels of responsibility were good predictors of incentive pay. Using a research sample of 13,109 executives from the ExecuComp database, secondary data from 1993 to 1997, and return to shareholders as a performance indicator, the authors determined that CEO profit per share (PPS) was $41.22 (mean) per $1000 change in shareholders' wealth.

Boschen et al. (2003) studied stock price performance in dynamic CEO compensation arrangements. Using compensation data for 30 CEOs from 1959 to 1995, ROA, and shareholders' return as performance indicators, they found that good stock price performance produced significant benefits in both the short and long runs.

Carpenter and Sanders (2004) investigated the effects of top management team pay on multinational corporation (MNC) performance. The study used 224 U.S. executives of MNC from the S&P database and data from 1992 to 1993 to investigate the influence of total executive pay on market-to-book value (performance). Specifically, the study found that CEO pay did not predict MNC performance.

Morgan and Poulson (2001) investigated the link between executive pay and performance by using S&P 500 firms as sample and secondary data from 1992 to 1997. The authors found that firms that had pay-for-performance plans recorded better financial performance.

Hartzell and Starks' (2003) study on the relationship between 1) stock options, salary, change in total cash pay, and total pay (pay measures) and 2) change in shareholders' wealth and Tobins' Q (performance measures) found that change in shareholders' wealth predicts change in total pay. The authors used six years of data (1992-1997) from 1,914 firms in the ExecuComp database. The focus of the study was on institutional investors and executive performance.

Siegel and Hambrick (2005) examined the top three hierarchical levels of the management of 67 firms by using executive compensation and performance data for 1991 and 1992. The independent variables were short and long-term pay and vertical, horizontal, and overall pay disparity. The two dependent variables were market-to-book value and return to shareholders (the performance variables). The authors found that pay disparity is negatively related to performance in highly technical firms.

Kato, Lemmon, Luo, and Schallheim (2005) studied 334 Japanese firms that had stock options plans (526 plans) for their executives from 1997 to 2001. The research variables were plan adoption indicators and shares outstanding (IVs) as well as cumulative abnormal returns and ROA (DVs). Using multivariate regression, the authors found that option-based performance pay is positively associated with cumulative abnormal returns (CAR), increased ROA, and top levels of management ownership.

Bonus-based managerial incentives drive executive employees' efforts toward enhancing organizational performance. Unlike stock options, bonus compensation plans (non-equity-based incentives) do not lead executive employees to manipulate accounting methods. Dechow, Sloan, and Sweeney (1996) studied the impact of stock-based compensation and bonus-based compensation on performance, and the authors found no significant evidence that firm earnings substantially increased due to bonus-based compensation plans. Furthermore, they concluded that stock option compensation plans dwarfed bonus-based compensation plans.

Bonus-based compensation plans have limited influence on fraudulent behaviors by executive employees. This is because bonus compensation plans do not have long-term implications for the wealth of the executive employees since they are based on current performance measured against past performance or set targets. However, Johnson, Ryan, and Tian (2009) determined that unrestricted stock options have a greater influence on leading executive employees to commit fraud, unlike vested, unvested, or restricted stock options.

Restricted stocks are not transferable and vest when certain conditions are met such as length of service and non-fraudulent behaviors. Restricted stocks are taxed as ordinary income when they vest, but they are subsequently taxed at lower capital gain rates for any appreciation in value. On the other hand, unrestricted stock options vest immediately when granted and become transferable. They are taxed as ordinary income, while subsequent appreciation is taxed at a lower capital gain rate. Therefore, using recent data, the present research may help to determine if the proportions of executive pay from bonuses and stock options positively influence corporate performance.

Improperly designed reward programs might trigger corporate fraud such as compensation mixes. This situation is particularly possible in compensation structures that include stock options and bonuses as seen in the classic cases of Enron, WorldCom, and Arthur Anderson. Empirical evidence shows that CEOs and managers design their decisions in an attempt to meet the implicit criteria of success. Executives may not be motivated or pressured to commit fraud if pay levels are the same across all industries and if compensation mixes do not include incentives that are tied to performance. This is because incentive systems, stock options, and bonuses are a double-edged sword, which may help organizations achieve their strategic goals, but they may also lead CEOs to make self-serving business decisions (O'Connor et al., 2006). As strategic goal motivators, managerial incentives exert the necessary pressure on executive employees to achieve organizational goals. But executive employees who are not ethically strong may think of maximizing their personal gain at the same time through manipulation of accounting choices to show improved business performance.

Compensation Theories

Although agency and behavioral theories are commonly used by researchers to provide explanations on the relationship between executive compensation and performance, there are other individual-based theories associated with executive compensation and financial performance. For example, prominent theories include equity theory, expectancy theory, and goal theory, and these theories are specifically used to support individual-based compensation plans in organizations.

Behavioral theory assumes that organizations strive to meet organizational goals of improved performance, and in the case that an organization's performance is below the set target, executives identify ways to report satisfactory performance (Harris & Bromiley, 2007). According to Gomez-Mejia et al. (2010), Wiseman and Gomez-Mejia developed the behavioral agency model (BAM), which was derived from Kahneman and Tversky's (1979) prospect theory and Cyert and March's (1963) behavioral theory of the firm. The behavioral agency framework is based on the theory that executives' risk-taking and risk-averse behaviors are dependent on the types of incentives, internal controls, and situations within organizations (Wu & Tu, 2007). For example, since stock options have no downside risks (Wiseman & Gomez-Mejia, 1998), executives that receive stock options take risk to enhance corporate performance. The behavioral and agency theories provide the "theoretical flavor" and basis for building the research hypotheses for this study.

On the other hand, agency theory focuses on the relationship between top executives and stockholders, particularly as it relates to conflicts of interest between the two parties (Tosi et al., 2010). Therefore, agency theory provides the framework to investigate the relationship between executive compensation and performance (Jensen & Meckling, 1976). Agency theory was derived from theory of a firm, which stipulates that the shareholders or the owners of a business employ the services of experienced executive employees or directors who constitute the board of directors to manage and control business operations on behalf of the shareholders. Therefore, executive employees or directors serve in a fiduciary capacity (Berle and Means, 1932) as agents of the owners of a firm's shareholders.

To drive commitment, performance, and compliance to corporate goals as well as to discourage undesirable executive employees' behaviors, owners of businesses expand directors' compensation to include stock options, which makes directors of an organization part owners of the business. Stock options are used as a governance mechanism to discourage unethical executive behaviors (Westphal & Zajac, 1994); hence, agency theorists advocate for stock options incentives as a way to align the interests of the directors with the interests of the shareholders (owners). As a result, executive employees or directors avoid negative earnings surprises (Matsumoto, 2002) which may involve manipulations of accounting choices to subvert good corporate governance (O'Connor et al., 2006). Therefore, behavioral agency theories, which are integrated to develop the behavioral agency model (BAM), are used to explain the role of executive compensation on corporate performance. This study is based on behavioral theory (the theory of work behavior) and agency theory (principal/agent relationship) because behavioral and agency theories help to explain the motivations of executives to enhance corporate financial performance.

In explaining the relevance of managerial theory in the analysis of executive compensation and financial performance, Tosi et al. (2000) indicated that executives are more knowledgeable in organizational processes and decision-making procedures than dispersed shareholders; hence, shareholders rely on the skill of business executives. However, shareholders are faced with the challenge of how to monitor and control the daily activities of executive employees. This is necessary to ensure that executives' workplace behaviors are in the interest of the principals (the shareholders) who want increases in the value of firms and improved performance (Bloom & Milkovick, 1998).

Stockholders address control and monitoring challenges through agent-principal contracts. This approach helps to establish ways to monitor and control executives' behaviors and decisions through reward incentives, which are designed to compensate executives for improved performance. The proponents of agency theory, Demski and Feltham (1978) as well as Shavell (1979), agreed, and they stated that efficient contracts between executive employees (agents) and principals (stockholders) are based on observing agent behaviors through monitoring. However, a study conducted by Levitas

(1998) contradicted the use of executive compensation plans as a control mechanism, reporting low correlations, .107 and .170, respectively. On a positive side, Sanders and Carpenter (1998) reported .6 and .5 correlations, respectively. These conflicting outcomes call for more research in this field in order to confirm or disaffirm prior research findings.

Equity theory is based on the assumption that an individual's motivation is affected by that individual's perception of the amount of work performed relative to outcomes. In other words, employees expect to receive rewards proportionate to their inputs or work performance. Therefore, if an employee receives less than proportionate rewards, the employee (the high performer) may leave the corporation or consciously reduce the amount of work performed because of dissatisfaction (Gomez-Mejia et al., 2010). Expectancy theory is based on the assumption that individuals develop mental perceptions of the outcomes associated with various tasks and assign a subjective measure to those outcomes (Tolman, 1932); hence employees participate in sets of tasks that can maximize their rewards. Therefore, employees with higher expectancy for an outcome for performing a particular task are motivated, while those employees with less expectancy of an outcome are less motivated. It was on the strength of this theory that Lawler (1971) hypothesized that executive pay linked to performance stimulates executives to work harder and in turn improve performance. Also, Schwab and Dyer (1973) hypothesized that employees' behaviors that are directed toward increased performance are influenced by what they expect to receive in return by way of pay; thus, it can be assumed that employee performance is driven by pay.

Likewise, goal theory is focused on the link between pay and performance. However, goal theory is associated with specific tasks to be performed and the expected financial outcomes and rewards for performing the specific task. In a goal-based task (goal theory), performance is expected to improve where standards and objectives are clear and pay is contingent to meeting set goals (Gomez-Mejia et al., 2010).

Managerial power theory was recognized after the financial scandal in late 2001 involving Enron, WorldCom, and many other large corporations. Specifically, this theory posits that top executives have the power to shape or set executive compensation. This is consistent with both theoretical and empirical evidence of top executive power in organizations and may account for why there are significant distortions in executive compensation structures that make most top executives' earnings to constitute of "rents," which is the excess of executive income over market efficiency and maximum shareholders' value (Schneider, 2013). The author recommended tying bonuses to long-term performance, eliminating windfalls from equity compensation, fixing time for equity awards, aligning executives' pension plans with increases in shareholders' value, and avoiding overly generous severance packages.

Related to managerial theory is managerialism, which suggests that executives focus more on increasing an organization's size than profits because large organizations can easily generate more profits as well as more power and goodwill (Tosi et al., 2000). The authors indicated that managerialist writers such as Herman (1981), Aoki (1984), and Williams (1985) applied managerialist logic to the study of executive compensation; the hypotheses of these writers held that executive pay is primarily a function of a company's size. Therefore, it can be inferred from advocates of managerialism that executives may prefer the use of a firm's size as the key criterion for fixing executives' pay rather than performance. The reason for this preference is because profit is not difficult to achieve by large organizations in a market with high entry barriers since large companies have superior information that provides them a competitive advantage (Gomez-Mejia, 1994).

This study used a behavioral agency theoretical framework as a platform to explain the influence of executive compensation elements on corporate financial performance as measured by net profit. To buttress the influence of executive compensation on executive behaviors, Kaplan and Henderson (2005) stated in their analysis of managerial incentives and compensation structures that behavioral constructs are "intertwined" with executive incentives (p. 352).

Also, the present study is based on a positivist paradigm and an objectivist epistemology, which is informed by theoretical perspectives (Crotty, 2010, p. 18). Since a quantitative research methodology approach is required for an objective epistemology (Yeganeh, Su, Virgile, & Chrysostome, 2004), a quantitative approach was used for this study.

Data and Estimation

Original data are most appropriate to build, analyze, and directly compare research models instead of meta-analysis of prior studies (Bromiley & Harris, 2014). Lipsey and Wilson (2001) agreed, and they indicated that original data are more appropriate for analysis and provide better information than a meta-analysis statistics summary. The argument here is that the researcher has greater control over original data analyzed for comparison and the interpretation of results; hence, this study relied on raw secondary data from corporations that were available in the SEC's EDGAR database.

Buck, Bruce, Main, and Udueni (2003) as well as McKnight and Tomkins (2004) stated that archival data from annual proxy reports or statements are acceptable means for researchers to investigate executive compensation.

Miller (1995) stated that secondary data are generally considered valid and reliable for studies on executive compensation and performance. Venkatraman and Ramanujam (1986) agreed, and the authors indicated that secondary or archival data provide all aspects of financial data which may not be available elsewhere. However, some researchers, despite the appropriateness of secondary data, believe that the researcher is one step removed from the reality of the phenomenon of study.

Although executive compensation may be financial, non-financial, or both, existing literature has categorized key executive compensation elements to include stock options, cash bonuses, and executives' salaries. This classification gives a wide range of coverage, which is sufficient to demonstrate that the independent variables for this study can account for significant variations in the outcome variable. Gomez-Mejia et al. (1987) confirmed the key composition of executive compensation by stating that executive compensation has three distinct components: cash bonuses, executives' salaries, and long-term income, represented by stock options.

Also, statement of financial accounting standards (SFAS) No. 123, issued by the Financial Accounting Standards Board (FASB, 1995), accounts for stock-based compensation, which recommended voluntary recognition of stock-based compensation estimates for stock options (Johnston, 2006). Jensen and Murphy (1990) indicated that stock options (equity-based) incentives rather than cash-bonus compensation are most appropriate to maximize a firm's value. Bergstresser and Phiippon (2006) agreed and stated that stock options motivate CEOs to manipulate earnings upward. On the other hand, McAnally et al., (2008) indicated that managers with large stock options are more likely to miss the performance benchmark by reporting small initial losses and subsequent small year-to-year earnings declines. These distinctions account for the predictor variables and outcome variables used for this study.

A research question that is focused on the relationship between independent variables and a dependent variable is a quantitative research question (Creswell, 2009). The research question, which is in a general form, is reduced to specific variables that are measurable and testable to allow for quantitative data analysis through hypotheses and driven by theory. A theory, such as agency theory, is central in the measurement of corporate performance, and it provides the framework to investigate the influence of incentive contracts on performance (Eisenhardt, 1989; Jensen & Meckling, 1976). This is because agency theory, like other theories, is made of concepts that are linked together, such as executive compensation and financial performance concepts for the agency-based theory, which posits that a relationship exists between executive compensation and financial performance (Jensen & Murphy, 1990). Likewise, Smith (2011) stated that a theory is needed to justify the expectation that a relationship exists between two or more variables. The author further indicated that research concepts, mostly abstract in nature, are reduced to measurable constructs or variables. This accounts for the use of stock options, cash bonuses, and executives' salaries that are used as proxies of executive compensation, while net-profit is used as a measure for financial performance.

Data analysis requires establishing the interaction between data and constructs using multiple regression to support or reject the constructs (Cronbach & Meech, 1995).

Linear regression is used to test individual hypotheses, while multiple regression is used to test the omnibus hypothesis. This approach requires the use of inferential statistics, which are used to determine the relationship between independent and dependent variables (Field, 2009). Bootstrapping statistics are used in research when the linearity assumptions of multivariate statistics are violated; hence, the knowledge of distributional properties of a statistic is not required (Efron, 1979). Miles, Shevlin, and McGhee (1999) agreed and described the bootstrapping technique as a simple but powerful tool in inferential statistics that does not rely on assumptions or the underlying probability distribution function of the variable. Instead, it is based on the empirical distribution function of the variables (p. 148). This principle was considered in this study when the transformed variables did not show evidence of linearity.

Executive Compensation and Ethical Behavior

Generally, human resources in an organization are composed of three categories of employees: operating employees, middle level managers, and the top five management executives, which are the focus of this study. Top management makes policy decisions and creates job procedures, which are assumed to be aimed towards achieving economic goals of the organization. The policy decisions which are passed down through the formal hierarchy for implementation are designed towards increased profits, productivity efficiency, and maximum return on investment, which are elements necessary to maximize stockholders' wealth. The employees, top management inclusive, are morally obliged to perform their responsibilities and obey the employer (stockholders) by virtue of a contractual relationship with the principal (stockholders). Two ethical responsibilities emerge from this relationship. First, employees have an obligation to work within the set rules and standards of the organization in order to meet the organizational goals. Second, the employer is expected to pay a just wage that is commensurate with the work performed by employees and their performance.

Since executives' decisions have direct implications on business outcomes or performance, it is plausible to link executive compensation with performance. However, several decades of research on the link between executive compensation and performance did not produce a consistent body of knowledge (Jensen & Murphy. 2004). Likewise, Dossi, Patelli, and Zoni (2010) indicated that a recent explosion of academic research on executive compensation and performance measurement has resulted in partial and ambiguous findings. This lack of understanding indicates why researchers persist in investigating the relationship between these variables through the use of different sets of data, performance measure criteria, and statistical methods.

From an ethical perspective, Chng, Rodgers, Shih, and Song (2012) questioned if incentive compensation leads to ethical behavior. While the works of O'Connor et al. (2006) as well as Zhang, Bartol, Smith, Pfarrer, and Khanin (2008) found that, consistent with agency theory, the increase in stock options encourages ethical behavior under certain conditions, the same authors found that an increase in stock options encourages executives to behave unethically under different conditions. Likewise, Mahoney and Thorn (2006) found that increases in stock options and bonuses make executives act in the long-term interest of their organizations and also encourage executives to behave ethically, though may be detrimental in advancing social and environmental goals of a corporation (Bebchuk, Fried, & Walker, 2002; Zalewski, 2003).

However, some prior research found that executives' ethical behavior depends on control traits found in some individuals (Ching et al., 2012). Trevino and Youngblood (1990) agreed and stated that executives that have locus of control clearly see the connection between their behavior and outcomes; hence, they are ready to take responsibility for their actions. Such executives are unlike other executives who lack personal control because they see less connection between their behaviors and business outcomes. Unethical behaviors by executives have a negative effect on performance because they may lead to shortcuts and illegal means to improve performance. In contrast, confident executives who have strong self-control believe that they can confidently improve performance or achieve performance goals in the face of declining performance without resorting to shortcuts or unethical behavior.

Observed Gap

Despite numerous studies on executive compensation and performance, there has been little progress in establishing a relationship between executive compensation and financial performance (Coombs & Gilly, 2005). Also, Tosi et al. (2000) stated that financial performance accounted for less than five percent of the variance in executive compensation, while Finkelstein and Hambrick (1988) stated that executive compensation was partly a function of how much executives were expected to contribute to the performance of organizations (p. 546). Most research on executive compensation has not been based on sound theoretical and conceptual frameworks; hence, Devers et al. (2007) challenged future executive compensation researchers to develop more theoretical and empirical evidence.

The current study is partly a response to this challenge, and it is also an attempt to fill in the gap in knowledge about the link between executive compensation and financial performance. Also, this study is grounded in agency and behavioral theories, and it uses multivariate regression to explain the relationship between executive compensation and corporate financial performance.

CHAPTER 3. METHODOLOGY

Purpose Statement

The purpose of this study is to determine if there is a significant relationship between executive compensation and corporate financial performance. Using empirical data, the study examines if stock options, cash bonuses, and executives' salaries are predictors of corporate financial performance as measured by net profit. Specifically, the study attempts to answer the following research question: To what extent are stock options, cash bonuses, and executives' salaries related to corporate financial performance?

The research question investigates a directional relationship between three independent variables (IVs) and a dependent variable (DV); therefore, a multiple regression analysis is used since it is the most suitable statistical technique in this context. The research model is a linear model that describes how a Y-variable relates to two or more X-variables (or transformations of X-variables: Tabachnick & Fidell, 2001).

A multiple linear regression technique is appropriate for this study since this study examines the relationship between financial performance (DV) and several specified independent variables (IVs). The response variable is financial performance (Y). The predictor variables of interest are stock options (X_1), cash bonuses (X_2), and executives' salaries (X_3).

Research Design

A study design with appropriate concepts that is underpinned by theory and associated with means of measurement enhances construct validity and internal validity

(Smith, 2011, p. 36). Therefore, a study design constitutes the blueprints for data collection, measurement, and analysis (Cooper & Schindler, 2006).

The design for this research study is a quantitative, non-experimental research approach using a multiple regression technique to investigate any significant relationship between stock options, cash bonuses, and executives' salaries (IVs) and corporate financial performance (DV). According to Creswell (2009), a quantitative research approach is a research method that can be used to test theories and examine the relationship among variables. This research does not qualify for experimental research since the researcher cannot perform one or more treatments (e.g., increase or decrease a treatment) in order to estimate the effect on the outcome (Orcher, 2005). Instead, this study focuses on the relationship between two or more variables and content analysis that involves exploring human behavior from existing data.

The business theories used in this study are agency and behavioral theories. Agency theory is central in the measurement of corporate performance; specifically, it provides the framework to investigate the influence of incentive contracts on performance (Eisenhardt, 1989; Jensen & Meckling, 1976). According to Smith (2010), a theory justifies the expectation that a relationship exists between two or more variables.

The study is based both on a positivist paradigm and objectivist epistemology, and it is informed by theoretical perspectives (Crotty, 2010, p. 18). As such, a quantitative research methodology approach is required (Yeganeh, Su, Virgile, & Chrysostome, 2004). Therefore, the study seeks to investigate the financial relationship between the IVs and DV as shown by the conceptual framework in figure 5. Figure 5 provides the conceptual framework for this study.

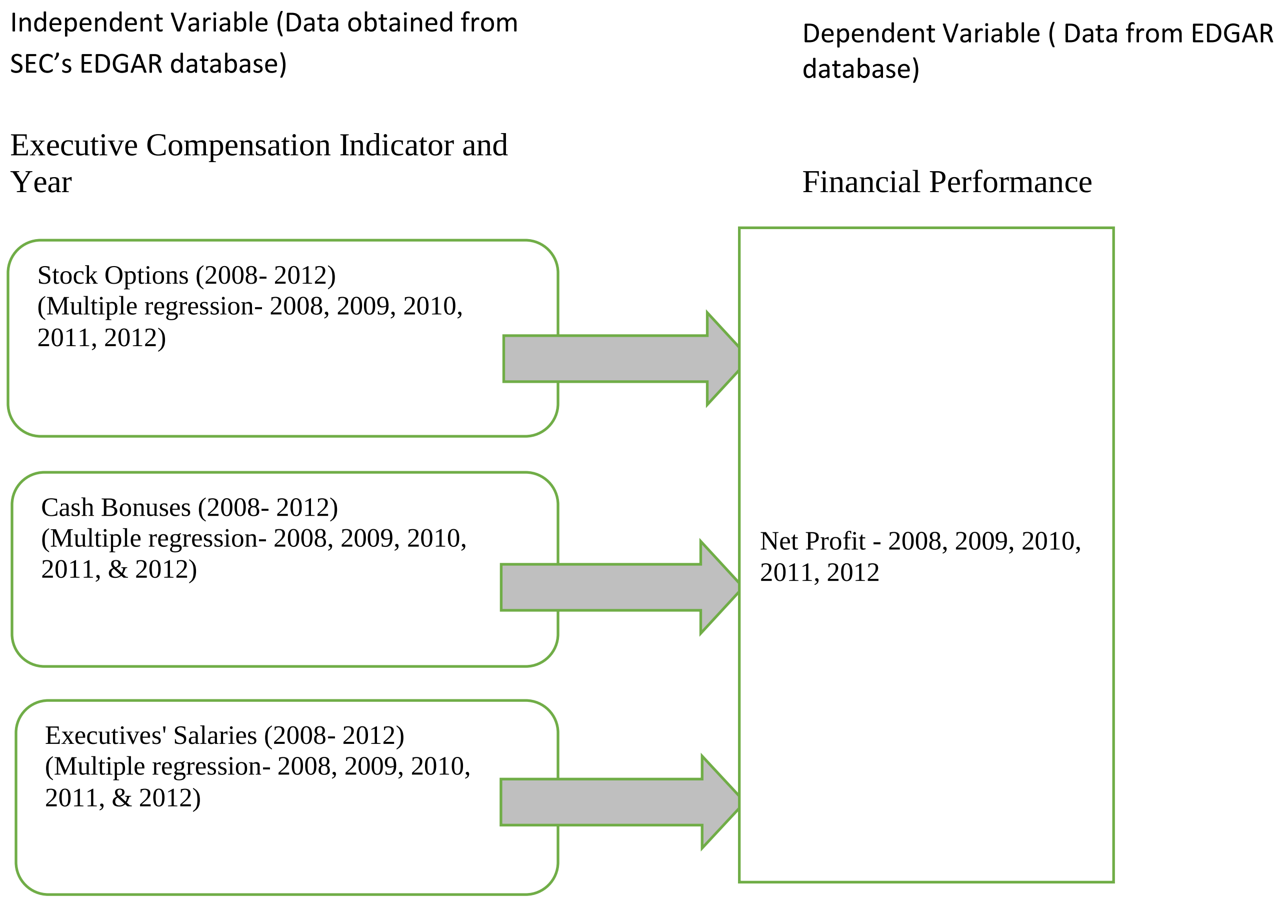

Figure 5. Conceptual Framework

This study uses a linear regression technique to test the individual hypotheses, while a multiple regression (R^2 in ANOVA summary table) was used to test the Omnibus hypotheses. A multiple linear regression model is a linear model that describes how a Y-variable relates to two or more X-variables (or transformations of X-variables) (Tabachnick & Fidell, 2001). This method is suitable for use in this case because a multiple linear regression technique helps to explain how financial performance (Y-variable) relates to the linear combination of stock options, cash bonuses, and executives' salaries (X-variables). Tripp and Kenny (1995), Combs and Skill (2003), Hartzell and

Starks (2003), and Coombs and Gilley (2005) used regression analysis to conduct similar research on executive compensation.

The study relied entirely on secondary data that was extracted from the SEC's EDGAR database. The data from the SEC are self-reported, aggregated financial data and financial statements from publicly listed corporations in the U.S. According to Venkatraman and Ramanujam (1986), secondary or archival financial data provide all aspects of financial data which may not otherwise be available (p. 808) and are valid and appropriate for the study of executive compensation (Miller, 1995). Therefore, secondary data are generally valid and reliable for this research. All variables used in the model are numerical/continuous variables. The dataset for analysis included a period of five years from 2008 to 2012. The data are financial performance data, which were measured by net profit. Meanwhile, executive compensation was measured by stock options, cash bonuses, and executives' salaries. The compensation and net profit data were obtained from corporations' financial statements or annual proxy filings in the EDGAR database.

The research population is comprised of the publicly listed corporations in the U.S., which is Standard & Poor's (S&P) 1,500 corporations. The research sample is from the research population that are part of S&P's 1,500 corporations. The research sample was randomly selected from the research population. To validate this model from the secondary database, a cross-validation technique was used.

Data analysis requires the use of descriptive statistics and inferential statistics to determine trends or the general direction in which data tends to move. Therefore, descriptive statistics were used to present percentages, averages, and dispersions in variables being studied, while inferential statistics (e.g., a multiple regression technique and bootstrapping statistics) were used to test hypotheses and predict the variability between research variables. According to Vogt (2007), inferential statistics are used for analysis in order to come to a conclusion about a population, while descriptive statistics may be used to measure central tendency, dispersion, and percentages (p. 57). For time, the dataset for analysis was based on an average of each variable over a period of five years from 2008 to 2012.

The sample size was generated statistically through the use of G*Power3. This was used to build the actual predictive model. However, to validate the actual predictive model from the secondary database through cross-validation, the sample size was increased from 77 to 154. In turn, 50% of the data was used for building the actual research model, and 50% was used for cross-validation. The sample of 154 publicly listed corporations was randomly selected from the research population which resides in the S&P 1,500 database.

Multivariate model assumptions were tested, and data were transformed accordingly. Some variable transformation methods considered include log, square root, and cube root transformations. As an alternative statistical model, a bootstrapping technique was used because the linear regression assumptions did not hold.

Sample

Population

The research population for this study is the publicly listed corporations in U.S., which are S&P's 1,500 corporations. According to Patten (2012), a population is a group in which the researchers are interested. The publicly listed corporations are of different sizes and expand across all industries. They include large corporations (S&P 500), midsize corporations (S&P 400), and small, publicly listed corporations (S&P 600). The population data were obtained from the SEC's EDGAR online database from 2008 to 2012 using ticker symbols.

The Sample Frame

The sample frame is the list of S&P 1,500 corporations from which the research sample was drawn. According to Vogt (2007), the sampling frame is the researcher's list of the research population (p. 80), while Robson (2005) defines the sample frame as the source of the qualified or eligible research population from which the research sample is drawn (p. 240).

Sampling Procedure

According to Vogt (2007), sampling involves the selection of a small group or a sample from a large group or population in order to learn more about the population from the research sample selected. When the sample is used to learn about the population, the sample is said to be a true representative of the population. A random sampling strategy was used to select the corporations that constitute the research sample. According to Orcher (2005), random sampling is the gold standard in quantitative research for selecting a sample from a research population as it gives each member of the research population an equal chance of being selected (p. 46).

Therefore, random sampling is an unbiased method of selecting research participants since every member of the target population has an equal chance of being selected, and the selection of one member does not depend on the selection of another member. Selection bias is a common problem in research when a random sampling technique is not used (Winship & Mare, 1992). A random sampling strategy reduces the threats associated with selection bias in recruiting research participants (Patten, 2012). To be included in the research sample, the corporations drawn must have compensation and performance data in the selected time period (2008-2012).

Initially, 154 publicly listed corporations were randomly selected from the S&P 1,500 and subjected to sample acceptance conditions. This sample is more than ten percent of the research population. The criteria or conditions used in the sample selection included that only corporations based in the U.S. were eligible for the study; the pay structure of the corporations based in the U.S. must have included stock options, cash bonuses, executives' salaries, and financial performance; and the companies must have filed financial proxy reports and statements annually to the SEC. If a corporation that was initially selected did not have a pay structure that included stock options or cash bonus incentives, the corporation was replaced. The process was repeated until 154 corporations (the total sample) were selected.

Sample Size

The sample size was determined using the multivariate model with three predictor variables and G*Power3 Data Analysis software. This approach is known as 'power analysis,' and it is the process of determining the sample size for a research study (Davey & Savla, 2009). Using G*Power3 based on an effect size of 0.15, power 0.8, and three predictor variables to compute the sample size, an initial sample of 77 corporations was obtained. This sample was used to build the research model. Since the study relied entirely on secondary data, the research model must be cross-validated. As a result, a second set of data from an additional 77 corporations was collected and analyzed, and the outcome was compared with the outcome of the actual research sample. Therefore, the total sample size was 154 from which 50% of the data was used in building the model, and 50% was used for cross-validation.

A research sample size depends on the variables to be measured, the type of data, and the statistical design. Therefore, research variables, data type, and the statistical design drive the sample size's computation. Although a large research sample reduces Type 1 errors and improves statistical significance, there are also costs associated with gathering more information, which may not be worth the effort (Vogt, 2012). Hence, the sample size for this study cannot be too large and thus cost more than necessary or so small that it would not obtain an optimal level of data needed. Therefore, the total sample of 154 publicly listed corporations used for this study is more than 10% of the research population, which is optimal for this study.

Rationale for Sample Selection

Sample selection. A random sampling method removes bias in the selection of the research sample. Thus, it helped in the collection of reliable data used to determine the relationship between stock options, cash bonuses, executives' salaries, and corporate financial performance as well as in determining which compensation elements are strongly related to corporate financial performance. According to Vogt (2007), the use of a non-random sampling method may lead to self-selection effects, which are one of the threats to non-experimental research. Non-random sampling, such as purposive and convenience sampling methods, gives the researcher the discretion to select research samples, which may affect the credibility of the research sample and in turn affect the reliability of the collected research data. Therefore, to conduct inferential research that will result in a research outcome that can be generalized, an unbiased sample and reliable data with minimal human intervention were used.

Sample size. The sample size was determined quantitatively using G*Power3; therefore, the sample size was devoid of the researcher or other human intervention. Also, research participants were randomly selected, thus removing bias in data collection. The use of G*Power3 helped to obtain an optimal sample size, avoiding the costs of an excessive sample size and the risks of a small sample size that may have led to a research outcome that could not be generalized or to a research model that could not be replicated with different samples. Therefore, the use of G*Power3 helped determine a sample size that is comparable to existing literature on similar topics and is most appropriate for this research.

Setting

The political, economic, and socio-economic environments in the U.S. from 2008 to 2012 provided the setting for this study. The research data included the period from 2008 to 2012. The year 2008 was the peak of the economic recession when many corporations suffered a decline in financial performance. Likewise, the decline in financial performance was worsened by the continuous fall of stock values in the stock market at that time. The DOW Jones and NASDAQ averages fell to their lowest points in decades. Many organizations retrenched or re-engineered their operations to cut costs, while some closed shops or threatened to do so. The auto and banking industries are prime examples. These hardships led to the government injecting funds into JP Morgan, General Motors, and many others to avoid the collapse of key corporations and the potential ripple effect on the economy.

Also, as a result of the economic recession at the time, several control measures were implemented by the federal government to stem the rate at which the economy was being eroded. Since the data for this study are partly executive compensation and financial performance data for years during the economic recession in the U.S., this study attempts to determine if the higher compensation paid to executives during the period of recession was justifiable. This determination is made by using multivariate regression and bootstrapping statistics to investigate if corporate financial performance for a five-year period relates to executive compensation.

The data collected and analyzed were for a five-year period from 2008 to 2012. The decision to use a five-year dataset to determine if there is a relationship between executive compensation and financial performance is based on existing peer-reviewed literature. According to Sepe (2011), the firm-manager relationship is ongoing and lasts an average of five or more years, which gives managers sufficient time to undertake many business projects geared toward meeting performance-based targets. Therefore, examining an organization's data for a five-year period helped to determine if financial performance is sensitive to executive compensation through the use of regression analysis.

Also, Aggarwal and Samwick (2003) state that approximately five years of sample data (1993 to 1997) from Standard & Poor's ExecuComp database is designed to be a true representation of the corporate sector. According to the authors, the dataset for this period is sufficient to make a precise calculation of the extent to which financial performance is sensitive to executive pay. Therefore, this may suggest why some previous studies on executive compensation and performance, such as research conducted by Henderson and Fredrickson (2001) and Hartzell and Starks (2003), collected and analyzed six years of secondary data from 1985 to 1990 and from 1992 to 1997, respectively. Therefore, a five-year dataset for this study (2008 to 2012) was adequate to determine if there is a relationship between executive compensation and corporate financial performance.

Instrumentation/Measures

Variables are observable items which can be assigned different values and are measurable. Specifically, variables are created to help categorize research data needed for analysis in order to answer quantitative research questions. To provide answers to the research question for this study, the variables are assigned values collected from secondary data. Executive compensation indicators, such as stock options and cash bonuses, are identifiable in a workplace and have values that are assigned to them such as payment of bonuses to executive employees. These variables are measurable since they are operationalized and measurable indicators of executive compensation. They are unlike concepts that are abstract ideas which may not be observable and thus difficult to measure (Smith, 2011).

The financial data required for the IVs are the compensation data, while the data required for the DV are financial performance data (net profit). Stock options are grants that provide executives the right to buy the firm's stock at a specified price—usually below market price and for a specified term—to help attract, retain, and motivate corporate executives (Hall & Murphy, 2002).

The value of stock options are the value of options related to rewards. Stock options are measured by the value of the cost of stock options granted to the top five executives. The cost portion is recorded on the income statement, while the capitalized portion is captured on the balance sheet. Cash bonuses are performance-based incentives to perform (Bouwens & van Lent, 2006, p. 65) and are measured by cash bonuses paid to the top five executives. The cost item is recorded on the income statement. Executives' salaries are a higher base pay for the top five executives, separate from bonuses, which are recorded as a cost on the income statement (Porter & Norton, 2011; Tulvinschi, 2013). Since each variable is identifiable and measurable, organizations assign a value to the variables. Values assigned to the independent variables are operational costs related to executive compensation (IVs), while net income relates to corporate financial performance, the dependent variable. The data for the IVs and DV are collected from the SEC's EDGAR database.

Stock options can be recognized either in the year the stock options are granted or on a future, predetermined date. For example, a grant of 1,000 stock options may be exercisable in three years' time for $10,000. The question is whether to recognize it as compensation on the date of issue or on a future date when the grant vests. Since the primary purpose of this research is to determine the relationship between key elements of executive compensation and corporate financial performance, stock options are recognized in the year they are issued since they are held to entice performance and attract rewards (Finkelstein & Hambrick, 1988). According to Antle and Smith (1985) and Murphy (1985), researchers now have resorted to using the *ex-ante* value of stock options (i.e., options value in the year granted) because it is theoretically the most appropriate approach.

Since secondary data was used for this research, survey instruments were not used to collect data. Therefore, the measure of the validity and reliability of the survey instrument may not be applicable. However, for research data from a secondary source to be reliable and valid, the source of the secondary data must be credible, and prior researchers must have relied on such data for research. According to Kimberlin and Winterstein (2008), data collected from a secondary source must be reliable and measure accurately what it purports to measure. Data from the SEC's EDGAR database is deemed credible since the publicly listed corporations that annually render reports to the SEC affirm that the reports are true as required by law. Also, most prior research on executive compensation relied on data from the SEC's EDGAR database.

Data Collection

The Institutional Review Board's (IRB) approval was obtained before the start of data collection. The research data were entirely secondary data from publicly listed U.S. corporations in the SEC's EDGAR database. The EDGAR database is an Internet-based platform created by the SEC to allow public access to financial information of publicly listed corporations in the U.S. The database is indexed and validated in compliance with the act of Congress that established the SEC. The SEC's EDGAR database has more than 1.7 million documents or over 610 gigabytes of data, and it is ranked as the 25th largest web-accessible database (Gerdes Jr., 2003).

The SEC's EDGAR database is a public source for publicly listed companies' data. The website allows free online access to corporate financial information (SEC, 2014); therefore, permission was not required to access the website and extract data, except for giving credit for some other researchers' opinions cited in this study.

Most prior studies on executive compensation relied on secondary data from the SEC. The works of Gomez-Mejia et al. (1987); Engel, Gordon, and Hayes (2002); Arora and Alam (2005); Bhagat and Bolton (2013); and Merkley (2014) are based on research data collected from the SEC's EDGAR database. The SEC's EDGAR database makes the work of researchers, in terms of document management, much easier. As required by law, publicly listed U.S. corporations make periodic reports to the SEC of their financial and operational activities, and the directors of each corporation sign each report to attest that the content is true. The SEC's EDGAR database automatically re-verifies reports from corporations and performs automatic collection, indexing, and validation of the submitted data.

The data for the target companies (sample) were retrieved from the EDGAR database by using each company's ticker symbols or central index key (CIK) number. The manual retrieval of archival data is an acceptable method for researchers to investigate executive compensation (Buck, et al, 2003; McKnight & Tomkins, 2004). From the summary of compensation tables in proxy reports submitted annually to the SEC, compensation data were manually retrieved. The compensation data for stock options, cash bonuses, and executives' salaries were sorted into categories or variables and then matched with net profit on an Excel spreadsheet. Then, the data was entered into SPSS, the statistical analysis software.

Since this study relied on secondary data, the researcher was one step away from the reality of the phenomenon of study. Hence, validity and reliability tests of research constructs were performed. The internal validity of data relates to the trustworthiness of data collected, while external validity relates to the assessment of the trustworthiness of data when replicated in a different setting or situation (Creswell, 2009). However, archival data from the SEC is deemed credible and reliable since the directors of the corporations attested that the data are true as required by law. Also, the data obtained from the SEC'S EDGAR database can be re-verified by future researchers whose works are based on the positivistic research paradigm (Denscombe, 2003).

The SEC's EDGAR database was accessed through the SEC's website (http://www.sec.gov/edgar/searchedgar/companysearch.html) using search parameters such as ticker symbols or central index key (CIK). From the database, the proxy reports containing executive compensation data were accessed through the Definitive 14A records, while the financial performance data were obtained from 10-K records in the same database. The process of collecting data from these records was rigorous and time-consuming since the dataset for each year of a company is not included in a single location in the database; therefore, to obtain a complete dataset for a company, several searches were made within the database.

Data Analysis

Data analysis strategy involves the use of descriptive and inferential statistics to determine trends or the direction in which data tends to move. Descriptive statistics presented the percentages, averages, and dispersions in variables being studied, while for inferential statistics, a multiple regression technique or bootstrap statistics were used to test hypotheses and predict the variability between the research variables. According to Field (2009), inferential statistics are used to determine the relationship between independent and dependent variables, and therefore, inferential statistics were used to determine the relationship between stock options, cash bonuses, and executives' salaries (the independent variables) and financial performance as measured by net profit (the dependent variable).

Testing of Hypotheses

Data analysis requires establishing an interaction between data and constructs using multiple regression in order to support or reject the constructs (Cronbach & Meech, 1995). The F-value and R^2 in the Analysis of variance (ANOVA) summary table for multiple regression statistical test was used to test the Omnibus hypothesis, while for the individual hypotheses ($H0_1$, $H0_2$, and $H0_3$), linear regression was used. Table 2 shows the summary of the hypotheses and statistical tests performed.

Table 2. Summary of Hypotheses and Statistical Tests

Null Hypotheses	Statistical Tests
Omnibus Hypothesis	
H0: Corporate financial performance is NOT related to stock options, cash bonuses, or executives' salaries	Multiple regression
Individual Hypotheses	
H01: There is no significant relationship between stock options and corporate financial performance.	Linear regression
H02: There is no significant relationship between cash bonuses and corporate financial performance.	Linear regression
H03: There is no significant relationship between executives' salaries and corporate financial performance.	Linear regression

An ANOVA is used to test a multiple regression equation for significance (Vogt, 2007, p. 153). An ANOVA test generates an F-statistic, which is used to generate the p-value. The p-value, which is the criterion for accepting or rejecting a null hypothesis, is

0.05 (5%) such that when "the probability that the null hypothesis is a correct hypothesis is less than 5 in 100 ($p < .05$), the null hypothesis will be rejected" (Patten, 2012, p. 105).

When the linearity assumption of multiple regression (parametric model) failed to establish a relationship between stock options, cash bonuses, executives' salaries (IVs) and financial performance (DV), one or more of the IVs were transformed. The common strategy used to evaluate linearity was through a visual observation of the scatter graph. Data transformations were applied on variables when the linear assumptions did not hold. Some data transformations considered included log, square root, and cube root transformations.

The statistical model that was used to explore this model is given below:

$$Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + E.$$

Within this model;

Y is the response variable and represents financial performance

X1 represents the variable stock options and β1 represents the coefficient of stock options

X2 represents the variable cash bonuses and β2 represents the coefficient of cash bonuses

X3 represents the variable executive salaries β3 represents the coefficient of executive salaries

β0 represents the intercept

Within the multiple regression model, it was examined to see if a particular X-variable was making a useful contribution to the model. That is, given the presence of the other X-variables in the model, does a particular X-variable help to predict or explain the Y-variable?

As an example, to determine whether variable X1 is a useful predictor variable in this model, it requires a test of the following hypotheses:

$$H0 : \beta 1 = 0$$

$$HA : \beta 1 \neq 0$$

If the null hypothesis above were the case, then a change in the value of X1 would not change Y, so Y and X1 are not related. Also, variables X2 and X3 would still be present in the model. If the null hypothesis above cannot be rejected, then variable X1 is not needed in the model, given that variables X2 and X3 will remain in the model.

In general, the interpretation of a slope in a multiple regression can be complicated. Correlations among the predictors can dramatically change the slope values from what they would be in separate simple regressions.

The dataset used to test the hypotheses was the average data for financial performance (net profit), the outcome variable for five years (2008-2012). This dataset was then regressed on the stock options (X1), cash bonuses (X2), and executives' salaries (X3), which are the predictor variables for the same period.

Bootstrapping Statistics

For alternative statistics, a bootstrapping technique was used since the linear regression assumptions did not hold. This method uses the existing dataset as a population from which repeated smaller samples are taken to calculate the statistics of interest (Field, 2009). As an alternate statistical technique, bootstrapping statistics are appropriate because they do not require knowledge of distributional properties of a statistic (Efron, 1979). Miles, Shevlin, and McGhee (1999) agreed and described the bootstrapping technique as a simple but powerful tool in inferential statistics that does not rely on assumptions or the underlying probability distribution function of the variable. Instead, it is based on the empirical distribution function of the variables (p. 148).

Treatment of Time

The executive compensation data and financial performance for the 154 corporations selected were obtained from the SEC's EDGAR database for the years 2008 to 2012. The executive compensation and financial performance data for the 154 companies were accumulated and averaged, producing an average for each variable over a period of five years from 2008 to 2012. According to Gomez-Mejia et al. (1987), averaging values of variables for analysis provides better measurement indicators than individual annual measurements; this method has been used successfully in prior research.

The five years of data for all of the variables (e.g., cash bonuses, stock options, executives' salaries, and net profit) were averaged to obtain a five-year average value which was used in the analysis. This approach helped to determine if there is a linear relationship between the IVs and the DV, and it also showed the IV that has a stronger relationship with the DV. All variables used in the model are numerical/continuous variables. Data for the financial performance indicator (DV) as measured by net profit were regressed on data for stock options, cash bonuses, and executives' salaries (IVs) for a period of five years.

Missing Data

Standard statistical analysis or quantitative statistics techniques such as multiple regression are developed to use complete sets of data (Peugh & Enders, 2004); unfortunately, missing data has become a common problem in quantitative research

(Enders, 2001). Since the research data were large, the missing data or cases were excluded, though the traditional treatments for missing data (e.g., listwise deletion, pairwise deletion, and a regression substitution method) were considered.

Testing of Research Assumptions

Osborne et al. (2001) stated that research without tested assumptions of the statistical tests for reaching conclusions creates a situation where there is rich research literature but questionable results, assertions, and conclusions. Osborne and Waters (2002) agreed and indicated that most of the multiple regression assumptions are "robust" and may not be susceptible to violation, except for the assumptions that variables are normally distributed and that a linear relationship exists between variables. Also, the assumptions that variables are measured without error and that variance is the same across all levels of independent variables (homoscedasticity) can be violated. These assumptions will be checked or tested.

To test for normal distribution, skew, and kurtosis, a visual inspection of the data plot was performed to confirm that the research sample was from a normally distributed population. Outliers were identified through visual inspection of either a scatter diagram or a histogram. Likewise, outliners were located through the difference in values between the data collected and the values predicted by the model (Field, 2009, p. 216). Additionally, a linear relationship between variables was tested by visual inspection of standardized residual plots and the use of existing theory as a guide.

Software Used to Analyze Data

The research data was analyzed using IBM®SPSS® (Special Package for Social Sciences (SPSS), Statistics Premium Gradpack 23 for Windows.

Justifications of Techniques

In the standard multivariate regression model, a dependent variable (Y) is assumed to be a function of a set of independent variables or regressors (X_1, X_2, X_3, ……X_k) in some populations (Berry, 1993). In this case, the population is comprised of corporations in the S&P 1,500. The model assumes that for each set of values for the independent variables, there is a conditional probability distribution of Y values such that the mean of the distribution is on the surface.

A random sampling strategy was used to select the research sample. The random sampling method removes bias in the selection of the research sample. According to Vogt (2007), the use of a non-random sampling method may lead to self-selection, which is one of the threats to non-experimental research. Non-random sampling, such as purposive and convenience sampling methods, gives the researcher the discretion to select research samples. This discretion may affect the credibility of the research sample, and in turn, the reliability of the research data collected may be affected. Therefore, in order to conduct inferential research that will result in a research outcome that is generalizable, an unbiased sample and reliable data with minimal human intervention are required; hence, the random sampling method was used to select the research sample.

Validity and Reliability

A study design, underpinned by theory and means of measurement, enhances construct validity and internal validity (Smith, 2011, p. 36). Kimberlin and Winterstein (2008) agreed and state that the key indicators of the quality of a measuring instrument are the validity and reliability of the measures (p. 2276).

Reliability estimates the consistency of measures administered at different times, while validity determines the extent to which an instrument measured what it purports to measure, usually referred to as ‘content validity.’ Thus, the quality of a research study depends on the construct validity which determines if the identified variables accurately measure abstract constructs or concepts as well as the phenomenon being investigated (Creswell, 2009). In practical terms, Trochim (2006) indicates that construct validity requires proper operationalizing of the ideas of cause and effect, which are represented by research hypotheses or propositions. This line of thought identified stock options, cash bonuses, and executives’ salaries as the key variables in this study that can be used to measure executive compensation.

Since secondary data were used for this study, survey instruments were not used to collect data; therefore, the measure of the validity and reliability of the survey instrument may not be applicable. However, the variables identified and used to measure executive compensation are supported by prior research on executive compensation. Additionally, the variables are workplace cost items for executive compensation where most incentive payments to executives are accrued yearly. Furthermore, secondary data from the SEC’s EDGAR database are deemed credible since the publicly listed corporations that annually render reports to the SEC affirm that the reports are true as required by law.

In the presence of data elements, secondary data can appropriately measure the variables required to answer questions, but Kimberlin and Winterstein (2008) cautioned by stating that though “retrospective charts or data are the gold standard, they are vulnerable to problems.” The authors recommend the use of standardized abstraction forms, abstractor training, abstractor monitoring, and binding of abstractors to study hypotheses as steps to ensure validity and reliability of data (p. 2282).

Incorrect valuation of stock options, improper classification of executive incomes, and intentional as well as unintentional mistakes or errors in the proxy statements may be threats to reliability. Additional threats to validity include secondary data that are not appropriate datasets for the measurement of variables as well as the unavailability of appropriate measures.

Multivariate regression was used to examine the interaction between data and constructs in order to validate the study. To ensure validity and generalizability of this study, the research model was cross-validated. Therefore, 50% of the data was used for building the actual research model, and 50% was used for cross-validation or to compare outcomes. According to Field (2009), assessing the accuracy of a model across different samples is an important step towards assessing the generalizability of a research outcome (p. 784).

Ethical Considerations

According to the Belmont Report, the selection of research participants calls for ethical consideration for fair procedures and outcomes. Because the data for this research are secondary data that are publicly available online, there are minimal or no ethical issues that relate to research participants. For example, the ethical issues that relate to physical, psychological, and social harm are common where the research participants are human beings.

Since the data for this study were available online, concern for the confidentiality of the participants' data was not necessary. However, it is ethically important to give credit to other authors' works, which this research has respected by complying with the American Psychological Association's (APA) requirements (2010). According to the American Association of University Professors (AAUP), plagiarism harms society by diminishing the creativity, authority, and credibility of the original work (2001). The essence of the PhD dissertation is to create knowledge and contribute to an existing body of knowledge in a field of study; it is not to diminish creativity or degrade the credibility of knowledge. Therefore, conscious steps were taken to avoid plagiarism.

This study research complies with the Academy of Management (AOM) Code of Ethics (2006) as it relates to data (not to fabricate or falsify data to achieve desired results); qualification of research (to disclose the assumptions, theories, research designs, and measures on which the research outcome is based); disclosure (disclose all methods and forms of data analyses for verification by other researchers); findings (take appropriate steps to correct significant research errors); and citations (accurately report the works of others).

The commitment to ethical standards is the moral responsibility of the researcher. Therefore, this study is based on "the highest level of professionalism," reporting results as they truly are, giving proper credit to the works of others, and disclosing all methods and analyses used to obtain the research outcome. Swanson and Holton (2005) indicated that as a researcher conducts research and constructs his or her own understanding of knowledge, the ideas borrowed from others must be traceable so that other scholars may track how the research findings were determined and establish if the judgment of the researcher was reasonable. Therefore, a researcher must adhere to these ethical principles relating to plagiarism and attribution.

The ethical issues surrounding the accuracy of data collected and reported were given serious consideration in the course of this study. This consideration is important because research data were available to the editor (reviewer) at any time in the course of review before the paper's publication. Duplicate or partial publication is a threat to the accurate reporting of data since unduplicated data are necessary for "independence of separate research efforts" (APA, 2010, p. 13). Duplication of data may involve using the same data originally used by a researcher for one or more works in the future.

Although the sharing of databases in academic research is ethical and advances knowledge, it raises some ethical concerns surrounding the legitimacy of intellectual property rights, protection of researchers' reputations, and priority claims for being the first to discover and publish (Shamoo & Resnik, 2009). These are some important, though less prominent, ethical issues that were addressed. According to the American Psychological Association (2010), authorship is for persons who make substantial contributions to the knowledge of a topic and accept responsibility for the work completed and published (p. 18). Thus, claiming another person's work does not make one an author, and it does not provide new knowledge to the existing body of knowledge in that field. Therefore, conscious efforts were taken to ensure that the outcome of this research is entirely the effort of the researcher and provides new knowledge to the field of accounting.

CHAPTER 4. RESULTS

Introduction

The analysis described in this chapter used secondary data between 2008 and 2012 to determine the extent of the relationship between executive compensation and corporate financial performance. Specifically, the primary purpose of the study was to determine if there is a significant relationship between key components of executive compensation (e.g., stock options, cash bonuses, and executives' salaries) and corporate financial performance as measured by net profit. This chapter presented the demographic description of the research sample, descriptive statistics, inferential statistics as well as bootstrapping statistics because the assumptions of linear regression did not hold. Each research hypothesis was tested to determine if a significant relationship exists with corporate financial performance. A separate set of data was used to cross-validate the actual research mode, so as to confirm if the research model can be generalized.

The researcher's background and experience as well as the training received to conduct this study had little or no influence on the data or the entire research process because the researcher has limited knowledge in research in this field of study. As a result, the research sample size was determined through G*Power3 statistical software, while the research sample was randomly selected. The research method and methodology were based on prior research, while the standard process for data collection and analysis was used to analyze and present the outcome of the data analysis.

The researcher is interested in the study because executives continue to receive higher incomes which may or may not translate to the state of the economy and overall performance of their organizations. Prior research on the relationship between executive compensation and corporate financial performance was mixed and confusing; hence, the researcher decided to conduct this study using current research data from the SEC's EDGAR database. The SEC's EDGAR database is a credible public domain for research data, and it can easily be accessed online through the SEC's website.

Sample Demography

The research population is comprised of publicly listed corporations in the U.S., which are S&P 1,500 corporations. These corporations are classified into ten categories according to the nature of business and types of products and services offered. From the research population of 1,500 corporations, 154 companies, representing more than 10% of the population, were randomly selected to create the research sample. The research sample represents all the sectors of the research population, but the research sample is not evenly distributed among business sectors. Table 3 shows the breakdown of the research sample according to business sectors of the U.S. economy. Also, the research sample was inclusive of all sizes of corporations to include S&P 500 (large corporations), S&P 400 (medium-size corporations), and S&P 600 (small-size corporations) as determined periodically by Standard and Poor's.

Table 3. Sample Distribution by Sector

SECTORS	NUMBER	%
Consumer Discretionary	22	14%
Consumer Staples	10	6%
Energy	9	6%
Financials	32	21%
Healthcare	20	13%
Industrials	14	9%
Information Technology	27	18%
Technology	5	3%
Materials	10	7%
Utilities	5	3%
Total	**154**	100%

The study relied entirely on secondary data that were manually extracted from the EDGAR database using company name, symbol, or central index key (CIK) number. The secondary data collected and analyzed were from the sample of publicly listed corporations within the S&P 1,500, comprised of S&P 500 (large corporations), S&P 400 (midsize corporations), and S&P 600 (small size corporations). Generally, the executive compensation and net profit of large corporations are larger in value than the other two classes of corporations. Likewise, executive compensation of medium-size companies is expected to be larger than that of the small-size corporations.

Usually, total executive compensation grows yearly, except in few situations when one or more directors' services are added or withdrawn. The net profit figures also show a similar trend. Table 4 demonstrates this trend using the dataset of 154 publicly listed corporations in the U.S., for the period from 2008 to 2012.

Table 4. Data Summary

Variables	2012	2011	2010	2009	2008
	Thousand	Thousand	Thousand	Thousand	Thousand
Executive Salary	415,006	393,711	379,998	374899	353,172
Stock Options	380,587	372,983	346,876	336,156	451,508
Bonuses	453,534	458,781	517,649	398,183	416,272
	in Millions	In Millions	In Millions	Millions	In Millions
Net Profit	97,834	92,523	77,861	36,965	54,226

Descriptive Statistics

Descriptive statistics provide a platform to quantitatively summarize the dataset used in this analysis. Data for all the variables (e.g., stock options, cash bonuses, executives' salaries, and corporate financial performance) were collected for a period of five years. The data were averaged for each variable over the five-year period to obtain a five-year average value which served as the analysis dataset. The five-year period is from 2008 to 2012. The summary of descriptive statistics for the actual research sample (77 publicly listed corporations) is presented in Table 5.

Table 5. Summary statistics of averaged data.

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
Mean Net Profit ($ millions)	77	-408.60	12411.60	349.12	1464.51	7.619	.274
Mean Executive Salary ($ thousands)	77	694.43	9927.40	2450.19	1249.72	3.029	.274
Mean Stock Options ($ thousands)	77	0.00	15974.70	2412.59	3003.84	2.270	.274
Mean Cash Bonuses ($ thousands)	77	32.53	9326.06	2461.18	2001.08	1.187	.274
Valid N (listwise)	77						

The descriptive statistics table shows the initial analysis dataset with 77 observations. It also shows descriptive statistics for the different variables, such as mean net profit, mean executive salary, mean stock options, and mean cash bonuses.

Mean net profit has a large spread with a maximum value of 12,411.60 ($ million) and a negative minimum of -408.60 ($ million). The spread spans companies that experienced negative net profit on average for the five years and companies that experienced relatively large profit on average. The mean and standard deviation values indicate that the mean net profit is highly variable. Mean net profit has a positive skewness of 7.619, and this is considered to be skewed based on the rule of 1; that is, a variable is considered skewed if the skewness statistic is greater than 1. Another approach is to consider doubling the standard error of the distribution, and if the skewness statistic is greater than standard error *2, then the variable is considered skewed. In the case of mean net profit, 7.619 > 0.548. This confirms that the variable is skewed.

Mean executive salary also showed a large spread with a maximum value of 9,927.40 ($ thousand) and a minimum value of 694.43 ($ thousand). The mean and standard deviation values also give an indication that mean executive salary is variable but possibly to a lesser degree compared to mean net profit. Mean executive salary also showed a positive skew greater than 1 and also greater than twice the standard error: 3.029 > 0.548. This result also confirms that mean executive salary is right or positively skewed.

Mean stock options had a spread from 0 ($ thousand) to 15,974.70 ($ thousand). This indicates that some companies did not have stock options on average while others offered significant stock options. Mean stock options had a high standard deviation which indicates highly variable data. The variable is also positively skewed with a skew statistic greater than 1 and greater than twice the standard error 2.270 > 0.548.

Mean cash bonuses had a spread from 32.53 ($ thousand) to 9,326.06 ($ thousand). Mean cash bonuses were also very variable, and the skewness statistic, 1.187, was slightly greater than 1. Mean cash bonuses were the least skewed variable in the dataset.

The cross-validation dataset was used to validate the analysis performed on the initial analysis dataset. Also, the cross-validation dataset was also averaged so as to be able to compare the output of the initial analysis dataset with the output of the cross validation dataset.

Exploratory Analysis

Exploratory data analysis presents an opportunity to characterize the main features of the data under study. The data were summarized graphically without applying any formal modelling or hypothesis testing. The aim was to determine if any trends or relationships were extreme or prominently appeared. This approach provided a broad view of the data.

The scatter plot matrix, Figure 6, shows that there may be an influence of outlier values within the dataset. APPENDIX C shows box plots of all variables and also suggests that the variables may be experiencing outlier influence.

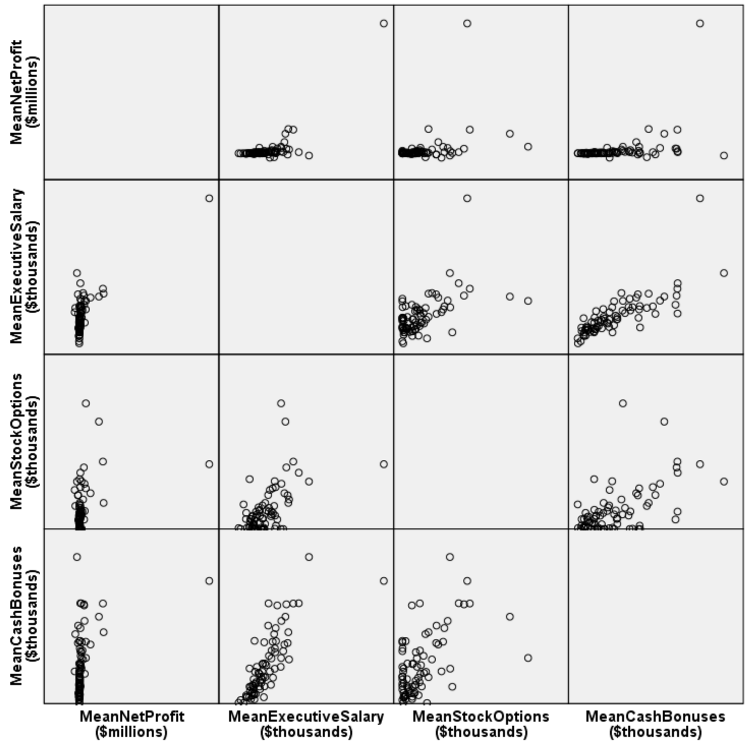

Figure 6. Scatter Plot Matrix

There was also a possibility of multi-collinearity as it appeared that some of the variables may be strongly correlated, and there may also be curve-linear relationships. The box plots of all variables also indicate that the variables may be influenced by outlier values.

Inferential Statistics

To ensure validity of analysis variables and to address some of the observations from the exploratory analysis above, some multivariate statistics verifications were performed. They included normality, linearity, and heteroscedacity.

The Gaussian or normal distribution refers to data that are shaped like a bell curve. Generally, averages of random variables independently drawn from independent distributions are normally distributed. The assumption that data are normally distributed is a key assumption in multivariate statistics. The preference is that there are no large deviations from normality, since large deviations from normality may generally lead to invalid statistical tests.

Histograms represent a frequency distribution of means of rectangles whose widths represent class intervals and whose areas are proportional to the corresponding frequencies. The height of each rectangle is the average frequency density. Histograms are widely used in research and practice to diagnose analysis variables for normality.

Data normality for all variables was assessed using normal probability plots and histograms. APPENDIX D shows the histograms for all analysis variables. The histogram plots were generated using the SPSS software.

The histograms show that mean net profit, mean executive salary, mean stock options, and mean cash bonuses are not normally distributed. These results are evident in the fact that the curves are not bell shaped. All histograms appear to be right skewed. Mean net profit, mean executive salary, and mean stock options show values that may be outliers.

APPENDIX E contains normal probability plots. The normal probability plots also confirm the non-normal distribution of all the variables under study. The normal probability plot shows a display of the data points which should fit the straight line for normally distributed data.

To address the deviation from normality, all variables were transformed. Several data transformations were explored, and the square root transformation appeared to give the best approximation of normality.

The square root transformation was performed using the square root function in SPSS:

- Sqrt(variable): where variable is the variable to be transformed
- Log(variable): where variable is the variable to be transformed

In order to perform a basic log transformation, the following criteria must be met:

- The dataset must not contain negative values.
- The dataset must not contain zero values.

Within the dataset under study, stock options contained zero values. The logarithmic was not directly applied to this variable as a result. The zero value within this variable was identified through the minimum value.

In order to transform a variable that contains 0 values, 1 was added to all values and then the log was taken. In SPSS, this operation was performed as follows:

- Log(variable + 1): where variable is the name of the variable

The histograms and normal probability plots of the transformed independent variables are shown in APPENDICES F and G, respectively.

Data Transformations

The square root transformations appeared to be appropriate for stock options, cash bonuses, and executives' salaries. The log transformation for stock options and cash bonuses still showed deviations from normality.

Correlations

Correlation analysis is useful for determining the strength of a relationship between two variables. In correlation analysis, correlation values range from -1 to +1, where a correlation value of +1 represents a strong positive relationship, while a correlation value of -1 represents a strong negative relationship. In other words, both variables increase together. Stated differently, as one variable is increasing, the other is decreasing. A correlation value of zero means no relationship exists. The closer the correlation value is to zero, the weaker the relationship is. The value of a correlation analysis can be assessed using the p-value. Basically, the p-value indicates the probability that the relationship indicated by the correlation would have been seen by chance alone if in fact there is no relationship between the variables (null hypothesis).

Table 6 shows the Pearson correlation coefficients, the p-values, and the sample size for the dependent and independent variables. The strongest correlation with mean net profit is with square root of transformed mean executive salary, and the weakest relationship is with square root transformed mean stock options.

The correlation values also revealed the possibility of multicollinearity in the data. Collinearity refers to a situation where independent variables that are part of a multiple regression study exhibit strong relationships among themselves. The effect of multicollinearity can be quantified with the variance inflation factor (VIF); the VIF summary for this study is presented in Table 7. Tolerance measures the strength of the linear relationship among independent variables. Specifically, it is calculated by subtracting the portions of a particular variable's variance attributed to other predictors from the value of 1. The VIF is the reciprocal of the tolerance value. Hence, a high tolerance value, or conversely a low VIF value, indicates minimal or low intercorrelation among the variables (Hair, Anderson, Tatham, & Black, 1998).

Table 6. Correlation Matrix

		Mean Net Profit ($ millions)	sqrt_MeanStockOptions	sqrt_MeanCashBonuses	Sqrt_MeanExecutiveSalary
Mean Net Profit ($ millions)	Pearson Correlation	1	.325**	.357**	.628**
	Sig. (2-tailed)		.004	.001	.000
	N	77	77	77	77
sqrt_MeanStockOptions	Pearson Correlation	.325**	1	.512**	.543**
	Sig. (2-tailed)	.004		.000	.000
	N	77	77	77	77
sqrt_MeanCashBonuses	Pearson Correlation	.357**	.512**	1	.826**
	Sig. (2-tailed)	.001	.000		.000
	N	77	77	77	77
Sqrt_MeanExecutiveSalary	Pearson Correlation	.628**	.543**	.826**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	77	77	77	77

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

Table 11 shows the tolerances and VIF values for the independent variables.

Table 7. Variance inflation factor

Coefficients[a]

Model		Collinearity Statistics: Tolerance	Collinearity Statistics: VIF
1	sqrt_MeanStockOptions	.692	1.444
	sqrt_MeanCashBonuses	.311	3.212
	Sqrt_MeanExecutiveSalary	.298	3.361

a. Dependent Variable: Mean Net Profit ($ millions)

The rule of thumb is that VIF values greater than five indicate moderate collinearity, and VIF values greater than 10 are severe and must be addressed. The independent variables in this study exhibit some multicollinearity, but the multicollinearity does not appear to be extreme.

Hypotheses Testing

The t-test and ANOVA are the widely used tests for statistical significance of the relationship between variables (Vogt, 2007). Also, the p-value, F-value, and R^2 in the model summary and ANOVA tables and as well as the *b*-value are frequently used for determining a relationship between variables (Fields, 2009). The benchmark for accepting or rejecting the null hypothesis for this study is based on an alpha value of 0.05 which is used as the p-value. This is the probability of obtaining results as extreme or more extreme than the ones observed given that the null hypothesis is true. Therefore, the smaller the p-value, the more evidence to reject the null hypothesis. This decision rule was supported by Anawis, M. (2012) who stated that the p-value defines the strength and type of evidence used to accept or fail to accept the null hypothesis (p. 24).

Hypothesis 1

H01: There is no significant relationship between executives' salaries and corporate financial performance.

HA1: There is a significant relationship between executives' salaries and corporate financial performance.

The first hypothesis tests for a linear relationship between the averaged net profit for years 2008 to 2012 and the averaged executive salary for years 2008 to 2012. The analysis was conducted using linear regression and the SPSS software. The square root transformed values of the independent variable were used in the analysis.

The full output of the linear regression can be seen in APPENDIX H. The regression summary is presented in Table 8.

Table 8. Linear Regression Summary for Executive Salary

Variable	**Coefficient b-value**	**t-value**	**Significance**
Constant	-3703.881	-6.234	0.000
sqrt_Mean Executive Salary	83.936	6.993	0.000
N = 77			
F Value = 48.907	sig = 0.000	Reject H_O	**Accept H_A**
R- squared = 0.395	Criteria $p < 0.05$		
Adjusted R-Squared = 0.387			

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The R square value is 0.395 which means that 39.5% of the variation in net profit is explained by mean executive salary. The F-statistic of this single model has a value of 48.907. This F-value is significant at the 0.1% level of significance and provides some indication of the ability of the research model to predict the research outcome. The positive *b*-value is significant at the .001 level of significance. The *b*-value indicates the strength of the relationship between a predictor and the outcome variable (Field, 2009, p. 209). These results indicate that the variable of executive salary has a positive significant relationship with net profit. The equation relating mean executive salary to net operating profit is given below:

$$\text{Mean net profit} = -3703.881 + (83.936)(\sqrt{\text{Mean Executive Salary}})$$

Hypothesis 2

H01: There is no significant relationship between stock options and corporate financial performance.

HA1: There is a significant relationship between stock options and corporate financial performance.

The second hypothesis tests for a linear relationship between the averaged net profit for years 2008 to 2012 and the averaged stock options for years 2008 to 2012. The analysis was conducted using linear regression and the SPSS software. The square root transformed values of the independent variable were used in the analysis.

The full output of the linear regression is provided in APPENDIX I. The regression summary is presented in Table 9.

Table 9. Linear Regression Summary for Stock Options

Variable	Coefficient	t-value	Significance
Constant	-298.736	-1.107	0.272
sqrt_Mean Stock Options	16.322	2.972	0.004
N = 77			
F Value = 8.833	sig = 0.004	Reject H_O	**Accept H_A**
R- squared = 0.105	Criteria P < 0.05		
Adjusted R-Squared = 0.093			

The R square value is 0.105 which means that 10.5% of the variation in net profit is explained by mean stock options. The F-statistic of this single model has a value of 8.833. This F-value is significant at the 0.4% level of significance. The positive *b*-value is significant at .5%. These results indicate that mean stock options appear to be significantly related to net profit. The R-square value for mean stock options is quite low. Although the relationship is significant, not much variation is explained by this variable. The equation relating mean stock options to net operating profit is given below:

Mean net profit =- 298.736 + (16.322)(√Mean Stock Options)

Hypothesis 3

H01: There is no significant relationship between cash bonuses and corporate financial performance.

HA1: There is a significant relationship between cash bonuses and corporate financial performance.

The second hypothesis tests for a linear relationship between the averaged net profit for years 2008 to 2012 and the averaged cash bonuses for years 2008 to 2012. The analysis was conducted using linear regression and the SPSS software. The square root transformed values of the independent variable were used in the analysis.

The full output of the linear regression is provided in APPENDIX J. The regression summary is presented in Table 10.

Table 10. Linear Regression Summary for Cash Bonuses

Variable	**Coefficient** b-value	**t-value**	**Significance**
Constant	-838.872	-2.140	0.036
sqrt_Mean Cash Bonuses	26.133	3.308	0.001
N = 77			
F Value = 10.941	sig = 0.001	Reject H_O	**Accept H_A**
R- squared = 0.127	Criteria P < 0.05		
Adjusted R-Squared = 0.116			

The R square value is 0.127 which means that 12.7% of the variation in net profit is explained by mean cash bonuses. The F-statistic of this single model has a value of

10.941. This F-value is significant at the 0.05 level of significance. The *b*-value of 26.13 is significant at 0.1%. These results indicate that mean cash bonuses appear to be significantly related to net profit. The R-square value for mean cash bonuses is also quite low. Although the relationship is significant, not much variation is explained by this variable.

The equation relating mean cash bonuses to net operating profit is given below:

$$\text{Mean Net Operating Profit} = -838.872 + (26.133)(\sqrt{\text{Cash Bonuses}})$$

Omnibus Hypothesis

H0: Corporate financial performance is NOT related to stock options, cash bonuses, or executives' salaries.

HA: Corporate financial performance is related to stock options, cash bonuses, or executives' salaries.

The omnibus hypothesis tests for the significance of the multiple regression model. The multiple regression analysis was conducted using linear regression and the SPSS software. The square root transformed values of the independent variable were used in the analysis.

The full output of the linear regression is provided in APPENDIX K. The regression summary is presented in Table 11.

Table 11. Multiple Regression Summary

Variable	Coefficient (b-values)	t-value	Significance
Constant	-4703.875	-7.297	0.000
sqrt_Mean Executive Salary	139.336	6.729	0.000
sqrt_Mean Stock Options	1.149	.225	0.823
sqrt_Mean Cash Bonuses	-37.85	-3.411	0.001
N = 77			
F Value = 22.305	sig = 0.000	Reject H_O	Accept H_A
R- squared = 0.478	Criteria P < 0.05		
Adjusted R-Squared = 0.457			

The R square value is 0.478 which means that 47.8% of the variation in net profit is explained by the model which consists of square root of mean executive salary, square root of stock options, and square root of mean cash bonuses. The F-statistic of this multiple regression model has a value of 22.305. This F-value is significant at the 0.05 level of significance. This means that the probability of getting the F-value by chance is very unlikely (p< 0.001); therefore, the F-value depicts the accuracy of the research model in predicting the relationship between IVs and the DV. The positive *b*-values indicate that the variables appear to be significantly related to net profit. Hence, the square root of mean executive salary is significantly related to net profit at the .001 level of significance.

Although the mean stock options *b*-value is positive, it is not significant at the .823 level of significance; therefore, there is no significant relationship between the square root of mean stock options and net profit. The square root of mean cash bonuses with a negative *b*-value is not a reliable predictor of the outcome variable because it has a negative relationship with net profit. The p-value of square root of mean stock options is significant at the 0.823 level of confidence. This p-value is not significant, and as a result, mean stock options can be removed from the model. The equation relating mean cash bonuses to net operating profit is given below:

Mean Net Profit =- -4703.875 + (139.336)(√Mean Executive Salary) + (1.149)(√Mean Stock Options) +(-37.85)(√Mean Cash Bonuses)

Cross-Validation

Cross-validation can be used to estimate the test error associated with a statistical model in order to evaluate its performance or to select the appropriate level of flexibility (James, Witten, Hastie, & Tibshirani, 2013). There are several approaches to cross-validation; but for this study the data-splitting approach was used. The cross-validation set approach consists of taking a random sample which will be analyzed and comparing it to the initial analysis sample. This approach provides some insight into the possibility of generalizing the initial research model. Summary statistics from the cross validation set can be seen in Table 12.

Table 12. Cross validation summary statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
Mean Net Profit ($ millions)	77	-884	21415	584.60	2491.191	7.926	.274
Mean Executive Salary ($ thousands)	77	1104	4808	2528.47	950.744	.740	.274
Mean Stock Options ($ thousands)	77	0	16462	2491.59	3108.619	2.210	.274
Mean Cash Bonuses ($ thousands)	77	336	25420	3368.48	4583.614	3.355	.274
Valid N (listwise)	77						

The cross validation sample contains 77 observations. Mean net profit has a large spread in the validation data set ranging from -884 ($ million) to 21,415 ($ million). The negative value indicates a loss. The mean and standard deviation also indicate the large spread of the data. The variable is also positively skewed with a skew statistic greater than 1 and also greater than twice the standard error 7.926 > 0.548. This is similar to the mean net profit variable in the analysis dataset.

Mean executive salary does not show an extreme spread in the cross-validation dataset. The spread ranges from 1,104 ($ thousands) to 4,808 ($ thousands). The mean and standard deviation values also indicate that mean executive salary may not be extremely variable. The skew statistic is less than 1 which is an indication of normality of the variable.

Mean stock options range from 0 ($ thousands) to 16,462 ($ thousands). This indicates some companies do not offer stock options and some companies offer significant stock options. Therefore, mean stock options are variable and skewed slightly as indicated by the mean, standard deviation, and skew statistic.

Mean cash bonuses range from 336 ($ thousands) to 25,420 ($ thousands). This variable spread is very large. The mean and standard deviation and skew statistics also indicate the large spread and skew of the variable.

For the cross-validation variables, the square root transformation was applied to adjust the skewness and also to keep the analytical approach consistent with the original analysis on the dataset.

The full output from the cross-validation is provided in APPENDIX L.

Cross-Validation Results

It was expected that the results obtained from the initial research and the cross-validation dataset may vary to some degree. To check if the model derived from the initial research sample accurately represents the research population, the cross-validation model was compared to the initial research model as well as the full model which is a combination of the cross validation and the initial research dataset. The initial research data had an R-square value of 0.478, while the cross-validation data set had an R-square value of 0.208. The cross-validation result was not within five percent of the initial research dataset result, and as such, it can be said to be different from the initial research dataset results. Therefore, the initial research model cannot be generalized. According to Field (2009), a model can be generalized if it can accurately predict the same outcome variable from the same set of predictors in a different group or data (p. 221).

These results show that both datasets are clearly different, and the model consisting of the independent variables is not adequate for new sample sets. Since there is a significant drop in power in the research model when applied to a different sample, the research model does not generalize.

A further attempt to check if the cross-validation model can be generalized was performed. It was also verified that the R-square value of the cross-validation dataset (0.208) was within five percent (plus or minus) of the R-square value for the model (0.220) using the full sample (initial research sample and cross validation sample, both combined). The same variables were significant in both the validation and full model. The full model output is provided in APPENDIX M.

Table 13 below shows the regression summary output from the cross-validation sample (second dataset for 77 corporations), while table 14 is the combined analysis summary (first and second dataset from 154 corporations).

Table 13. Cross Validation Summary.

Variable	Coefficient	t-value	Significance
Constant	-2461.5	-1.488	0.141
sqrt_Mean Executive Salary	34.134	0.126	0.43
sqrt_Mean Stock Options	30.872	0.366	0.003
sqrt_Mean Cash Bonuses	2.215	0.164	0.87

N = 77			
F Value = 6.384	sig = 0.001	Reject H_O	**Accept H_A**
R- squared = 0.208	Criteria $p < 0.05$		
Adjusted R-Squared = 0.175			

Table 14. Combined Analysis Summary

Variable	Coefficient	t-value	Significance
Constant	-3443	-4.157	0.000
sqrt_Mean Executive Salary	72.859	2.761	0.002
sqrt_Mean Stock Options	16.294	-0.691	0.006
sqrt_Mean Cash Bonuses	-6.288	3.169	0.491

N = 154			
F Value = 14.103	sig = 0.000	Reject H_O	**Accept H_A**
R- squared = 0.220	Criteria $p < 0.05$		
Adjusted R-Squared = 0.204			

Bootstrap Statistics

Bootstrap is a widely applicable and extremely powerful statistical procedure that can be used to quantify the uncertainty associated with a given estimator or statistical analysis method. The bootstrap technique empirically derives the distribution of the test statistic by resampling from the given data with replacement, calculating the statistic, and iterating through that process multiple times. It is a computer intensive procedure, and it has proven to be very effective. Table 15 below shows the output from the bootstrap analysis. The full output is provided in APPENDIX N.

The bootstrap was performed using the SPSS software. The original analysis dataset without transformations was used for the bootstrap analysis because of non-normal distribution of all the variables under study. This is because bootstrapping does not rely the probability distribution function of the variable; instead, it relies on the empirical distribution function of the variable (Miles, Shevlin, & McGhee, 1999, p. 148). Bootstrapping technique uses the existing dataset as a population from which repeated smaller samples were taken to calculate the statistics of the relationship between executive compensation indicators and financial performance indicator, net profit. The focal points in the bootstrap output are the standard error and the confidence interval which can be seen on the bootstrap output table.

Table 15. Bootstrap Analysis

Bootstrap for Coefficients

Model		B	Bootstrap[a] Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval Lower	Upper
1	(Constant)	-2045.307	523.361	1023.946	.337	-2749.596	-2.085
	Mean Executive Salary ($ thousands)	1.329	-.349	.685	.325	-.034	1.813
	Mean Stock Options ($ thousands)	-.001	.018	.051	.985	-.086	.110
	Mean Cash Bonuses ($ thousands)	-.349	.100	.219	.372	-.601	.073

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Table 16 shows summary of the bootstrap output for the individual bootstraps on the variables.

Table 16. Bootstrap Linear Regression on Individual Variables

Independent Variable	**R Square**	**F**	**P Value***
Executive Salary	0.574	101.227	0.282
Stock Options	0.133	11.493	0.328
Cash Bonuses	0.171	15.449	0.397

*obtained from bootstrap output

The p-value indicates that the variables are not significant. The p-value indicates Mean Executive Salary, Mean Cash bonuses, Mean Stock Options are not significant in the bootstrap analysis. This means that based on the bootstrap analysis none of the analysis variables can be considered a valid predictor of Mean Net Profit.

Study's Findings

The study's findings centered on providing the answers to the research questions that were formulated in the form of null and alternative hypotheses through the use of quantitative analytical techniques and inferential statistics. The total sample of 154 corporations for this study was randomly selected from the S&P 1,500 corporations. Data from 50% of the sample were used for building the model, and 50% were used for cross-validation. Each dataset contained 77 observations. The first sample was used as the initial analysis dataset, while the second sample was used as the cross-validation dataset.

The variables under study were mean net operating profit, mean stock options, mean cash bonuses, and mean executive salaries. The goal of the analysis was to explore the relationship between these variables and to determine if mean executive salaries, mean cash bonuses, and mean stock options could be used as predictors of mean net profit. The mean values for a five-year span (2008 to 2012) were used for each of the variables. The summary statistics indicated that the analysis set of variables had a larger spread. A similar trend was observed in the cross-validation set.

Exploratory analysis using boxplots and matrix correlation plots were used to visually uncover underlying relationships between the variables. The exploratory analysis indicated the possibility of multicollinearity and non-linearity. Non-linearity was further studied using histograms and normality plots. The histograms confirmed that the variables were skewed to the left and required transformation. The correlations also showed that some relationship existed between the analysis variables.

The hypothesis formally defined the research questions in the context of the variables under study. The outcome of the hypothesis on the initial analysis dataset indicated that executive salary was a strong predictor of net operating profit, while cash bonuses and stock options were not as strong predictors of net operating profit as executive salary. Multiple regression on the analysis dataset had a somewhat significant R-squared value. The residual versus fitted value plots for all hypotheses showed unequal error variance and outliers. This result is a strong indication that the models were not a good fit.

The purpose of the cross-validation set was to confirm the observation seen in the initial dataset. The cross-validation had a similar outcome with regards to non-linearity and unequal error variance. The R-Squared value was lower and not within five percent of the original analysis dataset.

The next step was the application of the bootstrap statistics. The bootstrap allowed resampling with replacement of the analysis dataset for 1,000 times, and linear regression was performed on the single variables as well as a multiple regression model. The bootstrap revealed that the variables are not significant because all variables' p-values were greater than the 0.05 level of significance. This result means that a modeling approach that consists of predicting mean net operating profit using mean executive salaries, mean cash bonuses, and mean stock options may be a fit for an isolated dataset (as seen in the analysis dataset) but will not transfer well to new models. Thus, it cannot be used as a general model for determining a relationship between stock options, cash bonuses, executives' salaries, and net operating profit.

CHAPTER 5. DISCUSSION, IMPLICATIONS, RECOMMENDATIONS

Introduction

This chapter presents a summary of the research problems and the methodology applied to provide answers to the research question, which was designed from the research problem. Also, the chapter discusses the research findings, implications of the study, recommendations for practitioners and future researchers, and the strengths and limitations of the study. The concise description of the study relating to the answers of the research question is summarized in the conclusion section of this chapter.

Summary of the Research Problem

The primary focus of this study was to determine analytically if there is a relationship between executive compensation and corporate financial performance using data obtained from the SEC's EDGAR database for publicly listed corporations in U.S. Specifically, the study attempted to understand if there is a relationship between executive pay mix (stock options, cash bonuses, and executives' salaries in the case of this study) and corporate financial performance (as measured by net profit for this study). Therefore, the following were the objectives of the study:

1. Determine if there is a significant positive linear relationship between stock options and financial performance (net profit)
2. Determine if there is a significant positive linear relationship between cash bonuses (non-equity incentive compensation) and financial performance (net profit)
3. Determine if there is a significant positive linear relationship between executives' salaries and financial performance (net profit)

4. Determine if the independent variables combined (omnibus) have a significant relationship with financial performance.

The research objectives were derived from the research question and operationalized through the following hypotheses:

Omnibus

H0: Corporate financial performance is NOT related to stock options, cash bonuses, or executives' salaries.

HA: Corporate financial performance is related to stock options, cash bonuses, or executives' salaries.

Individual Hypotheses:

H01: There is no significant relationship between stock options and corporate financial performance.

HA1: There is a significant relationship between stock options and corporate financial performance.

H02: There is no significant relationship between cash bonuses and corporate financial performance.

HA2: There is a significant relationship between cash bonuses and corporate financial performance.

H03: There is no significant relationship between executives' salaries and corporate financial performance.

HA3: There is a significant relationship between executives' salaries and corporate financial performance.

Based on the primary objectives of this study, the study's results helped, in part, to affirm or disaffirm the propositions made by the following authors:

1. Tosi et al. (2000) stated that financial performance accounted for less than five percent of variance in executive compensation.
2. Finkelstein and Hambrick (1988) stated that executive compensation is partly a function of how much the executive is expected to contribute to performance of an organization (p. 546).

Summary of Research Methodology

The study relied entirely on secondary data which were extracted from the SEC'S EDGAR database. The data were used to determine if stock options, cash bonuses, and executives' salaries are related to corporate financial performance as measured by net profit. According to Miller (1995), secondary data are generally considered valid and reliable for this type of study, while Venkatraman and Ramanujam (1986) indicated that secondary or archival financial data provide all aspects of financial data which may not otherwise be available. However, some researchers, despite the appropriateness of secondary data, believe that the researcher is one step removed from the reality of the phenomenon of the study. Hence, researchers that rely entirely on the use of secondary data, cross-validate the developed research model with different sets of data. This action is to enhance the prospects of generalizing the research outcome.

The research question was to determine the extent to which stock options, cash bonuses, and executives' salaries are related to net profit, which is a quantitative research question (Creswell, 2009). The research question was reduced to specific variables that are measurable and testable to allow for quantitative data analysis through hypotheses, descriptive statistics, and inferential statistics. While descriptive statistics presented averages, percentages, and dispersions, inferential statistics involved the use of multiple regression for data analysis since the variables are all interval variables.

The research sample was obtained from publicly listed corporations in the U.S, which was the research population. In total, 154 publicly listed corporations were randomly extracted from the S&P list of publicly listed corporations and subjected through sample acceptance conditions. The criteria for selection included the following: only corporations based in the U.S. were eligible for the study; the pay structure of the corporations had to include stock options, cash bonuses, executives' salaries, and financial performance; and the companies must have filed annual financial proxy reports and statements to the SEC. The process for randomly extracting the sample was repeated when the first sample selected from the sample frame did not result in 154 corporations, which is the total sample size (actual research sample and cross-validation sample) required for data collection.

The executive compensation data and financial performance data for the 154 corporations obtained from the SEC's EDGAR database were for the years from 2008 to 2012. The executive compensation and financial performance data for the 154 companies are accumulated and averaged, producing an average for each variable over a period of five years from 2008 to 2012. This approach provides a better indicator than individual annual measurements and was successfully used by Gomez-Mejia et al. (1987).

The initial sample of 77 publicly listed corporations was generated statistically through the use of G*Power3. The data from these corporations were used to build the actual predictive model. However, to validate the actual predictive model built from the secondary data, a second set of data of 77 publicly listed corporations was obtained and analyzed, and the model obtained was compared with the initial sample model. Thus, 50% of the data was used for building the actual research model, and 50% was used for cross-validation.

The data were analyzed using descriptive statistics and inferential statistics through the SSPS Statistics software package. Multiple regressions were used to determine the strength of the predictor variables in predicting the outcome variable using the regression line (Field, 2009). Multiple regressions provide statistical analysis and a predictive explanation of the relationship between predictor variables such as stock options, cash bonuses, executives' salaries, and corporate financial performance, which is the outcome variable for this study. In addition, a robustness check was conducted to assess the sensitivity, validity, and reliability of the research outcome, while a cross-validation technique helped to determine if the research outcome could be generalized.

Summary of the Research Results and Discussions

The study's design, methodology, type of data, and data analysis procedures focused on answering the following research question: To what extent are stock options, cash bonuses, and executives' salaries related to corporate financial performance? The hypotheses were derived from the research question and were based on the principles of agency theory. The summary of hypotheses tests and conclusions are as shown in Table 17.

Table 17. Research Hypotheses and Conclusions

Type of Hypothesis	Hypothesis	Regression Test	Bootstrap Test	Conclusion Reached
Omnibus	Financial performance is related to stock options, cash bonuses, or executives' salaries.	Mixed Outcome	Not Supported	Relationship not significant
Individual				
1	There is relationship between stock options and financial performance.	Supported	Not Supported	Relationship not significant
2	There is relationship between cash bonuses and financial performance.	Supported	Not Supported	Relationship not significant
3	There is relationship between executives' salaries and financial performance.	Supported	Not Supported	Relationship not significant

The Omnibus hypothesis states that financial performance is related to stock options, cash bonuses, or executives' salaries. A multiple regression test partially supports this proposition since the outcomes were mixed. This accounts for the mixed outcomes of prior studies on the relationship between executive compensation and financial performance. The focus of prior research on executive compensation was based on large corporations and multinational corporations. Similarly, this study relied on U.S. corporations whose stocks are publicly listed.

The first hypothesis stated that there is a relationship between stock options and financial performance. The linear regression test supports this hypothesis. Most recent studies on executive compensation observed that executive compensation is now moving towards equity-based compensation as well as non-equity based compensation (e.g., bonuses). The casual view of the data of this study confirms this result; unfortunately, the outcome of this study, like most recent empirical research, could not establish a strong relationship between stock options and financial performance.

The second hypothesis stated that there is a relationship between cash bonuses and financial performance. A linear regression test supports these hypotheses despite the fact that non-equity incentive compensation is not growing in direct proportion to net profit. Also, little variation in net profit is explained by cash bonuses, which indicates that other variables may be better measures of variation in net profit.

The third hypothesis stated that there is a relationship between executives' salaries and financial performance. Although higher executive base pay grows yearly, it does not grow at the rate of other incentive-based compensation such as cash bonuses or non-equity based incentives and equity-based incentives, including stock options. A linear regression test supported this hypothesis.

The bootstrap revealed the variables are not significant because all variable p-values were greater than the 0.05 level of significance. As a result, a modeling approach used in determining the relationship between mean net profit and mean executive salaries, mean cash bonuses, and mean stock options may be found to be a fit in the initial analysis dataset, but the approach did not transfer well to new models. Therefore, it cannot be accepted as a general model for predicting mean net profit or used to determine a relationship between executive compensation and net profit.

Generally, executives' salaries now grow at a lower rate than other incentive-based compensation such as non-equity incentives compensation (e.g., bonuses) and equity-based compensation plan (e.g., stock options). The pie chart in Figure 7 shows that in most corporations that have a mixed executive compensation plan, other incentive compensation mixes are either close to the base salary or have outgrown the executives' salaries.

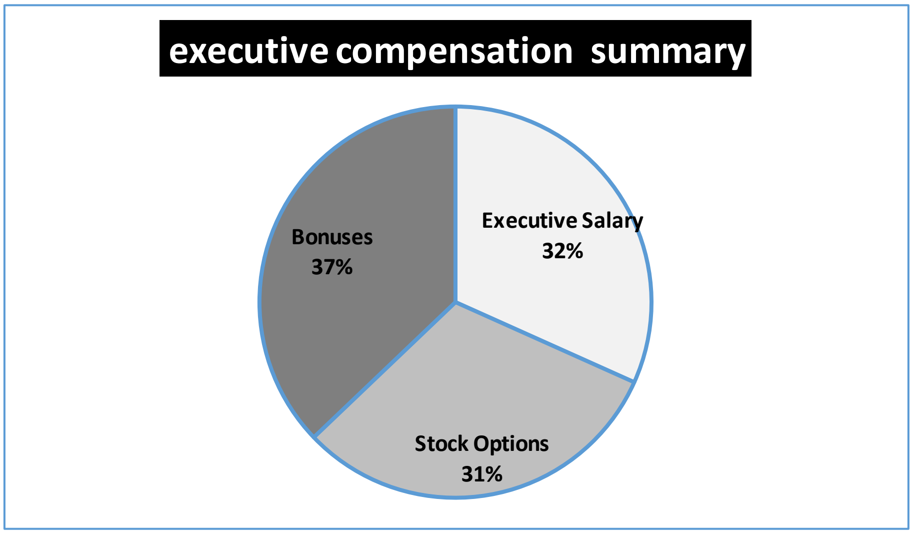

Figure 7. Executive Compensation Distribution

Testing of Theory

For this study, agency theory failed to predict or explain the relationship between executive compensation and corporate financial performance. Agency theory is based on the assumption that executives' actions and corporate performance can be monitored through executive compensation since stockholders (owners of business) are dispersed; therefore, they do not participate in daily business decision-making processes. To accurately apply the principles of agency theory in this study, stock options, executives' salaries, and cash bonuses were chosen as the executive compensation indicators to collect data, while net profit was chosen as the corporate financial performance indicator. It was from these conceptual indicators (stock options, cash bonuses, and executives' salaries) that the research hypotheses were developed and tested using regression and bootstrap statistical techniques.

Since testing a theory requires valid and reliable indicators, conscious effort was made in the selection of indicators to measure theoretical concepts while using existing literature as a guide. For simplicity and ease of computation, executive compensation was limited to the three key indicators, although there are other financial and non-financial executive compensation indicators which may be difficult to apply in a research study at the same time. The absence of other forms of executive compensation indicators in this study may affect the research outcome, but their omission does not dilute the contributions of this study in this field of study. Therefore, this study was a social inquiry which involves a theory (agency theory), data collection, data analysis, and theory testing in order to compare such theory with data trends.

Implications of the Results and Recommendations

The outcome of this study showed there is no significant relationship between the key elements of executive compensation and financial performance as measured by net profit. This outcome confirms prior studies on executive compensation, such as the work of Tosi et al. (2000), Conyon, Peck, and Sadler (2001), Carpenter & Sanders (2004), and Siegel & Hambrick (2005), that found there is no significant relationship between executive performance and financial performance. This finding may mean that current executive compensation structure and policies have no bearing on corporate financial performance. Likewise, public outcry and government institutions' demands, such as the SEC's demand for disclosure of executive compensation, also have no impact. Therefore, executives' pay is not commensurate with financial performance, and thus, the situation is tenuous.

Agency theory assumes that a relationship exists between executive compensation and performance (Jensen & Murphy, 1990). This study, using a sample of 154 publicly listed corporations, was unable confirm this assumption. This result does not mean that the data of some corporations did not show trends of a relationship between executive compensation and financial performance. Instead, the study was unable to establish a significant relationship between executive compensation and performance in all the IVs when the averages of data of 77 corporations (actual research sample) in the first instance were analyzed. The same is true when the second set of data for 77 corporations was analyzed to cross-validate the actual research model.

The study may interest shareholders or owners of corporations who are faced with the choice between paying executives for performance and paying regular base pay to executives like other employees. The outcomes of this study suggest that current compensation strategies, policies, and structures are out of touch; therefore, they may not solve the long-standing issue of executive pay having little or no relationship with corporate financial performance (Coombs & Gilley, 2005).

There is no doubt that attractive executive pay, pay polices, and pay mixes attract intellectually sound candidates for executive jobs and also retain existing good hands, but executives' earnings should not be out of proportion with the incomes they generate for their organizations. Therefore, a balance should exist between what an executive earns as income and the net profit earned by the organization. Moreover, executive pay must be related to an organization earnings and to a greater extent the executive's experience, leadership, intellectual base, and other attributes associated with the executive. Although executive performance may be complex to measure, computer software now exists that may help organizations measure executives' performance. A balanced scorecard is a good example of a financial instrument that can be used in practice to measure executive compensation and performance.

In order to measure corporate financial performance and executive compensation as well as ensure that an executive's remuneration is commensurate with performance, a financial measurement instrument is required. Apart from the use of statistical techniques to analyze research data and explain the relationship between variables, a balanced scorecard is a financial instrument that can be combined with statistical techniques to determine if executive compensation is commensurate with corporate financial performance. A balanced scorecard helps to determine if incentive compensation motivates executives to accomplish corporate financial performance targets or budgets set by the board of directors.

The reliance on the balanced scorecard as a measurement instrument is based on its ability to translate compensation and performance variables, which may be in conceptual or theoretical forms, to something concrete that can be expressed in numbers. According to Kimberlin and Winterstein (2008), the validity of a measurement instrument is the extent to which the instrument measures what it claims to measure as well as the ability of the instrument to operationalize and quantify a construct (p. 2278). A balanced scorecard achieves this objective since it can operationalize conceptual constructs through quantification of the constructs to allow for the use of measurement indicators for each construct. For example, the executive compensation elements, including stock options, cash bonuses, and executives' salaries, as well as the corporate performance indicator of net profit, are expressed in currency numbers, which can then be used to calculate other financial performance indicators such as ROA, ROE, and EPS.

Also, another executive pay method that may require the consideration of researchers and practitioners is the bonus-equity-backed pay approach. This approach allows for pre-determining executive pay that is aligned upfront on paper to target corporate financial performance; hence, non-equity payments and income-based equity grants are paid only when the set targets and budgets of the corporation are met. This compensation model is based on equity and bonuses. However, executives' base salaries should be moderate and comparable across industries.

Strengths and Limitations

Strengths

The reliability of secondary data depends on the accuracy of the data collected, because inaccurate data may lead to misleading research outcomes. The accuracy of secondary data is outside the control of researchers; hence, the use of a probability sampling technique and validation of the research model through a cross-validation statistics technique, which are necessary to validate the quality and reliability of the research data and model.

Also, since the IVs and the DV are continuous variables, the variables can be measured, which meets the criteria for a multiple regression technique. A multiple regression technique is a sound statistical technique for making predictions based on a DV that is a continuous variable. Continuous variables are quantitative variables, which are interval or ratio variables (Field, 2009), and can be used for parametric tests.

Parametric tests produce reliable and high-quality research models and outcomes. Alternatively, nonparametric tests use categorical variables, which may require data transformation, but they still may not produce research models comparable to the research model that is based on continuous or quantitative variables.

Further, a bootstrapping technique was used to confirm the test of the hypotheses when the linear regression assumptions did not hold. This method uses the existing dataset as a population from which repeated smaller samples are taken to calculate the statistics of interest (Field, 2009). Bootstrapping statistics is appropriate because it does not require distributional properties of a statistic (Efron, 1979). It as a simple but powerful tool in inferential statistics that does not rely on assumptions or underlying probability distribution function of the variable, but rather is based on empirical distribution function of the variables (Miles, Shevlin, and McGhee, 1999).

Although the outcomes of previous research on the link between executive compensation and performance were mixed, there is strong evidence to suggest that executives positively react to perceived incentives that will lead to financial gain (Berrone & Gomez-Mejia, 2009; Hambrick, Werder, & Zajac, 2008). This research tested this perception within the framework of agency theory and the outcome was mixed.

The major reason for a large sample size is "to obtain greater precision of estimates of subgroups of the U.S. population" (Hofferth, 2005, p. 893); however, a sample that is too large may be unnecessarily expensive and may not be worth the cost and effort. Therefore, the sample size for this research was statistically determined using the G*Power3 statistics technique. This technique was used to determine a sample size of 77 corporations, which is an optimal size for this study. This sample was increased to 154 (doubled) so as to use the data from the second sample of 77 corporations to cross-validate the research model from the initial sample. The use of G*Power3 to determine sample size removed potential biases associated with the researcher's discretion in determining sample size.

Limitations

The process of extracting research data from public databases such as the SEC's EDGAR database was rigorous. While the task required manual extraction of data from the database, this challenge was mitigated by the summary compensation tables in the database of which Chief Executive Officers (CEOs) are mandated to include in their company's reports to the SEC. The compensation table includes the components of executive compensation such as stock options, cash bonuses, and executives' salaries. Also, strict inclusion criteria for sample selection makes sample selections difficult, and such criteria may affect the generalizability of the research outcome since all corporations may not have the same pay structure for their top five executives.

Although the random sampling method is the gold standard in quantitative research for selecting a sample from a research population (Orcher, 2005), the sample selected from the S&P's 1500 may not represent all publicly listed corporations in the United States. Specifically, the sample may not represent all economic sectors and sizes of publicly listed corporations. However, the random sampling method is the best of all quantitative research sampling methods for selecting a sample from the research population for this study since it provides each corporation listed in the S&P's 1500 an equal opportunity of being selected for the research sample.

Publicly listed corporations in the U.S. are from different industries, and corporations in each industry may have different pay structures and policies. As a result, these differences may not be captured when all corporations are reviewed together. Future research on executive compensation and performance should be performed for each industry to determine if there are unusual industry effects on executive compensation and corporate financial performance.

The choice of three predictors and one outcome variable from several financial and nonfinancial executive compensation and corporate financial performance indicators is a potential limitation. The study did not consider non-financial variables such as quality targets, safety, and pension plans. These non-financial variables were unquantifiable because they may be difficult to monetize; hence, they were excluded as research variables. According to Bebchuk and Grinstein (2005), pension plans are a significant component of total executive compensation. However, since many financial fringe benefits such as 401K or 403K retirement benefits do not extend across all corporations, it may not be expedient to include such executive compensation components as research variables. There are other performance indicators such as EPS and ROA, but net profit as a performance indicator for corporate financial performance ranks among the best performance measures (Bromiley & Harris, 2014).

This study is limited in scope since the study is primarily focused on the relationship between executive compensation and corporate performance. Therefore, this study opens new areas of investigation on executive compensation for future researchers so as to better understand executive compensation and corporate financial performance, which may require making inferences on changes in executive compensation composition and structures.

Recommendations for Future Research

There are many studies on the relationship between executive compensation and performance, but to date, little is known about the relationship between executive compensation and corporate financial performance. This little understanding is a result of mixed outcomes of prior studies which failed to establish a common methodology to approach research on this phenomenon. Secondly, most research studies on executive compensation and corporate financial performance were quantitative studies using secondary data. Limited studies on executive compensation used a qualitative or a mixed research approach. Therefore, scholars or experts in this field may need to define a common methodology to be used for studies of this nature.

Without question, secondary data are excellent measures of executive compensation and performance variables. As a result, most literature in this field has relied on secondary data. Although directors of corporations vouch in proxy statements for the accuracy of executive compensation and corporate financial performance data they provide to the SEC, human errors or mistakes cannot be ruled out. Incorrect data may skew the outcome of a research study; hence, additional measures are needed to validate research outcomes. For this study, a data-splitting approach was used in which data was randomly split into two halves. The first half was used for building the research model, while the second half was used to cross-validate the research model. There are other methods available to validate research outcomes, but there may be a need for future researchers to compare existing methods and suggest the best possible approach that can be used as a benchmark.

Although a conscious effort was made in the choice of the research population and the selection of the research sample from the population, the inclusion criteria and broad nature of the research population (listed corporations of all industries in the U.S.) may affect the replication of the research model in a different setting. Likewise, since the nature of business operations of listed corporations of each industry is different from that of other industries, the compensation and financial performance data obtained from a mix of corporations of different industries may be less predictive. Therefore, future research on the relationship between executive compensation and corporate financial performance may focus on corporations of a specific industry or sector because of the unique nature of each industry or business sector. It is expected that the dataset from a specific industry may accurately measure the relationship between executive compensation and corporate financial performance, though generalization of the research outcomes may be limited to the same industry.

Despite the contradictory outcomes of prior research on the relationship between executive compensation and corporate financial performance, it can be deduced from the existing research literature that financial measures and non-financial measures are important parameters for measuring performance because financial and non-financial indicators may have short-term or long-term business implications. Specifically, corporate financial performance measures include net profit, sales, return on assets, and return on investment, while customer satisfaction, quality of service, research and development (R&D), and human resources development are examples of non-financial measures. Ittner, Larcker, and Randall (2003) as well as Merchant and Van der Stede (2007) indicated that financial measures are effective for short-term decision-making, while Ittner and Larcker (1998) as well as Sliwka (2002) argued that a combination of financial and non-financial measures are effective measures for corporate financial performance. This study relied entirely on one financial indicator (net profit) in the measurement of performance, which is a limitation that may affect the validity of the research outcomes. Therefore, future research should consider using mix of financial and non-financial indicators in measuring corporate financial performance.

Also, future research should investigate the predictive powers of the key performance indicators such as ROI, EPS, ROE, net profit, gross profit, and sales (examples of financial performance) as well as R&D, customer satisfaction, human resources and process innovation (examples of non-financial measures). The outcomes of such research will provide a useful guide for future researchers in selecting measurement indicators; hence, it would eliminate the current trial-and-error approach in the selection of measurement parameters.

This study used a snapshot in time of the relationship between executive compensation and corporate financial performance for the years 2008 to 2012. This time period was based on the assumption that five years of data may be sufficient to provide evidence of the relationship between the phenomena being studied. Also, prior studies supported the use of five or more years of data in determining a relationship between executive compensation and corporate financial performance. For example, Aggarwal and Samwick (2003) stated that a six-year dataset is sufficient in making a precise calculation of the extent to which corporate financial performance is sensitive to executive pay, while Henderson and Fredrickson (2001) as well as Hartzell and Starks (2003) collected and analyzed six years of secondary data, 1985-1990 and 1992-1997, respectively. However, the one-time analysis of a dataset for a period (2008-2012) limits the scope and time of this study; hence, a longitudinal study may provide a better estimation of the relationship between executive compensation and corporate financial performance.

Furthermore, any efforts to align executive pay with corporate financial performance may require changes in pay strategies, policies, and pay mixes. Such changes would require research on executives' pay and strategies or research on executive pay, policies, and strategies that align compensation with performance. This task may require the use of survey instruments and secondary data as a mixed approach in future studies.

Finally, this study presents the opportunity to expand the scope of the inquiry beyond examining the relationship between executive compensation and corporate financial performance by including compensations of the entire top management team or directors instead of limiting the study to the top five executives. This type of expanded study may provide a better theoretical perspective of the relationship between executive compensation and corporate financial performance than the present study.

Conclusions

Similar to other social science research, many of the research variables of interest in accounting research are theoretical constructs which are difficult to measure. To measure executive compensation and corporate financial performance, the executive compensation construct was aligned to test reliable key indicators of executive compensation: stock options, cash bonuses, and executives' salaries. These key indicators are called the research variables and were treated as independent variables (IVs). For this study, net profit was used to measure corporate financial performance, which was treated as the dependent variable (DV). Researchers sometimes combine net profit along with other measures such as return on investment (ROI) and return on equity (ROE), but this study used net profit as an alternative measure of financial performance. The research variables for this study were surrogate to agency theory concepts.

Since using tests or instruments that are valid and reliable to measure research variables account for the quality of a study (Kimberlin & Winterstein, 2008), empirical data from the SEC's EDGAR database were used to measure the variables for this study. This database is a credible source of research data, and most previous researchers relied on data from this database. A multiple regression technique was used to test research hypotheses, while a bootstrapping technique was used to test the stability of the regression models.

The study's results attempted to provide answers to the research following question: To what extent do stock options, cash bonuses, and executives' salaries relate to corporate financial performance? After relying on secondary data for a period from 2008 to 2012 for analysis and using cross-validation and bootstrapping techniques to check the regression models, the study found no significant relationship between executive compensation and corporate financial performance.

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APPENDIX A. STATEMENT OF ORIGINAL WORK

Academic Honesty Policy

Capella University's Academic Honesty Policy (3.01.01) holds learners accountable for the integrity of work they submit, which includes but is not limited to discussion postings, assignments, comprehensive exams, and the dissertation or capstone project.

Established in the Policy are the expectations for original work, rationale for the policy, definition of terms that pertain to academic honesty and original work, and disciplinary consequences of academic dishonesty. Also stated in the Policy is the expectation that learners will follow APA rules for citing another person's ideas or works.

The following standards for original work and definition of *plagiarism* are discussed in the Policy:

> Learners are expected to be the sole authors of their work and to acknowledge the authorship of others' work through proper citation and reference. Use of another person's ideas, including another learner's, without proper reference or citation constitutes plagiarism and academic dishonesty and is prohibited conduct. (p. 1)
>
> Plagiarism is one example of academic dishonesty. Plagiarism is presenting someone else's ideas or work as your own. Plagiarism also includes copying verbatim or rephrasing ideas without properly acknowledging the source by author, date, and publication medium. (p. 2)

Capella University's Research Misconduct Policy (3.03.06) holds learners accountable for research integrity. What constitutes research misconduct is discussed in the Policy:

> Research misconduct includes but is not limited to falsification, fabrication, plagiarism, misappropriation, or other practices that seriously deviate from those that are commonly accepted within the academic community for proposing, conducting, or reviewing research, or in reporting research results. (p. 1)

Learners failing to abide by these policies are subject to consequences, including but not limited to dismissal or revocation of the degree.

Statement of Original Work and Signature

I have read, understood, and abided by Capella University's Academic Honesty Policy (3.01.01) and Research Misconduct Policy (3.03.06), including the Policy Statements, Rationale, and Definitions.

I attest that this dissertation or capstone project is my own work. Where I have used the ideas or words of others, I have paraphrased, summarized, or used direct quotes following the guidelines set forth in the APA *Publication Manual*.

Learner name and date	Fidelis Kenine, July 13, 2015
Mentor name and school	Dr. Douglas Smith, School of Business and Technology

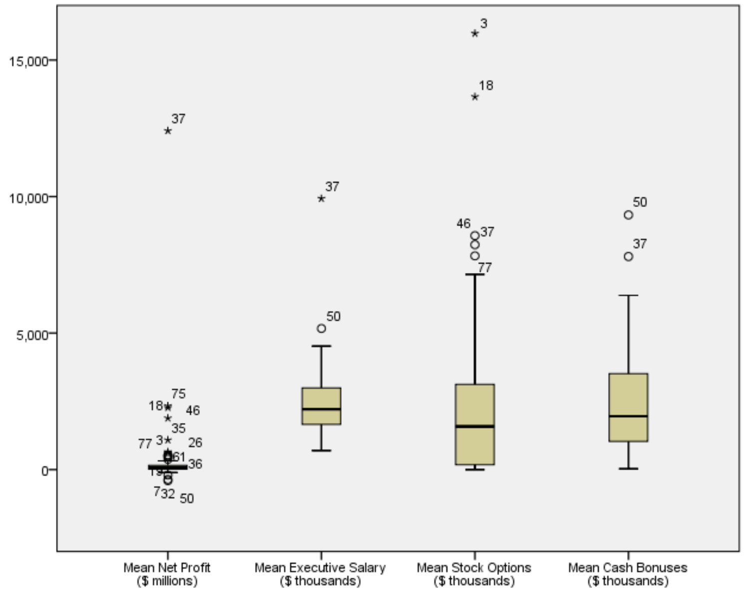
APPENDIX B: Averaged analysis data set (average of year 2008 to 2012)

Constituent	Symbol	Mean Net Profit ($ millions)	Mean Executive Salary ($ thousands)	Mean Stock Options ($ thousands)	Mean Cash Bonuses ($ thousands)
Materion Corporation	MTRN	23	1414	916	799
M/I Schottenstein Homes	MHO	-71	1682	1106	663
Allergan Inc	AGN	647	3398	15975	2902
AES Corp	AES	209	2600	2207	6376
SPX Corp	SPW	188	3374	0	2340
Red Hat Inc	RHT	99	2245	1353	2550
E*TRADE Financial Corp	ETFC	-359	2953	2929	4422
Luminex Corp	LMNX	10	1643	635	1033
Natus Medical Inc	BABY	7	1478	1234	284
Oshkosh Corporation	OSK	55	2383	3309	1675
Standard Motor Products	SMP	21	2125	0	1710
Old Dominion Freight Line Inc	ODFL	98	1709	0	3992
Wilshire Bancorp Inc	WIBC	13	694	108	51
La-Z Boy Inc	LZB	0	2052	743	916
Mentor Graphics Corp	MENT	5	1963	2736	1954
Altera Corp	ALTR	544	2015	2286	1894
Sterling Bancorp/DE	STL	22	1562	181	513
Raytheon Co	RTN	1885	3671	13656	5528
American Eagle Outfitters	AEO	379	3902	3749	2810
Air Methods Corp	AIRM	45	1393	149	2238
Martin Marietta Materials	MLM	105	2746	1609	1193
Gartner Inc	IT	117	2207	2992	2025
Sonic Corp	SONC	67	1781	1481	617
Cato Corp A	CATO	53	2272	0	1730
Impax Laboratories Inc	IPXL	88	1794	2176	1357
Peabody Energy Corp	BTU	519	3419	5754	5261
Alliance Data Systems Corp	ADS	256	2324	0	3899
Keurig Green Mountain Inc	GMCR	144	2017	2444	1085
Urstadt Biddle Prop Inc A	UBA	29	1010	3121	33
Apple Inc.	AAPL	19	3069	416	3971

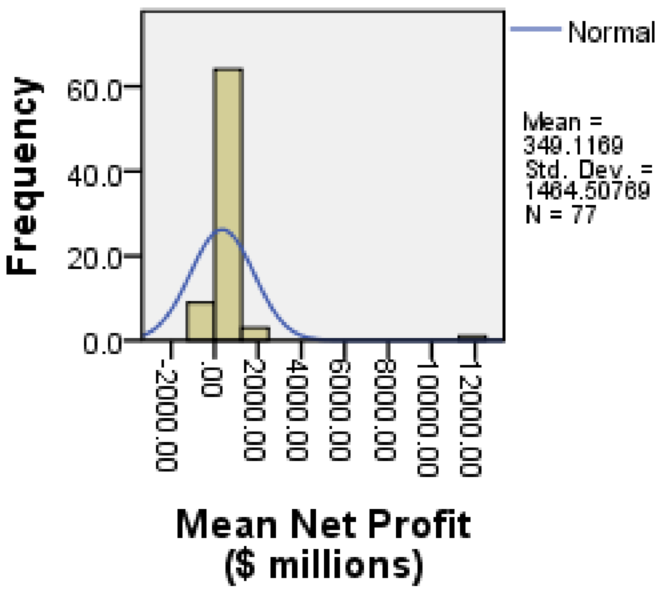
Zebra Technologies Corp A	ZBRA	82	2043	1688	1456
Masco Corp	MAS	-409	2681	4957	2052
Kennametal Inc	KMT	126	2210	1281	2509
Arris Group Inc	ARRS	12	2200	0	1534
Kellogg Co	K	1084	3610	4551	3755
Seagate Technology	STX	632	2861	5170	3935
Wells Fargo & Co	WFC	12412	9927	8236	7805
Salix Pharmaceuticals Ltd	SLXP	7	1751	0	1262
Trustco Bank Corp (NY)	TRST	32	2298	150	404
Centene Corp	CNC	75	3002	26	3516
Toll Brothers Inc	TOL	-106	3815	4277	3856
Covance Inc	CVD	134	2456	2353	2444
LogMeIn Inc	LOGM	7	1186	2040	530
Rogers Corp	ROG	21	1460	1270	1072
Big 5 Sporting Goods Corp	BGFV	17	1526	139	678
Colgate-Palmolive Co	CL	2271	4174	8569	6368
Corrections Corp of America	CXW	156	1857	1859	2343
Compuware Corp	CPWR	122	3051	5326	4804
Hanover Insurance Group Inc	THG	92	2878	2019	1649
Macy's Inc	M	-202	5168	6034	9326
Hospira Inc	HSP	220	2991	6072	2219
Host Hotels & Resorts Inc	HST	14	2375	636	2547
Harmonic Inc	HLIT	7	1580	1580	705
Concur Technologies Inc	CNQR	9	1737	94	2030
Bel Fuse Inc B	BELFB	-1	830	0	223
MICROS Systems Inc	MCRS	125	4521	7152	6384
MDC Holdings Inc	MDC	-91	2573	4324	4964
Ryder System Inc	R	152	2625	2677	3038
Tompkins Financial Corporation	TMP	32	1382	302	419
Innophos Holdings Inc	IPHS	95	1654	592	1555
Brown Forman Corp B	BF.B	482	3155	1203	6246
Arrow Electronics Inc	ARW	219	3013	1702	3266
Prestige Brands Holdings	PBH	-11	1589	1680	1186
Unifirst Corp	UNF	77	1679	424	557
AvalonBay Communities Inc	AVB	321	2792	2223	3376
CBOE Holdings Inc	CBOE	123	3530	0	3337

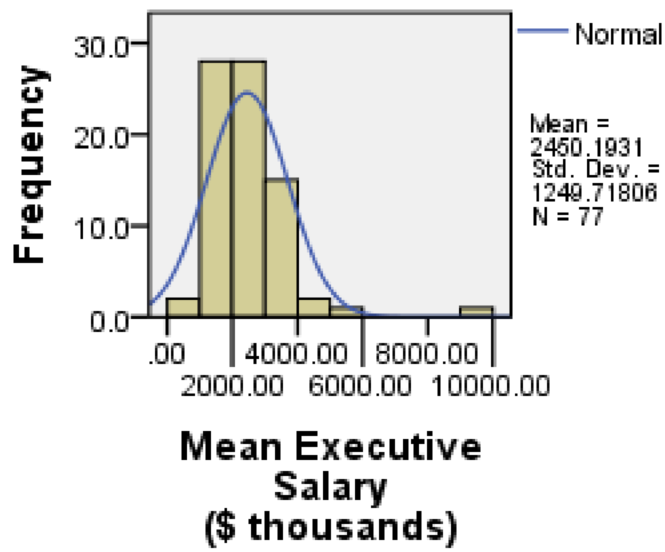
City Hldg Co	CHCO	38	1236	148	402
Fairchild Semiconductor Intl A	FCS	19	2132	177	1312
Saul Centers	BFS	41	1700	412	270
PGT Inc	PGTI	-36	1169	1254	434
Manhattan Associates Inc	MANH	33	1606	590	1125
South Jersey Industries Inc	SJI	77	1636	0	894
Werner Enterprises Inc	WERN	82	2338	0	1097
Synaptics Inc	SYNA	49	1396	6339	1072
Exelon Corp	EXC	2335	3857	3308	4538
Lexmark International Inc	LXK	231	2786	1843	2878
Stanley Black & Decker	SWK	458	3734	7829	6317

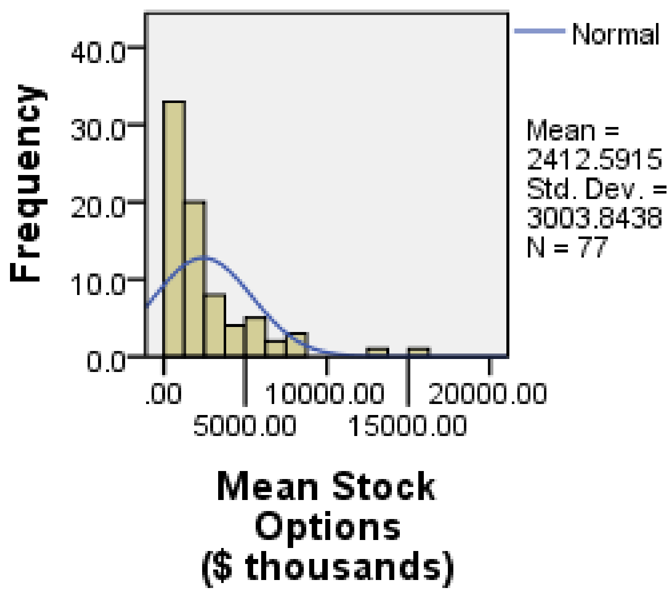
APPENDIX C: Exploratory Analysis Graphs
Box Plot

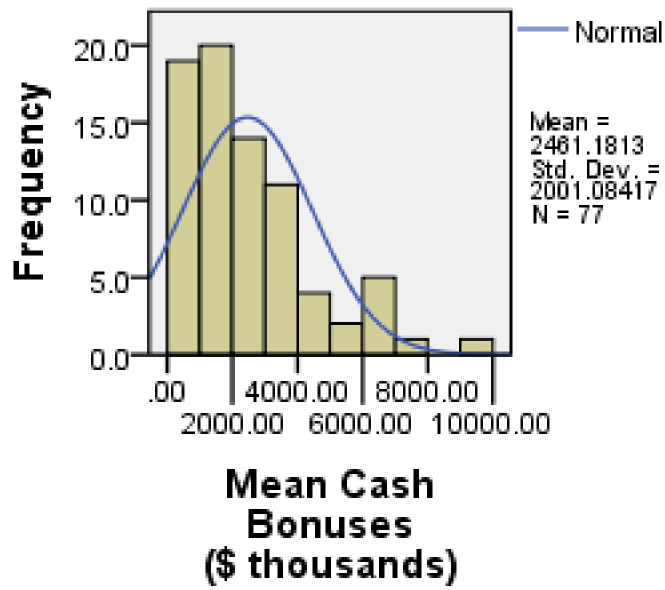


APPENDIX D: Histograms of analysis variables

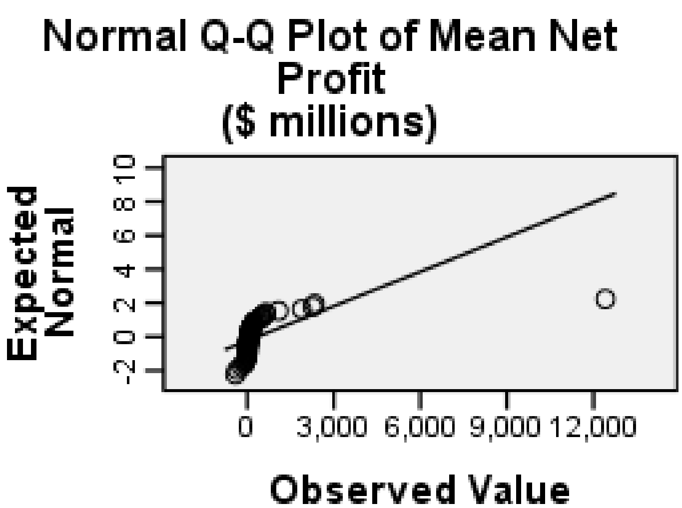


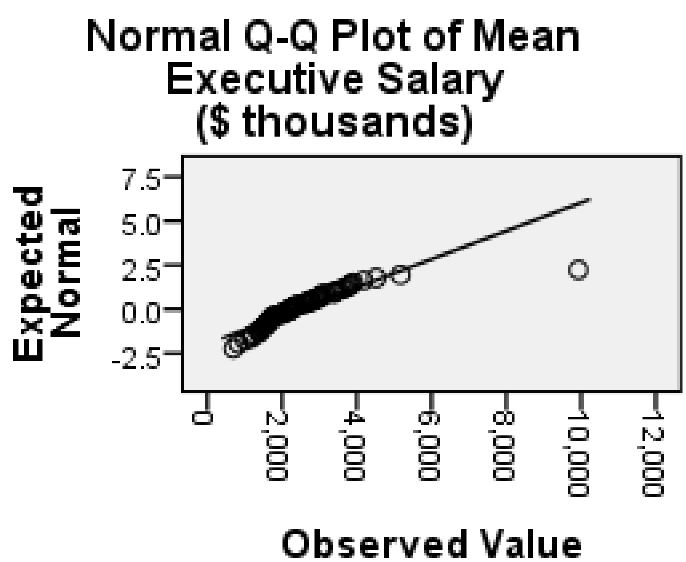


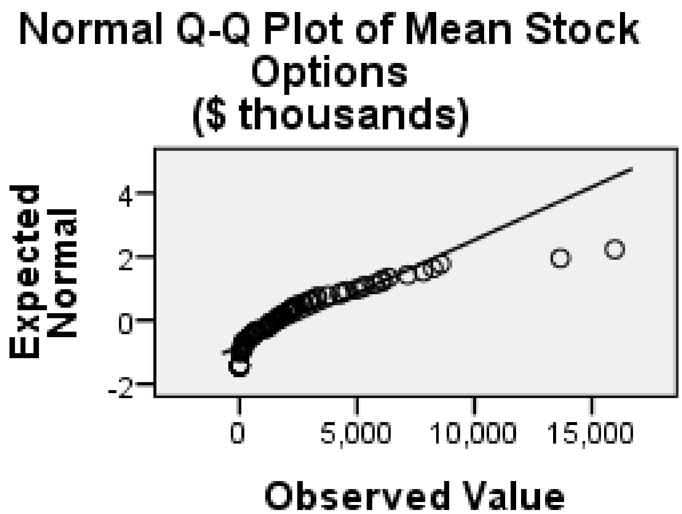


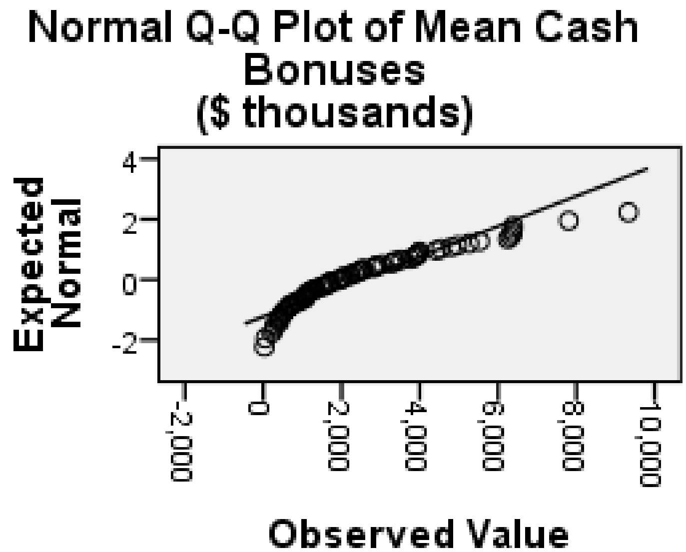


APPENDIX E: Normal Probability plots

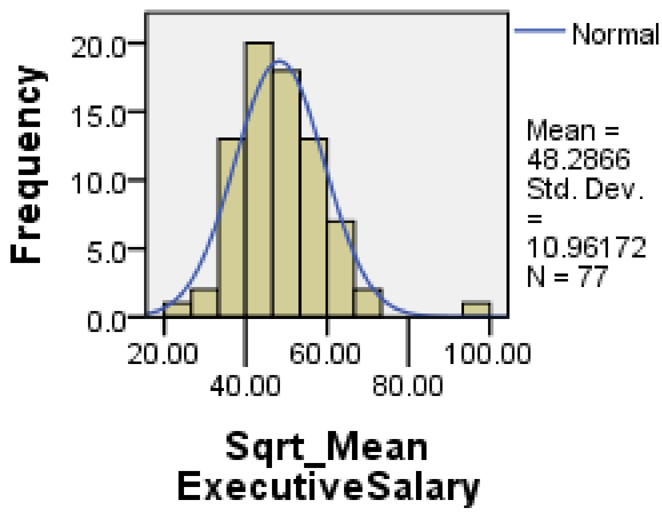


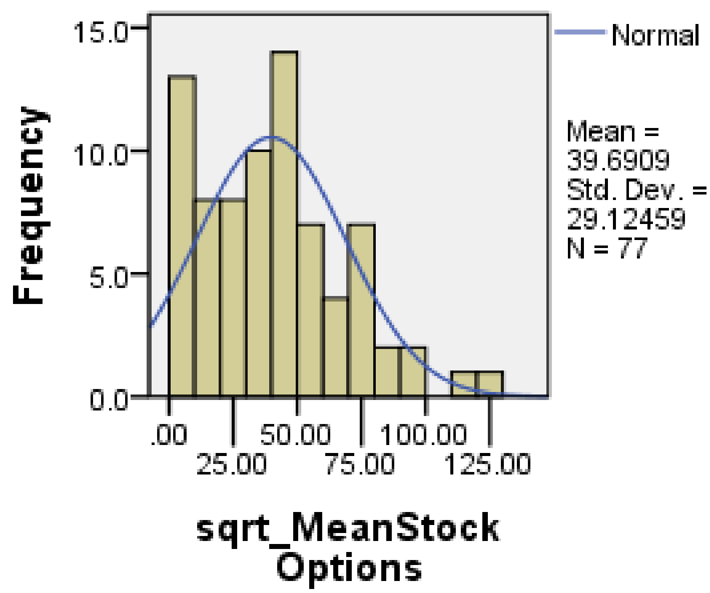




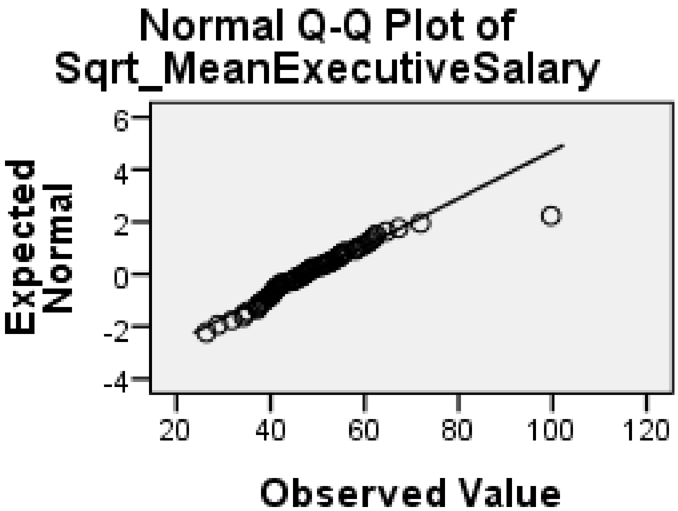


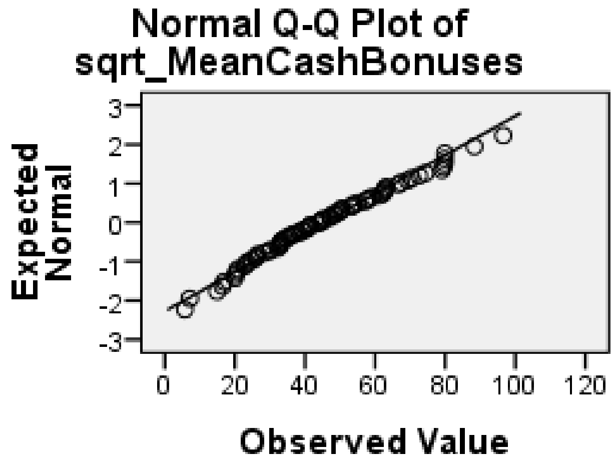
APPENDIX F: Histogram (Transformed)

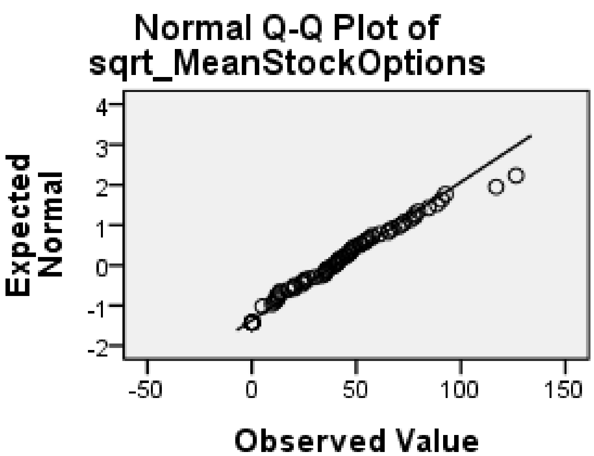




APPENDIX G: Normal probability plot (Transformed)







APPENDIX H: Full regression output for Mean Net Profit and Mean Executive Salary

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Sqrt_MeanExecutiveSalary[b]	.	Enter

a. Dependent Variable: Mean Net Profit ($ millions)

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.628[a]	.395	.387	1146.96693

a. Predictors: (Constant), Sqrt_MeanExecutiveSalary

b. Dependent Variable: Mean Net Profit ($ millions)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	64338504.506	1	64338504.506	48.907	.000[b]
	Residual	98664985.297	75	1315533.137		
	Total	163003489.802	76			

a. Dependent Variable: Mean Net Profit ($ millions)

b. Predictors: (Constant), Sqrt_MeanExecutiveSalary

Coefficients[a]

Model		95.0% Confidence Interval for B		Collinearity Statistics	
		Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-4887.405	-2520.357		
	Sqrt_MeanExecutiveSalary	60.026	107.846	1.000	1.000

a. Dependent Variable: Mean Net Profit ($ millions)

Collinearity Diagnostics[a]

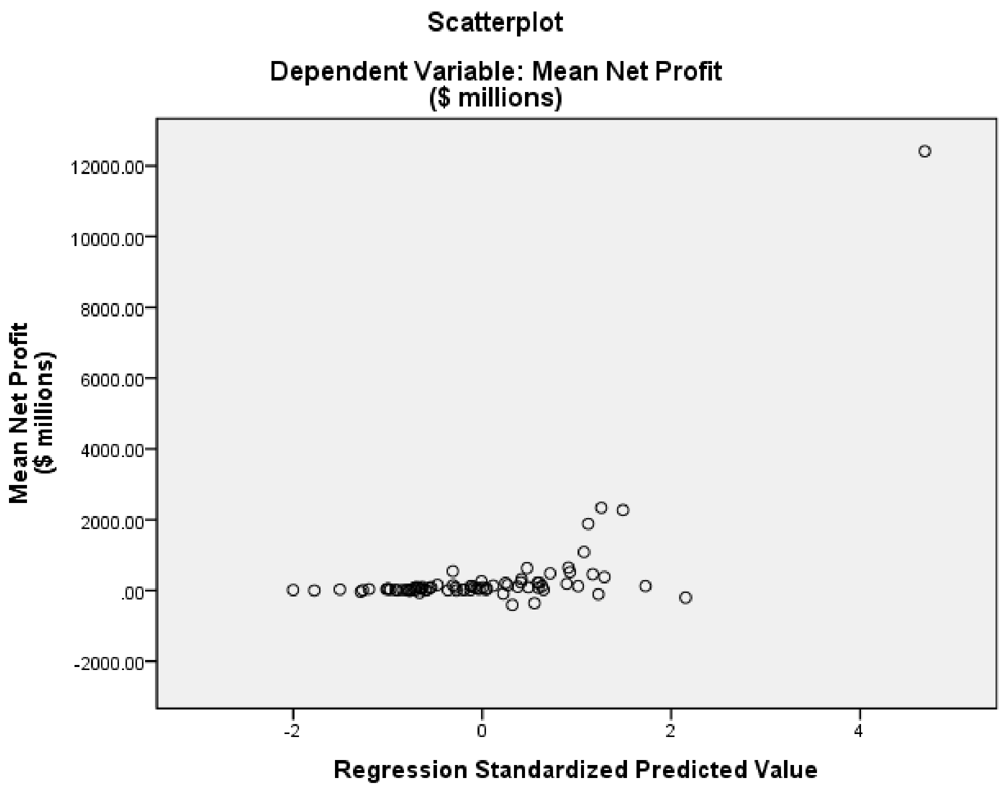
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	Sqrt_MeanExecutiveSalary
1	1	1.975	1.000	.01	.01
	2	.025	8.979	.99	.99

a. Dependent Variable: Mean Net Profit ($ millions)

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-1491.9861	4659.2266	349.1169	920.08656	77
Residual	-2531.50830	7752.37354	.00000	1139.39611	77
Std. Predicted Value	-2.001	4.684	.000	1.000	77
Std. Residual	-2.207	6.759	.000	.993	77

a. Dependent Variable: Mean Net Profit ($ millions)



APPENDIX I: Full regression output for Mean Net Profit and Mean Stock Options

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	sqrt_MeanStock Options[b]	.	Enter

a. Dependent Variable: Mean Net Profit ($ millions)

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.325[a]	.105	.093	1394.40879

a. Predictors: (Constant), sqrt_MeanStockOptions

b. Dependent Variable: Mean Net Profit ($ millions)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17175299.961	1	17175299.961	8.833	.004[b]
	Residual	145828189.841	75	1944375.865		
	Total	163003489.802	76			

a. Dependent Variable: Mean Net Profit ($ millions)

b. Predictors: (Constant), sqrt_MeanStockOptions

Coefficients[a]

Model		95.0% Confidence Interval for B		Collinearity Statistics	
		Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-836.110	238.639		
	sqrt_MeanStockOptions	5.382	27.263	1.000	1.000

a. Dependent Variable: Mean Net Profit ($ millions)

Collinearity Diagnostics[a]

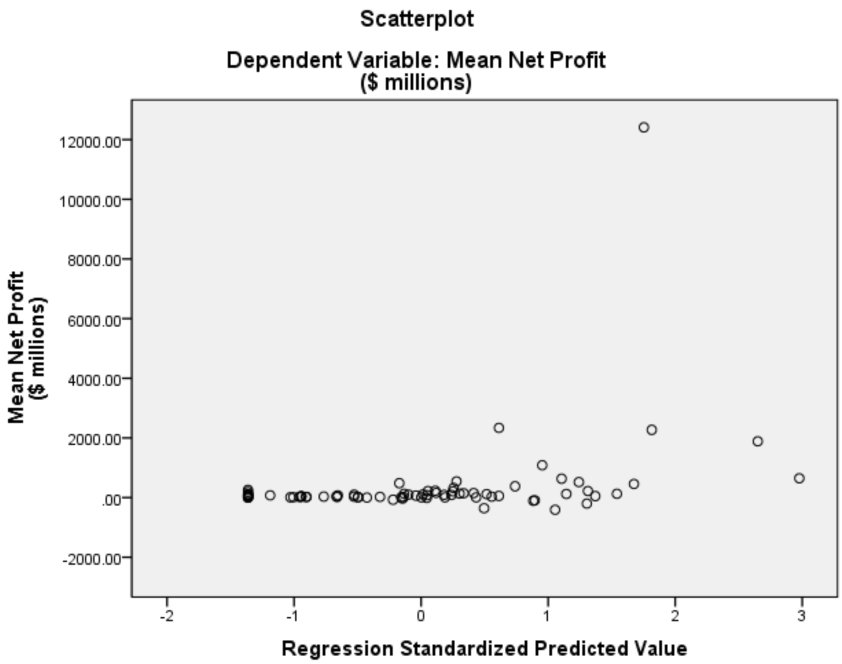
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	sqrt_MeanStock Options
1	1	1.808	1.000	.10	.10
	2	.192	3.069	.90	.90

a. Dependent Variable: Mean Net Profit ($ millions)

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-298.7359	1764.2770	349.1169	475.38489	77
Residual	-1259.09290	11229.03613	.00000	1385.20467	77
Std. Predicted Value	-1.363	2.977	.000	1.000	77
Std. Residual	-.903	8.053	.000	.993	77

a. Dependent Variable: Mean Net Profit ($ millions)



APPENDIX J: Full regression output for Mean Net Profit and Mean Cash Bonuses

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	sqrt_MeanCashBonuses[b]	.	Enter

a. Dependent Variable: Mean Net Profit ($ millions)

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.357[a]	.127	.116	1377.20660

a. Predictors: (Constant), sqrt_MeanCashBonuses

b. Dependent Variable: Mean Net Profit ($ millions)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20751138.759	1	20751138.759	10.941	.001[b]
	Residual	142252351.043	75	1896698.014		
	Total	163003489.802	76			

a. Dependent Variable: Mean Net Profit ($ millions)

b. Predictors: (Constant), sqrt_MeanCashBonuses

Coefficients[a]

Model		95.0% Confidence Interval for B		Collinearity Statistics	
		Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-1619.689	-58.055		
	sqrt_MeanCashBonuses	10.394	41.872	1.000	1.000

a. Dependent Variable: Mean Net Profit ($ millions)

Collinearity Diagnostics[a]

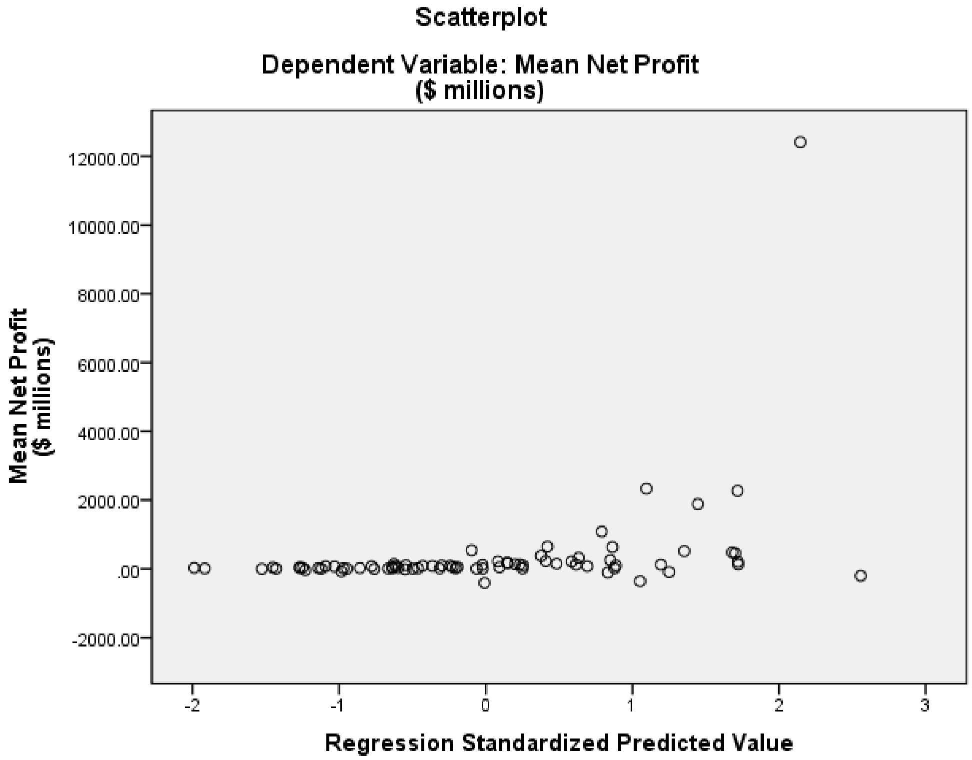
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	sqrt_MeanCashBonuses
1	1	1.916	1.000	.04	.04
	2	.084	4.786	.96	.96

a. Dependent Variable: Mean Net Profit ($ millions)

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-689.8311	1684.8239	349.1169	522.53354	77
Residual	-1886.42383	10941.73535	.00000	1368.11603	77
Std. Predicted Value	-1.988	2.556	.000	1.000	77
Std. Residual	-1.370	7.945	.000	.993	77

a. Dependent Variable: Mean Net Profit ($ millions)



APPENDIX K: Full Multiple Regression Output

Descriptive Statistics

	Mean	Std. Deviation	N
Mean Net Profit ($ millions)	349.1169	1464.50769	77
sqrt_MeanStockOptions	39.6909	29.12459	77
sqrt_MeanCashBonuses	45.4595	19.99522	77
sqrt_MeanExecutiveSalary	48.2866	10.96172	77

		Mean Net Profit ($ millions)	sqrt_MeanStockOptions	sqrt_MeanCashBonuses	sqrt_MeanExecutiveSalary
Pearson Correlation	Mean Net Profit ($ millions)	1.000	.325	.357	.628
	sqrt_MeanStockOptions	.325	1.000	.512	.543
	sqrt_MeanCashBonuses	.357	.512	1.000	.826
	sqrt_MeanExecutiveSalary	.628	.543	.826	1.000
Sig. (1-tailed)	Mean Net Profit ($ millions)	.	.002	.001	.000
	sqrt_MeanStockOptions	.002	.	.000	.000
	sqrt_MeanCashBonuses	.001	.000	.	.000
	sqrt_MeanExecutiveSalary	.000	.000	.000	.
N	Mean Net Profit ($ millions)	77	77	77	77
	sqrt_MeanStockOptions	77	77	77	77
	sqrt_MeanCashBonuses	77	77	77	77
	sqrt_MeanExecutiveSalary	77	77	77	77

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	sqrt_MeanExecutiveSalary, sqrt_MeanStockOptions, sqrt_MeanCashBonuses[b]	.	Enter

a. Dependent Variable: Mean Net Profit ($ millions)

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.692[a]	.478	.457	1079.36511

a. Predictors: (Constant), sqrt_MeanExecutiveSalary, sqrt_MeanStockOptions, sqrt_MeanCashBonuses

b. Dependent Variable: Mean Net Profit ($ millions)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	77956370.506	3	25985456.835	22.305	.000[b]
	Residual	85047119.296	73	1165029.031		
	Total	163003489.802	76			

a. Dependent Variable: Mean Net Profit ($ millions)

b. Predictors: (Constant), sqrt_MeanExecutiveSalary, sqrt_MeanStockOptions, sqrt_MeanCashBonuses

Coefficients[a]

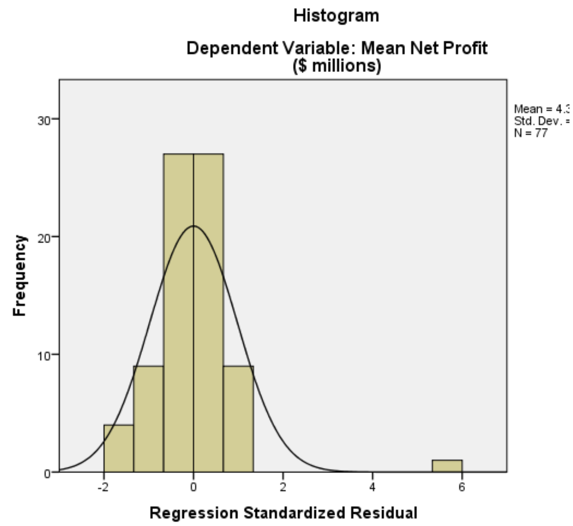
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-4703.875	644.661		-7.297	.000
	sqrt_MeanStockOptions	1.149	5.109	.023	.225	.823
	sqrt_MeanCashBonuses	-37.850	11.097	-.517	-3.411	.001
	sqrt_MeanExecutiveSalary	139.336	20.706	1.043	6.729	.000

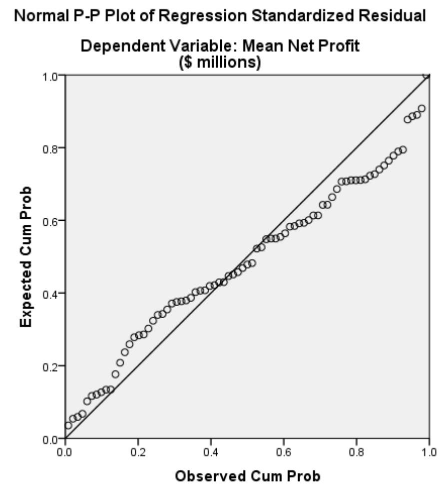
a. Dependent Variable: Mean Net Profit ($ millions)

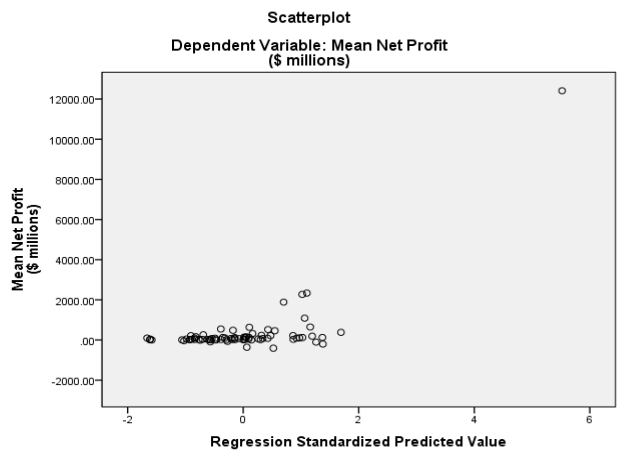
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-1335.5283	5939.3657	349.1169	1012.78908	77
Residual	-1947.91113	6472.23438	.00000	1057.84736	77
Std. Predicted Value	-1.663	5.520	.000	1.000	77
Std. Residual	-1.805	5.996	.000	.980	77

a. Dependent Variable: Mean Net Profit ($ millions)







APPENDIX L: Cross Validation Output

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  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT MeanNetProfit$millions
  /METHOD=ENTER sqrt_MeanStockOptions sqrt_MeanCashBonuses
sqrt_MeanExecutiveSalary
  /SCATTERPLOT=(MeanNetProfit$millions ,*ZPRED)
  /RESIDUALS HISTOGRAM(ZRESID) NORMPROB(ZRESID)
  /CASEWISE PLOT(ZRESID) OUTLIERS(3).
```

Regression

Variables Entered/Removed[a,b]

Model	Variables Entered	Variables Removed	Method
1	sqrt_MeanExecutiveSalary, sqrt_MeanStockOptions, sqrt_MeanCashBonuses[c]	.	Enter

a. Dependent Variable: Mean Net Profit ($ millions)

b. Models are based only on cases for which CV = 0

c. All requested variables entered.

Model Summary[b,c]

Model	R		R Square	Adjusted R Square	Std. Error of the Estimate
	CV = 0 (Selected)	CV ~= 0 (Unselected)			
1	.692[a]	.151	.478	.457	1079.365

a. Predictors: (Constant), sqrt_MeanExecutiveSalary, sqrt_MeanStockOptions, sqrt_MeanCashBonuses

b. Unless noted otherwise, statistics are based only on cases for which CV = 0.

c. Dependent Variable: Mean Net Profit ($ millions)

ANOVA[a,b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	77956370.506	3	25985456.835	22.305	.000[c]
	Residual	85047119.296	73	1165029.031		
	Total	163003489.802	76			

a. Dependent Variable: Mean Net Profit ($ millions)

b. Selecting only cases for which CV = 0

c. Predictors: (Constant), sqrt_MeanExecutiveSalary, sqrt_MeanStockOptions, sqrt_MeanCashBonuses

Coefficients[a,b]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-4703.875	644.661		-7.297	.000
	sqrt_MeanStockOptions	1.149	5.109	.023	.225	.823
	sqrt_MeanCashBonuses	-37.850	11.097	-.517	-3.411	.001
	sqrt_MeanExecutiveSalary	139.336	20.706	1.043	6.729	.000

a. Dependent Variable: Mean Net Profit ($ millions)

b. Selecting only cases for which CV = 0

Casewise Diagnostics[a]

Case Number	Std. Residual	Mean Net Profit ($ millions)	Predicted Value	Residual	Status
37	5.996	12412	5939.37	6472.234	
83	18.575	21415	1365.45	20049.348	X[b]
147	-3.395	-223	3440.69	-3664.089	X[b]
154	3.326	2732	-857.45	3589.650	X[b]

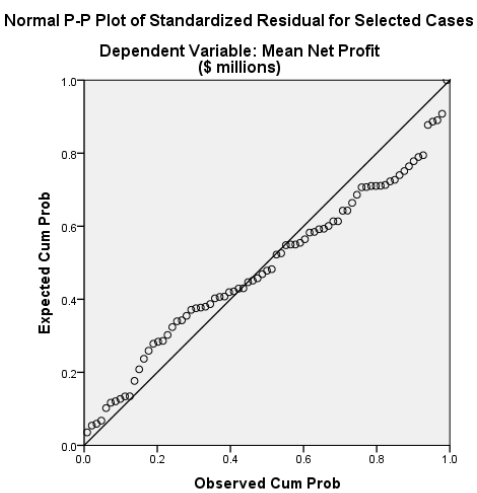
a. Dependent Variable: Mean Net Profit ($ millions)

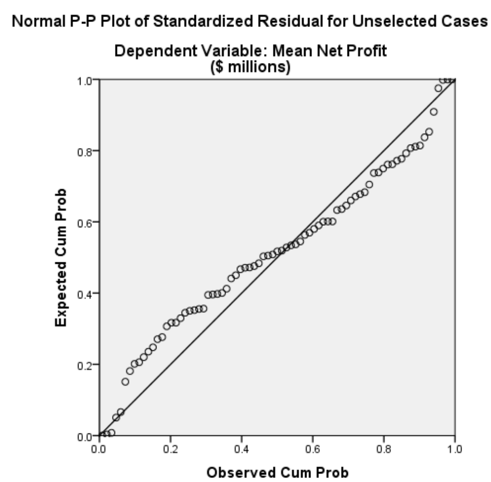
b. CV ~= 0 (Unselected)

Residuals Statistics[a,b]

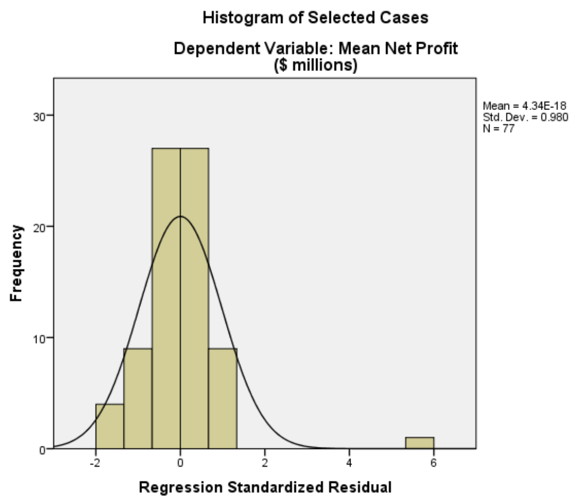
	CV = 0 (Selected)					CV ~= 0 (Unselected)				
	Minimum	Maximum	Mean	Std. Deviation	N	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-1335.53	5939.37	349.12	1012.789	77	-1893.24	3440.69	310.38	894.245	77
Residual	-1947.911	6472.234	.000	1057.847	77	-3664.089	20049.348	274.226	2516.612	77
Std. Predicted Value	-1.663	5.520	.000	1.000	77	-2.214	3.053	-.038	.883	77
Std. Residual	-1.805	5.996	.000	.980	77	-3.395	18.575	.254	2.332	77

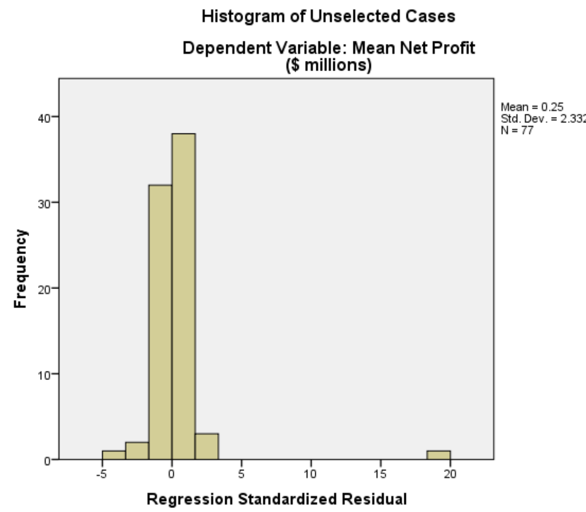
a. Dependent Variable: Mean Net Profit ($ millions)

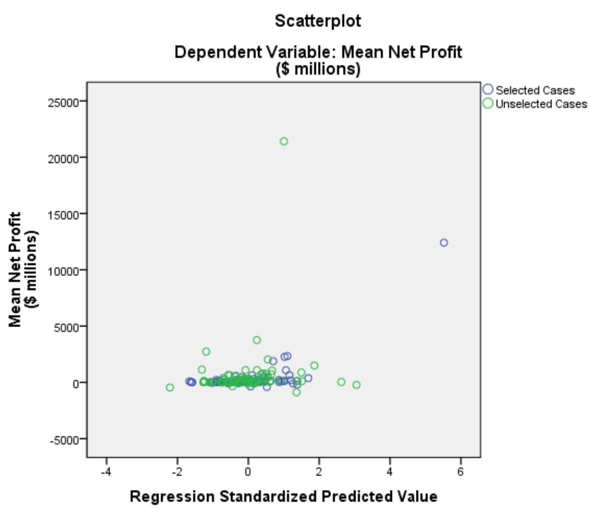




b. Pooled Cases








```
REGRESSION
  /SELECT=CV EQ 1
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT MeanNetProfit$millions
  /METHOD=ENTER sqrt_MeanStockOptions sqrt_MeanCashBonuses
sqrt_MeanExecutiveSalary
  /SCATTERPLOT=(MeanNetProfit$millions ,*ZPRED)
  /RESIDUALS HISTOGRAM(ZRESID) NORMPROB(ZRESID)
  /CASEWISE PLOT(ZRESID) OUTLIERS(3).
```

Regression

Variables Entered/Removed[a,b]

Model	Variables Entered	Variables Removed	Method
1	sqrt_MeanExecutiveSalary, sqrt_MeanStockOptions, sqrt_MeanCashBonuses[c]	.	Enter

a. Dependent Variable: Mean Net Profit ($ millions)
b. Models are based only on cases for which CV = 1
c. All requested variables entered.

Model Summary[b,c]

Model	R		R Square	Adjusted R Square	Std. Error of the Estimate
	CV = 1 (Selected)	CV ~= 1 (Unselected)			
1	.456[a]	.461	.208	.175	2262.376

a. Predictors: (Constant), sqrt_MeanExecutiveSalary, sqrt_MeanStockOptions, sqrt_MeanCashBonuses
b. Unless noted otherwise, statistics are based only on cases for which CV = 1.
c. Dependent Variable: Mean Net Profit ($ millions)

ANOVA[a,b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	98019194.910	3	32673064.970	6.384	.001[c]
	Residual	373639127.693	73	5118344.215		
	Total	471658322.603	76			

a. Dependent Variable: Mean Net Profit ($ millions)
b. Selecting only cases for which CV = 1
c. Predictors: (Constant), sqrt_MeanExecutiveSalary, sqrt_MeanStockOptions, sqrt_MeanCashBonuses

Coefficients[a,b]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	-2461.521	1654.692		-1.488	.141
	sqrt_MeanStockOptions	30.872	10.094	.366	3.058	.003
	sqrt_MeanCashBonuses	2.215	13.499	.025	.164	.870
	sqrt_MeanExecutiveSalary	34.134	42.973	.126	.794	.430

a. Dependent Variable: Mean Net Profit ($ millions)
b. Selecting only cases for which CV = 1

Casewise Diagnostics[a]

Case Number	Status	Std. Residual	Mean Net Profit ($ millions)	Predicted Value	Residual
37	X[b]	3.746	12412	3936.84	8474.763
83		7.693	21415	4009.30	17405.502

a. Dependent Variable: Mean Net Profit ($ millions)
b. CV ~= 1 (Unselected)

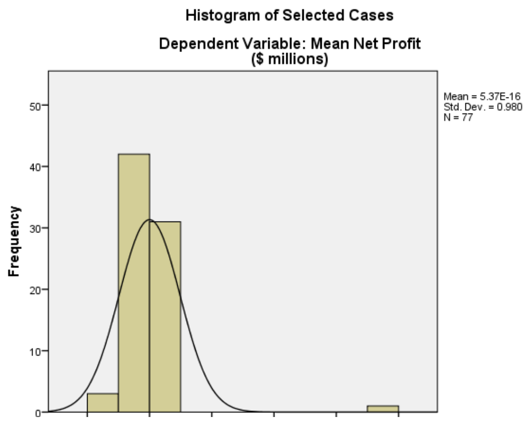
Residuals Statistics[a,b]

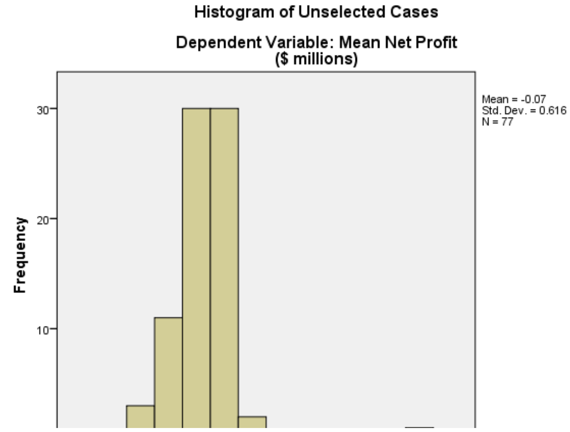
	CV = 1 (Selected)					CV ~= 1 (Unselected)				
	Minimum	Maximum	Mean	Std. Deviation	N	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-1124.47	4009.30	584.60	1135.661	77	-1445.09	3936.84	512.71	1176.429	77
Residual	-3141.418	17405.502	.000	2217.274	77	-2902.459	8474.764	-163.596	1392.510	77
Std. Predicted Value	-1.505	3.016	.000	1.000	77	-1.787	2.952	-.063	1.036	77
Std. Residual	-1.389	7.693	.000	.980	77	-1.283	3.746	-.072	.616	77

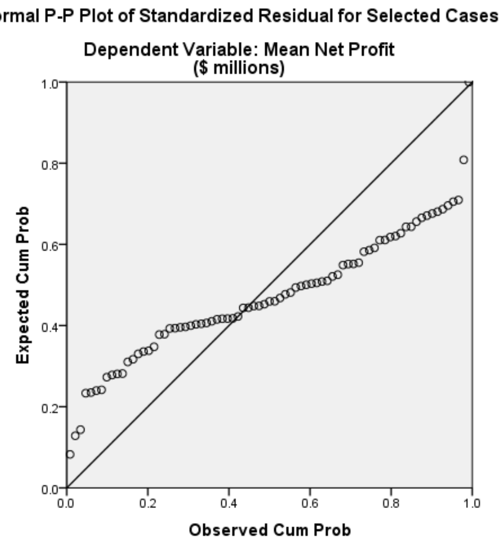
a. Dependent Variable: Mean Net Profit ($ millions)

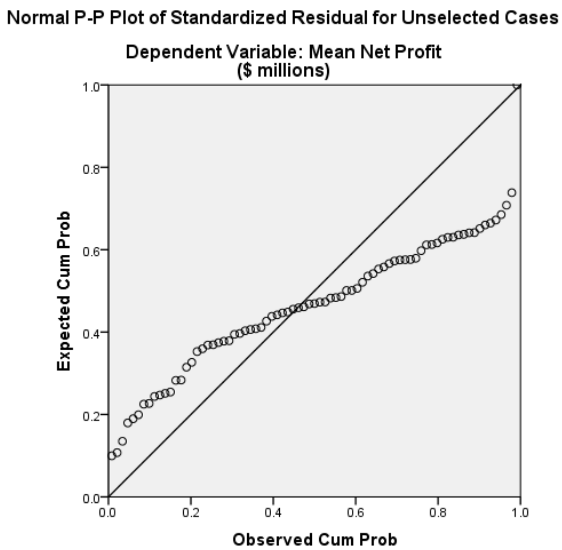
b. Pooled Cases

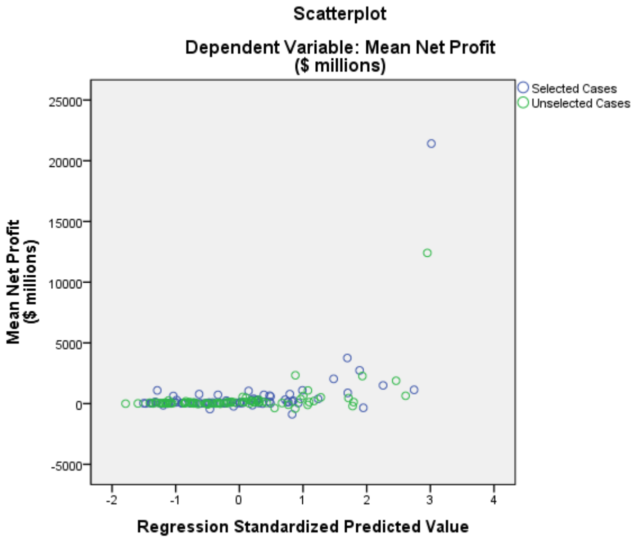
Charts











APPENDIX M: Combined sample regression output

```
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT MeanNetProfit$millions
  /METHOD=ENTER sqrt_MeanStockOptions sqrt_MeanCashBonuses
sqrt_MeanExecutiveSalary
  /SCATTERPLOT=(MeanNetProfit$millions ,*ZPRED)
  /RESIDUALS HISTOGRAM(ZRESID) NORMPROB(ZRESID)
  /CASEWISE PLOT(ZRESID) OUTLIERS(3).
```

Regression

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	sqrt_MeanExecutiveSalary, sqrt_MeanStockOptions, sqrt_MeanCashBonuses[b]	.	Enter

a. Dependent Variable: Mean Net Profit ($ millions)

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.469[a]	.220	.204	1819.703

a. Predictors: (Constant), sqrt_MeanExecutiveSalary, sqrt_MeanStockOptions, sqrt_MeanCashBonuses
b. Dependent Variable: Mean Net Profit ($ millions)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	140098769.422	3	46699589.807	14.103	.000[b]
	Residual	496698038.418	150	3311320.256		
	Total	636796807.840	153			

a. Dependent Variable: Mean Net Profit ($ millions)
b. Predictors: (Constant), sqrt_MeanExecutiveSalary, sqrt_MeanStockOptions, sqrt_MeanCashBonuses

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t
		B	Std. Error	Beta	
1	(Constant)	-3443.122	828.306		-4.157
	sqrt_MeanStockOptions	16.294	5.901	.234	2.761
	sqrt_MeanCashBonuses	-6.288	9.100	-.076	-.691
	sqrt_MeanExecutiveSalary	72.859	22.992	.361	3.169

a. Dependent Variable: Mean Net Profit

($ millions)

Casewise Diagnostics[a]

Case Number	Std. Residual	Mean Net Profit ($ millions)	Predicted Value	Residual
37	4.216	12412	4739.53	7672.070
83	10.126	21415	2989.16	18425.639

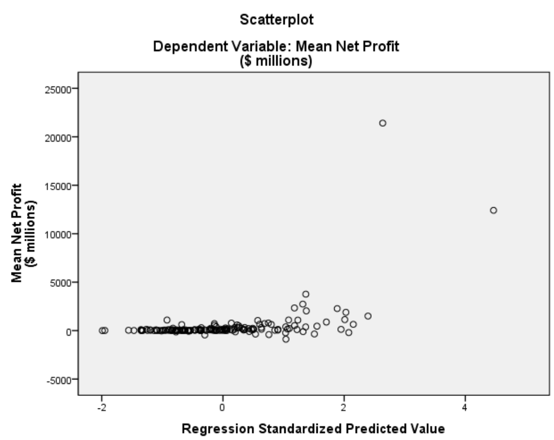
a. Dependent Variable: Mean Net Profit ($ millions)

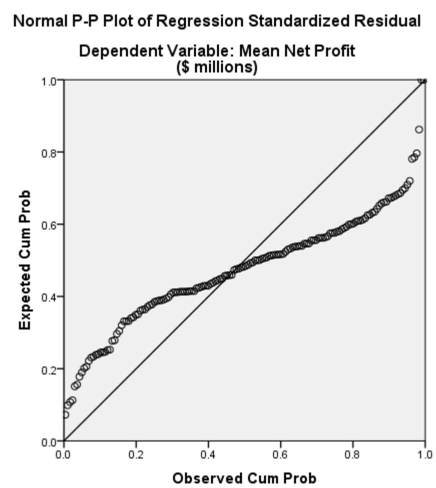
Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-1437.87	4739.53	466.86	956.911	154
Residual	-2654.481	18425.639	.000	1801.775	154
Std. Predicted Value	-1.991	4.465	.000	1.000	154
Std. Residual	-1.459	10.126	.000	.990	154

a. Dependent Variable: Mean Net Profit ($ millions)

Charts





APPENDIX N: Bootstrap Output

```
BOOTSTRAP
  /SAMPLING METHOD=SIMPLE
  /VARIABLES TARGET=MeanNetProfit$millions INPUT=
MeanExecutiveSalary$thousands
    MeanStockOptions$thousands MeanCashBonuses$thousands
  /CRITERIA CILEVEL=95 CITYPE=PERCENTILE  NSAMPLES=1000
  /MISSING USERMISSING=EXCLUDE.
```

Bootstrap

bootstrap Specifications

Sampling Method	Simple
Number of Samples	1000
Confidence Interval Level	95.0%
Confidence Interval Type	Percentile

```
REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS CI(95) R ANOVA
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT MeanNetProfit$millions
  /METHOD=ENTER MeanExecutiveSalary$thousands
MeanStockOptions$thousands MeanCashBonuses$thousands
  /SCATTERPLOT=(MeanNetProfit$millions ,*ZPRED)
  /RESIDUALS HISTOGRAM(ZRESID) NORMPROB(ZRESID).
```

Regression

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Mean Cash Bonuses ($ thousands), Mean Stock Options ($ thousands), Mean Executive Salary ($ thousands)[b]	.	Enter

a. Dependent Variable: Mean Net Profit ($ millions)
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.813[a]	.662	.648	869.336

a. Predictors: (Constant), Mean Cash Bonuses ($ thousands), Mean Stock Options ($ thousands), Mean Executive Salary ($ thousands)

b. Dependent Variable: Mean Net Profit ($ millions)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	107834037.330	3	35944679.110	47.562	.000[b]
	Residual	55169452.473	73	755745.924		
	Total	163003489.802	76			

a. Dependent Variable: Mean Net Profit ($ millions)

b. Predictors: (Constant), Mean Cash Bonuses ($ thousands), Mean Stock Options ($ thousands), Mean Executive Salary ($ thousands)

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	-2045.307	226.084		-9.047	.000	-2495.891	-1594.722
Mean Executive Salary ($ thousands)	1.329	.133	1.134	10.001	.000	1.064	1.594
Mean Stock Options ($ thousands)	-.001	.041	-.002	-.026	.979	-.083	.080
Mean Cash Bonuses ($ thousands)	-.349	.083	-.477	-4.221	.000	-.514	-.184

a. Dependent Variable: Mean Net Profit ($ millions)

Bootstrap for Coefficients

Model		B	Bootstrap[a]				
			Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval	
						Lower	Upper
1	(Constant)	-2045.307	523.361	1023.946	.337	-2749.596	-2.085
	Mean Executive Salary ($ thousands)	1.329	-.349	.685	.325	-.034	1.813
	Mean Stock Options ($ thousands)	-.001	.018	.051	.985	-.086	.110
	Mean Cash Bonuses ($ thousands)	-.349	.100	.219	.372	-.601	.073

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Residuals Statistics[a]

		Statistic	Bootstrap[b]			
			Bias	Std. Error	95% Confidence Interval	
					Lower	Upper
Predicted Value	Minimum	-1167.71				
	Maximum	8414.02				
	Mean	349.12	2.81	169.95	111.18	790.55
	Std. Deviation	1191.163	-129.439	707.988	112.969	2577.408
	N	77	0	0	77	77
Residual	Minimum	-1780.362				
	Maximum	3997.576				
	Mean	.000	.000	.000	.000	.000
	Std. Deviation	852.006	-173.894	253.219	234.369	984.800
	N	77	0	0	77	77
Std. Predicted Value	Minimum	-1.273				
	Maximum	6.771				
	Mean	.000	.000	.000	.000	.000
	Std. Deviation	1.000	.000	.000	1.000	1.000
	N	77	0	0	77	77
Std. Residual	Minimum	-2.048				
	Maximum	4.598				
	Mean	.000	.000	.000	.000	.000
	Std. Deviation	.980	.000	.000	.980	.980
	N	77	0	0	77	77

a. Dependent Variable: Mean Net Profit ($ millions)

b. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples