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Chief Executive Officers' Compensation and Firms' Performance in the U.S. Banking Industry

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This is to certify that the doctoral study by

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Abstract

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MS, University of Newcastle upon Tyne, 2004

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Abstract

The growth rate of chief executive officers' (CEOs) compensation has dramatically outpaced average employees' pay increases. Scholars have not been able to reach a consensus on whether the financial performance of firms has a positive influence on CEOs' compensation. Also, boards of directors lack a clear understanding of the relationship between financial performance of firms and CEOs' incentive compensation in the U.S. banking industry. The purpose of this correlational study was to examine the predictive relationship between financial performance of firms (measured by return on equity [ROE] and annual revenue) and CEOs' total compensation in the U.S. banking industry. According to agency theory, which was the theoretical framework for this study, failing to understand such a relationship could cause a misalignment between CEOs' compensation and the performance of firms. Hence, the research question was, does a predictive relationship exist between ROE, annual revenues of firms, and CEOs' total compensation? Archival data from publicly traded U.S. banking firms were collected and analyzed. Multiple regression techniques were used to identify a statistically significant predictive model, $F\ (2, 121) = 95.691$, $p < .000$, $R^2 = .613$. Changes in annual revenue were found to be significantly more sensitive than changes of ROE relative to the impact on changes in CEOs' total compensation. This study may contribute to positive social change by raising individuals' awareness of the importance of maintaining CEOs' equitable compensation. Additionally, compensation committees of banking firms can use the findings from this study to evaluate their compensation strategies and make necessary adjustments.

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Dedication

This doctoral study is dedicated to me for my hard work, incredible will power, and determination to accomplish a life goal. I also dedicate this study to my family members: my wife, Liping Hu; my daughters, Audrey Li and Brandy Li; and my parents, Yanyin Li and Ling Xiao, who have always been there for me throughout the whole journey. This achievement would not have been possible without their support. Thank you very much.

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Section 1: Foundation of the Study

The average compensation for U.S. chief executive officers (CEOs) of Standard & Poor's (S&P) 500 companies rose by more than 300% from the 1990s to the 2010s (Shue & Townsend, 2017). This trend in CEO compensation might be a reflection of the growth in profits of firms. In this study I evaluated, using a quantitative correlational design, the predictive relationship between firms' return on equity (ROE), their annual revenues, and CEOs' total compensation (including salary, cash bonuses, bonuses in stock, and bonuses in options). The results of this study could add to the existing body of knowledge on the relationship between CEOs' compensation and the financial performance of the firms that employ them.

Background of the Problem

The dramatic increase in CEOs' compensation might not align with the financial performance of the firms that employ them. Results of previous studies on the relationship between firm performance and CEO compensation have been varied. For instance, Nulla (2013b) found that CEOs' total compensation and the financial performance of the firms that employed them were positively related in the financial service industry. However, Lin, Kuo, and Wang (2013) found that there was a negative relationship in other industries.

Boards of directors (BODs) of companies appoint CEOs with the objective of maximizing shareholders' wealth (Iqbal & Javed, 2017). However, CEOs might act in their own interests rather than that of their shareholders, if BODs fail to govern CEOs' job performance by making compensation contingent on firm performance (Okoth &

Coşkun, 2016). As Nulla (2013a) noted, some BODs might not have a compensation structure in place to align CEOs' interests with those of shareholders.

BODs might include incentive mechanisms in CEOs' compensation packages, which are often composed of cash bonuses, bonuses in stock, and bonuses in options in addition to salaries (Rau, 2017). On the other hand, shareholders' interests depend on the financial performance of the firms in which they hold stock, where financial performance can be the measurements of ROE and annual revenue (Okoth & Coşkun, 2016). Using a statistical model might provide helpful findings about the predictive relationship between the financial performance of firms and CEOs' total compensation. Such findings might also provide supportive information for BODs to use in considering their CEOs' incentives as a part of corporate governance.

Problem Statement

CEOs' compensation is inseparably tied to firm performance in U.S.-based banks, which implies that CEOs should receive reduced compensation when their firms experience negative market returns (Cerasi & Oliviero, 2015). During the 2006–2008 financial crisis, more than 50% of the U.S. banking CEOs lost their incentive compensation (Cerasi & Oliviero, 2015). The general problem is that some firms in the banking industry might not maintain an effective structure for CEOs' compensation, which could result in conflicts of interests between CEOs and their shareholders. The specific problem is that BODs of some U.S. banks lack an understanding of the predictive relationship between ROE, annual revenue of the firm, and the CEO's total compensation.

Purpose Statement

The purpose of this quantitative, correlational study was to examine the predictive relationship between ROE, annual revenues of firms, and CEOs' total compensation. The independent variables (predictors) were ROE of the firm and annual revenue of the firm. The dependent variable (criterion) was CEO's total compensation. Archival data for U.S. publicly traded banks from 2010 to 2015 were used to quantify the predictor variables and the criterion variable. Data were available in firm-year format.

This study may contribute to social change by providing new information that could assist members of BODs regarding decisions to incentivize CEOs, such as including various types of bonuses in CEOs' compensation packages. Misalignment between CEOs' compensation and the performance of firms may be of concern to the public (Nulla, 2013b). However, the public and the other stakeholders might have limited awareness about the extent to which such a misalignment may have a negative impact on financial performance of the firm. This study could lead BODs to a better understanding of how firms' financial performance should affect CEOs' compensation, which may contribute to improved public perception.

Nature of the Study

I determined that a quantitative methodology was appropriate for examining the relationship between the predictor variables and the criterion variable. Quantitative researchers seek to understand and generalize a phenomenon by testing numerical data, measuring variables, and building statistical models (McCusker & Gunaydin, 2015). Guetterman, Fetters, and Creswell (2015) asserted that qualitative researchers, instead,

focus on developing a theory, understanding individuals' experiences, or exploring a phenomenon. However, the focus of this study was on the empirical examination of the relationship between predictor variables and criterion variable. Because qualitative study does not involve use of a statistical approach to examine the relationship between variables (Birchall, Murphy, & Milne, 2016), I concluded that a qualitative method was not appropriate for my investigation.

In addition to choosing a method, researchers need to decide on the strategies of inquiry within a research methodology, which is the research design (Wilson, 2016). I determined that a quantitative correlational design was the most suitable one for this study. A correlational design, which is nonexperimental in nature, allows researchers to establish the relationship between variables without any manipulation (Hughes, Matt, & O'Reilly, 2015). True experimental and quasi-experimental designs were not appropriate for this study because they are used for assessing cause-and-effect relationships (van Loon, de Bruin, van Gog, van Merrienboer, & Dunlosky, 2014). Using a causal-comparative design, a researcher examines a *causal factor* and compares differences between variables (Bonita et al., 2014; Shepherd, O'Carroll, & Ferguson, 2014). The focus of this study was on examining the relationship between the variables of interest rather than determining whether they were causally related to one another. A descriptive design is more suited to providing an overview of the relationship between variables than a detailed investigation of the relationship (Oh & Gastmans, 2015).

Research Question

Does a predictive relationship exist between ROE, annual revenues of firms, and CEOs' total compensation?

Hypotheses

H_0: A significant predictive relationship does not exist between the ROE of firms, annual revenues of firms, and CEOs' total compensation within the U.S. banking industry.

H_a: A significant predictive relationship exists between the ROE of firms, annual revenues of firms, and CEOs' total compensation within the U.S. banking industry.

Theoretical Framework

Agency theory provided the framework for this study. This theory stems from the work of Berle and Means (1932), who observed that leaders of modern companies often separate ownership from operational control. This separation of ownership from control resulted in the principal-agent relationship, where managers, as agents of the organization, perform actions in the best interests of the owners (principals; Berle & Means, 1932). However, agency theory also relates to the assumption of the *economic man*, an imaginary figure who can act rationally for the optimization of self-interests (Bosse & Phillips, 2016). Mitnick (2015) expanded agency theory by arguing that a CEO of a firm who might pursue his or her own benefits over those of the firm if performance of the firm and the CEO's incentives are not aligned. Eisenhardt (1989) stated that the assumptions of agency theory had two fundamental tenets: the conflict of interest

between the principal and the agent, and the information asymmetry between both parties.

Agency theory was applicable to this study because my focus was on finding the relationship between the best interests of CEOs and those of firms. I surmised that bonuses in CEO compensation might be considered the incentive in the principal-agent relationship and might encourage managers to work harder to improve performance of their firms. Jensen and Mecking (1976) identified the cost of monitoring the CEO's performance as the agency cost and further suggested that organizations—or their BODs—should have strong incentive mechanisms in place for individuals to minimize agency cost. Hence, the CEOs' self-interests (the compensation received from the company) and the owners' best interests (performance of the firm) need to achieve consistent alignment.

In the present study, CEO's compensation was a straightforward measurement (the criterion variable), whereas ROE and annual sales revenue were the indicators (the predictor variables) for performance of the firm. I used relevant data as the measurements of CEO's compensation and performance of the firm. The theoretically expected relationship, namely higher compensation of a CEO, might lead to better performance of a firm.

Operational Definitions

Annual revenue: The amount of money that a company receives from sales per year (Benedettini, Neely, & Swink, 2015).

Bonus in stock: The amount of payment in addition to the salary that a person receives in the form of company's stock (Paz & Griffin, 2014).

Bonus in option: The rewarding privilege in addition to the salary that a person receives in the form of company's stock option grant (Paz & Griffin, 2014).

Cash bonus: The amount of money paid in addition to the salary that a person receives (Paz & Griffin, 2014).

CEO total compensation: The sum of salary, cash bonus, and non-cash bonuses that a CEO receives (Paz & Griffin, 2014).

Non-cash bonus: The amount of payment in addition to the salary that a person receives in forms other than money (Samina & Zaman, 2015).

Return on equity: The result of aftertax profit divided by stockholders' equity (Masum, 2014), or the ratio of net income and net assets, which serves as a measurement of how much profit shareholders receive on their investments (Pletzer, Nikolova, Kedzior, & Voelpel, 2015).

Assumptions, Limitations, and Delimitations

Assumptions

Assumptions are facts that, while considered to be true, have not gone through a verification process (Wohlin & Aurum, 2015). Unverified information assumed to be true can include the supporting theory of the study being invalid or still under investigation and the methodology used being ineffective for this study. In this study, I assumed that the data collected from annual reports regarding the financial performance of firms were

accurate, as were data collected from archival databases containing the CEOs' compensation.

Limitations

Limitations are potential weaknesses of the study that are mostly out of the researcher's control (Cunha & Miller, 2014; Green, Tonidandel, & Cortina, 2016). The limitations for this study were that the target population included only publicly listed banks in the United States and data collected spanned years 2010 to 2015. Hence, the results might not be valid for other industries or time periods. Also, I used archival data for the study. Other researchers might achieve different results if they perform a similar evaluation using a different type of data collection method. Lastly, stakeholders in the banking industry might interpret these results differently.

Delimitations

Delimitations of a study are actions that researchers decide not to perform because of the scope or boundaries of the study (Domingos et al., 2014; Newcomer, Marion, & Earnhardt, 2014). The two predictor variables in this study were potentially correlated, which might have had an impact on results of the study. I proceeded with the study, being aware of the risks of yielding poor results if multicollinearity occurred in the data analysis process. However, I was prepared to address the matter if the results were poor when the data analysis procedures were complete. The delimitations of this study were as follows: I did not extend the inquiry into components of corporate governance other than CEOs' compensation. The examination was only of publicly traded U.S.-based banks; I

did not include privately held banking corporations in the study. Also, I only used two forms of measurements for organizational financial performance.

Significance of the Study

Contribution to Business Practice

Although CEOs' compensation has attracted much attention among financial researchers, BODs of companies still lacked an understanding of the relationship between CEOs' compensation and financial performance of firms (Lin et al., 2013). Prior researchers have had mixed results in examining this relationship in other industries. Lin et al. (2013) were not able to identify a general relationship across 10 different industries. Nulla (2013b), however, found a positive relationship within the financial service industry. In this study, I examined the U.S. banking industry to address a gap in business practice revealed in the literature I reviewed.

The results of the study may effectively contribute to business practice by increasing knowledge about the connection between CEOs' compensation and financial performance of public banking firms in the United States. Lin et al. (2013) found, through an examination of this relationship, that business practices are enhanced by adopting a strategic and fair CEOs' compensation structure that links to the performance of firms. Additionally, BODs of companies can better understand the importance of having strategies for developing efficient CEO compensation structures. BODs might be more confident in monitoring the performance of firms on behalf of their shareholders than before (Lin et al., 2013).

Implications for Social Change

The results of this study carry a positive implication for social change by potentially raising the level of public awareness regarding the risks associated with misalignment between performance of firms and CEOs' compensation. Banking industry stakeholders did not possess a clear understanding of the risks associated with the possible mismatches between CEOs' compensation and performance of firms (Cerasi & Oliviero, 2015). The public might gain insight about how to address their concerns about performance of firms and CEOs' compensation. Members of BODs might not understand the risks and costs associated with CEOs' decisions on behalf of the companies without proper incentive mechanisms (Mitnick, 2015). Therefore, this study may be useful to both organizations in the public banking industry and to society.

A Review of the Professional and Academic Literature

A review of the professional and academic literature involved an in-depth inquiry into various sources, such as academic journals, technical and research reports, publications of professional affiliations, seminal work, and scholarly books. My initial search yielded more than 600 articles on research methods, theoretical framework, financial performance of firms, and CEOs' compensation. Then, I shifted my focus to financial, economic, and managerial journals, which resulted the inclusion of 88 articles from journals such as *Academy of Management Journal*, *Annual Review of Financial Economics*, *Financial Management*, *International Review of Finance*, *Journal of Accounting and Finance*, *Journal of Accounting and Economics*, *Review of Quantitative*

Finance and Accounting, *Journal of Banking & Finance*, *The Journal of Finance*, and *Journal of Organizational Behavior.*

My strategy for searching the literature began with the keywords and phrases, *CEOs' compensation* and *financial performance of firms.* I then searched for literature on my theoretical framework by using the key phrase, *agency theory*. An additional search included a combination of the following keywords: *banking industry*, *executive compensation*, *corporate governance*, *executive compensation structure*, and *corporate performance*. In conducting my search, I used a few filtering techniques to ensure the relevance and currency of the literature. These filters consisted of the following: selecting the publication year to be older than 2013; excluding journals that were not peer-reviewed; and excluding articles from fields other than finance, management, or economics.

In searching for literature, I used Walden University Library databases, Google Scholar (using the *citation chaining* function), Social Science Research Network database, Education Resources Information Center database, U.S. Bureau of Economic Analysis, and Amercian Bankers Association. As a result, the literature review included 95 sources, of which more than 85% were peer-reviewed with publication dates less than 5 years old (see Table 1; also see Appendix A for a breakdown of the frequency and percentage of all sources used in the study).

Table 1

Frequency and Percentage of Sources Used in the Study

	References			
Resources	≤ 5 years old	6 + years old	*N*	%
Peer reviewed articles	82	8	90	94.7
Other journal articles	4		4	
Books		1	1	
Total	86	9	95	90.5

Note. Articles from peer-reviewed journals which were published in the past 5 years constituted 86.3% of the total sources.

This review of the literature is organized according to the following four sections. The first part is a restatement of the purpose statement of the study and hypotheses to remind the reader of the intended examination. I then present an analysis of the literature regarding my theoretical framework to provide context for the examination. Next is an analysis of the predictor variables of ROE of the firm and annual revenues of the firm, as well as the synthesized literature on these measurements. The last section is a review of the literature pertaining to the criterion variable of CEO's compensation and the literature on its measurement.

Application to the Applied Business Problem

The purpose of this quantitative, correlational study was to examine the predictive relationship between ROE of firms, annual revenues of firms, and CEOs' total compensation (including salary, cash bonuses, bonuses in stock, and bonuses in options). The predictor variables were ROE of the firm and annual revenue of the firm. The criterion variable was CEO's total compensation. Archival data for U.S. publicly traded banks from 2010 to 2015 were used to quantify both the predictor variables and the criterion variable. The examination was based upon the following hypotheses:

H_0: A significant predictive relationship does not exist between ROE of firms, annual revenues of firms, and CEOs' total compensation within the U.S. banking industry.

H_a: A significant predictive relationship exists between ROE of firms, annual revenues of firms, and CEOs' total compensation within the U.S. banking industry.

Literature on Agency Theory

Agency theory originated from the work of Berle and Means in 1932, who stated that modern companies often have the separated ownership from operational control, which represent the principal-agent relationship. Berle and Means (1932) evaluated the 200 largest U.S.-based nonfinancial firms in 1929 in their quantitative study and found that 44% did not have any individual ownership interest. Most companies owned 20% of their stock—a share Berle and Means perceived was also at an approximately minimum level—which indicated that the companies needed to attain control of operation. Managers, as the agents, perform actions in the best interests of owners (principals), according to Berle and Means. However, agency theory also relates to the assumption of economic man, an imaginary figure who can act rationally for the optimization of self-interests (Bosse & Phillips, 2016).

Eisenhardt (1989) stated that agency theory had two fundamental tenets: (a) a conflict of interest between principal and agent and (b) information asymmetry between both parties. The agent may also be the shareholder of the firm, who will likely act on maximizing the value of the firm (Bosse & Phillips, 2016). Berle and Means (1932) then analyzed and categorized 88 firms that owned 58% of the total assets among the top 200

management-controlled ones. Of these, in only 11% of firms did owners possess a majority of the firms' shares.

Mitnick (2015) studied the origins of agency theory and found that CEOs might pursue their own interests if they perceived that their incentives did not align with performance of firms. Balafas and Florackis (2014) used this theory to examine the effects of CEO compensation on shareholder value by comparing firms that provided their CEOs with excessive fees and other firms in the same industry that did not provide their CEO with excessive fees. Using data from a large sample of U.K.-listed companies for the period of 1998–2010, Balafas and Florackis found that higher CEO compensation could lead to lower subsequent short-term returns, whereas firms that provided CEOs with low incentive distribution experienced the opposite.

Jensen and Mecking (1976) integrated various components of the theory of property rights, the theory of agency, and the theory of finance to develop a theory of the ownership structure for a firm, which aims to determine the firm's equity and debt. Using agency theory, Brisker, Colak, and Peterson (2014) found that owners experienced information gaps in the external environment, market trends, and actual business situations of their firms because they were not engaged in the specific business activities of their firms. To counter the effects of these information gaps, Bosse and Phillips (2016) suggested that the principal need to employ a monitoring mechanism on the agent's performance.

Jensen and Mecking (1976) began by defining the meaning of agency costs. Next, they determined the relationship between the issue of separation and control from the

perspective of agency costs. Finally, Jensen and Mecking clarified the nature of the agency costs caused by outside equity and debt. They used the theory of ownership structure to identify the agency cost as the cost of monitoring CEO performance, and concluded that firms should develop strong incentives programs to minimize agency cost (Jensen & Mecking, 1976). Brisker et al. (2014) hypothesized that executives whose compensation was highly equity-based were motivated to avoid ownership dilution by timing their seasonal equity offers to periods when investors in the firm could temporarily overprice their stocks. A mere 1% change in stock price can lead to significant changes in executives' wealth.

Aided by agency theory, Brisker et al. (2014) found that CEOs of firms with relatively high compensation experienced abnormally low stock returns and unfavorable changes in operational performance in the 3 years following the change in stock price. In general, the findings led Brisker et al. to conclude that principals sought wealth maximization while agents strove for benefit maximization, a mismatch that could create inevitable conflicts of interest between the two groups. The firms that experienced positive abnormal returns outperformed firms where CEOs received compensation at the top of the incentive compensation distribution (Balafas & Florackis, 2014). Higher incentive pay also led to lower future operating performance. The development of social productivity and the continuous expansion of production scale might affect the principal-agent relationship (Balafas & Florackis, 2014). In the contemporary corporate environment, information asymmetry between owners of firms (principals) and managers (agents) can negatively affect the relationship (Balafas & Florackis, 2014).

Jouber and Fakhfakh (2011) investigated incentive system designs in firms in France and Canada using agency theory with a particular focus on the relationships between the characteristics of BODs and earnings management (a proxy of earnings quality). Through performance-matched discretionary accruals (PMDA), Jouber and Fakhfakh carried out three separate regressions on a full sample consisting of a French subsample and a Canadian subsample to determine institutional features and BOD characteristics that can affect PMDA. Jouber (2016) investigated how CEOs' pay relative to firm performance compensation schemes might align with the executives' incentives. By using a quantitative logit and stepwise regression design, Jouber collected sample data of executive compensation for 231 publicly traded companies in Canada, France, United Kingdom, and the United States over the period of 2004–2008.

Through a regression analysis on panel data of 180 French and Canadian listed firms from 2006 to 2008, Jouber and Fakhfakh (2011) investigated the impact of institutional features on the behavior of earnings management, which were the strongest incentives to management discretion through a PMDA. They conducted three separate panel regressions to determine the effects of board characteristics and institutional features on the PMDA. Jouber (2016) found that pay-to-performance incentives were likely favorable to shareholders because these schemes tended to contribute to value creation for the firm.

Further, the effects on long-term total shareholder returns were not unanimously applicable to all firms; companies that experienced growth would have higher market value in the future (Jouber & Fakhfakh, 2011). CEOs' pay for performance incentives

served the interests of shareholders by creating value for the firms (Jouber, 2016). Results of Jouber's study were the same as those reported earlier by Jouber and Fakhfakh regarding the effects of incentives on long-term total shareholder returns, but Jouber also found higher quality corporate governance of executive compensation affected the level of investors' protection.

The uncertainty of current investment income compounds the difficulties of measuring performance of agents (Banker, Darrough, Rong & Plehn-Dujowich, 2013). Banker et al. developed a two-period principal-agent model to test their theoretical predictions utilizing CEO compensation data collected from the period of 1993–2006. On the other hand, Nyberg, Fulmer, Gerhart, and Carpenter (2010) applied agency theory to their meta-analysis of existing literature by examining the relationship between CEOs' compensation and the financial performance of firms.

Banker et al. (2013) found BODs of growth companies tended to raise the proportion of equity earnings in CEOs' compensation structure to reduce agency costs. The nature of investment opportunities also affects executive compensation structure. Investment or investment opportunities that were more uncertain and needed more time to succeed were more likely to be associated with potential proxy conflicts (Banker et al., 2013). Nyberg et al. (2010) concluded the quality of the primary data, an emphasis on equity-based compensation, and the mismatch of short-term or long-term incentives were limitations to applicability of agency theory. Based on the reconceptualization of CEOs' compensation to CEOs' return, Nyberg et al. discovered a stronger alignment of CEOs'

compensation and shareholders' interests than had been reported in the previous literature.

Pandher and Currie (2013) conducted a quantitative correlational study examining how CEOs' compensation and compensation composition can be strategic factors in the capacity of firms to generate value, the uncertainty of resource advantage, and the competitive interaction of the firm stakeholders with their top executives. Pandher and Currie used an analytical framework wherein CEOs and stakeholders pressed for the surplus of firms as utility-maximizing claimants according to their bargaining power, while providing shareholders with market-based returns. Pandher and Currie found that executives were self-serving and might not act in shareholders' best interests to maximize profits for the firm, which agreed with the findings reported by Nyberg et al. (2010).

In a mixed-methods study, Larkin, Pierce, and Gino (2012) focused on the psychological cost of nonexecutive compensation to analyze agency theory by investigating the pay-to-performance system from a different perspective. Larkin et al. first conducted a qualitative case study using the survey and interview instruments on data of selected firms in California. Next, they examined how psychological costs from overconfidence and social comparison can lead to reductions in the accuracy of individual performance-based compensation by using a quantitative cause-and-effect analysis design. Larkin et al. found that compensation was a strategic motivator for workers, which could also lead to overall better productivity and firm performance. Therefore, the results of Larkin et al. and Pandher and Currie (2013)'s study were coincided.

Larkin et al. (2012) concluded that even though agency theory provides a framework for the development of compensation strategies, the theory fails to take into account several psychological factors that can improve costs of performance-based compensation. The researchers argued that performance-based pay increases agent costs because of psychological costs such as social comparison and overconfidence (Larkin et al., 2012; Pandher & Currie, 2013). Therefore, Larkin et al. proposed better compensation options that were team-based, seniority-based, or flatter compensation. However, the use of compensation systems might have strategic significance for corporations. Larkin et al. pointed out the limitation of the agency theory was disregarding the strategic effects of compensation systems.

Other researchers' findings were different from those of Larkin et al. (2012) regarding the value of agency theory. For example, Cao and Wang (2013) conducted a mixed-methods study by integrating agency theory into search theory to examine executive compensation in market equilibrium. They analyzed the optimal contracting strategy of individual firms under arbitrarily fixed outside options for CEOs, where a CEO can choose to stay or quit after privately observing an idiosyncratic shock to the firm. Then, the authors explored the relationship between the risk level of the firm and the optimal pay-to-performance ratio (Cao & Wang, 2013). Cao and Wang tested on a sample of 1,890 firms and 3,181 CEOs with data from ExecuComp database for the period of 1992–2009. They found that the optimal pay-to-performance ratio was less than 1, even when the CEO was risk-neutral, and that the equilibrium pay-to-performance

sensitivity depended positively on the idiosyncratic risk of the firm and negatively on the systematic risk (Cao & Wang, 2013).

Chakravarty and Grewal (2016) used agency theory as the theoretical framework in their quantitative study to analyze a combination of ExecuComp, Capital IQ, and Kantar Media Intelligence on 515 firms during the period of 2001–2009. Chakravarty and Grewal suggested that granting more stock options and restricted stocks could mitigate CEO's short-term disincentives and, in return, encourage CEOs to invest more in advertisement and research and development (R&D). Liao and Lin (2017) studied how R&D investments of firms might have an impact on firm performance and found a positive relationship in between. Therefore, the spending on R&D and advertising mediated the relationship between CEOs' compensation and performance (book value, sales, dividend payout, and return on assets [ROA] of firms in the given study; Chakravarty & Grewal, 2016).

R&D spending also provided disincentives for the CEOs; these disincentives could create the problems such as earnings expectation to the subsequent analysts' anticipation, declining sales, worse economic conditions, and limited tenure in the firm (Chen, Ho, & Ho, 2014). The risk compensation would have a direct impact on agents' decisions that involve capital investment, R&D expenses, and corporate diversification (Chen, Ho, et al., 2014). In contrast to Chen, Ho, et al., Chakravarty and Grewal (2016) suggested that if CEOs' compensation were set according to long-term scope, the CEOs would act in the best interests of long-term goals and perform more risk-taking behaviors. Furthermore, the effects would be larger in smaller firms because larger companies are

not likely to improve the equity-to-bonus ratio on a large scale. Therefore, the research was consistent with agency theory, indicating CEOs' compensation aligned with performance of firms from a long-term perspective (Chakravarty & Grewal, 2016).

Review of Relevant Literature on Predictor Variables

Return on equity. Analysts utilize performance measures to determine how well a profit-seeking organization is faring; ROE is one of the strongest predictors (Ahsan, 2013). In a quantitative study, Samad (2015) described ROE as one of the most important ratios for investors to check. This indicator is quite popular among analysts, financial managers, and shareholders because it represents the outcome of DuPont analysis, which is a widely used financial ratio analysis (Samad, 2015). Ahsan, as part of a literature synthesis review, evaluated why financial managers, analysts, and researchers seek to determine the value of a company through traditional measurements such as earnings per share, returns on assets, and dividends per share. Ahsan designed a quantitative correlational study to determine why experts described ROE as one of the most commonly used indicators for firms to gauge their performance based on the assumption of given fixed assets, net working capital, equity, and tax rates. Ahsan found that ROE was an appealing measurement for analysts because it links the income statement to the balance statement.

Earnings ratio is related to equity ratio. However, studies later revealed that serious flaws existed in using ROE as a measure of firm performance. One of the main limitations was that earnings are a manipulatable factor, even in a legal way (Ahsan, 2013). Changes in accounting policies within the framework of generally accepted

accounting principles (GAAP) can also lead to changes in earnings (Ahsan, 2013). Rappaport (1986) indicated that asset turnover, or the second component of ROE, can be vulnerable to inflation. Asset turnover and ROE can increase due to inflation, but not due to the performance of the firm, which might increase even if assets are not being utilized effectively. Rappaport also found that in the 1970s, even though the earnings of S&P 500 companies decreased drastically, ROEs of firms still increased because of significant financial padding and increased levels of asset turnover. While the firms appeared as if they were performing well because of their increased ROEs, their market returns were poor (Rappaport, 1986).

Another flaw is that computation of ROE is often made after the cost of debt, but before considering the cost of capital. If capital gearing increased, ROE would increase as well just because returns earned on the borrowed money are still higher than the cost of borrowings (Ahsan, 2013). However, this argument is not an accurate picture of the value of the firm because increasing debts or capital gearing beyond a specific level can also lead to the devaluation of the company and the share price to decrease (Ahsan, 2013). Xing, Howe, and Anderson (2017) asserted that ROE was a short-term indicator to boost the perceived annual performance of a firm. Pursuing higher ROE through increased capital gearing can lead to wealth destruction (Ahsan, 2013).

ROE is the calculation of profit after tax and preference dividends of a specific year, divided by the book value of equity at the start of the year, which consists of issued ordinary share capital in addition to the share premium and reserves (Xing et al, 2017). Average equity can also be used for the computation (Ahsan, 2013, Xing et al., 2017).

Ahsan stated that ROE is composed of three ratios: (a) profitability ratio, (b) asset turnover ratio, and (c) financial leverage. ROE increases or improves if one of these ratios also improves (Ahsan, 2013). If profitability, which is earnings divided by sales improves, the ROE can improve. If assets usage is efficient while financial leverage increases, the same effect could happen. Over time, however, studies revealed that improving ROE does not equate to higher shareholder value (Ahsan, 2013).

Annual revenue. Annual revenue is a strong indicator of firm growth. Revenue growth is a sign that a company is performing well (Feng, Morgan, & Reco, 2017). According to Feng et al., present value (PV) of a firm is the PV from expected cash flows to be generated by the firm in the future. The most important input in valuation, especially for the firms in a high-growing industry, is the growth rate to predict future revenue and earnings (Feng et al., 2017; Xing et al., 2017).

Growth in revenue tends to be more persistent than growth in earnings, which are also much more predictable than growth in earnings (Feng et al., 2017; Xing et al., 2017). Accounting choices often have less impact on annual revenue than on annual earnings, which applies specifically to technology firms because their executives exercise more discretion when deciding on R&D spending (Xing et al., 2017). Therefore, the accountants of firms can just transfer earnings between accounting periods, which is difficult to do with revenues (Feng et al., 2017).

In addition, revenue growth over time has been found to be consistently correlated with earnings growth, which makes historical growth in revenues much more useful for forecasting and analyzing firm performance compared to historical growth in earnings

(Feng et al., 2017; Xing et al., 2017). Feng et al. found that focusing on revenue growth instead of earnings growth could better determine the pace of growth. Furthermore, the momentum of growth could be carried over for the long term (Feng et al., 2017).

Compared to earnings growth, changes in annual revenue are less volatile and not as easily affected by accounting policy changes (Feng et al., 2017). Annual revenue changes could determine effects of changes in firm size, which could also be a more accurate measurement for making projections for the future (Feng et al., 2017; Xing et al., 2017). To calculate annual revenue, the firm relies on the computation of the amount of money received in exchange for goods and services. Annual revenue is important for analyzing and measuring financial ratios, such as gross margin and gross margin percentage (Feng et al., 2017).

Review of Relevant Literature on Criterion Variable

Executive compensation. CEOs provide management services to the organization in return for compensation. Executive compensation committees established the ownership of firms determine CEOs' compensation program based on the need to retain executives and maintain continuity in leadership (Veliyath, George, Ye, Hermanson, & Tompkins, 2016). Compensation committees originally developed compensation packages as a method of competing for managerial talent within the open market and ensuring that organizations could compete for scarce talents (Veliyath et al., 2016). Over time, CEOs' compensations have increased with the size of the organization, and the complexity and scarcity of skill sets catalyzed the demand of CEOs (Nickerson, 2017).

Executive compensation includes basic annual salary, bonus, and future contract (DeYoung, Peng, & Yan, 2013). Among these types of compensation, the basic annual salary is a fixed compensation, which is independent of the business performance of the firm, whereas executive bonuses have a significant positive correlation with the business performance of the firm (DeYoung et al., 2013). CEOs' forward contracts typically appear in the form of stock awards or grants to stock options that could be redeemed as actual cash rewards after a certain period (Bettis, Bizjak, & Kalpathy, 2015). To measure CEO compensation, corporations have formed a compensation structure in business practice; this structure uses a combination of cash, options, restricted stock, and other bonuses (Rau, 2017). Executive compensation could be categorized into following types (a) short-term income, (b) long-term income, and (c) deferred incentive income, which specifically includes (a) base salary, (b) bonus, (c) stock, (d) stock options, and (e) other forms (Shan & Walter, 2016; Upneja & Ozdemir, 2014).

Increasing the proportion of equity earnings, such as the proportion of stock options in the compensation structure, could effectively integrate the long-term benefits of the company with the CEOs' personal interests, thereby helping to enhance the value of the company (Ju, Leland, & Senbet, 2014). Performance-based income (bonuses) is an essential variable for motivating agents, which could also affect the growth of enterprises (Indjejikian, Matejka, Merchant, & Van der Stede, 2014). Increasing risk might create changes in wealth that might occur as a result of changes in the value of the firm (Ju et al., 2014). As CEOs' compensation in the form of stock options increases, risk taking might also increase due to the potential for upside return in stock options, but a set floor

for losses (Tosun, 2016). While stock returns for the investor (stockholder) are crucial, these returns are also forward-looking and reflect the investors' future expectations of stock price (Banker et al., 2013). Specifically, debt levels for firms decrease as a CEO's stock options as a proportion to pay increase (Tosun, 2016).

The design of CEOs' compensation structure should satisfy the following two conditions: (a) include adequate risk income in the incentive structure of executives; and (b) carry out effective supervision for executives to reduce the cost of risk (Brisker et al., 2014). Gaertner (2014) examined the role of CEO compensation in tax risk to firms by analyzing the relationship between aftertax CEO incentives and effective tax rate (ETR). Gaertner found a negative association between aftertax CEO incentives and ETR. Based on that finding, Gaertner concluded that CEO incentives, as well as the bonus, are an effective tool for mitigating tax risks by minimizing tax exposure. Furthermore, CEO's aftertax incentives are positively associated with cash compensation and aftertax savings (Gaertner, 2014). Therefore, Gaertner suggested that the result is consistent with the economic theory that additional tax-related compensation risk should have the proportionally incremental compensation.

Determinants of executive compensation. Many factors determine the level of executive compensation within a company. The executive board establishes executive compensation and selects individuals to serve in the position of CEO. Liu, Liu, and Diaz (2016) examined how larger firms with stricter disclosure rules can affect CEO compensation. Liu et al. found that increasing CEO compensation is the result of stricter monitoring of the chief executive and institutional shareholders of corporate stock.

Institutional shareholders and outside directors comprise most executive boards and are responsible for monitoring the CEOs' compensation and performance of the firm (Liu et al., 2016). Corporate consultants recommend that executive compensation originates with rewards, which provide an increase in wealth based on stock appreciation of the company (Kaplan & Minton, 2012). By using the option of awarding stock options, BODs can create rewards and incentives that not only align the interests of shareholders and CEOs, but also create a financial reward for improved performance (Kaplan & Minton, 2012).

Kaplan and Minton (2012) evaluated trends in CEOs' compensation from 1992 to 2007 among large U.S. companies and found an explanation for trends in CEOs' turnover. They found the annual turnover of CEOs was higher than the estimates from previous studies of earlier periods. Kaplan and Minton asserted that CEOs' compensation greatly determined the turnover rate. Since the 1970s, institutional ownership and outside directors serving on executive compensation boards have increased, as has turnover of CEOs (Kaplan & Minton, 2012). However, BODs must remain independent to create alignment with equity incentives (Laux, 2015). Laux determined that when compensation committees had a higher proportion of nonexecutives as members, CEO salary compensation was lower, but equity compensation was higher. Because the use of stock options provides an alignment with the performance of the firm, corporate boards must ensure that compensation committees have fewer executive members, which increases the use of equity compensation (Laux, 2015).

CEOs may also receive salaries and bonuses based on their past performance (Banker et al., 2013). Cremers and Grinstein (2014) analyzed the variation of CEO

compensation practices and relevant controversy from the perspective of the market for CEO talent. The authors followed a quantitative correlational design to examine the relationship between CEOs' compensation benchmarking, *pay-for-luck*, and the structure of the CEO talent pool by collecting data from ExecuComp and Compustat databases (Cremers & Grinstein, 2014). To measure the variables, Cremers and Grinstein used the control variables of performance measures (including ROE from the previous year, changes in the log of shareholder value from the previous year, and growth in the log of sales) and CEOs' tenure, as well as the independent variable of the percentage for CEOs' appointments within the same industry. Cremers and Grinstein found that only CEOs' compensation had benchmarks against the firms in industries that did not require firm-specific CEO talent, where pay-for-luck was another popular practice that has asymmetry between compensation and performance. However, the CEOs' compensation packages did not rely on whether the CEOs had firm-specific talent (Cremers & Grinstein, 2014).

Cremers and Grinstein (2014) concluded that the structure of the CEO talent pool was related to marginal decisions on CEO compensation (benchmarking and pay-for-luck). No evidence was found to explain increases in overall CEO compensation (Cremers & Grinstein, 2014). Cremers and Grinstein ascribed these findings to consistency with theories of the CEO talent market and the argument of CEO talent competition. In contrast with Cremers and Grinstein's study, Falato, Li, and Milbourn (2015) justified the link between the CEOs' credentials, CEOs' compensation, and performance of the firm by statistical analysis of data from the ExecuComp database with a sample of 2,195 cases of CEO succession from 1993 to 2005, although CEOs' talent, by

its very nature, was difficult to quantify. The measurement of CEOs' credentials referred to coded proxies on CEOs' press coverage, trackable career records, and educational records (Falato et al., 2015). The regression analysis results were twofold: (a) new CEOs earned as much as 5% of total compensation premium per best decile of credential-holders, of which were from CEOs with good credentials in relatively large firms; (b) CEOs with better credentials had significantly higher compensation in their first-year appointments (Falato et al., 2015). Also, the evidence revealed the presence of a relationship between CEOs' credentials, CEOs' compensation, and performance of the firm (Falato et al., 2015).

On the other hand, Vallascas and Hagendorff (2013) identified compensation practices in the banking industry and the associated risks, where the CEOs' cash bonuses might introduce the level of default bank risks. Vallascas and Hagendorff conducted a quantitative correlational study to investigate the link between the incentive mechanisms embedded in CEOs' cash bonuses and the riskiness of banks. The authors measured the bank risks via the Merton distance to default (DD) model, which is widely used in research and commercial applications (Vallascas & Hagendorff, 2013; Yeh, 2017). The DD model measures the default risk as the number of standard deviations the market value of bank assets lies above default point, which is the point where the market value of assets is less than the book value of total liabilities (Yeh, 2017). Vallascas and Hagendorff collected data from U.S. and European banks during the period of 1986–2008. The results revealed no evidence of cash bonuses exerting a risk-reducing effect

when banks were financially distressed, or when banks operated under weak regulatory regimes (Vallascas & Hagendorff, 2013).

Additional factors can affect executive compensation. The components of executive compensation are a combination of both short-term compensation (salary and bonuses) and long-term compensation, which typically consists of stock and shares (Cole & Mehran, 2016; Gabaix, Landier, & Sauvagat, 2014). Cole and Mehran briefly described the relationship between CEOs' compensation and performance of the firm. The goal of an organization is to achieve maximum profit; shareholders and owners get financial benefits from this profit (Cole & Mehran, 2016). Managers or executives who are responsible for managing the firm normally focus on self-benefit rather than shareholders' or organization interests (Cole & Mehran, 2016). Gabaix et al. suggested avoiding the issue of self-benefiting by providing attractive compensation and incentives to executives. For example, by increasing sales or production, executives might claim more compensation (Gabaix et al., 2014). Therefore, the relationship must depend on profit-compensation but not on the relationship between high sales or production and compensation (Cole & Mehran, 2016; Gabaix et al., 2014).

Political and social factors also play important roles in executive compensation. Executives try to influence political factors to stabilize or increase their compensation (Cole & Mehran, 2016; Gabaix et al., 2014). Executives' high salaries and the other compensation have an impact on the social environment because they lead to inequality in society because ordinary workers' payments do not match the compensation of these executives (Cole & Mehran, 2016). Size of the firm has an impact on executive

compensation: small firms have a negative impact on executive compensation, whereas large firms had a positive impact on executive compensation (Gabaix et al., 2014).

Tax reform policies influenced the tax system in terms of capital gains instead of executive income. Over time, stock options or share-based compensation have increased at high rates (Gorry, Hassett, Hubbard, & Mathur, 2017). Recent data and reliable information on stock-based compensation support estimates of an accurate and consistent relationship between management wealth and firm performance over the long term (Gorry et al., 2017). Share-based compensation is an essential part of contemporary compensation packages (Gorry et al., 2017). Long-term incentives should not increase, but stock or share-based compensation should decrease (Gorry et al., 2017). The need for uniform and clear pay practices for executives across the market segment emerged. Recent studies indicated that use of stock-based compensation practice has declined, but researchers suggested that the executive compensation value, which depends on share and market segments, has been increasing continuously (Gorry et al., 2017; Usman, Akhter, & Akhtar, 2015).

Usman et al. (2015) studied the determinants of CEOs' compensation with a partial least square (PLS) regression analysis to investigate the effectiveness of BODs on CEOs' compensation structure using a sample of companies listed on the Karachi Pakistan Stock Exchange 100 from 2007 to 2011. Usman et al. used variance inflationary factor and bootstrapping techniques to verify the proposed model in PLS graph software. Fralich and Fan (2015) conducted a quantitative analysis to examine investors' and executives' different points of view of the contingency factors of executive compensation

to reduce agency costs. Their findings revealed CEOs' social capital has greater importance to factors correlated with CEOs' compensation, and little weight on human capital factors (Fralich & Fan, 2015). By contrast, the findings attached greater importance to human capital factors influencing executive compensation (Fralich & Fan, 2015). However, Usman et al. failed to find any relationship between BODs' effectiveness, CEOs' compensation, and performance of firms; these results were the implications of the misalignment issue in agency theory. Conclusions of the study reflected the business environment in Pakistan, where businesses experience poor corporate governance and concentrated ownership (Usman et al., 2015). Usman et al. pointed out that their study had a different component of CEOs' total compensation, which did not include stock options.

Executive compensation varies according to size of the firm, which could be determined by sales data, assets, and number of workers. Lin et al. (2013) examined the pay systems of companies that had suffered from *fat cat* problems of high pay for CEOs. They defined the fat cat problem as poor CEO performance coupled with high executive compensation (Lin et al., 2013). Lin et al. used sample data of 903 U.S.-based firms from 2007 to 2010 and found a substitution effect between CEO compensation and the level of CEO ownership: larger firms granted higher pay to their CEOs. However, when Lin et al. limited the sample to only fat cat companies, they found a positive association between tenure and firm size with CEOs' compensation. In addition, firm size, leverage ratio, and investment opportunities were significantly associated with total CEO compensation when the sample was limited to fat cat companies in the financial services industry (Lin

et al., 2013). Withisuphakorn and Jiraporn (2017), as well as Lin et al. focused on agency theory, who argued that excessive CEO pay was due to the power of executives over directors, which also allowed CEOs to set their own compensations and extract payment.

CEOs who have abilities greater than those of average executives receive a larger compensation package (Graham, Li, & Qiu, 2012). Managerial power occurs when the CEOs have the power to extract payment from an organization through direct influence over the board (Graham et al., 2012). Bebchuck et al. (2011) found that CEO influence over the board (managerial power) creates pay structures that compensation committees should control through total executive compensation practices and corporate governance. Specifically, if a CEO of an organization has enough power over governance to have an impact on the process of a compensation board when establishing a financial contract, then measuring pay-for-performance may not be an appropriate method through which to identify the variables, which make up executive compensation (Bebchuck et al., 2011). Seo, Tompkins, and Yi (2014) determined that to control the power of the CEO, the independence of BODs and compensation boards can prevent managers from extracting payments through higher compensation.

Not all factors that determine executive compensation are financial in nature. Davila and Venkatachalam (2004) investigated the role of nonfinancial performance measures in executive compensation. O'Reilly, Caldwell, Chatman, and Doerr (2014) conducted a quantitative study to examine the relationships between CEOs' personality, organizational culture, and performance of the firm. Jouber (2014) conducted a quantitative correlational study and found that CEO incentives could increase innovation

within corporations. Nulla (2013a) conducted a quantitative research to investigate the effect of CEOs' age on CEOs' compensation using accounting performance of the firm. Nulla used data from the S&P database from 2005 to 2010 targeting Canadian companies.

Davila and Venkatachalam (2004) conducted a quantitative study to explore the relationship between nonfinancial measures for firms (for example, the passenger load factor) and CEOs' cash compensation. They collected data from the EDGAR online database for 35 airline companies. Davila and Venkatachalam found the existence of a relationship between the passenger load factor and CEOs' cash compensation based on results of the study. However, they found weak evidence that CEOs' power and financial performance measures have an impact on the relationship between nonfinancial performance measures and cash compensation (Davila &Venkatachalam, 2004).

O'Reilly, Caldwell, et al. (2014) conducted a correlational study using two sets of samples: 56 U.S. publicly traded firms in the technology industry and 44 privately held Irish firms. They first employed a factor analysis method to identify the organizational culture and its characteristics on both samples of data, and then tested the hypotheses of the study using the U.S. portion of the sample data (O'Reilly, Caldwell, et al., 2014). The measurement of the independent variable was from an organizational culture profile-based Q-sort method containing statements such as fast-moving and being precise, as well as the Big Five model of CEO personality (O'Reilly, Caldwell, et al., 2014). The dependent variable was revenue and Tobin's Q, which reflect the present and future cash flows, respectively (O'Reilly, Caldwell, et al., 2014). Xing et al. (2017) argued that

Tobin's Q, as a long-term performance indicator, was better for the purpose valuation than the traditional accounting terms such as ROE. O'Reilly, Caldwell, et al.'s findings indicated that CEOs' personality has a positive effect on organizational culture, which in turn has an impact on performance of the firm. However, O'Reilly, Caldwell, et al. suggested further study of the relationships between CEOs' personality, organizational culture, and performance of the firm based on more complex profiles.

Innovation often improves in firms that employ more highly compensated CEOs, which is a positive change for organizational objectives (Laux, 2015). Jouber (2014) used a Pearson's correlational design to examine the relationship between the interdependence of compensation incentives and firm innovation. Results of studies indicated that the type of incentive (stock options) a compensation committee uses correlates with firm innovation and growth (Chen, Chen, & Chu, 2014; Jouber, 2014). Specifically, Jouber found that recent awards and unvested options are more effective in incentivizing CEOs than previously awarded and vested options. Thus, compensation committees should continue to utilize stock options to align CEO incentives with those of shareholders (Chen, Chen, et al., 2014; Jouber, 2014).

Executive compensation in financial crisis. With the early 2000s' financial crisis and intense controversy over government bailouts of floundering companies, the question of executive compensation has again come to the fore of business discourse (Bhagat & Bolton, 2014; Paravisini, 2015; Vemala, Nguyen, Nguyen, & Kommasani, 2014). The issue was complex; the AIG bonus scandal became a flashpoint for discussion about excessive executive compensation and the global economic crisis. AIG, however,

represented a special case of a company owned essentially by U.S. taxpayers who paid for executives' bonuses (DeYoung et al., 2013; Suárez, 2014). The fundamental principle was the same: high levels of executive compensation, if not translated into improved performance, were a drain on shareholder wealth (DeYoung et al., 2013; Suárez, 2014).

The financial crisis of 2008 exemplified the issue of the drain on shareholder wealth. The crisis had several different antecedents: reaction of the government to the savings and loan scandal; federal interest rate policies after the dot-com bubble burst; the creation and subsequent lack of oversight of Fannie Mae and Freddie Mac (DeYoung et al., 2013; Suárez, 2014). A wide range of factors that contributed to the crisis of 2008 made it difficult to gauge the impact of executive compensation accurately. However, executive compensation schemes played a role in the development of the crisis (DeYoung et al. 2013; Suárez, 2014).

Flush with cash because of aggressive interest rate cuts by the federal government after the dot-com bubble burst, banks began to invest aggressively in consumer credit markets (DeYoung et al., 2013; Suárez, 2014). This phenomenon manifested in an increase in subprime lending. Bank executives were willing to take this risk because they were confident that these activities would result in increased profits (Suárez, 2014). For a few years, banks recorded stellar profits and executives cashed in hundreds of millions of dollars in bonuses, options, and stock compensation (DeYoung et al., 2013; Suárez, 2014). To ensure maximized profits and minimized risks were achieved, bank executives packaged their mortgages in mortgage-backed securities (Suárez, 2014). However, bank

executives advocated at the time that they were offloading some of these subprime loans (DeYoung et al., 2013; Suárez, 2014).

Yang, Dolar, and Mo (2014) used a quantitative study to explore the relationship between CEO compensation and firm performance based on data of 3,286 different firms and 6,242 different CEOs from the S&P ExecuComp database. Their study was one of the very few studies that focused on the comparison of the pre- and post- financial crisis periods in 2007. Yang et al.'s study extended the dimension of similar studies. Yang et al. found that the relationship between CEO compensation and firm performance demonstrated different patterns between two periods. Based on these different patterns, they suggested that incentive-based contracts were not effective compensation tools in the aftermath of the crisis (Yang et al., 2014). Later, Guo, Jalal, and Khaksari (2015) used data from the Gindex to measure the dependent variable of corporate governance quality while using CEOs' age, tenure, and ROE of firms as control variables. The results showed that CEO compensation was negatively related with a bank taking risks or becoming a failed institution, for the periods both before and during the financial crisis (Guo et al., 2015).

Ultimately, executive compensation played only a minor role in the era of economic crisis (Yang et al., 2014). Bank executives, supplied with stock options, sought to increase profits. In doing so, they lowered their lending standards too much (DeYoung et al., 2013; Suárez, 2014). The executives were not entirely culpable, though; the federal government gave them immoderate amount of money to lend (DeYoung et al., 2013; Suárez, 2014). Bank executives who did not lend the cash available to them were losing

money; bank executives were inevitably going to find ways to invest, and the demand was in the mortgage market (DeYoung et al., 2013; Suárez, 2014). Stakeholders reasonably expected bank executives would have pursued such tactics regardless of the structure of their compensation packages, especially since they received guidance in that direction from the Federal Reserve (DeYoung et al., 2013; Suárez, 2014).

The controversy of executive compensation. Elson and Ferrere (2014) argued that excessive overcompensation departed from optimal market-based contracting, which originated from the mechanistic and arbitrary application of compensation peer group. They further pointed out the necessity of internal pay-setting systems to develop compensation standards based on the individual nature of the organization concerned, including the CEOs' current and historical performance, and competitiveness exhibited by different industries, firms, and business environments (Elson & Ferrere, 2014). Elson and Ferrere addressed this problem in the context of corporate law, which was different from most of the work reviewed from an economic perspective. Elson and Ferrere stressed the importance of pointing out a practical solution to prevent overcompensation and to better regulate the CEOs. They emphasized the importance of incorporating the individual characteristics of CEOs (Elson & Ferrere, 2014).

In part, the controversy can be traced to the poor optics that arose when executives made hundreds or thousands of times more than what their employees made. The question of an individual's value was a fair one in this context; the defense was also reasonable (Bhagat & Bolton, 2014; Paravisini, 2015). The market forces of supply and demand drove the market for executive talent. Generous compensation packages are

essential for attracting top talent. Without top talent, the company would not meet its objectives (Bhagat & Bolton, 2014; Paravisini, 2015). The issue is also relevant to the study on corporate governance by Zhu and Westphal (2014). These studies revealed that no matter how much compensation an executive receives, the structure of the compensation should align with objectives of the executive team with those of the shareholders (Bhagat & Bolton, 2014; Paravisini, 2015; Zhu & Westphal, 2014).

On the other hand, scholars argued executive compensation could be too high and thus cause a significant burden. In 2006, a survey revealed that 81% of BODs voted that CEO pay was too high (Zhu & Westphal, 2014). The underlying premise is that executive pay should be linked to performance. In many cases, the designed constructs justify the case. The rise in equity-based compensation schemes was primarily due to the belief that if management had an ownership stake in the firm, the management actions would align with the other owners' (shareholders') objectives (Paz & Zaidi, 2014). The tax structure at the time—Financial Accounting Standards Board Statement (FASB) No.123—supported the use of equity-based compensation by providing favorable tax status, which led to a proliferation of options-based compensation (Paz & Zaidi, 2014). The intent of options-based compensation was to resolve the agency problem, but ultimately it only added complexity to the agency problem (Chang, Hayes, & Hillegeist, 2015; Tosun, 2016). In many firms, executives have enough control over their compensation to build in some distance between their performance and their pay (Chang et al., 2015; Tosun, 2016).

The objective was to align the interests of management with those of shareholders, but both options and executive contracts are finite (Cole & Mehran, 2016). Therefore, the best interests of the executive team were to maximize value in the short run, to the point of options expiry. So long as the options were *in money* at the expiry date, the executives would receive their compensation (Cole & Mehran, 2016). This argument created a short-term orientation for the executives; while any given shareholder might hold the security for the short run, the shareholders as a group existed in perpetuity (Cole & Mehran, 2016). Their interests were for long-term growth and profitability, which was not congruent with the short-term orientation created using options. Indeed, some of the major accounting scandals of the early 2000s were driven by this time orientation conflict (Cole & Mehran, 2016). Members of the FASB recognized the problem and amended the treatment of equity-based compensation with Statement 123R, although other firms did not need the FASB to make the call for them (Paz & Zaidi, 2014). Companies such as Berkshire Hathaway have long-eschewed giant executive payouts; these companies have kept equity-based compensation focused on the long-term effects (Paz & Zaidi, 2014).

If executives are ignorant of the timing and strike price of their options, they should be more inclined to pursue the interests of the company, which would lead these executives to have no sense of urgency to drive up earnings before an expiry date (Neron, 2015). Executives might ultimately receive millions, which would depend strictly on performance. The temptation to fix earnings would disappear (Neron, 2015). On the other hand, an abundance of literature exists on the indication of executive compensation not

being competitive (Neron, 2015; Nickerson, 2017). The first argument that executive salaries were not too competitive is the free market argument; the market for executive talent is a free market, which is subject to the laws of demand and supply; the market participants might determine executive compensation (Nickerson, 2017). The factors that go into this calculation of worth vary, depending on the firm. For some firms, the BOD might believe it is essential to hire an experienced CEO. The CEO's compensation, even if in the tens of millions, is a small fraction of what the CEO is worth to the bottom line of the firm (Neron, 2015; Nickerson, 2017).

The free market argument could also be the cornerstone to refute the claims made by potential opponents. The gulf between workers' salaries and executive salaries relates to the worth of each participant to the organization (Fang & Shi, 2016; O'Reilly, Doerr, Caldwell, & Chatman, 2014). A good CEO could be worth millions to the company and might not be easily replaced. The free market argument holds true in the Berkshire Hathaway argument, which implies that market participants determine the optimal CEO compensation (Fang & Shi, 2016; O'Reilly, Doerr, et al., 2014).

Another argument is that executive talent must be well-compensated for attraction and retention. Such talent does take nonfinancial factors into consideration when choosing their employment situation, which is their prerogative (Giannetti & Metzger, 2015). Executives should, as rational actors, extract the highest possible package of financial and nonfinancial compensation (Giannetti & Metzger, 2015). A competitive environment could allow executives to receive their incentives (Giannetti & Metzger, 2015). Again, the BOD of a company chooses to pay these salaries because the

opportunity costs of not paying them are deemed to be too high (Giannetti & Metzger, 2015). The argument is that a properly constructed executive compensation plan will yield the desired results (Heron & Lie, 2017). Thus, the size of the compensation package will not determine the level of effectiveness; instead, the size of the compensation package will determine the structure of the package (Heron & Lie, 2017). Many firms have a high level of executive compensation matched by high performance. In most situations, scant publicity or outcry about the issue widely persists (Heron & Lie, 2017).

Members of the BODs must answer to their shareholders. In many cases, if shareholders are institutions and do not receive a good return, then shareholders start replacing board members (Giannetti & Metzger, 2015). The board, therefore, has a vested interest in attracting the type of talent that would keep the company competitive (Giannetti & Metzger, 2015). If executives' compensation packages are not competitive, BODs risk their jobs in addition to the profits of the company (Giannetti & Metzger, 2015). Previous studies have shown that the importance of acquisition of talent that is not expertise-specific to each position at best-performing companies (Neron, 2015; Nickerson, 2017). The highest performing companies build pools of talent from which they can draw, as needed (Giannetti & Metzger, 2015). Thus, talented people are inevitably underutilized at times. Executives' higher order needs are not always addressed. Thus, they must have a generous compensation, or when the time comes to move someone from the organization to a fulfilling higher order executive position, the talent would not be there (Giannetti & Metzger, 2015).

CEO compensation proponents point out that the bulk of the CEOs' excessive compensation comes in the form of stock or options (Heron & Lie, 2017; Sauset, Waller, & Wolff, 2015). Such instruments were introduced into executive compensation packages specifically to align the interests of management with those of shareholders (Heron & Lie, 2017). The shareholders and the BODs initiated the idea to protect shareholders' wealth (Huang & Wang, 2015). As well, the instances in which executives have abused the compensation system occurred. However, those executives often found themselves being prosecuted. Awarding bonuses to the CEOs with poor performance is not a good practice. Evidence indicates that reducing executive compensation sends a red flag to investors, causing rapid erosion of shareholder wealth as the stock price dropped (Heron & Lie, 2017). Regulating or scrapping the entire system of executive compensation is unreasonable simply because some firms are not good at designing executive compensation plans (Heron & Lie, 2017).

The free market philosophy underlays the beliefs of executive compensation not being too high. Advocates of the free market claimed that the market is irrational and favorable tax treatments encouraged equity-based compensation (Bolton, Mehran, & Shapiro 2015; Hitz & Müller-Bloch, 2015). By the time the tax treatment was changed, the concept had become standard practice; shareholders have only recently begun to exercise their rights in a meaningful way (Bolton et al., 2015). However, a handful of major institutional investors, such as the California Public Employees' Retirement System (CalPERS), still had strict policies regarding executive compensation (Hitz & Müller-Bloch, 2015).

While the CalPERS and protesters from the Occupy Wall Street movement opposed high executive compensation on financial grounds, forming the basis of most objections to executive compensation levels was due to economic and social inequality (Keister, 2014). The social-stratification view stemmed from the notion of patterned principles, where a social order with more than the role of government was to pull levers of power to bring reality closer than just social order (Keister, 2014). Executives' average compensations, as compared to those of workers, were high enough. Research showed the compensation—or payment gap—between the executives (CEOs or managers) and ordinary workers has increased rapidly every year (Shue & Townsend, 2017). Executives, as leaders of the workforce, play an important role in every organization and act as key members. They lead and manage the standards, processes, production, and quality control of an organization (Nickerson, 2017). The executives' high compensation rates are understandable because of executives' specific and crucial responsibilities (Nickerson, 2017). As stated above, the growing compensation gap between the executives and workers is a fundamental factor of inequality, which influences the environment of society and produces negative impacts (Keister, 2014).

Executives' high compensation rates have an impact not only on the social environment of the countries in which their firms operate but also on the economy of those countries. The growing inequality is not just because of salary or wage differences, but also about the executive shares and stock in the organization (Gao, Luo, & Tang, 2015). Executives also receive benefits in the form of allowances and bonuses. The BOD or the organization director invests too much to compensate the right person for the

executive-level job (Guo et al., 2015). The government could control the high compensation issue by implementing regulatory procedures and a more sophisticated tax system on such executive salary packages (Gao et al., 2015). The business community and executives usually consider regulations as government interference in business, which had a potential for yielding unstable factors to the government politically. Therefore, the executive compensation regulation system is not a good option to reduce or eliminate the inequality. On the other hand, taxation system could reduce the income inequality, and people could get benefits from the tax system (Gao et al., 2015).

Disagreements about the impact of firm size on CEOs' compensation and the relationship of firm size with CEOs' total compensation occurred in the financial services industry (Lin et al., 2013). CEOs' compensation relates not only to the size of firms, but also to the CEOs' tenure, both of which contribute to the overall compensation (Lin et al., 2013). However, evidence and research also indicated that while a relationship existed between firm size and CEO compensation, the relationship was sensitive to the period selected for the study (Banker et al., 2013). The reason being the existence of this relationship was not reported in research for the period from the 1940s to the early 1970s. To be consistent with previous studies, researchers reported that executive compensation was strongly and positively correlated with accounting returns (Banker et al., 2013; Lin et al., 2013). In addition, both accounting returns and market returns have a direct impact on executive compensation. Lin et al. found that regardless of the measurement of compensation (cash compensation only or total compensation), both accounting and market returns influenced executive compensation.

Executive compensation and firm performance. Hou, Lee, Stathopoulos, and Tong (2016) indicated that executive compensation structure could influence the development of enterprises, but the research findings vary widely. Moreover, different perspectives emerged on the variables and their influence factors on corporate performance (Hou et al., 2016). Most scholars advocated that the link between CEOs' compensation and performance of firms would ease the conflicts between shareholders' and executives' interests and help solve the problem of agency. High compensation for CEOs could improve the profitability of the corporation, as represented in annual revenue of the firm (Graham et al. 2012).

Hou et al. (2016) found the same result–equity compensation is helpful for motivating executives to create enterprise value. The authors discovered a strong correlation between executive remuneration and the market value of the firm (Hou et al., 2016). Banker et al. (2013) also found positive effects of CEO compensation, and showed the managerial ownership has a positive incentive effect and could thus significantly improve operating performance of the company; in other words, a positive correlation exists between executive compensation structure and growth in annual revenue of the main business. Banker et al. performed a multiple linear regression analysis using ROE and individual stock performance as predictor variables, and CEOs' salary, CEOs' bonus, and CEOs' equity compensation as criterion variables. They determined that from 1993 through 2006, using data of 15,512 CEOs, ROE and stock performance of an individual firm had a positive association with both CEOs' salary and CEOs' equity-based compensation (Banker et al., 2013).

Gibbons and Murphy conducted a survey of the entrepreneurs of the top 500 companies in *Happy Magazine*, and more than half of the survey participants indicated the financial index method was more appropriate than other methods for evaluating financial performance of firms (Graham et al., 2012). Empirical research of 367 companies listed on the New York Stock Exchange revealed that accounting indexes are a commonly used method for evaluating the performance of entrepreneurs instead of stock returns (Graham et al., 2012). In addition, Lin et al. (2013) reported that firm size, as measured by total assets of a firm, has a significantly positive relationship with CEOs' incentive compensation. Firm size is a measurement to differentiate the size of each firm by total assets of the firm (Lin et al., 2013).

In recent years, many organizations have increased the proportion of stock options in executive compensation structure (Fralich & Fan, 2015). Regarding the proportion of shareholding, Fralich and Fan (2015) found a positive correlation between managers' ownership and corporation performance. DeYoung et al. (2013) found that CEO compensation is significantly related to company characteristics, corporate governance mechanism, and other factors. In private enterprises and foreign investment holding companies, annual executive remuneration has a significant correlation with the annual revenue (DeYoung et al., 2013).

Scholars have found that executive compensation structure is closely related to the performance of corporations (Chakravarty & Grewal, 2016). Some researchers have carried out relevant empirical research on the mutual relationships of executive basic salary, bonuses, benefits, risks, and income. According to Cooper, Gulen, and Rau

(2016), the difficulty of distinguishing between the business performance and fixed salary might equate to a greater value in the compensation structure. If the shareholding ratio of CEOs was high, the cash reward would be relatively low (Chakravarty & Grewal, 2016). Individual ownership would replace the salary incentive, and there would be a negative correlation between incentive compensation and executive ownership (Cooper et al., 2016). Increased executive ownership could help coordinate the interests between executives and owners, and potentially reduce the agency costs (Chakravarty & Grewal, 2016).

Nulla (2013a) used independent variables of ROE and annual revenue, and the dependent variable of CEOs' total compensation in the study. The results indicated the existence of a positive relationship between CEO compensation and CEO age, using accounting performance as a benchmark (Nulla, 2013a). Graham et al. (2012) contributed to the study of executive compensation by modeling the fixed effect of managers, which refers to the heterogeneity of the managerial talents and human capital. Therefore, the model may explain some of the high levels of executive compensations. Graham et al. suggested that executives with high compensation and increased corporate performance are identified to be highly aligned. Furthermore, Graham et al. found that managers with a higher than expected level of compensation would take measures to prevent losing their jobs and the excess compensation by choosing lower leverage. The authors pointed out that executives' human capital accounts for better corporate performance (Graham et al., 2012).

Brisker and Wang (2017) used a quantitative correlational design to explore the relationship between CEOs' deferred compensation, capital structure of the firm, and firm performance. They used the deferred compensation data set to measure CEOs' aversion to risk. Brisker and Wang also provided firsthand evidence of the relationship between CEO risk preferences and firm risk, such as stock return volatility, earnings volatility, and the riskiness of financial and investment policies. The results indicated that risk-taking CEOs pursue risky financial and investment firm policies, based on the behavioral consistency theory to demonstrate that CEOs act consistency across personal and professional situations (Brisker & Wang, 2017). Meanwhile, Alves, Couto, and Francisco (2016) used a quantitative correlational method to examine the link between CEOs' compensation and characteristic of firms, including shareholders' return, and stakeholders' characteristics. Alves et al. used a unique, hand-collected data set of 450 Portuguese companies listed on the Portugal Stock Exchange for the period of 2002–2011. The dependent variable was the log of CEO earnings, while the independent variables included the log of assets, dividend yield, CEO age, CEO tenure, stock earnings, and so on (Alves et al., 2016). Alves et al. used the ordinary least squares regression analysis at the significance level of 1%, 5%, and 10%, resulting in some variables losing statistical significance. The results indicated that, in comparison with the previous research findings for CEOs in other countries, CEO earnings in Portugal were at the consistent level (Alves et al., 2016).

Alves et al. (2016) also found that CEO earnings were higher in large firms, which yielded a higher level of dividend. Higher CEO age drove the earnings up; CEOs

with higher education levels had lower earnings (Alves et al., 2016; Falato et al, 2015). Regarding the characteristics of BODs, the larger the compensation and governance committee is, where more foreign directors included, the higher earnings CEOs receive (Alves et al., 2016). However, firms in which the CEOs who also served as chairmen of BODs received lower earnings, while larger size of the board and more independent directors involved. Alves et al. suggested and validated the linkage between CEOs' compensation and characteristics of the firm, based on the new insights to determinants of CEOs' earnings.

Zou, Zeng, Lin, and Xie (2015) conducted an empirical investigation of the relationship between top executives' compensation and environmental performance in China. The result indicated that best-performing executives' cash compensation has a positive relation with company environmental performance, whereas equity ownership has a negative relation with company environmental performance (Zou et al., 2015). The results also showed that, in these relationships, the competition played a moderating role. In more competitive industries, pay and ownership have stronger relationships with environmental performance (Zou et al., 2015). Smirnova and Zavertiaeva (2017) examined the relationship between CEOs' compensation and performance of firms based on data of large European firms from 2009 to 2013. The results suggested that company market efficiency has a high intercorrelation with CEOs' compensation (Smirnova & Zavertiaeva, 2017). Accounting-based performance, such as ROA, was found to have a correlation with the cash and bonus portions of CEOs' compensation, while incentive

compensation might have an association with performance of the firm (Smirnova & Zavertiaeva, 2017).

However, some scholars also opined that executive compensation is negatively correlated with business growth of the firm (Banker et al., 2013). Banker et al. found ROE is negatively related to a CEO's bonus. Banker et al. also concluded that the bonus has a negative relationship to past performance. Compensation committees should evaluate the use of salary and bonuses and ensure that each method of compensation aligns with the performance of the firm (Chen, Chen, et al, 2014; Veliyath et al., 2016). Often, the size of a BOD also has relevance as BOD size is related to risk-taking choices within a firm (Huang & Wang, 2015). Huang and Wang determined that smaller BODs increased the risk-taking behavior of chief executives through the larger incentives in their compensation. Huang and Wang also concluded that CEOs working with the oversight of smaller BODs would elect less leverage (debt), but would take on higher risk in projects than those CEOs who had the oversight of a larger BOD. CEO tenure was used as a measurement of the number of years a CEO has held his or her position (Lin et al., 2013).

In addition, Kim, Kogut, and Yang (2015) analyzed the drastic shift of income inequality in the United States and blamed executive compensation for being the primary source. They proposed three potential explanations, including interlocking directorates, peer groups, and educational networks (Kim et al., 2015). Kim et al. failed to find supporting statistical evidence of the explanatory power of peer and education network on excessively high executive compensation. Therefore, managerial talent could not be

the major source of rapid growth of executive compensations, which were growing faster than the market valuation or size of the firm (Kim et al., 2015). The only justified explanation of their statistical analysis was corporate director networks (Withisuphakorn & Jiraporn, 2017). Namely, it was the power of executives and interlocking directorates to blame for the speedy growth of executive compensations (Withisuphakorn & Jiraporn, 2017).

Jenter and Kanaan (2015) found similar results as to the study of Kim et al. (2015). Jenter and Kanaan examined the probability of CEO dismissal against corporate performance by using the hand-collected data over the period of 1993–2009. The results suggested that CEOs were more likely to have dismissals in a market downturn than during a boom period, which was an exogenous factor beyond the CEOs' control (Jenter & Kanaan, 2015). Jenter and Kanaan proposed the explanation that performance in a recession was more indicative of managerial ability and quality of the firm-CEO match. The implication of this literature was to use relative performance measures such as benchmark performance against peer performance, or value-weighted industry or market performance (Jenter & Kanaan, 2015).

The researchers asserted that CEOs' turnover should be an extreme case of pay-for-performance because peer performance affected not only compensation, but also CEOs' turnover (Jenter & Kanaan, 2015). Even though Jenter and Kanaan pointed out that CEO compensation can lead to innovation, Brisker et al. (2014) concluded that it can lead to less risk taking, which can also be detrimental. Another concern regarding incentives paid through stock options was the unintended consequence of creating risk

aversion for the CEO (Brisker et al., 2014). Risk aversion could occur if the CEO has most of his or her wealth concentrated in stock options and thus tied to the value of the firm (Brisker et al., 2014; Heron & Lie, 2017). CEOs in a situation with wealth tied directly to the firm value may be hesitant and reject positive net present value projects, which were too risky (Heron & Lie, 2017).

Coles, Daniel, and Naveen (2006) used a quantitative study to examine the relationship between an important organizational feature, the structure of managerial compensation, and value-critical managerial decisions—specifically, the relationship between managerial compensation, investment policy, debt policy, and firm risks. They used the S&P ExecuComp database to collect data of selected CEOs (Coles et al., 2006). However, Coles et al. did not identify the conceptual framework on which they based the test; they concluded that higher sensitivity of CEOs' wealth to stock volatility (vega) implements riskier policy choices. Coles et al. also found that riskier policy choices lead to compensation structures with higher vega and lower delta. Stock return volatility was found to have a positive effect on both vega and delta (Coles et al., 2006).

Similar to Coles et al. (2006)'s study, Brisker et al. (2014) empirically examined whether CEOs had the incentive to time the seasoned equity offerings (SEOs) when they thought the stock price was overvalued in the market while they held high equity-based compensation. They found that the firms with that kind of CEOs would experience abnormally low stock returns and relatively low operating performance in the 3-year period following the SEOs (Brisker et al., 2014). The authors concluded that CEOs with a

high level of equity-based compensation was self-motivated by timing SEOs when stocks were overpriced (Brisker et al., 2014).

Bebchuk, Cremers, and Peyer (2011) investigated the relationship between CEO pay slice (CPS) and the value, performance, and behavior of public firms. The results were based on data collected from the Compustat and ExecuComp databases for the period of 1993–2004, using regression analysis with control variables and correlation analysis (Bebchuk et al., 2011). Bebchuk et al. determined that CPS has a negative impact on firm value, as well as negative correlation against accounting profitability, stock return accompanying acquisitions, performance sensitivity of CEO turnover, and stock market return. Moreover, CPS has an association with higher odds of lucky grants with low prices for CEOs. Higher CPS would lead to a series of risks and further impact corporate performance (Withisuphakorn & Jiraporn, 2017). Higher CPS represents CEOs' superior power over the boards, as well as greater extent for CEOs to extract payment, which was still in line with the argument in the framework of agency theory (Bebchuk et al., 2011; Withisuphakorn & Jiraporn, 2017).

Shim and Kim (2015) conducted Pearson's correlation and ordinary least square (OLS) regression to test the relationship between CEO compensation and corporate performance; the results indicated that market-based performance measures are strongly correlated with CEO compensation in the pre-*Sarbanes-Oxley (SOX) Act* period. Results of research by Cooper et al. (2016) indicated that corporate performance has no correlation with executive compensation. Cooper et al. also had different explanations for the causes of no correlation between executive compensation and firm growth. However,

accounting-based performance measures correlated positively with CEO compensation in the post-SOX period. The results indicated that the *SOX Act* played a vital role in explaining changes in the relationship between performance expectations of firms and CEOs' compensation (Shim & Kim, 2015). In brief, results of much research have revealed that executive compensation structure has a significant influence on executive behavior and a strong incentive effect on business growth.

Executive compensation in the banking industry. Studies have shown the unique characteristics of the banking sector that make the nature of CEOs' compensation unlike that of other industries (Cerasi & Oliviero, 2015; Leventis, Dimitropoulos, & Owusu-Ansah, 2013; Liu, Padgett, & Varotto, 2017; Nguyen, Nguyen, & Yin, 2015). Leventis et al. conducted a quantitative correlational study to examine the relationship between the corporate governance and the performance (with accounting conservatism) of banks. The authors discussed the importance of having an effective corporate governance to banking corporations due to the information asymmetry (Nguyen et al., 2015). Levantis et al. identified executive compensation as a major component of corporate governance while using earnings per share and the buy-and-hold stock return as the variables of measurement to financial performance. The authors selected 421 publicly listed commercial banks in the United States; during the sample period of 2003–2009, where 47% of banks from the sample reported a negative stock return in a given year (Leventis et al., 2013). Using a Pearson's pairwise correlation test for data analysis, Leventis et al. found banks with better incentives for management did not necessarily perform well in terms of stock return and earnings. However, Leventis et al. also found

that banking CEOs received high compensation levels for boosting the financial performance of their firms. The authors suggested that BODs of banks should engage in the practice of conservatism to reduce financial risks (Leventis et al., 2013).

Cerasi and Oliviero (2015) measured the corporate performance from two periods: before the financial crisis (2005–2006) and during the financial crisis (2007–2008). Cerasi and Oliviero studied the relationship between CEOs' financial incentives and the volatility of performance by banks during the financial crisis. In a similar study, Liu et al. (2017) observed how executive compensation changes might relate to corporate governance by using a sample of 214 U.S. banking mergers from the Thomson ONE Banker database. Cerasi and Oliviero divided the performance measurements into two different groups: one group included ROA, market return from stock prices, capital ratio, book value, and total assets for 2005–2006; the other group was buy-and-hold return and its standard deviation for 2007–2008. The authors employed new data sources combined from Bankscope and S&P Capital IQ-People Intelligence databases for 116 large banks worldwide (Cerasi & Oliviero, 2015). Results of regression analysis revealed that banks with better CEOs' financial incentives had higher volatility, lower buy-and-hold returns amid the crisis, and higher Tobin's Q before the crisis (Cerasi & Oliviero, 2015). The implication was that the relationship between two variables could be dynamic and vary over time (Cerasi & Oliviero, 2015).

To measure CEOs' compensation, Cerasi and Oliviero (2015) applied the definitions that consisted of variables of cash bonus over salary, equity bonus over salary, total bonus over salary, and value of total compensation. They found a lack of evidence

for a relation between CEOs' compensation and performance of firms from the sample data (Cerasi & Oliviero, 2015). However, Liu et al. (2017) initially obtained a sample size of 478, from which they reduced the sample size by applying certain criteria such as whether the deal was closed between the years 1995–2012, whether bidder and target firm were commercial banks. For CEO compensation, the authors collected data manually from financial statements that were available from the SEC EDGAR website (Liu et al., 2017).

Liu et al. (2017) developed hypotheses based whether CEOs' compensation is at an optimal level when changes in compensation have a positive relationship with performance of the firm, which was not affected by the articulation of corporate governance. A corporate governance index (CGI) contains a set of variables that measure the wellness of overall corporate governance (Iqbal & Javed, 2017; Liu et al., 2017). The authors found that CGI increased throughout the time span; however, the differences between the sample period of 2004–2012 and 1995–2003 had a statistical significance of the mean values of CGI (Liu et al., 2017). Such a result coincided with the introduction of the SOX Act in 2002 (Liu et al., 2017; Shim & Kim, 2015). By using a series of regression analyses, Liu et al. concluded that changes in CEOs' salary for bank mergers had a positive relationship with the performance of bidding banks, and that this performance did not have a relationship with the CGI. Liu et al. stated that being satisfied with the optimal contracting hypothesis, meaning the banking CEO compensation settings aligned with shareholders' interests. Likewise, changes to CEOs' cash bonus for

bank mergers had a negative relationship with the firms' performance, which was clearly influence by the CGI (Liu et al., 2017).

In contrast to pay-for-performance sensitivity, DeYoung et al. (2013) studied pay-risk sensitivity, namely the change of CEOs' compensation against stock volatility. Guo et al. (2015) investigated whether CEOs' compensation composition played a role in promoting risk-taking behaviors in the banking industry. Prager (2014) examined the relationship between risk management, corporate governance, and bank performance in the context of financial regulation. Guo et al. conducted a quantitative regression study to examine how CEO compensation composition relates to the incentive of banks for risk taking. The study was also about the examination of the relationship between banking CEOs' compensation and changes in risk-taking opportunities before and during the financial crisis (Guo et al., 2015).

DeYoung et al. (2013) justified the link between risk-taking incentives to financially risky business policies. Banking CEOs were not only aware of the risk-taking behaviors, but also acted in response to the incentives of their commercial contracts. DeYoung et al. also pointed out the bank boards were monitoring the risk outcomes by adjusting proper compensation contracts, especially for those banks with a large proportion of income from nontraditional activities. The authors grasped the unique characteristics of the banking sector and the implied incentives in contract, which, although not be a quantitative measurement, might have played an important role in determining CEOs' compensation and influencing CEOs' behavior (DeYoung et al., 2013).

Guo et al. (2015) collected data from the ExecuComp database for top executives' compensation and from the Bankscope database for financial statements, respectively, for a sample of publicly traded banking companies between 1992 and 2008 (before and during the financial crisis). The measurement of the independent variable of total compensation was the maximum of the sum of salary, bonus, long-term incentive plan payouts, other annual, restricted stock grants, and all other value of option grants (Guo et al., 2015). As well, Prager (2014) proposed to answer the questions that emerged during the financial crisis and pointed out that financial firms should be different from nonfinancial firms. Prager summarized previous studies and results by conducting a literature review study to answer the question of whether misaligned incentive and mismanagement existed for investment banks, mortgage funding corporations, and other credit rating agencies. Prager collected sample data of literature for U.S. and European banks and found that banks in which the chief risk officer (CRO) reported to the board rather than to CEO would have higher stock returns and ROE during the financial crisis. Therefore, they concluded that CROs might be able to perform their jobs to restrain CEOs from taking risky actions (Prager, 2014).

Transition

In Section 1, I presented the problem underlying the intended study. Also presented were the purpose of the intended study, the nature of the intended study, the research question, hypotheses, the theoretical framework, the operational definitions, the assumptions, limitations, and delimitations, implications for social change, and a review of the professional and academic literature. Results of the literature review indicated the

need for the present study, the purpose of which was to examine the existence of a predictive relationship between ROE of firms, annual revenues of firms, and CEOs' total compensation (including salary, cash bonuses, bonuses in stock, and bonuses in options).

In Section 2, I discuss the project, which includes a restatement of the problem, the role of the researcher, the participants, the research method and design, the population and sampling, ethical considerations, instrumentation, data collection technique, data analysis process, and the study validity. In Section 3, I present the data analysis results, application to business practice, implication to social change, recommendations for future studies, and reflections.

Section 2: The Project

This section includes an overview of the methodology and design used in this study. I discuss the selection and justification of the research method and design in detail. I also present the (a) role of the research, (b) research participants, (c) instrumentation used for data collection, (d) consideration of ethical research, (e) techniques of data collection, and (f) data analysis procedures. I conclude this section by addressing the threats to study validity.

Purpose Statement

The purpose of this quantitative, correlational study was to examine the predictive relationship between ROE of firms, annual revenues of firms, and CEOs' total compensation (including salary, cash bonuses, bonuses in stock, and bonuses in options). The independent variables (predictors) were ROE of the firm and annual revenue the firm. The dependent variable (criterion) was CEO's total compensation. Archival data for U.S. publicly traded banks from 2010 to 2015 were used to quantify both the predictor variables and the criterion variable. Data were available in firm-year format.

This study may contribute to social change by providing new information that can assist individuals on BODs when making decisions to incentivize CEOs, such as including various types of bonuses in CEOs' compensation packages. Misalignment between CEOs' compensation and performance of firms may be of concern to the public (Nulla, 2013b). However, the general public and the other stakeholders might have limited awareness about the extent to which such a misalignment might have a negative impact on the financial performance of firms. This study could lead BODs to a better

understanding of how firms' financial performance should affect CEOs' compensation, which may contribute to improved public perception.

Role of the Researcher

My role as a researcher in the data collection process of this quantitative correlational study was to ensure careful selection of data sources and the validity of study results. I had to ensure that data from publicly available sources used in this study were collected in a reliable and valid manner. My research role also encompassed data analysis of the final data sets. Bozkurt, Akgun-Ozbek, and Zawacki-Richter (2017) reviewed previous studies and concluded that researchers can be learners or observers who draw and present conclusions from the synthesis of data and previous findings. Brett et al. (2014) summarized the researchers' role as ensuring that the research conducted has high quality by analyzing relevant scientific data in detail and with care.

Roulston and Shelton (2015) stated that researchers must be objective, neutral, and impartial in the research process. To ensure that researchers do not introduce personal biases affecting statistical analysis, researchers must be able to state the perspective of participants before undertaking the data collection (Coburn & Penuel, 2016). My relationship with the topic of the study was intentional because I demonstrated great interest in quantitative correlational studies. I accessed archives of the S&P ExecuComp and S&P Compustat databases, which were publicly available data. My relationship with participants was neutral and independent. I targeted the U.S. banking industry because of the interests from the identified gaps in the literature review and my previous work inside of it.

While the role of the researcher is to initialize the review process and avoid potential ethical dilemmas in the research (Page & Nyeboer, 2017), members of institutional review boards (IRB) ensure that research conforms with practices, protocols, and other regulatory aspects articulated in the *Belmont Report*, which contains a summary of basic ethical principles and guidelines for research involving human subjects (Fiske & Hauser, 2014). The *Belmont Report* includes the principles of respect for persons, beneficence, and justice (Fiske & Hauser, 2014). These principles have led researchers to apply for following requirements: (a) informed consent, (b) risk and benefits analysis, and (c) selection of subjects (Friesen, Kearns, Redman, & Caplan, 2017; Jones & McCullough, 2015). These guidelines and applications did not apply to this study because I did not involve human subjects in my research.

Participants

For this study, I used archival data sources throughout and did not make use of human subjects. Cornelissen (2016) asserted that using secondary data analysis ensures not only the generalizability of findings but also the likelihood of decreasing ethical risks. The use of archival data was the most appropriate method for addressing the research questions for this study. Johnston (2014) suggested that researchers should select the appropriate data collection method that may save time, effort, and resources. All data were sourced from the archives of S&P ExecuComp and S&P Compustat databases, which were publicly available. Moore (2014) also conducted research using archival data in the U.S. health services industry. I did not need to create any strategies for gaining permission to access the data used in this study (see Appendix C).

Archival Data of Compensation

The S&P ExecuComp database was the source for data on CEO compensation. The S&P ExecuComp database contains annual compensation data on the top five executive officers of all S&P 1000 companies since 1992; these records represent more than 3,300 companies and data on 39,000 executives (Gillan, Hartzell, Koch, & Starks, 2017). Executive data consist of compensation information, such as salary, cash bonuses, stock options, and other bonuses (Gillan et al., 2017). In this study, I targeted only CEOs' compensation data of commercial banking companies—SIC 6020.

The S&P ExecuComp database is an accurate and unbiased collection of executive compensation data sourced from proxy statements of annual reports for included firms (Gillan et al., 2017). Mathuva (2014) argued that although researchers have raised concerns about the reliability of these archival data, the financial data reports have gone through the audit and validation process to attest to their reliability. The S&P ExecuComp is popular in published research (Gillan et al., 2017). Falato et al. (2015) conducted research to examine the relationship between the financial performance of firms, CEOs' skills, and CEOs' compensation by using archival data from the S&P ExecuComp database. Guo et al. (2015) also conducted a quantitative regression analysis, using the S&P data, to determine the extent to which salaries, cash bonuses, and long-term incentives of executives were related to corporates' risk-taking activities. Based on this research, I concluded that the archival data from the S&P ExecuComp database are an accurate representation of CEOs' compensation, which was the criterion variable in the present study.

Archival Data of Financial Performance

The S&P Compustat database was the source of information on ROE and annual revenue of companies. The S&P Compustat database is a resource financial, statistical and market information on companies' performance worldwide, which has wide usage in research. (Casey, Gao, Kirschenheiter, Li, & Pandit, 2015; Chen & Waters, 2017). Bragaw and Misangyi (2017) examined the relationship between CEOs' prior experiences, initial compensation, and market-based performance of firms using archival data from the S&P Compustat database. The S&P Compustat database contains information sourced from the financial statements of publicly traded companies (Casey et al., 2015). Johnston (2014) stated that data from financial reports are reliable due to the auditing and validating processes of those publicly traded firms. Financial reporting indices were the best representation of financial performance of firms (Melitski, & Manoharan, 2014). ROE and annual revenue were predictor variables derived from the research question of this study. Therefore, I used archival data from the S&P Compustat database to address the research question.

Research Method and Design

Research Method

I relied on quantitative methodology to address the research question. This approach was appropriate for the study because the study involved testing the existence of a relationship between two sets of variables. Quantitative method is a type of empirical research for testing statistical hypotheses under the framework of a theory (Trafimow, 2014). This study also involved claims (hypotheses), which consisted of variables.

Quantitative method concerns the development of hypotheses and testing hypotheses (Choy, 2014). Variables should be measurable using numbers and analyzable with statistical techniques (Ingham-Broomfield, 2014).

A qualitative approach was not appropriate for the study because qualitative research focuses on establishing a theory, a definition, or the understanding of a phenomenon (Cho & Lee, 2014). Qualitative method also involves different approaches regarding data analysis process; typically, qualitative researchers convert data into themes or patterns for analysis (Daigneault, 2014). Finally, the qualitative research method was not suitable for analyzing or testing the relationship between numerically valued variables (Sandelowski, 2014).

A mixed-methods approach was also not appropriate for this study. Mixed-methods research combines both qualitative and quantitative aspects into understanding and verifying complex phenomena (Mayoh & Onwuegbuzie, 2015). The mixed methods rely on quantitative data to yield statistical results, which in turn leads to the development of specific follow-up questions for in-depth understanding of the process and underlying relationship (Birchall et al., 2016). In addition, some researchers argued that the mixed methods provide increased accuracy for the study (Özdemir & Adan, 2014). However, this study did not have the need for understanding a phenomenon.

Research Design

A correlational design was the most suitable approach for this study. The focus of the study was on the examination of the relationship between variables. Quantitative researchers measure two or more sets of variables and use findings of correlational design

to determine the relationship between variables (Curtis, Comiskey, & Dempsey, 2016). The correlational design involves using natural and continuous variables from the interested population, where no manipulation of the variable is necessary (Rucker, McShane, & Preacher, 2015). Alves et al. (2016) conducted research using correlational design to examine the relationship between dependent variables and independent variables. Hence, the correlational design was suitable for the study.

The traditional experimental design was not appropriate for this study. First, the experimental design is best for studying the main effects and interactions between more sets of process variables or factors (Barka et al., 2014). Second, the experimental design often involves the manipulation of variables to understand how changes in one variable affect other variables (Rucker et al., 2015). Finally, researchers conduct scientific experimental design to find the optimal values of variables, rather than finding the relationship between variables (Callao, 2014). The purposes of employing an experimental design exceeded the scope for this study.

The quasi-experimental design was also not appropriate for this study. Quasi-experimental designs are unlike experimental designs that test the causal consequences of treatments outside of the laboratory (Cook, 2015). Furthermore, quasi-experimental design does not fulfill the requirement of this study to test the relationship between variables. This quantitative design was concerned with yielding insights on the short-term results that need follow-up, as well as publication biases (Irvin & Kaplan, 2014). Therefore, the correlational design was the only suitable one for addressing the research question and testing hypotheses of the study.

Population and Sampling

The general population of this study was archival data of CEOs' compensation, ROE, and annual revenue, from all publically traded commercial banks with a SIC code of 6020, including SIC codes of 6021 (national commercial banks), 6022 (state commercial banks), and 6029 (commercial banks, not elsewhere classified) located within the United States. I designated this population because the research question was to discover whether a predictive relationship exists between ROE of a firm, annual revenue of a firm, and CEO's compensation. The population of a study should logically stem from the research question of the study, as well as a sampling plan (Palinkas et al., 2015). Palinkas et al. also stated that quantitative study emphasizes the generality of knowledge is the representative of the population.

The randomly selected samples were from archival data of U.S.-based publicly traded commercial banks. This sampling method was a probabilistic simple random procedure. First, the sample of population should be randomized (probabilistic) because the sampling must have representativeness of the population (Anderson et al., 2015). Second, employing such a sampling method was a feasible and efficient data collection process. Duan, Bhaumik, Palinkas, and Hoagwood (2015) alleged that convenience sampling may achieve the maximum effectiveness of limited resources. However, Peterson and Merunka (2014) argued that statistical inferences using a convenience sample would cause a limitation to generalize results to a different population, which meant the study would have limited reproducibility. Probabilistic sampling was optimal because the research results could extend the generalization (Kandola, Banner, O'Keefe-

McCarthy, & Jassal, 2014). Third, random sampling ensures that every member of the population has an equal opportunity to be selected (Emerson, 2015). I used computer-generated random numbers assigned to members of the population for sampling in this study.

The simple random sampling technique has both its strengths and weaknesses. For instance, this approach has the benefit of requiring minimal knowledge of the target population (Kandola et al., 2014). Kandola et al. further concluded that using simple random sampling can achieve high internal and external validity. On the other hand, the downside of using such a method can be (a) high cost, (b) requiring a sampling frame, or (c) introducing large sampling errors (Kandola et al., 2014). Therefore, researchers should take the size of samples into considerations to ensure the generalizability of the research, as well as balance the use of resources for their research (Anderson et al., 2015).

In this study, I used G*Power (Version 3.1.9.2) to calculate the sample size. G*Power is a free and stand-alone computer program, which researchers commonly use to perform statistical power analysis and tests in social and behavioral research (Macfarlane et al., 2015). G*Power Version 3.1 provided enhancements to previous versions and included procedures for correlation and regression analysis (Faul, Erdfelder, Lang, & Buchner, 2009). Specifically, researchers use a priori power analysis to estimate the sample size before conducting the research (Walum, Waldman, & Young, 2016). In the research planning phase, researchers must anticipate an effect size (the strength of correlation) to estimate the sample size for a given power level (1- β) and significance

level (α). Tomczak and Tomczak (2014) explained that a small effect size would lead to the requirement of a large sample size to reach a certain statistical significance level, whereas a large effect size leads to small sample size. Walum et al. also suggested using a standardized *Cohen's* effect sizes (of 0.1 = small, 0.3 = medium, and 0.5 = large) or a reference from the literature reviews.

I conducted a priori power analysis using the following values to calculate the sample size: $\alpha = 0.05$; power $(1- \beta) = 0.95$; and anticipated effect size = 0.2. The result of the calculation was 81 for the required sample size. Bosco et al. (2015) argued that the benchmarks for effect size had an update of 0.2, 0.5, and 0.8 for small, medium, and large, respectively. Bosco et al. further observed different correlational studies with the effect size ranging from 0.10 to 0.80 and concluded that the distribution of effect size exhibited a mapping to Cohen's benchmarks. Tomczak and Tomczak (2014) further asserted that researchers had a difficulty in determining an accurate effect size and suggested selecting an effect size between 0.2 and 0.8. I also reviewed other doctoral studies from both Walden and other universities to get an idea of how these researchers decided on an effect size value. Moore (2014) conducted the study with a value of effect size at 0.498 and suggested using a larger sample size to address an outstanding generalizability. Heron (2015) studied the relationship between CEOs' compensation and financial performance of firms with an effect size of 0.35 to be able to reject the null hypothesis, resulting in support of the hypothesis of the existence on a positive relationship between CEO's compensation and financial performance of the firm.

Ethical Research

All data in this analysis were publicly available, historical data from archival sources. Johnston (2014) suggested that using existing data sets could save time and accelerate the pace of research, provided the same content from the original data collection was available. However, Cho et al. (2015) pointed out that the existing regulation also allowed the researchers to alter or waive the informed consent when the research involved no more than minimal risks to human subjects. Dolan (2015) emphasized that researchers must invoke the informed consent process when conducting research on human subjects. The participants of this study included archived data sets that were publicly available, rather than human subjects. As such, an informed consent process was not applicable. However, the Walden University IRB needed to review and approve the application before the data collection process could commence (see Appendix B). The IRB approval number for the study was 08-03-17-0454701.

Ethical researchers must demonstrate receptiveness, openness, and fairness to participating human subjects regarding acquisition of informed consents (Simon, Klein, & Schartz, 2014). Practically, offering an incentive to nudge participants to making their judgments is not ethically protective of personal autonomy (Ploug & Holm, 2015). Additionally, the data collection process did not include human subjects; therefore, concerns related to incentives for participants was also not applicable.

Linder, Elek, and Calderon (2014) raised concerns regarding the ethical challenge of maintaining confidentiality or anonymity of participants. Because participants of this study were publicly available data, I did not need to intentionally protect organizations by

excluding the identity information in any part of the study. Data used in this analysis were stored on an internal hard drive of a password-protected computer during the study period. These data were transferred to a flash drive and continued to be stored for 5 years, after which time I will physically destroy the flash drive.

Instrumentation

In this study, I relied on a Microsoft Excel spreadsheet as the instrumentation for comparing, filtering, storing, and processing raw data. The version of Microsoft Excel was 2016 through a Microsoft Office 365 subscription. This instrumentation was suitable for the study because variables and their measurements were numerical formats, which could be easily managed and processed by the instrument. Omair (2015) discussed and emphasized the importance of using numerical data because the essence of quantitative research is to test hypotheses. Guetterman et al. (2015) suggested collecting data with a series of scales for quantitative studies.

This instrument was a widely available product, which I did not have to acquire access permission to use it for the research (see Appendix C). Ingham-Broomfield (2014) noted that researchers should realize appropriateness of the research design regarding the use of or further developing an effective research instrument. Heale and Twycross (2015) asserted that researchers must assess the validity of the instrument to ensure it measures what it is supposed to measure if the researchers use an existing instrument. The reliability of the instrument reflects the research quality, which relates to the stability and consistency of the instrument (Heale & Twycross, 2015). In this study, I did not have any difficulties in neither making sure of the validity of the instrument nor adjusting the

research instrument, because data sources had the same format as the instrument (delivered as .csv or .xls files). Also, I did not have any concerns with the reliability of the instrument because I collected archival data.

The concepts measured by the instrument were CEOs' total compensation (including salary, cash bonuses, bonuses in stock, and bonuses in options), ROE, and annual revenues of firms for publicly traded commercial banks in the United States from 2010 to 2015. The predictor variables (ROE and annual revenue) were archival data downloaded from the S&P Compustat database, which were in measurements of the ratio in the instrument (see Appendix D for a sample of the raw data). The criterion variables were from the S&P ExecuComp database, which were in ratio as well. The other variables such as company name and CEO name were in ordinal measurements. I used the instrument for collecting data of U.S. commercial banks (SIC 6020). Moore (2014) used the same instrument to collect data from the U.S. health insurance industry (SIC 6320 and 6321). Chakravarty and Grewal (2016) collected data for all publicly held companies within electric and electronic industries based on SIC codes 3570–3695. Cremers and Grinstein (2014) collected data for all aspects of CEOs' compensation from the S&P ExecuComp database for the period of 1993–2005.

Data Collection Technique

The research question of this study addressed the existence of a predictive relationship between ROE of firms, annual revenues of firms, and CEOs' total compensation within the U.S. banking industry. Hence, ROE of firms, annual revenues of firms, and CEOs' compensation were essential information in the data collection process.

I collected data electronically from the S&P ExecuComp and S&P Compustat databases via a querying portal, and downloaded data in Microsoft Excel file format. After data cleaning process, the raw data went through an import process to data analysis software (IBM SPSS, Version 21.0), which was followed by a merging step. I only included archival data from years 2010 to 2015, with a filter of SIC code 6020 for commercial banks.

The reason for selecting such a data collection technique was due to data availability, relevance, recentness, and convenience. Eckford and Barnett (2016) stated that the method of online data collection had benefits of obviating the need for preliminary data entry and saving the cost of instrument administration. Electronic forms of data collection make the data processing step easier than paper forms (Li et al., 2015). Wohlin and Aurum (2015) suggested that researchers who had difficulties with accessing human participants might choose to collect archival data for analysis. Also, using Microsoft Excel for web-based data mining was a relatively new and effective technique compared to the other existing ones (Makwana & Rathod, 2014). On the other hand, the instrument for data collection was also compatible with the statistical analysis software utilized for the study. IBM SPSS can convert data from Microsoft Excel files (Dezhi & Shuang, 2014).

Although the archival data collection technique had the advantage of presenting data sources in a structured and organized fashion (Li et al., 2015), such a technique might also have its disadvantages. Briones and Benham (2017) argued that the Internet-based data collection method has the selection bias toward the population who has the

Internet access. Wohlin and Aurum (2015) advocated that researchers should combine archival data collection with other data collection techniques to mitigate the impact of missing data components. Lastly, archival data sources were normally not intended for scientific research purposes, which would need some degree of data interpretation (Kandampully et al., 2014).

This study did not need to include a pilot study. Sajid et al. (2016) summarized that the purpose of performing a pilot study is to assess the feasibility of the main study and derive preliminary estimators for future design. However, Moore (2014) already conducted a similar research using a different population from this study, which could be a proof of the feasibility of the study. Lancaster (2015) stated that the primary function of a pilot study was to evaluate the possibility of success and threats to the validity of the study with a small sample size. Yang et al. (2014) used a large sample size in a quantitative study to test the relationship between executive compensation and firm performance. The pilot study also can be a simulation to the main study with randomization in place (Whitehead, Sully, & Campbell, 2014). Shim and Kim (2015) conducted a quantitative research study to examine the relationship between executives' compensation and performance of firms using randomly selected samples from the research population. These previous studies have already indicated that the study is researchable. Hence, I did not conduct a pilot study before the data collection rather emphasizing on the data analysis to answer the research question.

Data Analysis

The research question and associated hypotheses of the study were as follows:

Does a predictive relationship exist between ROE, annual revenues of firms, and CEOs' total compensation?

H_0: A significant predictive relationship does not exist between ROE of firms, annual revenues of firms, and CEOs' total compensation within the U.S. banking industry.

H_a: A significant predictive relationship exists between ROE of firms, annual revenues of firms, and CEOs' total compensation within the U.S. banking industry.

Pallant (2016) summarized that the statistical technique used for exploring the relationship between variables can be a correlation, a regression, or a factor analysis. To answer the above research question, I conducted a linear multiple regression analysis to test a set of hypotheses. The regression test was suitable for this study because the essence of the research question was to try to determine whether the independent variables were predictors of the dependent variable. Regression analysis is a statistical technique to explore the relationship between numerically measured independent and dependent variables, which emphasizes the prediction or forecasting from one variable to another (Hopkins & Ferguson, 2014). The hypothesized relationship of this study had the intention to determine the predictive relationship between variables. Armor, Cotla, and Stratmann (2017) argued that regression analysis enables researchers to monitor how criterion variable would change when predictor variables change. Regression analysis also involves the estimation to responses of one variable caused by the explanatory variables (Wiedermann, Hagmann, & von Eye, 2015). Kim, Cho, et al. (2015) employed multivariate regression analysis to assess the predictive relationship between the variables

of continuous scales. This study included the variables with measurements in ratios. Hence, a regression analysis was suitable.

Curtis et al. (2016) further suggested using a scatterplot to obtain an indication of the correlation between variables, as well as the type of relationship, before conducting the test. I also used descriptive statistics to explore the description of raw data by including mean, standard deviation (SD), minimum, and maximum value of variables. Curtis et al. advised using descriptive statistics for summarizing data and describing the characteristics of data samples. However, Ploutz-Snyder, Fiedler, and Feiveson (2014) argued the importance of descriptive statistics being an early research step in statistical analysis. The inclusion of descriptive statistics could establish associations between the variables for data delineation (Bettany-Saltikov & Whittaker, 2014).

Although a regression analysis was optimal for the study, I evaluated the appropriateness of other types of analyses. Pearson's product-moment correlation analysis is also a statistical technique for exploring the simple relationship between independent variables and dependent variables (Curtis et al., 2016). Selection of correlational analysis depends upon the research question and the level of measurement (ordinal, interval, or ratio) of variables (Curtis et al., 2016). Hedge, Powell, and Sumner (2017) also indicated that correlation analysis is concerned with on testing the significance of a relationship between variables. Therefore, simple correlation analysis was not suitable for this study.

Factor analysis provides the ability to combine related variables and uncover patterns from common groups (factors) based on a shared variance (Mthembu, Roman, &

Wegner, 2016). Shao et al. (2015) conducted a factor analysis study to summarize the components and their associations to certain cancer risks from many correlated variables. As well, Baglin (2014) argued that factor analysis is a process that involves repeating analysis (rotation) of refining solutions to reach a meaningful result. Factor analysis is for scientific purposes because of its power and large sample (Zygmont & Smith, 2014), which was not applicable for this study.

Other types of techniques such as *t* tests, chi square, analysis of variance (ANOVA), or multivariate analysis of variance (MANOVA) were also not applicable to the study. These aforementioned techniques are used to assess and compare differences between groups of observations or conditions (Pallant, 2016). For instance, Aghdeab, Mohammed, and Ubaid (2015) conducted an ANOVA analysis by a comparison to find out optimizations in design and manufacturing methods. Sharpe (2015) asserted that the chi-square analysis is a nonparametric technique to identify the difference between groups of participants when the dependent variable is a measurement of nominal. Wen et al. (2015) utilized *t* tests to compare two groups of participants and identify different effects of treatment. Vossoughi, Shahvali, and Sadeghi (2016) described that the MANOVA test is best of comparing the mean vector between groups, which in turn addresses hypotheses related to the differences between groups of data.

Once the data collection process was complete, I began a data cleaning process. Data cleaning process involved scrutinizing and identifying any missing records or invalid components in data sets. Hashem et al. (2015) identified that data cleaning was an important step in the research process. The purpose of data cleaning is to minimize

problems by correcting invalid data or eliminating missing records (Kongara & Punyasesudu, 2015). Researchers may utilize either the traditional method (loading into a spreadsheet) or certain tools for cleaning data, such as Google OpenRefine and Data Wrangler by Stanford Visualization Group (Batrinca & Treleaven, 2015). Li et al. (2015) also pointed out that innovative data collection tools could make the data cleaning process efficient when involving a large amount of raw data. However, I visually scanned data by applying filters from the spreadsheet because the number of relevant data records was small.

Then, I deleted the identified discrepancies (missing or invalid data records) from data sets. Cheema (2014) concluded that case deletion and imputation-based methods are common missing data handling approaches, where researchers can either simply discard those records with missing data or replace them. Cheema further stated that using inappropriate handling approaches might result in poorly estimated parameter and reduced power of analysis. Ebrahim et al. (2014) emphasized the missing data issue could result in poor generalization of the research and therefore developed a comprehensive approach to addressing the missing data issue, which included using a reference instrument and a complete-case analysis. Aste, Boninsegna, Freno, and Trentin (2015) suggested that researchers could resolve missing data problems by deleting the whole case in quantitative observations. In this study, the random sampling procedure provided the ability to ensure the samples were representative of the population because of data availability. Hence, the case deletion approach was still feasible.

Statistical analyses have underlying assumptions that researchers need to consider before conducting the analysis (Pallant, 2016). The normality, linearity, homoscedasticity, and multicollinearity of data distribution are assumptions for multiple linear regression analysis, which represent certain patterns respectively in statistical plotting (Pallant, 2016). Normally distributed data depict a symmetrical mountain-peak-shaped line; linearity is represented by a straight line (or roughly straight line), while homoscedastic data show a cigarette-shaped pattern (Pallant, 2016). I used histograms, a normal probability plot (P-P), and scatterplots to assess the normality, linearity, and homoscedasticity of data; these plots were available in IBM SPSS Version 21.0. Nunes, Alvarenga, de Souza Sant'Ana, Santos, and Granato (2015) pointed out that data homoscedasticity means that different groups of data have the same value of standard deviation and further suggested that researchers should utilize statistical functions to check for homoscedasticity. Puth, Neuhäuser, and Ruxton (2014) also suggested researchers should check histograms of all variables for any substantial deviation from normality.

Researchers cannot always assume the normality of data, but may also use other methods such as bootstrapping for resampling purposes, regardless of the data distribution (Bro & Smilde, 2014). Nevertheless, in situations where data plots reveal a violation of the assumption of data distribution, I used an alternative method to carry out the testing procedures. Banjanovic and Osborne (2016) stated that a bootstrapping method could be an alternative for resampling by the researcher when violation of the assumption occurred. Hopkins and Ferguson (2014) also argued that researchers might

need to adjust data set to address a violation of the assumption in multiple regression analysis and ensure the accuracy of the test by data transformation. Hopkins and Ferguson further advised using a specialized regression technique of transformed variables, such as logarithm or square root.

In SPSS Version 21.0, the default significance level is set at .05, which is a typical level for published nonscientific research to be considered as statistically significant (Ives, 2015). The result of a small *p* value would mean that the predictor has a good fit in the model to influence the response. The estimated effect size for the study was .20 as an input of G*Power a priori power analysis to calculate the required sample size. The confidence level measured how much of samples might contain true parameters from the population. Hedge et al. (2017) stated a simple way to calculate the confidence interval (CI) is 100% * (1-α). This study had the estimated CI of 95%. In a regression analysis, the regression coefficient represents how sensitive the change of criterion variable is when one of predictor variables changes (Ray-Mukherjee et al., 2014). Therefore, a high regression coefficient would mean that the model had a good fit or variables had a strong predictive relationship.

By having completed the regression analysis, results of tests would support a response of whether to accept or reject predefined hypotheses, which in turn provided the proof to answer the research question. If the result of probability value (*p* value) was less than the significance level, as expected, the test would be significant, which would indicate rejection of the null hypothesis and acceptance to the alternative one.

The flowchart in Figure 1 illustrates the step-by-step data analysis actions in SPSS.

Figure 1. The Flowchart for Data Analysis in SPSS

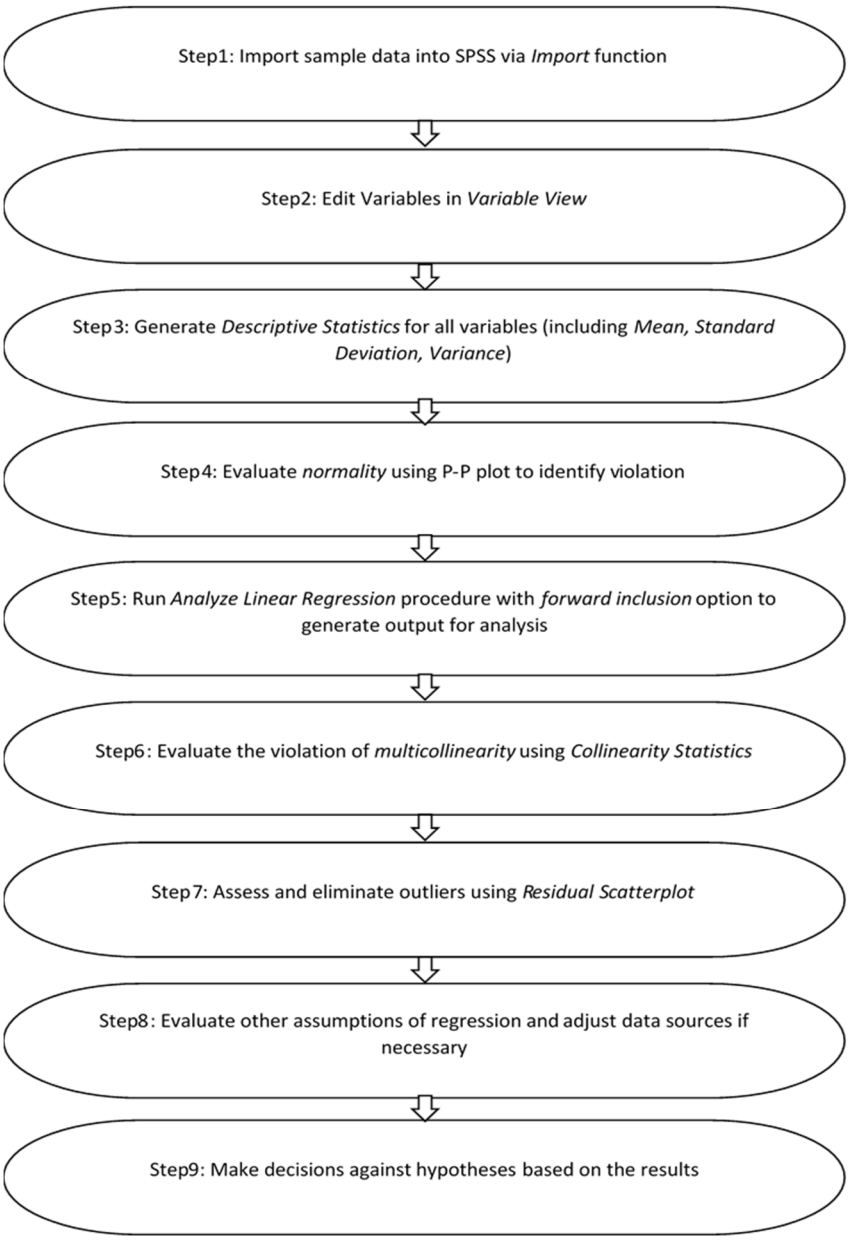

Figure 1. Data analysis steps in SPSS.

Study Validity

Validity of a study involves both internal and external aspects. One of the concerns for internal validity is the approximate truth to inferences regarding the examination of causal relationship (Ehiri et al., 2014). Lane and Gast (2014) stated that the internal validity has threats from experimental designs involving an assessment to effects of treatments or interventions. This study did not have concerns for threats to internal validity because it was not an experimental design. However, threats to statistical conclusion validity might be in question (Kratochwill & Levin, 2014).

Statistical Conclusion Validity

Threats to statistical conclusion validity might potentially exist. Statistical conclusion validity also refers to inferential validity, which is a form for ensuring the appropriateness of statistics and adequateness of findings for quantitative research (Rutkowski & Delandshere, 2016). Wester and Borders (2014) conducted research to review quantitative research articles published in the *Journal of Counseling & Development* and further criticized the existence of certain conditions might affect Type I and Type II error rates. Type I errors refer to the chances of rejecting a true null hypothesis, while Type II errors refer to the probability of accepting the null hypothesis when it is, in fact, false (Wester & Borders, 2014). Conditions regarding possible threats to statistical conclusion validity were as follows: (a) the instrument used was without reliability and validity check; (b) assumptions to statistical analyses were without satisfaction; and (c) inadequate sample size selection occurred (Wester & Borders, 2014). Antonakis, Bastardoz, Liu, and Schriesheim (2014) suggested using a more sophisticated

design and estimation procedure to minimize the threats to statistical conclusion validity and make the research more impactful. Next, I covered the following details to address concerns to statistical conclusion validity in the study.

Reliability of the instrument. The first factor of threats the validity of statistical conclusions is reliability of the instrument. Cor (2016) emphasized the importance of study validity and recommended that researchers report the relevant instrument reliability by including a Cronbach's coefficient alpha calculation. Finnegan, Runyan, Gonzalez-Padron, and Hyun (2016) also advocated reporting a Cronbach's alpha value to measure the reliability and associated significance. Lachmann, Trapp, and Trapp (2017) suggested performing an internal consistency check by computing a Cronbach's alpha value to assess reliability. The acceptable value of the Cronbach's coefficient alpha should be greater than .7. However, the sample value of Cronbach's alpha does not have a minimum acceptable level even though some studies had a result of rejection for a Cronbach's alpha lower than .7 (Bonett & Wright, 2015). The Cronbach's alpha has been widely used for assessing the internal reliability of psychological instruments (Samaha & Hawi, 2016), which was not applicable for this study.

Data assumptions. Data assumptions could be a threat to statistical conclusion validity. Statistical analyses rely on different assumptions about data distribution. In the case of a violation of data assumptions, the validity of statistical conclusion would have a serious impact (Solomon, Howard, & Stein, 2015). Linear regression analysis shares a few assumptions with other types of analyses such as normality, linearity, and homoscedasticity (Pallant, 2016). For multiple linear regression, I assessed the

multicollinearity by using the correlation coefficients and a scatterplot between the predictor variables. Outliers and level of measurement were also factors that could have an impact on results of regression analysis, especially with a relatively small sample size selection (Pallant, 2016). I used a histogram, a scatterplot, and a normal P-P plot of the regression standardized residual to assess the normality, linearity, and homoscedasticity; I used a boxplot to assess outliers.

Sample size. A small sample size might not have the representativeness of the population, which is potentially a threat. Nuzzo (2016) asserted that quantitative studies with small sample size selection undermine the achievement of statistical testing power and significance. Simonsohn, Nelson, and Simmons (2014) further argued that estimated effect sizes being true might support the appropriateness of various sample sizes. To estimate an effective sample size, Macfarlane et al. (2015) suggested researchers perform a power analysis before the actual studies, which minimizes the threat to study validity. In this study, a power analysis by using G*Power software ensured that a properly selected sample size was sufficient.

External Validity

While the internal validity of a study applies to the identified population, Khorsan and Crawford (2014) expounded that external validity refers to how much generalizability the results of studies have for expanding to a larger population, different measurements, or settings. Palinkas et al. (2015) stated that using a probability sampling strategy may increase the generalizability or transferability of the study (external validity). On the other hand, one of the weaknesses of a nonprobabilistic sampling

strategy may be the compromises to the external validity of the study. This study adopted a random sampling strategy, which was the probabilistic approach. Therefore, the results could have limitations to the selected population, which was data of CEOs' compensation, ROE, and annual revenues of all commercial banks located within the United States. Readers should not generalize the findings and results to other industries.

Transition and Summary

Section 2 contained a comprehensive plan and the underlying rationale for conducting the research regarding determining the predictive relationship between CEO total compensation, ROE, and annual revenues of publicly traded commercial banks in the United States. This study utilized the S&P ExecuComp and S&P Compustat databases that store publicly available CEO compensation and company financial data, respectively. The data collection process included downloading data with the instrument of Microsoft Excel and cleaning data for invalid data records. This study was a quantitative correlational study in which the relationship between ROE, annual revenue, and CEOs' compensation was explored using scatterplots, normal p-p plots, histograms, and multiple regression analysis. Regression coefficients, a probability value, and significance level were determinants for answering the research question and making a conclusion on the existence of a predictive relationship between ROE of firms, annual revenues of firms, and CEOs' compensation in the U.S. banking industry. Section 3 presented the conclusive findings of data analysis in detail, recommendations for further actions or research, and implications of social change.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this quantitative correlation study was to examine the predictive relationship between ROE of firms, annual revenues of firms, and CEOs' total compensation (including salary, cash bonuses, bonuses in stock, and bonuses in options). The predictor variables were ROE of the firm and annual revenue of the firm. The criterion variable was CEO's total compensation. From the results of the statistical analysis, there was a significant predictive relationship between ROE of firms, annual revenues of firms, and the CEOs' total compensation, which was based on data of a sample size that had moderate generalizability to the population.

Presentation of the Findings

The statistical analysis of sample data of ROE of U.S. banking firms, annual revenues of firms, and CEOs' compensation yielded some perspectives to the regression model. Details of these findings in this section include (a) the testing of assumptions, (b) descriptive statistics, (c) inferential statistics results, and (d) a theoretical conversation pertaining to the findings. I used the variable transformation approach to avoid the potential influence of violated assumptions. Specifically, the logarithmic model depicted a predictive relationship between variables in percentage changes. This transformation was more realistically approachable due to the nature of the variables used in this study.

Tests of Assumptions

The data preparation and the preliminary analysis of data were important processes before the actual statistical analysis. Pallant (2016) emphasized the need for

parametric assumption evaluation to enhance the significance of the test. Initially, I checked for the distribution of data by plotting histograms. However, I discovered that none of these variables were normally distributed as a bell-shaped line (see Figure 2 for an example of total compensation).

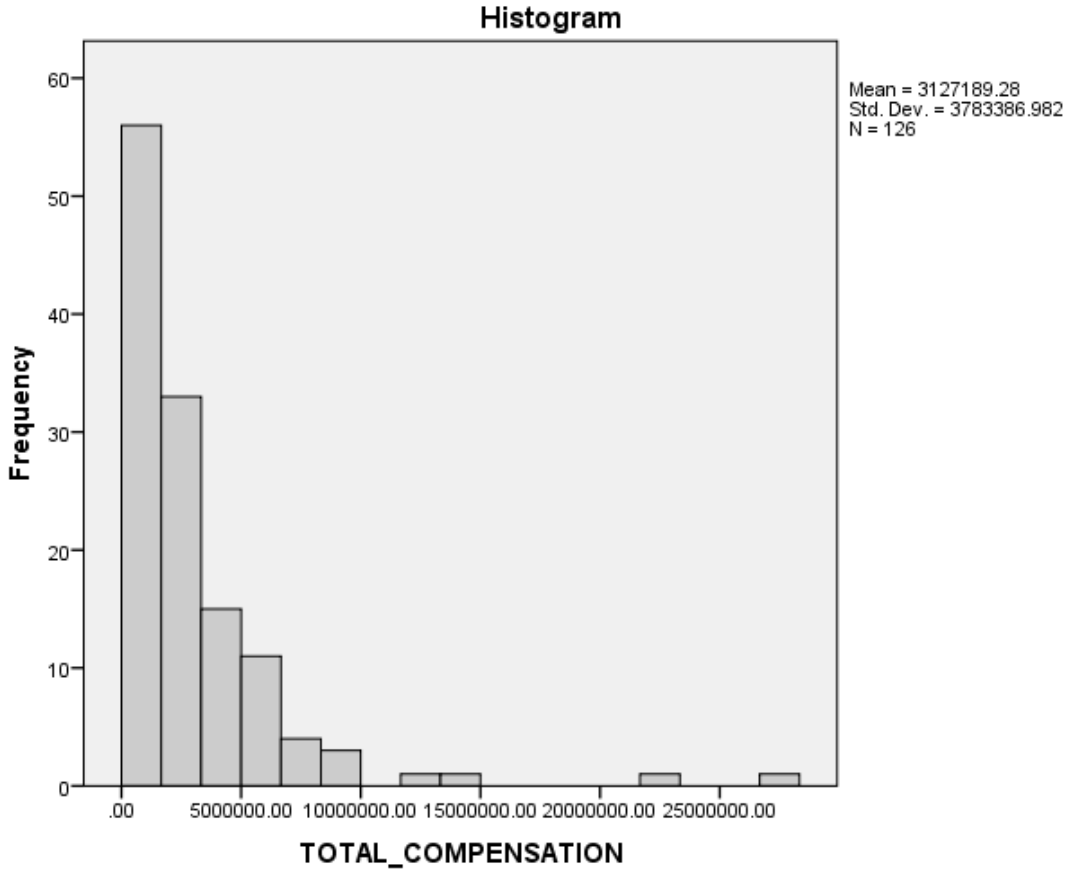

Figure 2. A histogram of the criterion variable of total compensation.

Data distribution of the criterion variable was severely skewed to the right. The peak values were on the left side of the mean value, while the standard deviation value was high. In other words, most of the CEOs' total compensation (approximately 70%) was relatively much lower than that of the rest of the CEOs in the sample. Very few

CEOs (four out of 126) had much higher total compensation than others. Therefore, the sample data violated the parametric assumption of data being normally distributed.

In the case of any violations of parametric assumptions, the researcher must resolve such issues before starting any data analysis (Pallant, 2016). Pallant further suggested that transforming variables might help in better meeting the parametric assumptions. I used the following logarithmic transformation on all variables.

$$\text{total\_compensation\_log} = \log_{10}(\text{total\_compensation}) \quad (1)$$

$$\text{revenue\_log} = \log_{10}(\text{revenue}) \quad (2)$$

$$\text{ROE\_log} = \log_{10}(\text{ROE}) \quad (3)$$

where total_compensation_log, revenue_log, and ROE_log were newly transformed variables, which were the logarithm to the base 10 (common logarithm) of old variables (total_compensation, revenue, and ROE). After the variable transformation process, I carried out the planned procedure to test the following assumptions by exploring the relevant calculations and graphs.

Multicollinearity. Multicollinearity was one of the potential limitations of the study because the calculation of both ROE and revenue had a relation to net income. Specifically, ROE was the quotient of net income and shareholders' equity, while net income could be the *difference* of revenues and total expenses. Winship and Western (2016) explained that multicollinearity (or, having auto-correlated predictor variables) in a regression model could cause problems by introducing large standard errors that impact the power of the test. However, the scatterplot between the logarithm of revenue and the logarithm of ROE showed no linear relationship (see Figure 3).

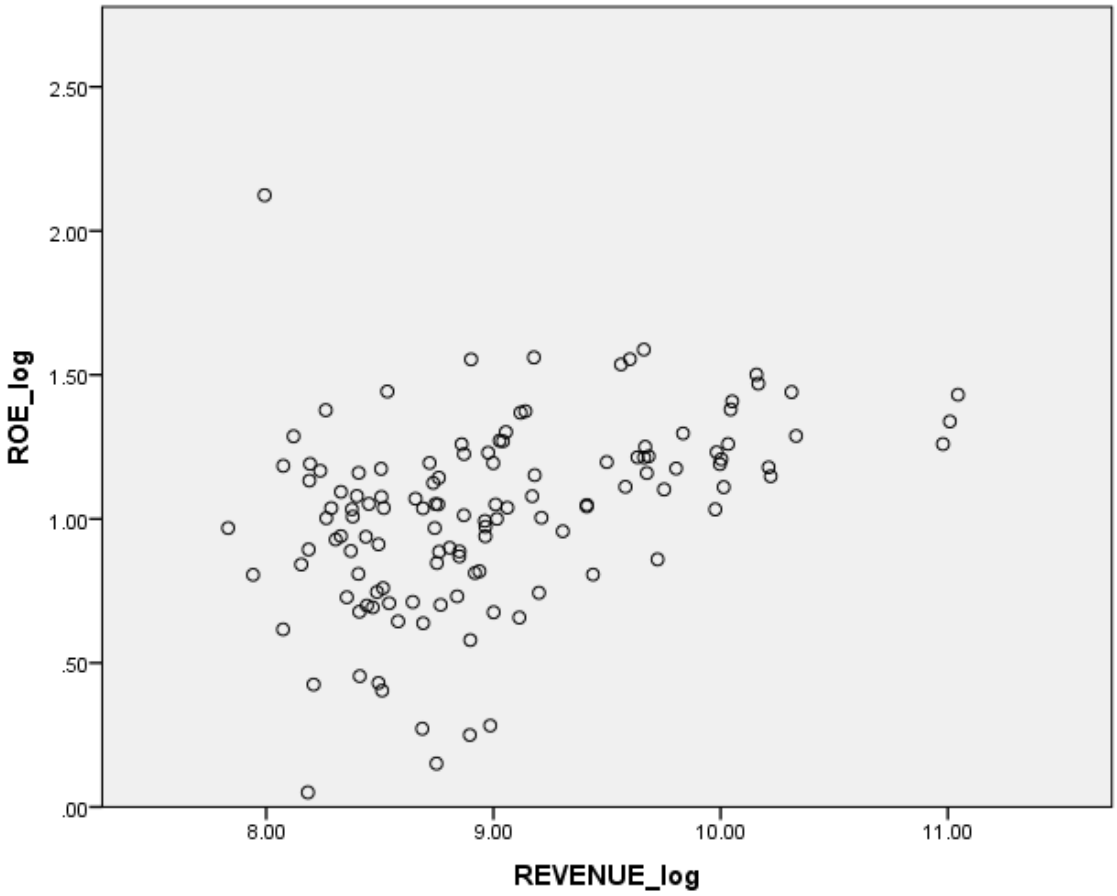

Figure 3. Scatterplot of the transformed predictor variables..

The predictor variables (ROE_log and revenue_log) were not noticeably correlated because the scatterplot did not show a linear pattern. As well, the Pearson's correlation coefficient between the predictor variables was .386, which represented a small bivariate correlation level. I also evaluated values of tolerance and the variance inflation factor (VIF*)* from the collinearity statistics, which were within the acceptable range of tolerance >.10 and VIF < 10 (see Table 2). Hence, the logarithmic model met the assumption of multicollinearity.

Table 2

Collinearity Statistics

Model	Variable	Collinearity statistics	
		Tolerance	VIF
1	(Constant)		
	Revenue_log	.851	1.175
	ROE_log	.851	1.175

Outliers. Outliers are also an important aspect that a researcher needs to check and possibly remove. Pallant (2016) suggested inspecting the boxplot or Mahalanobis distances for detecting outliers. A boxplot indicated that outliers were problematic with a separate data point presented (see Figure 4).

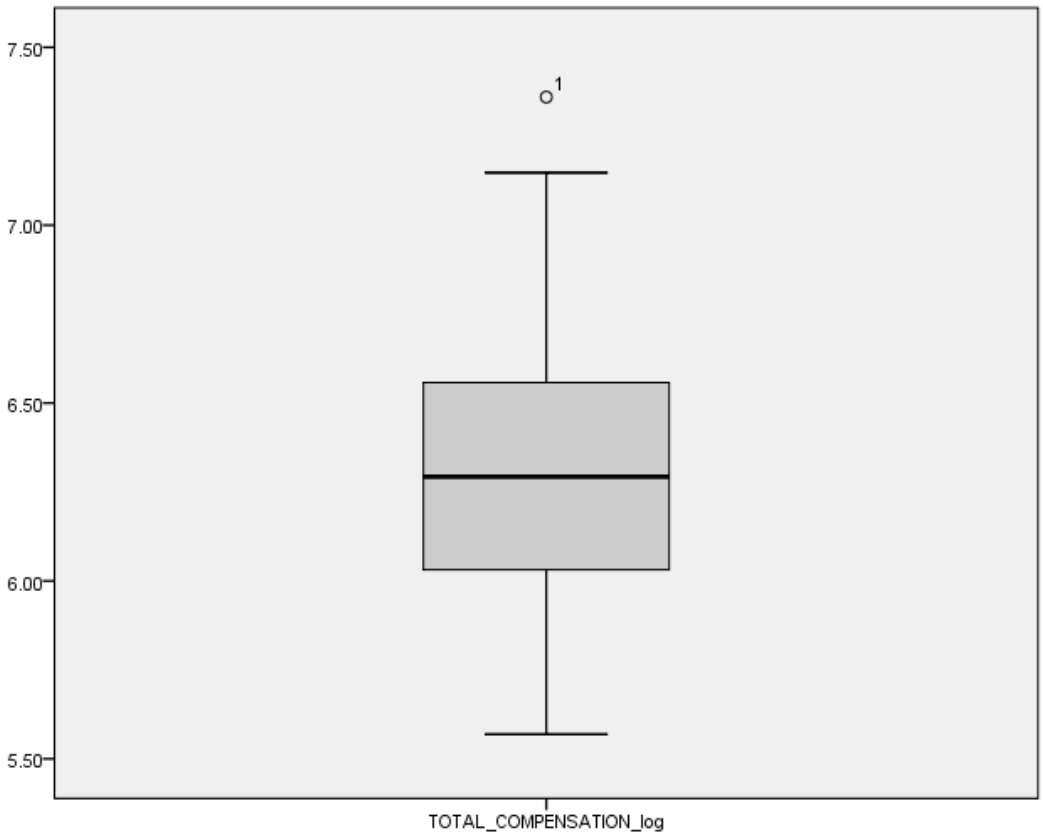

Figure 4. A boxplot shows the outlier..

The rectangle in the boxplot represented the distribution of most sample data. The line in the middle of the rectangle indicated the median value. The bars on the top and bottom of the rectangle leveled to the maximum and minimum values, respectively. However, the additional circle above the maximum value was an outlier. Based upon the number of predictor variables, I also checked the saved Mahalanobis distances in the data file for any critical chi-square value exceeding 13.82. Based on this review, I removed two observations separately from a total of 126 for final analysis. After a reassessment, the model had no additional outliers.

Normality, linearity, and homoscedasticity. Normality, linearity, and homoscedasticity are other fundamental assumptions of linear regression analyses. Pallant (2016) expounded that these assumptions could reveal the underlying relationship between variables. Pallant further advocated using different plots of standardized residuals for checking assumptions of normality, linearity, and homoscedasticity. Presented at the end of the analytical output, the normal plot (P-P) of regression standardized residual demonstrated no major deviation from normality, linearity, and homoscedasticity (see Figure 5).

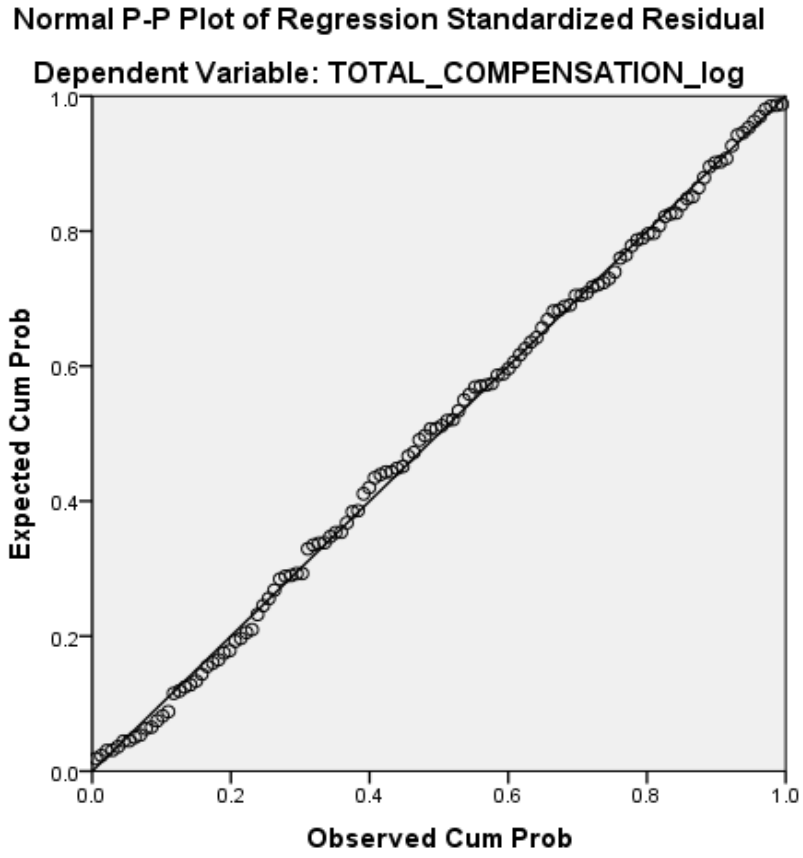

Figure 5. The normal P-P plot of regression standardized residual. Data points of actual values and predicted values in the normal P-P plot formed a relatively straight diagonal line.

Residuals are differences between actual values and predicted values, which should be normally distributed (Pallant, 2016). A histogram of standardized residuals also indicated the normal distribution of sample data (see Figure 6).

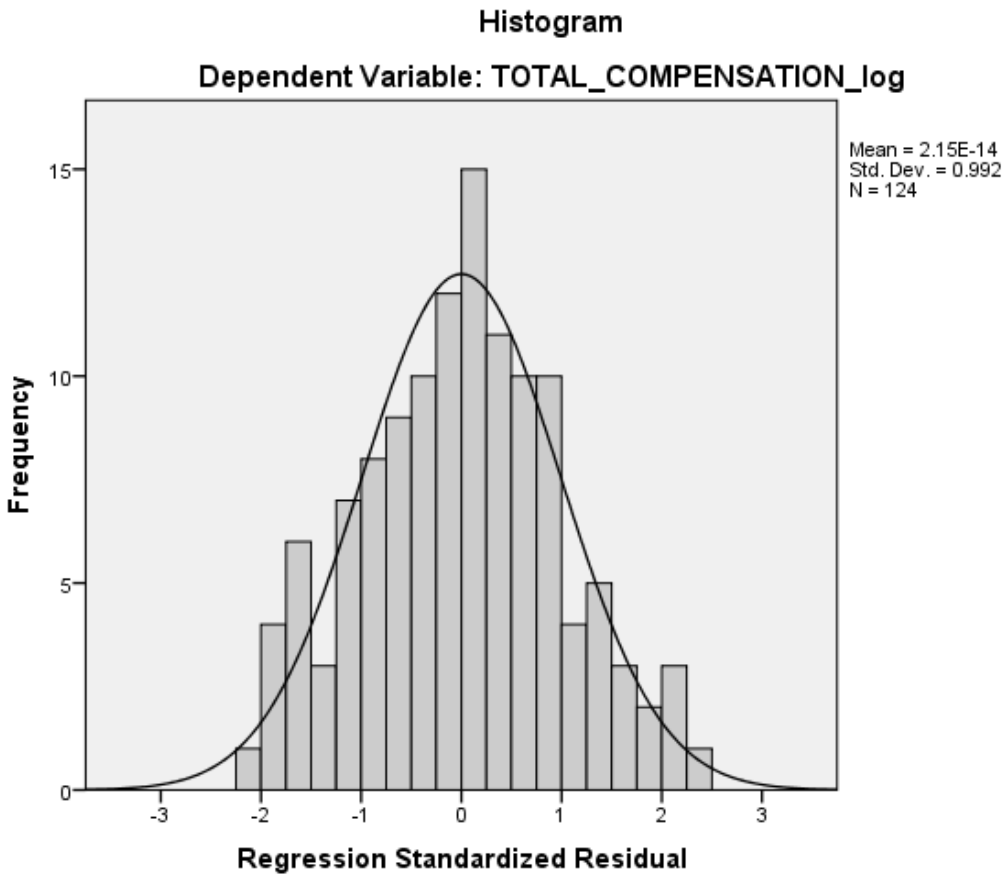

Figure 6. The histogram of regression standardized residual.. Standardized residuals of the criterion variable were mostly within a bell-shaped line.

Pallant (2016) emphasized the need for checking the depiction of scatterplot and the maximum value of Cook's distances to be smaller than 1 (see Figure 7).

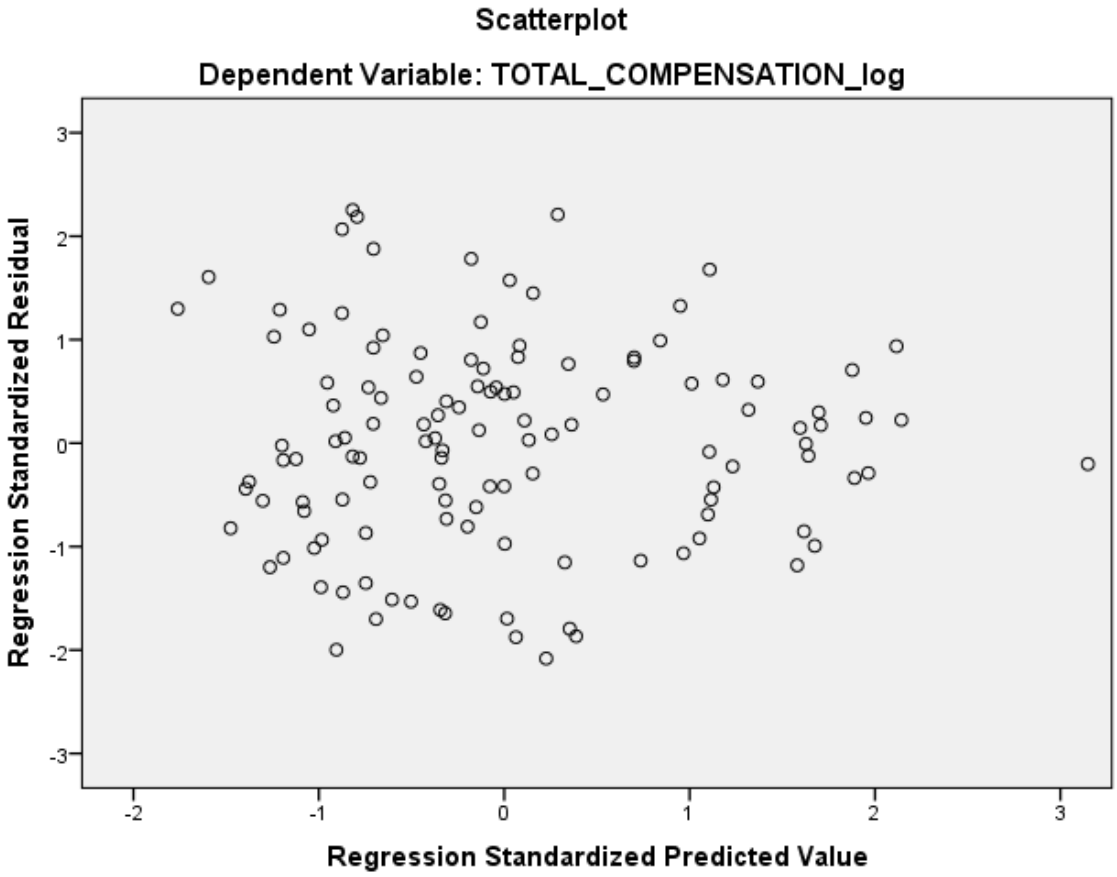

Figure 7. The scatterplot of regression standardized residual. .

The scatterplot of standardized residuals did not delineate any clear and systematic patterns. The maximum value of Cook's distance of .065 also confirmed that no major problem existed in the predictive model. Therefore, I did not identify any violation to assumptions of normality, linearity, and homoscedasticity.

Descriptive Statistics

Descriptive statistics provide summarized values of variables, such as mean and standard deviation. Pallant (2016) advised to always check for descriptive statistics to see if values make sense. I utilized a total of 124 observations for the analysis, using the

respective logarithms of CEO's total compensation, revenue, and ROE as variables. Table 3 included the descriptive statistics of variables in the study, where the standard deviation of each variable was not reasonably high.

Table 3

Descriptive Statistics for Transformed Variables

Variable	Mean	Standard deviation	*N*
Total_compensation_log	6.2896	.36705	124
Revenue_log	8.9621	.63959	124
ROE_log	1.0158	.32054	124

Inferential Results

In the final model, I invoked the standard multiple linear regression procedures, α=.05 (two-tailed), to examine the efficacy of ROE and revenue in predicting CEO's total compensation. The predictor variables were ROE of the firm and annual revenues of the firm. The criterion variable was CEO's total compensation. The null hypothesis was that a significant predictive relationship did not exist between ROE, annual revenue, and CEO's total compensation. The alternative hypothesis was that a significant predictive relationship existed between ROE, annual revenue, and CEO's total compensation.

Results of preliminary data analyses revealed violations to parametric assumptions. However, the variable transformation technique was in place to combat the influence of assumptions of normality, linearity, and homoscedasticity; the transformed model had no serious violations identified (see Tests of Assumptions). The model as a whole was able to significantly predict CEO's total compensation, F (2, 121) = 95.691, p < .000. The correlation coefficient was .783, indicating that approximately 61% of

variations in the logarithm of CEO's total compensation was attributed to the linear combination of predictor variables (logarithms of ROE and annual revenue).

Despite the fact that a combination of ROE and annual revenue were statistically significant to the total compensation, annual revenue alone ($t = 12.714$, $p < .000$) accounted for the contribution to the whole model. ROE did not explain any significant variation in CEO's total compensation ($t = .124$, $p > .05$). Standardized coefficients of the model also explained that annual revenue contributed vastly more than ROE in the model (see Table 4 for model summary and coefficients).

Table 4

Model Summary and Coefficients for Standard Multiple Regression.

Variable	Unstandardized coefficients		Standardized coefficients				
	B	SE	Beta	t	Sig.	R^2	ΔR^2
Model 1					.000	.613	.606
(Constant)	2.270	.296		7.669	.000		
Revenue_log	.447	.035	.780	12.714	.000		
ROE_log	.009	.070	.008	.124	.901		

Note. N = 124; criterion variable = total_compensation_log.

The final predictive equation was:

$$\log_{10} Y\text{ (Total compensation)} = \beta_0 + \beta_1 * \log_{10}\text{ (Revenue)} + \beta_2 * \log_{10}\text{ (ROE)} \quad (4)$$

or,

$$Y\text{ (Total compensation)} = 10^{\beta 0} * (\text{Revenue})^{\beta 1} * (\text{ROE})^{\beta 2} \quad (5)$$

where β_0 was the constant and β_i was the coefficient for unstandardized coefficient of each predictor variable. Taking an example, the CEO's total compensation should be close to \$5952446.66, given $Y = 10^{2.270} * (\$10317361000)^{.447} * (12.89)^{.009}$.

Tarasova and Tarasov (2016) stated that elasticity showed the relative change of an index under the influence of the change of another index, while the other indexes were holding as constants. To transform the above equation further by differentiating it, β_1 and β_2 were the elasticity of total compensation to revenue and ROE respectively (see Figure 8).

$$\beta_1 = \frac{\%\Delta(Total\ compensation)}{\%\Delta(Revenue)}\ ;\ \beta_2 = \frac{\%\Delta(Total\ compensation)}{\%\Delta(ROE)}$$

Figure 8. The elasticity in the criterion variable and the predictor variables. β_1 and β_2 represented the percentage change of the total compensation with respect to percentage changes of revenue and ROE individually.

Revenue. The coefficient for revenue (.447) as a predictor of total compensation indicated that approximately a 44.7% increase in CEO's total compensation for every 1% increase in annual revenues of the firm. In other words, CEO's total compensation tended to increase dramatically as annual revenues of the firm increased. Standardized coefficient for revenue (.780) indicated that revenue contributed far more than ROE did (standardized coefficient = .008) in the predictive model (see Table 4).

Return on equity. The coefficient for ROE (.009) as a predictor of total compensation indicated an almost 1% increase in CEO's total compensation for every 1% increase in ROE of the firm. In other words, the change in ROE of the firm had minimal impact on the change in CEO's total compensation. Table 4 is the regression summary table.

Additionally, Pallant (2016) expounded that the adjusted R^2 (ΔR^2) from the output involved steps of taking the number of variables and the sample size into consideration. Given the adjusted R^2 (.606) was in the close range of the R^2 (.613), the regression model was relatively reliable (see Table 4). However, Daderman and Basinska (2016) suggested cross-validating the model by reporting the adjusted R^2 from the calculation of Stein's formula (see Figure 9), which predicts the generalizability of the regression model to a different sample from the same population.

$$(\Delta R^2) = 1 - \left[\left(\frac{n-1}{n-k-1}\right)\left(\frac{n-2}{n-k-2}\right)\left(\frac{n+1}{n}\right)\right](1 - R^2)$$

$$where\ n = \#\ of\ participants; k = \#\ of\ predictors.$$

Figure 9. Stein's formula.

The adjusted R^2 could also be a result of the calculation involving the number of participants (n) and the number of predictors (k). Incorporating values of n and k into the equation, the result of such a calculation was the adjusted R^2 = .597, compared to the R^2 of the model at .613, which indicated good generalizability.

Analysis summary. The purpose of this study was to examine the predictive relationship between ROE of firms, annual revenues of firms, and CEOs' total compensation. I used multiple linear regression to examine the ability of ROE and annual revenue to predict the value of CEO's total compensation, using the logarithmically transformed variables. The assessment of assumptions of multiple linear regression was successful because the transformation of variables and removing outliers enhanced the model. The logarithmic model could significantly predict CEO's total compensation, F (2, 121) = 95.691, $p < .000$, R^2 = .613. The conclusion from this analysis was that ROE of

firms and annual revenues of firms had an association with CEOs' total compensation. In particular, annual revenues of firms were sensitive to CEOs' total compensation.

Theoretical conversation on findings. Based on the results of data analysis, I rejected the null hypothesis that a significant predictive relationship did not exist between ROE of firms, annual revenues of firms, and CEOs' total compensation. ROE and annual revenues of firms significantly predicted CEOs' total compensation among U.S. publicly traded commercial banks. Such a finding conformed to the supposition of agency theory, which explained the principal-agent relationship. Annual revenue (annual sales) is one of the simple indicators of financial performance of a firm, while CEO's compensation is the representation of the agent's interest in the business context. Feng et al. (2017) found that annual revenue was a more manageable ratio of growth of a firm. A predictive relationship between performance of a firm and CEO's compensation meant that both the principal's interests and the agent's interests were aligned.

Unlike annual revenue, ROE of a firm is a more complex measurement on profits; ROE incorporates debts and net income into the equation. Therefore, ROE of a firm might be more difficult for predicting a CEO's compensation. Ahsan (2013) argued that ROE was the figure with manipulability, which might have flaws in measuring performance of a firm. Overall, findings of this study dovetailed with Nulla (2013a)'s study, where the relationship between financial performance of a firm and CEO's compensation existed.

These findings echo those of Moore (2014)'s research for the U.S. health insurance industry, in which annual revenue of a firm was a dominating factor in

predicting CEO's total compensation. Banker et al. (2013) also found a negative relationship between performance of a firm, measured by ROE and CEO's compensation using data from 1993 to 2006. However, compensation committees should consider different varieties of performance measurement, regarding building an effective CEO incentive plan.

Applications to Professional Practice

The results of this study can help BODs to understand the use of different types of incentives (bonuses, stock awards, option awards, and so on) for compensating CEOs, which should align with financial performance of their firms. Lin et al. (2013) found that misaligned relationship between CEO's compensation and performance of the firm existed in some industries. Hence, compensation committees in the banking industry should continue to keep the aligned relationship between CEOs' compensation and performance of the firm. Obtaining a statistically significant model could allow for a competitive total compensation structure within the industry.

Business practices in different industries may vary. The results of this study enhanced the known knowledge about the relationship between performance of the firm and CEO's compensation in the U.S. banking industry. ROE is one of the most common measurements of performance in the banking industry (Klaassen & van Eeghen, 2015). However, Klaassen and van Eeghen further asserted that ROE is a short-term measurement that omits risks. Having obtained knowledge of a specific industry, compensation committees will be able to develop an efficient CEO's compensation

structure, which reflects the percentage changes in ROE, annual revenue, and CEO's compensation, to balance the performance of the firm with CEO's incentives.

Based on findings of the regression model, annual revenue and ROE of firms had a significant predictive relationship to CEOs' total compensation. Bennett, Bettis, Gopalan, and Milbourn (2017) argued that benchmarking performance-based components in the compensation package would be a good business practice for evaluating the strategy of CEOs' compensation structure. Business leaders could utilize the regression formula to measure if their CEOs currently have proper compensation for the performance of the firm, or to determine their compensation for the future.

Implications for Social Change

The general public demand a pay raise due to a high inflation rate. As well, the rapid growth of CEOs' compensation has drawn much of public attentions (Gopalan, Milbourn, Song, & Thakor, 2014). Individuals' concern on the unfairness of wealth distribution or the significance of income inequity has been widely persistent in society (Kiatpongsan & Norton, 2014). The contribution to social change of this study involved having individuals in societies understand the rationale for why CEOs' and the average employees' compensation have some disparities, as well as the public perception on how performance of firms correlates to their CEOs' total compensation. Additionally, the growth of CEOs' compensation must be tied to performance of firms (Abraham, Harris, & Auerbach, 2014). Using the results of this study, stakeholders of firms might also acquire an understanding of the importance of how to award impartial compensation packages to CEOs.

Recommendations for Action

Financial performance of firms had a positive influence on their CEOs' total compensation among U.S. commercial banks. Such a finding coincided with the results of research in other industries (Moore, 2014; Nulla, 2013b). Compensation committees of U.S. banking firms should pay attention to this study and could use the findings of the study to evaluate their current CEO compensation packages and fine-tune their compensation plans accordingly. Specifically, compensation committees need to perform periodic reviews of statistical relationship on total compensation of CEOs, using revenue as one source of data to represent performance of the firm. However, compensation committees can only use ROE to evaluate a limited statistical relationship. By doing these reviews, BODs may record the risks for any tangible discrepancies of mismatched CEO's compensation to performance of the firm. BODs should further initiate remedial actions based on these findings.

Besides compensation committees and BODs, potential audiences of this study are scholars and investors. Scholars may use results of the study for considering further research on performance of firms and CEOs' compensation. Investors can rely on careful analysis of data or evidence from the research to make their investment decisions (Chatterji, Durand, Levine, & Touboul, 2015). Therefore, I will publish the final version of the study in the ProQuest dissertations database; or submit a refined version to economics-related journals. Using these publications, I thereby disseminate findings of this study to other scholars. Furthermore, results of the study may also be available to

investors in appropriate forums of professional gatherings, such as conferences or workshops on economics, finance, and management.

Recommendations for Further Research

I only used data from the past 6 years in this study. Enlarging the sample size in the future research could also improve generalizability of results (Nuzzo, 2016). Further studies into the relationship between financial performance of firms and CEOs' compensation within the U.S. banking industry could focus on the examination of data from a more extended period. Abraham et al. (2014) suggested structuring a sample within a single industry, which might have specific characteristics to impact CEOs' compensation.

Further studies could also cover the population in other industries. Annual revenue and ROE are potentially auto-correlated. Pallant (2016) pointed out that the existence of multicollinearity would jeopardize the regression model. To address the limitation of this study, I suggest using different variables that measure performance of the firm, such as the stock price, current ratio, or cash flow. Additionally, future studies may include other types of variables that might affect CEO's compensation or performance of the firm, such as total assets of the firm or interest rates.

Reflections

Overall, the research process has been a challenging and exciting experience. To address the data assumption and maintain the power of statistical testing, I had to transform all the originally proposed variables into forms of the logarithm, as well as to reduce the sample size from 126 to 124. However, the preemptive expectations did not

impact results of the study because the transformed variables demonstrated a strong fit for the model. Even though the results showed a predictive relationship existed between the financial performance of U.S. banking firms and CEOs' total compensation, the results of the study surprised me that ROEs alone did not have the positive relationship to CEOs' total compensation.

During the proposal stage, I expected that the predictive relationship between financial performance of U.S. banking firms and CEOs' compensation would exist. Specifically, I expected both annual revenue and ROE would predict CEOs' total compensation. However, little doubt on the existence of such a relationship started to emerge during the literature review phase, which motivated me to continue the research. Although I had the basic statistical skills before engaging in the data analysis, I improved my skills of regression data analysis and extended my knowledge of quantitative research. Furthermore, the research process required extensive time for planning, implementation, and iteration. I have greatly benefited from such an experience by improving the time-management skills, both on professional and personal levels.

Conclusion

The main finding of this study showed that a significant predictive relationship exists between the financial performance of firms and CEOs' total compensation. Such a finding was in favor of the argument from agency theory. However, the finding was limited to one aspect of the performance of firms: the measure of annual revenues. The response of compensation to the proportional changes in annual revenues was much more definitive than in ROE. Compensation committees should continue to maintain and

improve CEOs' incentives to ensure the proper alignment between performance of the firm and CEOs' compensation.

Previous studies focused on examination of the relationship between financial performance of firms and CEOs' compensation. These studies, such as those by Lin et al. (2013), Nulla (2013a), Nulla (2013b), and Moore (2014) yielded controversial results. However, studies in the banking industry were rare. According to agency theory, aligning performance of the firm with CEO's compensation is imperative because CEOs (act as agents of firms) may have conflicting interests to those of owners of firms (the principal; Mitnick, 2015). Using a standard multiple linear regression, I performed data analysis on a sample data set to answer the research question of whether a significant predictive relationship existed between ROE, annual revenues of firms, and CEOs' total compensation in the U.S. banking industry. From the results of data analysis, I found that annual revenue was the dominating factor in predicting the total compensation.

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Appendix A: Frequency and Percentage of Total Sources

This study includes a total of 222 references, of which 212 articles (95.5%) are from peer-reviewed journals and six articles (2.7%) are from non-peer-reviewed journals. Two books and two dissertations, representing 0.9% of total sources, respectively, are also included. The total number of sources published within 5 years is 210, which accounts for 94.6% of all sources. Of the articles used in the study, 201 were published in peer-review journals within the past 5 years, which represents 90.5% of total sources.

Appendix B: Statement Regarding Data Collection

Walden University's directive states that researchers are required to obtain IRB approval before collection of any data. I used publicly available archival data for the study after obtaining IRB approval. To collect such data prior to IRB approval, as indicated by the DBA rubric, would be a direct violation of Walden University's IRB policy.

Appendix C: Statement Regarding Permissions for Data and Instrumentation

The study involved analysis of archival data from databases and annual reports that were publicly available. I did not need to obtain permissions for collecting data because the datasets were not proprietary and there were no human participants in the process. Additionally, I used raw archival data for analysis; therefore, permission related to instrumentation was not needed.

Appendix D: Sample of the Raw Data Used in the Study

TICKER	SALARY (k)	BONUS (k)	STOCK_AWARDS (k)	OPTOIN_AWARDS (k)	TOTAL_COMPENSATION	REVENUE	ROE
STD2	1653.846	3750.000	.000	.000	5403846.00	10317361000	12.89
CMA	1261.154	.000	3175.039	368.070	4804263.00	2578000000	11.19
FNB	905.016	.000	3548.672	.000	4453688.00	708405000.0	7.71
CUBI	600.000	1082.812	75.000	1990.200	3748012.00	277567000.0	5.00
SIVB	912.333	.000	2092.890	670.964	3676187.00	1519559000	14.18