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Pepperdine University
Graduate School of Education and Psychology

NEW CEO'S PERSONALITY AND LEADERSHIP STYLES AS MEASURED BY
THE TRAITS OF AGE, EDUCATION, AND PRIOR EXPERIENCES AND THEIR
EFFECT ON THE FIRM'S PERFORMANCE

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Education in Organizational Leadership

by

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August 2010

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This paper is dedicated to my father, Dong H. Cho, who passed away in 2001.

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ABSTRACT

New technologies and increased competition require CEOs to assess and analyze vast amounts of information. They need cognitive ability and higher education and training. Moreover, CEOs are under more pressure to act quickly, to recognize potential problems or opportunities, and to take action immediately. They must be willing to take risks (Joos, Leone, & Zimmerman, 2003). Companies are turning to younger CEOs (Loomis, 2007) as they are more familiar with new technologies, better able to endure high stress environments, more open to new ideas, and less reluctant to take risks.

This study examined the relationship between the financial performance of a company and specific demographic factors of its CEO, including age, tenure, education, and prior experience, and whether the CEO was hired from within or outside the company. Also, the study examined the relationship between CEO's age and tenure before and after the repeal of the Glass-Steagall Act (1999). The goal was to establish a prediction model, based on demographics of successful financial industry CEOs, to aid companies in their selection of new CEOs. The data were collected from U.S. companies in the insurance, securities, diversified financial, commercial banks, and IT industries which file financial statements with a government agency.

The findings indicate a significant difference in:

- a new insurance CEO's age and tenure before and after the repeal of the Glass-Steagall Act (1999)
- the age of new CEOs of insurance companies and that of their counterparts at other types of financial institutions or IT companies.

There was no significant difference in the level of education or tenure.

There was a significant correlation between:

- the changes in return on equity and the variables of age, school tier, degree, and prior experience
- changes in revenue, in stock price, and in return on equity and the variables of firm size, the new CEO's origin, and tenure
- changes in stock price and a new CEO who graduated from school tier three or four (below average undergraduate schools).

There was no significant correlation between a new CEO's age, school tier, degree, and prior experiences, and a company's change in revenue or in its stock price.

Chapter 1 – Overview

As an owner/manager of an insurance brokerage firm, this researcher is always curious to learn what happens to companies when CEOs are replaced. Among other things, do companies experience rapid growth or is there a significant decrease in market value? The selection or replacement of CEOs not only affects a company's performance (Hogan & Kaiser, 2005) but also the national economy (Luhby, 2008) as evidenced by the recent economic turmoil. Among the many factors that companies must take into consideration when selecting a CEO is leadership ability and how this can be defined and verified.

The researcher is a huge believer in management scholar Hogan and Kaiser's "personality predicts leadership" (Hogan & Kaiser, 2005). Hogan and Kaiser believe that personality is vital to a leader's success because effective leadership "involves persuading other people to set aside, for a period of time, their individual concerns and to pursue a common goal that is important for the responsibilities and welfare of a group" (Hogan, Curphy & Hogan, 1994, p. 493). Moreover, Hogan, et al. maintain that a leader's personality will dictate his/her leadership style, and therefore eventually impact, if not determine, organizational performance.

Like Hogan, et al., (1994) Northouse believes that leadership is a process whereby an individual influences a group of individuals in order to achieve a common goal (Northouse, 2001). However, he maintains that leadership is a process rather than a trait or characteristic. It is not linear, but interactive. In other words, leadership is connected with building cohesive and goal-oriented teams. Therefore, leadership is closely tied to, and its true merit dependent upon, team performance.

It is significant to note the difference between these two definitions of leadership and how they can be applied to the business world. Northouse (2001) defines leadership in a more general context in which interaction is possible and expected, for example, in small companies. Hogan and Kaiser (2005), on the other hand, define leadership in a more limited context, one that is linear and involves much less interaction. This is the environment in which a CEO must function, one in which their personality or management style directly impacts employee and company performance. For the purposes of this dissertation, the focus will be more on Hogan and Kaiser's theories and how they apply to the often autonomous role of CEOs in large companies.

When companies hire new CEOs, they must not only consider personality and leadership qualities, but also other factors such as one's age. Warren Buffett believes that age is one of the most important factors a company must consider when choosing a CEO's successor (Loomis, 2007). There is a current trend among companies to hire CEOs who are younger. I believe that this trend is largely due to heightened competition, the emphasis and importance of information-based technologies and rapid globalization. In brief, younger CEOs are more likely to better understand the workings of today's technology and the concept of what is new today is old tomorrow than CEOs in the past. Also, they tend to be more creative and to foster creativity in others, which allows them to more easily adopt a risk-taking attitude.

I also believe that CEOs now require a higher level of education, with a greater emphasis on math, economics, and data analysis. Like the trend towards youth, the importance of higher education is partly due to the onslaught of information brought on by advances in technology. In addition, because of globalization and heightened

competition, CEOs are required to have more professional training in making quick decisions based on objective analysis. A company's survival can easily depend on a CEO having this ability. According to Keiser, CEO positions are now considered to be "professionalizations," which are defined as jobs or professions that entail intellectual ability and extensive training (Keiser, 2004).

Prior experience is another important factor in the selection of a CEO. Throughout their careers, have the candidates demonstrated an ability to solve problems and/or satisfy the market? Have they enhanced or tarnished the image of a company? Do they have expertise in a specific area, or skills and knowledge that can be applied to a wide range of business environments?

This dissertation reviews leadership based trait theory to further study the CEO's trait and the CEO's announcement effect to ensure that a company evaluating CEO candidates will choose the one who is most qualified and capable.

It also evaluates the job performance and effectiveness of CEOs by examining changes in revenue, stock prices and returns on equity at certain intervals during his/her tenure. These changes could serve as proxies to determine whether or not a company has hired the right CEO – the one most able, competent, qualified, and worthy of the job.

The Problem

When a company replaces its Chief Executive Officer (CEO), the stock market's demand must be fitted with the company's supply, which in this case is the selection of a new CEO. That is, the new CEO's ability (a combination of personality, age, educational background, and prior experience) as a leader must meet the market's expectations. Thus, upon the announcement of a new CEO, subsequent changes in stock price movement

(stock price volatility) are inevitable. For example, when Boeing (Colias, 2005) named W. James McNerney Jr. as CEO in June 2005, its share price increased \$4.29. In contrast, when Nokia (Huuhtanen, 2005) appointed Olli-Pekka Kallasvuo as its new CEO in August 2005, its U.S. shares slipped \$0.10.

The seesaw-like movement in stock prices demonstrates that the financial market does indeed evaluate the incoming CEO's ability and reputation. Here, ability (Morris & Maisto, 2005) means a skill that a CEO actually has and for which the CEO needs no additional training. Furthermore, reputation (Karuna, 2006) is defined as the market's perception of the CEO's ability to ensure the long-term success and survival of his/her firm.

The market will endeavor to predict the firm's future direction by analyzing the incoming CEO's ability from his prior experiences and his personality, along with other demographic factors including age and educational background. Moreover, the stock market's initial reaction to a newly-announced CEO may be interpreted as a reflection of the social-self, or how leaders are perceived by others (Judge, Colbert, & Ilies, 2004). That social-self is reflected by the leader's emergence and his leadership effectiveness (Judge, Bono, Ilies, & Gerhardt, 2002). Therefore, the new CEO's perceived ability affects the future direction of the firm: its value, its management and its stakeholders.

If a CEO's intellectual ability (intelligence) is related to his personality (especially competency) and it is assumed that personality predicts leadership (Hogan, et al., 2004), then the CEO's general intellectual ability partly depends on innate cognitive ability, age and level of education. Moreover, due to rapid globalization, intense competition and internal and external environmental changes (Choo, 2001) such as

regulations, politics, economy, technology, socio-culture, and ecology, CEOs are now expected not only to keep up with but also to adapt to these fast-paced environments by gaining a broader understanding of the domestic and world markets and by being able to make the right decisions within a short amount of time. As a result, when a company selects a new CEO there is a tendency to place more importance upon his/her personality, age, education level, and prior experience.

The insurance industry is a great example to further study the aforementioned factors because this previously ossified industry was government regulated until 1999. Since then, the industry has gone through a tremendous transformation, primarily due to globalization, deregulation (Yeager, Yeager, & Harshman, 2007) and terrorist attacks. Meanwhile, the IT (information technology), biotech, and high-tech industries remain domestically and globally competitive.

In a regulated industry (Hadlock, Lee, & Parrino, 2002), it is much easier to select a new CEO because the entry barriers, including bureaucracy, either prevent or discourage other companies, foreign or domestic, from entering the market. This is one reason why less complex, regulated firms (Joos, et al., 2003) tend to hire younger CEOs. In contrast, as a result of the transition from a regulated to non-regulated industry, insurance companies are now hiring slightly older CEOs than before, placing more emphasis on their experience, professional knowledge and history of financial performance as evidence of their ability to manage more complex, macro environments (Joos, et al., 2003).

In addition, there are specific industry characteristics which impact the selection of CEOs. Both macro and micro factors must be considered when selecting CEO

candidates from either the inside or the outside. Macro factors are generally non-firm specific, while micro factors are firm-specific (Joos, et al., 2003). More micro factors are considered under limited competition for regulated companies, such as utility industries, whereas more macro factors are considered under unlimited competition. In turn, in the insurance industry after deregulation, more macro factors are considered. The increased competition within the same industry makes the choice of CEO more of a risk, as more competition makes decision making more difficult and more vital to a company's survival.

Due to President Clinton's deregulation of the insurance industry in 1999 (Yeager, et al., 2007), CEOs in the industry have awakened from a long slumber. Previously, they were protected under laws such as the Glass-Steagall Act of 1933 and the Bank Holding Company Act of 1956. These laws had prohibited banks, insurance companies and security firms from entering each other's businesses. However, since deregulation, i.e., the Gramm-Leach-Bliley Act of 1999 (Neale & Peterson, 2005), these industries have become more competitive among themselves. Moreover, security firms have now entered the banking industry, and visa versa. For example, in 1998 Citigroup acquired the security firm, Solomon Smith Barney, whereas Citibank acquired Travelers Insurance the same year. Citibank (Citigroup, 2002) also acquired California Federal Bank and made it into an insurance brokerage.

As a result, insurance companies are now placing more emphasis on age, personality, education and intellectual ability in their selection of CEOs in order to compete with other financial firms (Joos, et al., 2003). This is brought about by an effort to ensure that CEOs remain competitive with their more experienced and highly trained

counterparts at banks, such as the Bank of America and Citibank, and at investment companies, such as Prudential and Merrill Lynch.

Purpose of the Study

The purpose of this study is to examine the relationship between a firm's performance and the new incoming CEO's personality and leadership style, as well as his/her age, education level, and prior experiences. From this, we should be able to determine what role these factors play in the success or failure of a company's financial performance. The ultimate goal is to arrive at a formula which will enable companies to select the candidates who are most suitable for the given business sector and who are the most likely to succeed.

The publicly held business corporation (Horngren, 1981) is an extremely delicate structure, partly because ownership is shared by stockholders who often delegate management responsibilities to professionals. This delegation relationship is called an agency contract (Jensen & Meckling, 1976) in which stockholders engage another person (agent) to perform some service on their behalf. This act involves delegating some decision-making authority. To maximize shareholders' interests, agency costs (the sum of the costs of formal and informal structuring contracts) should be minimized. The best agency framework (Jensen & Meckling, 1976) is to resolve the conflicts of interest between stockholders, managers, and bondholders of the firm. Due to this complicated structure, CEOs, as professional managers or owners (Carey & Ogden, 2000), must survive not only by fulfilling their contracts with the board committees, but also by satisfying or surpassing market expectations.

Before examining these relationships any further, it is essential to define the role of a CEO and to fully understand his or her responsibilities. The Chief Executive Officer (Downes & Goodman, 1991) is the person primarily responsible for carrying out the strategic plans and policies of the organization. In addition, a CEO usually assumes the title of Chairman of the Board or President of a company. In this capacity, a CEO advises and informs board members, interfaces between the board and staff, and is expected to fully cooperate with the board in his/her own performance review. He/she not only attempts to persuade and control board members, but also acts as a peacemaker by minimizing conflict. Finally, a CEO must compete with rival companies, most often with limited resources (including human, material, and financial) and under time, information, and legal constraints.

Similar to the president of a nation, the CEO's many responsibilities include recommending a yearly budget for the board's approval; managing the organization's resources within budget guidelines and according to current laws and regulations; shaping the firm's climate; opening/closing a plant; entering a new market; marketing, selling, and developing new products; laying off employees; hiring high-ranking staff; and increasing the company's share value (Vancil, 1987). The CEO must also attempt to increase the value of the firm in order to satisfy the stakeholders. Throughout his/her reign, the organization's mission, programs, products, and services should present a consistently strong, positive image to relevant stakeholders.

A CEO's critical mistakes due to negligence or faulty actions from misjudgment often lead to either financial and/or non-financial disaster, not only for the company but also for society as a whole, as witnessed in the Enron case (Bolman & Deal, 2003). Of all

these responsibilities, often the most important is the hiring and positioning of high-ranking officers because “leadership is about the performance of teams, groups, and organizations” (Hogan & Kaiser, 2005, p. 169).

In an environment of such major rapid change, the CEO’s role (Hill & Westlaufer, 1998) must also undergo a corresponding transformation, otherwise, his/her position of authority may quickly evaporate. On the other hand, a CEO must strike a delicate balance, since rapid change is not always perceived as desirable. For example, during Franco Bernabe’s six-year tenure as CEO of ENI, Italy’s large, energy-focused industrial conglomerate, Bernabe quickly transformed the organization from a debt-ridden, government-owned, and politically controlled entity into a competitive and profitable publicly traded corporation focused on energy production (Hill & Westlaufer, 1998).

To accomplish this, Bernabe sold off 200 companies, dismissed hundreds of managers, and installed radical new business systems and procedures. When his tireless advocacy for change prompted the Board of Directors to demote him and call for his ouster, he responded, “A leader cannot take the weighted average of other people’s opinions and make them his own. A person who has to make important decisions has to make them alone. You need an inner compass to indicate the way” (Hill & Westlaufer, 1998, p. 86).

The following illustrates how a CEO must approach problems from a variety of angles and take the appropriate actions by using a variety of decision making processes. In economics and finance, decision making and judgment are based on rational choice theory (Mellers, Schwartz, & Cook, 1998), which states that if the CEO fails to be

rational, then he/she will not be able to survive competitive market forces. The CEO needs to learn quickly as a decision maker, because if he makes a mistake he will be eliminated from the game.

Some scholars, such as Gigerenzer, Kahneman, and Hammond (Mellers, et al., 1998) criticize the assumptions behind the rational choice theory. Gigerenzer argues that good judgment is not only based entirely on rational choice, but also derives from content analysis, including any underlying laws, principles, and axioms. In addition, good judgment should reflect basic principles of survival and adaptation. Likewise, Kahneman (Mellers, et al., 1998) suggests that logical analyses should be supplemented with substantive evaluations which assess the quality of decision outcomes. Lastly, Hammond argues that the integration of both internal consistency of decisions and empirical accuracy of decisions is rationality. As seen in the arguments against the rational choice theory, the CEO must be a good decision maker based upon his/her intelligence and prior experiences.

Successful CEOs have many different decision making processes to choose from and can judge when to change or abandon them entirely (Carey & Ogden, 2000). Such flexibility encourages and often results in great ideas and inventions. In most cases, the quality of a CEO's education, the areas of expertise and experience in making decisions enable the CEO to identify and solve problems.

In the real business world, the public lives in ambiguity and a lack of knowledge about relevant probabilities. According to Fox and Tversky (Mellers, et al., 1998), feelings of competence are dependent upon clear versus ambiguous knowledge. Numbers alone cannot help CEOs solve problems. Sometimes algorithms work, whereas other

times heuristics apply. As formal education involves learning both heuristics and algorithms, it therefore follows that higher education gives CEOs the ability to base decisions on a variety of factors and to approach problems from different angles.

In any case, many factors can either help or impede problem solving. One of these factors is the CEO's level of motivation or emotional arousal, which is influenced by any number of factors including age, wealth, and tenure. It is generally understood that younger CEOs have a greater level of motivation and ambition, whereas age may inhibit older CEOs who are interested in maintaining the status quo (Mellers, et al., 1998). On the other hand, age, or experience, is often invaluable when faced with problems that share some semblance to past experience. This paper will look at age as a factor in the selection of CEOs and see whether this trend towards younger CEOs, with an emphasis on innovation, education, etc. is a good one or not.

The new CEO's personality, age, education and prior experiences are all factors that significantly impact not only the future direction of the firm, but also the CEO's job performance and leadership effectiveness (Hogan & Kaiser, 2005).

Leadership, as Hogan and Kaiser (2005) define it, is the ability to build and maintain a group that performs well compared to its competition. Moreover, leadership should be evaluated in terms of the performance of the group over time. The performance of the company can be checked by studying (Copeland & Weston, 1992) the change of shares in large stockholders as a signal of a change in the firm's value. In brief, the selling of company stock often signals less confidence in the company's future, whereas the purchase of company stock is perceived as a good sign and will encourage investors. By studying the relationship between the company's performance (effectiveness) and the

past and present demographic factors of CEOs, such as age, education, prior experience, tenure, and insider/outsider, a model can be developed to help companies choose the right CEO.

The model will always be contaminated by unexpected external macro factors that cannot be controlled. These include the implementation of new government regulations, the penetration of the market by foreign companies, sudden changes in the price of oil, and innovations in technology. Well-developed application methods already exist that can predict leadership potential among middle management. However, these were not intended, nor have they been adapted or amended, to predict the leadership capacity of potential CEOs. As an example, Hogan and Kaiser's *Domain Model of Competencies* (Hogan & Kaiser, 2005) identifies four broad domains of managerial competencies:

- The intrapersonal domain, internalized standards of performance;
- The interpersonal domain, social skills, role taking and role playing abilities;
- The business domain, abilities and technical knowledge related to organizational activity;
- The leadership domain, influence and team building skills.

Hogan and Kaiser highlighted three points about this domain model: a) it is developmental; b) there is a hierarchy of increasing trainability; c) and it is comprehensive. The model can be used to identify potential leaders, but is rarely used in selecting corporate executives, including CEOs (Hogan & Kaiser, 2005).

Companies often hire outside assessment centers which conduct tests that measure both cognitive ability and personality by applying structured interviews and simulations (Hogan et al., 1994). Nonetheless, when companies choose CEOs, they do not utilize

these services since other factors may be of more immediate importance. These services do not take into account the political realities surrounding the selection between board members and other stakeholders.

However, unlike Hogan and Kaiser's definition of leadership, the fact that an individual or group of leaders is able to emerge from within the group to direct it should not be ignored. Moreover, it cannot be denied that personality plays a significant role in leadership (job performance). Leadership personality impacts leadership style which in turn affects employee attitude, team functioning, and organizational performance (Hogan & Kaiser, 2005).

Mueller (Marsh, 1989) writes that the first priority of a 21st century leader is to develop a core team of highly qualified subordinates who can jointly cope with the problems and uncertainties they may encounter in the future. To achieve this, Zaleznik (Marsh, 1989) maintains that mentors of tomorrow's leaders will have to take risks with people and bet initially on the perceived talent in younger people as they are better equipped to adapt to change and the competitive global market.

Personality plays an important role in determining leadership style and it has a direct bearing on both employee attitudes and on how teams function, thereby impacting the performance of the organization as a whole. It therefore follows that personality can be instrumental in predicting leadership effectiveness. However, because a numerical value cannot be placed on personality, stock price movement (Karuna, 2006) takes on importance in deciding whether or not the company has hired the right CEO. In other words, revenues as well as stock price changes reflect the CEO's job performance over

time which, in turn, reflects leadership. Therefore, personality studies and trait theories need to be further analyzed.

Problem Statement and Research Hypotheses

It is becoming increasingly difficult for companies to survive in such a highly competitive world. Accordingly, employers are placing more emphasis on candidates having graduated from a prominent or well-known university, as this is indicative of their having received a quality education. Moreover, board members often retain strong alumni relations, and this often influences their selection of CEOs (Keiser, 2004). This is especially true in bureaucratic countries such as France, England, Japan, and Korea. To the mature staging industry, these factors seem to be more applicable than to the start-up staging industries such as IT (Information Technology). Recent studies of high technology industries have shown that:

CEOs in higher technology industries are more inclined to have backgrounds in research and development and tend to be younger than CEOs in lower technology industries. Meanwhile, within the high technology industries, organizations going through growth phases were more apt to have CEOs with research and development backgrounds than organizations in more mature phases, which tended to have CEOs with backgrounds in administration, finance, and marketing. (Keiser, 2004, p. 56)

The insurance industry used to be a more mature and conservative industry, but now appears to have undergone a rapid transformation, ever since the catalytic repealing of the Glass-Steagall Act in 1999 (Neale & Peterson, 2005). The insurance industry has grown into a more mature and conservative industry although it may be experiencing a few transformations since the catalytic repealing of the Glass-Steagall Act in 1999. These companies are now more aggressive and rely heavily on new technologies such as the internet to market products and to serve customers. This paper therefore examines

whether or not the industry's reliance upon new technologies has resulted in the hiring of younger CEOs.

The problem statement examines what relationship, if any, exists between a firm's performance and a new CEO's personality and leadership style, as well as his/her demographics of age, education, and prior experiences.

The following are the research hypotheses:

- 1) Is there a difference between the new insurance CEOs' age, their education level, and tenure before and after the repealing of the Glass-Steagall Act in 1999?
- 2) Is there a correlation between the new CEO's age, school tier, degree, and prior experiences and the change in company's performance?
- 3) Is there a correlation between the size of the firm (small, medium or large based on the rank of asset sizes), the new CEO's origin (insider/outsider) and tenure, and the change in company's performance?
- 4) Is there a difference in independent demographic factors (particularly in age, level of education, and tenure) among new CEOs of insurance companies and their counterparts at other financial institutions such as banks and securities, or their counterparts at IT companies?

The validity of these hypotheses will be tested by comparing the demographics and job performances of new CEOs at regulated and unregulated companies during their tenure. Because the financial industries contain both regulated and unregulated characteristics, a close study of the CEOs of these companies is necessary to illustrate the relationship between leadership and performance. For the purpose of this research, the

population has been defined as U.S. companies in the insurance, securities, diversified financial, commercial banks, and IT industries that file financial statements with a government agency.

Definition of Key Terms

Glass-Steagall Act of 1933. Legislation passed by Congress authorizing deposit insurance and prohibiting commercial banks from owning brokerage firms. Under Glass-Steagall, these banks were prohibited from investment banking activities, such as underwriting corporate securities or municipal revenue bonds. The law was designed to insulate bank depositors from the risk involved when a bank dealt in securities and to prevent a banking collapse like the one that occurred in the Great Depression (Downes & Goodman 1991).

Gramm-Leach-Bliley Act of 1999. Congress passed this act, also known as the Financial Services Modernization Act of 1999, on November 4, 1999. This act removed most of the barriers that existed between the three different financial segments (banks, investment companies, and insurance companies) and allowed firms in these segments to cross-sell each other's products on a much wider scale than previously allowed (Neale & Peterson, 2005).

Bank Holding Company Act of 1956. A U.S. Act of Congress that regulates the actions of bank holding companies. It required Federal Reserve Board approval for the establishment of a bank holding company and prohibited bank holding companies headquartered in one state from acquiring a bank in another state (Downes & Goodman, 1991).

Chief Executive Officer (CEO). Officer of a firm principally responsible for the activities of a company (Downes & Goodman, 1991).

Chief Operating Officer (COO). Officer of a firm, usually the president or an executive vice president, responsible for daily management. Reports to CEO (Downes & Goodman, 1991).

Chief Financial Officer (CFO). An executive officer who is responsible for handling funds, signing checks, keeping financial records, and financial planning (Downes & Goodman, 1991).

Summary

Because of new technologies as well as increased competition, both from within and from outside the industry, CEOs must be able to sort through and analyze vast amounts of information. This requires considerable cognitive ability as well as higher education and training. Moreover, CEOs are under more pressure than ever before to act quickly, to recognize potential problems or opportunities and to take action immediately, which betrays a certain willingness to take risks. For these and other reasons, companies are turning to younger CEOs, as they are more familiar with new technologies, more open to new ideas and less reluctant to take necessary risks. But how much younger? And is age any more important than experience, expertise or reputation within a certain business field?

This study will try to answer these and other questions by examining the relationship between a company's performance over time and a new CEO's personality, age, education and prior experience. The goal is to establish a prediction model for companies to aid them in their selection process.

Chapter 2 – Literature Review

Overview of the Insurance Industry

The insurance industry can be divided into two groups: property-casualty and life insurance companies. Because insurance products are so closely tied to public welfare, government regulation and protection are vital in today's global market, as evidenced by the recent near collapse of American International Group's (AIG) (Luhby, 2008). That is why the Federal government authorized the Federal Reserve Bank of New York to lend AIG \$85 billion to prevent them from filing bankruptcy. In return, the Federal Reserve Bank received a 79.9% stake in the company. If AIG had failed, it would have led to the collapse of other companies that they insure, some of them international, and this would have resulted not merely in a loss of jobs but also a loss of insurance policies that could not be replaced (Luhby, 2008).

The intervention of government is not new. During the Great Depression the Glass-Steagall Act of 1933 (Neale & Peterson, 2005) separated investment and commercial banking activities. The main goals of the act were to regulate greedy banks in the pre-depression era, to separate the three financial sectors such as banks, investment companies, and insurance companies, to reduce excessive risk-taking by financial institutions, and to restore public confidence in the overall banking system.

In 1945, the McCarran-Ferguson Act gave states the authority to regulate the business of insurance without interference from federal regulation, unless federal law specifically provides otherwise. Because of this regulation, the insurance industry could reside comfortably inside a well protected castle compared with other financial institutions (Grace & Klein, 2008).

In 1956, as an extension of the Glass-Steagall Act, the Bank Holding Company Act was implemented to prevent financial conglomerates from having too much power. This act further separated financial activities by creating a wall between insurance and banking (Neale & Peterson, 2005).

On November 4, 1999 Congress enacted the Gramm-Leach-Bliley Act (Yeager, et al., 2007), also known as the Financial Services Modernization Act. This act deregulated the financial services industry by expanding the powers of financial institutions. Most of the barriers that existed between the three different financial sectors were removed. All three financial sectors were allowed to sell each other's products and had access to a broader customer base. Essentially, this act allowed rapid consolidation of the industry.

According to classical economic theory, without any government regulation individual utility (satisfaction) would be maximized in the long run under perfect competition (Copeland & Weston, 1992). Even though perfect competition does not exist and may never have existed, there is still workable competition (Williams, 1987). In their paper, Neale and Peterson (2005) say that the enhanced competitiveness in the global economy, the broader customer base, and the potential for consolidation are expected to lead to greater profitability within the U.S. financial industry.

In order to answer the research questions, the following three areas need to be reviewed: (a) Leadership Theory based on personality, (b) the selection process of the new CEO, and (c) the announcement effect of the new CEO. When CEOs are replaced, questions are asked about the successor (Vancil, 1987). The CEO's personality, his/her knowledge of the market and his firm, his prior experiences, and his demographic information are useful in analyzing and predicting the firm's future direction.

Leadership Theories

When a company announces a new CEO, the media (Robbins, 2001) is quick to describe this person as charismatic, enthusiastic, a great motivator, or perhaps even savior. These terms are known as *traits* and allow for concise descriptions that can provoke a quick emotional response, especially among nervous shareholders or rival companies. The emphasis on personality is understandable since it has long been assumed that leaders are successful largely because of innate qualities, not merely because of their knowledge or experience: “A lot of companies gradually realize that a great leader is a great leader regardless of the industry. And great leadership is infinitely more difficult to teach than industry knowledge” (Carey & Ogden, 2000, p. 151)

However, there are many schools of thought in regards to leadership and its impact on and its role within a company. According to Jago (1982, p. 315), each has its limits in terms of practical application: “Multiple interpretations of leadership phenomena exist, each providing some insight into the role of leader but each remaining an incomplete and wholly inadequate explanation of complex relationship.” It is therefore helpful to analyze the various features of each before a more detailed discussion of the importance of personality as outlined in the *leadership trait approach theory*.

Standard leadership theories. Leadership theories can be divided into three main categories. The first consists of *the trait approach* and *the style approach*, both of which define leadership from the leader’s point of view (Northouse, 2001). There are other schools of thought (*situational leadership theory*, *contingency theory*, and *path-goal theory*) that define leadership as the ability to adapt to the follower and the context. The third and final category (*the leader-member exchange theory*) defines leadership as an

interactive, dyadic relationship between both leaders and followers. There are, of course, notable differences between theories within the same category. For example, *the style approach* (Robbins, 2001) emphasizes the behavior of the leader, whereas *the trait approach* focuses on the personality characteristics of the leader.

According to *the situational leadership approach* (Northouse, 2001), effective leaders can accurately diagnose the current development level of subordinates in a task situation and then exhibit the prescribed leadership style that matches that situation. In other words, leaders analyze the conditions and change their leadership style to best suit the circumstance. Instead of dictating the environment, they adapt to it.

Similarly, Fiedler's *contingency theory* (Robbins, 2001) is also concerned with styles and situations and provides the framework for effectively matching the leader and the situation. It is a refined mixture of style approach and situational approach theories.

Path-Goal theory, most of which was developed by House and Aditya (1997), examines how leaders motivate subordinates to accomplish designated goals. This theory illustrates how leaders can enhance employee performance and satisfaction by focusing on employee motivation. The underlying assumption (Northouse, 2001) is based on expectancy theory. That is to say, subordinates will be motivated if they think that they are capable of performing their work and that their efforts will result in a certain outcome or the payoffs for doing their work are worthwhile.

The third category, *leader-member exchange theory* (LMX theory) (Robbins, 2001), focuses on the leader-member relationship as a priority, and therefore effective communication in leader-member relationships is essential. This theory recognizes the existence of in-groups and out-groups within a group or organization. In-group members

are willing to do more than what is required in their job description and look for innovative ways to advance the group's goal. In contrast, out-group members act strictly within their prescribed organizational roles. The leader's role is to differentiate between in-group members and out-group members, giving the former (in-group members) more responsibilities, more opportunities, and more support.

A fairly recent theory, the *transformational leadership approach* (Northouse, 2001), does not fall directly into any of the above categories, but instead borrows many of their ideas. This approach examines the process by which certain leaders are able to inspire followers to accomplish great things. It is similar to trait theory in that it provides "individualized consideration and intellectual stimulation" and describes leaders who possess charisma (Robbins, 2001, p. 329).

Leadership trait approach theory. Leadership trait approach theory was originally developed from a branch of psychology's personality theories. This theory, unlike other personality theories that emphasize the importance of early childhood experience in personality development, focuses on the present, already developed adult personalities. Personality is defined as the sum of total ways in which an individual reacts and interacts with others. It has two important parts: (a) the unique differences that distinguish a person from everyone else and (b) its relatively stable and enduring quality (Robbins, 2001). Personality can change and develop, but the degree to which change is possible is partly dependent upon age. Allport and Odbert believed that some traits are inherited and that each individual has a unique constellation of traits. On the other hand, by using factor analysis, Cattell claimed that the complexity of human personality could be explained with only twenty three traits (Morris & Maisto, 2005).

However, recent scholars have insisted that five traits are sufficient: extroversion, agreeableness, conscientiousness, emotional stability, and culture [openness to experience] (Robbins, 2001). They also claim that these Big Five dimensions of personality are reliable predictors of job performance, especially when other criteria such as technical skills and experience are considered. Judge et al. (2002) concluded that the five-factor model had multiple correlations with leadership, indicating strong support for the leader trait perspective as traits are organized according to the five-factor model. Also, each of these five traits has multiple facets. For example, agreeableness includes trust, straightforwardness, altruism, compliance, modesty, and tenderness (Jang, Livesley, McCrae, Angleitner, & Riemann, 1998).

After reviewing the literature describing the relationship between personality and job performance, Barrick and Mount as cited in Judge, Bono, et al. (2002) determined that the validity of personality as a predictor of job performance is generally quite low. However, they admitted that when the previous studies were conducted, no well-accepted taxonomy existed for classifying personality traits. Therefore, it was not possible to determine whether or not there were consistent, meaningful relationships between particular personality constructs and performance criteria in different occupations. In response, Judge, Bono, et al. (2002) suggested replacing the words “job performance” with “leadership” in Barrick and Mount’s paper. In other words, personality is a predictor of leadership (Hogan & Kaiser 2005), but not necessarily job performance.

Leadership has two broad categories: leadership emergence and leadership effectiveness (Judge, Bono, et al., 2002). Leaders emerge when someone within a group is perceived as leader-like. Thus, leader emergence occurs when an individual is viewed

as a leader with only limited information about that individual's performance. This is a within-group phenomenon. In contrast, leadership effectiveness refers to a leader's performance in influencing and guiding the activities of his unit toward achievement of its goals. This is a between-groups phenomenon.

In a Harvard working paper (Wasserman, Nohria, & Anand, 2001), three scholars argued that the debate question, "Does leadership matter?" might be misdirected. They said that the question should be, "When does leadership matter?" They showed that the impact of CEOs differed markedly by industry, and that CEOs have the most significant impact where opportunities are scarce or where CEOs have slack resources. Thus, their study showed that a CEO's impact is different depending on type of industry and firm size.

The basic premise (Northouse, 2001) is that human behavior can be summarized by a few traits. Psychologists say that a trait is a dimension of personality used to categorize people according to the degree to particular characteristic. In other words, traits are building blocks of personality. Traits occur in combinations, and these combinations make each person unique. Traits are organized hierarchically based on how much they influence behavior. People can have more of a trait by demonstrating their behavior more frequently with more intensity across a wider range of situation.

Psychologists (Morris & Maisto, 2005) say that traits describe individual difference; people respond to the same situation in different ways. They also insist that traits are bipolar; for any trait, there is an opposite.

The trait theories of leadership – theories that sought personality, social, physical, or intellectual attributes that differentiated leaders from non-leaders – date back to the

1930s (Robbins, 2001). During this time, research concentrated on determining the specific traits that clearly differentiated leaders from followers. People assumed potential leaders could be identified by observing certain traits. Some of these traits, it was reasoned, could be honed through training and practice, but one still had to be born with the potential. Leaders could be made, but only if they were born with the right stuff (Northouse, 2001).

The trait theories were one of the first systematic attempts to study leadership. In the mid-1900s, research challenged the theories by questioning the universality of leadership traits. The cumulative findings from more than half a century of research lead to a conclusion that although some traits may increase the propensity of success as a leader, none of the traits guarantee success (Robbins, 2001).

In a major review in 1948, Stogdill suggested that no consistent set of traits differentiated leaders from non-leaders across a variety of situations (Northouse, 2001). He said that an individual with leadership traits might be a leader in one situation, but not in another. Rather than being a quality that individuals possessed, leadership was re-conceptualized as a relationship between people in a social situation. Personal factors related to leadership continued to be important, but researchers contended that these factors were to be considered as relative to the requirements of the situation (Morris & Maisto, 2005).

Leadership research began with an emphasis on identifying the qualities (traits) of great individuals. Then it shifted to include the impact of situations on leadership. Most currently, it has emphasized the behavioral styles of leaders (Robbins, 2001).

Leadership can be viewed as a trait or set of traits (Jago, 1982). In other words, leadership can be viewed as a measurable and quantifiable property possessed by different people in different amounts. Alternatively, it is possible to focus on observable leader behaviors rather than on inherent traits. From this perspective, leadership exists primarily in the actions of the leader. Furthermore, it seems certain background characteristics (Marsh, 1989) can also be associated with leadership capability. Marsh quoted Burack's research in his dissertation paper:

Leaders, if not born, seem to be made early in their lives by their experiences up to and including high school. While a clear answer to the question is yet to be determined, indications are that there exist basic characteristics in people which can readily develop into necessary leadership qualities under the proper conditions. If these basic ingredients are not present, training for leadership might well be misplaced. (p. 94)

While no one can argue that good leaders have most or all of the good traits, it is easy to find effective leaders who have at least some of these traits. Likewise, it is also easy to find people who exhibit nearly all of these traits, but who are terrible leaders. So effectiveness and efficiency of leadership would be inadequate until personal and situational characteristics have been integrated, as Stogdill (1948) predicted.

Although the trait theories are neither accurate nor enough, they do provide valuable information about leadership. They can be applied to individuals at all levels and in all types of organizations. Although a definitive set of traits is not provided by the trait approach (Northouse, 2001), the approach does provide direction in regards to which traits are good to have if one aspires to take a leadership position. By taking personality tests and other similar questionnaires, individuals can gain insight into whether or not they have certain traits deemed important for leadership, and they can pinpoint their strengths and weaknesses.

Managers can use information from the trait approach theory to assess where they stand within their organization and what they need to do to strengthen their position (Northouse, 2001). It can suggest areas in which their personal characteristics are very beneficial to the company and areas in which they may wish to receive more training to enhance their overall approach. Managers can then further develop a deeper understanding of who they are and how they will affect others in the organization.

According to her dissertation paper regarding personality traits of executive women (Gmelin, 2005), the personality scores of executive women are consistent with leadership trait theory. The issue is leadership style caused by personality.

Many scholars believe that the CEO's personality is a critical and influential factor in the firm (Miller & Droge, 1986). Miller and Droge assert that the CEO's personality impact is greater in small and young firms than in large and old firms (banks and government included) for the firm's performance. We can expect the impact of the CEO to be direct and pervasive.

The CEO as a high achiever (Miller & Droge, 1986) influences the firm's structure. So the need for achievement in personality is a critical factor for the successful companies.

The analysis of CEO's traits (personality) (Hogan & Kaiser, 2005) is more important than ever before for successfully implementing major organizational objectives based on inside and outside environmental changes. Even though those traits are very subjective and unique to CEOs, and the traits are very tough to convert into numbers for each potential CEO in order to predict who the right CEO would be for the company,

fortunately some demographic factors and past experiences through the CEO's biography could be used as proxies to predict the firm's future.

The CEO's intelligence and mental abilities (Morris & Maisto, 2005) are partly heredity and partly where and how he has grown up – education, family, and work environment, etc. Schmidt and Hunter (Judge, et al., 2004) proclaimed that intelligence is the most important trait or construct in all of psychology, and the most successful trait in applied psychology. They said that intelligence is one of the best predictors of general job performance. In the complex jobs, the relationship between intelligence and performance is stronger.

In a Gallup Poll before the 2000 presidential election (Judge, et al., 2004), 90% of Americans responded that the candidate should understand complex issues. Judge, et al. (2004) cite Lord, Foti, and De Vader, who found that intelligence was the only attribute that is seen as a critical feature that must be possessed by all leaders. They also concluded that intelligence is a key characteristic in predicting leadership perceptions. But Rubin, Bartels, and Bommer (Judge, et al., 2004) argued that intelligence was more strongly related to perceived intellectual competence of the leader than to leadership emergence.

Locke (Judge, et al., 2004) argued that cognitive ability to gather, integrate, and interpret enormous amounts of information is important for leaders as decision makers. Leadership also requires a considerable measure of creativity, which is, in turn, a reflection of a leader's intelligence. Leaders generate creative solutions on their own and may stimulate follower creativity through follower intrinsic motivation and high quality leader-member exchange.

Rushton (Judge, et al., 2004) concluded that creativity and intelligence are distinct, but related, constructs. He said that intelligent leaders are not only better problem solvers, but they are also more likely to become creative and foster the creativity of their followers.

If people believe that leaders are endowed with certain characteristics, then when people observe these characteristics in others, they infer leadership or leadership potential to exist. Rubin et al. (Judge, et al., 2004) noted that individuals seem to share a common understanding about the traits that leaders possess and these traits are used as benchmarks for deciding emergent leadership.

Fiedler and Garcia's cognitive resource theory (Judge, et al., 2004) assume that intelligence and experience and other cognitive resources are factors in leadership success. In order to predict leadership success, the level of stress as well as cognitive capabilities must be considered. Their theory predicts that a leader's cognitive ability contributes to followers' performance only when a leader communicates using directive behavior.

At the same time, stress (Robbins, 2001) affects the intelligence-decision quality relationship. The theory predicts that a leader's experience is positively correlated with decision quality under high stress. Therefore, a CEO's past experience or expertise is highly significant in solving the problems his or her company faces. Fiedler and Garcia (Robbins, 2001) also propose that leader intelligence and experience is irrelevant for simple tasks.

If the above theory is correct, we can conclude that intellect, emotional motivation, competence, and self discipline are among the most important personality traits for a successful CEO.

Before repealing the Glass-Steagall Act, barriers to the entry of new firms into a market were high in the insurance industry. Barriers to the entry (Leftwich & Eckert, 1985) may be inherent in the nature of the market or existing firms and government units may have erected them. That is, they may either be natural or artificial. The Glass-Steagall Act itself (Downes & Goodman, 1991) made CEOs in the insurance industry less competitive compared with those in the IT and software industries, although it does not mean that they were less intellectual or less competent. But their decision making choices had been considerably less than those in other rapid changing industries.

The CEO Selection Process

A Board of Directors must select a CEO who can maximize the firm's value. Without any doubt, the Board of Directors (Carey & Ogden, 2000) tries to find the CEO by considering the firm's current situation and its future growth and direction. According to Joos, et al. (2003), four factors should be considered: effort, risk, human capital, and horizon. Depending upon the firm's situation, the Board of Directors will have to select the new CEO based upon the four factors criteria. The most idealistic candidate (Joos, et al., 2003) would be low effort averse, low risk averse, long horizontal, and most knowledgeable in both the general and the specific management approaches that relate to the firm and the industry. In other words, a Board of Directors requires a sincere, trustworthy, aggressive, younger but experienced, intelligent and intellectual CEO.

Although all four factors are typically unobservable to outsiders (Joos, et al., 2003), each factor is correlated with the incoming CEO's age and the type of firm. The effort averse factor is directly related to the agency's problem dealing in the corporate finance area (Copeland & Weston, 1992). Because a CEO works as an agent for the stockholders, there is no guarantee that the CEO will always act in their best interest. In most firms, nontrivial monitoring costs from the owners' pockets incur to keep the CEO in line. However, if the CEO has a certain amount of ownership in the firm, monitoring costs can be reduced.

Start-ups, high growth, and financially distressed firms (Joos, et al., 2003) tend to hire younger CEOs. Each company has different attitudes toward risk, depended upon the firm's financial health. Even though a CEO is low risk averse, he can have a limited option to take action if the firm is not financially strong. The Board of Directors closely monitors the CEO even though executive compensation contracts address managerial incentive problems. Therefore riskier firms tend to appoint younger CEOs (Joos, et al., 2003).

Due to the CEO's compensation plan (Joos, et al., 2003), there is some relationship between the CEO's age and the firm's growth option. So if the firm has long-term growth projects, the firm will tend to engage a younger CEO.

Since a CEO's general management skills, along with firm and industry-specific knowledge, increase with firm size, there is a positive correlation between firm size and the CEO's age (Joos, et al., 2003). Those skills are normally obtained from prior experience through jobs. Thus, high-tech firms require younger CEOs to be more familiar with the emerging technologies in their industry. The CEOs of regulated firms that

operate under more constrained opportunity sets tend to be younger when hired if the firms do not require general management and firm-specific knowledge. However, if the regulated firms require industry-specific knowledge, then the CEO's tend to be older (Joos, et al., 2003).

Hadlock, Lee, and Parrino (2002) say that utility CEOs tend to be older when appointed to office and graduate from less prestigious schools with legal backgrounds when compared to CEOs of unregulated firms. Their interpretation is that managerial talent and effort are not very important factors of job performance. They also found that utility firms rarely appoint outsiders as CEOs.

Pfeffer and Salancik (2003) suggest that environmental contingencies affect the replacement of CEOs. In other words, organizations tend to select CEOs to handle current organizational problems. For example, if firms face uncertainty and instability derived from competitive interdependence, these firms will likely select new CEOs from within the industry – from competing firms – in an effort to reduce their competitive uncertainty.

When powerful CEOs (Westphal & Zajac, 1995) appoint new board members, they select demographically similar ones. If this is true, incumbent board members will choose the new CEO based upon similar demographic factors. According to Westphal and Zajac there is a certain amount of bias in the selection process:

Social psychological studies on performance evaluation and hiring practices consistently find bias in evaluation decisions in which the parties are demographically similar. In experimental and field research on hiring decisions, studies have demonstrated a positive relationship between applicant-rater similarity and the perceived quality of the applicant. (p. 61)

Additional evidence suggests that similarity frequently enhances interpersonal attraction (Bryne, Clore, & Worchel, 1966; Bryne, 1971). Early interpretations of these findings invoked a reinforcement model, arguing that similarity provides mutual reinforcement or consensual validation of each individual's beliefs, thus enhancing interpersonal attraction and producing bias in evaluation decisions.

When the board of directors selects the new CEO, it is natural to select one with similar demographic factors, functional background, age, educational level, and insider/outsider status (Westphal & Zajac, 1995). Even though the new CEO is selected in the company's best interest, the market could perceive and judge that CEO differently.

A change of CEO is affected by various factors such as competition between top managers, the role of the Board of Directors, and large blockholders. Warner, Watts, and Wruck (1988) said that if a firm selects an outsider, the benefits must be greater than the costs, otherwise insiders' incentives may diminish and employee morale might suffer. Moreover, the search for an outsider is a considerable expense for any company and therefore the selection of an outsider usually occurs when the company enters or expands into new areas in which the firm has no specific human capital.

Agrawal, Knoeber, and Tsoulouhas (2006) argue that firms tend to promote new CEOs from within. Outsiders are said to be handicapped. In order to become a new CEO as an outsider, that CEO must outperform insider candidates. Firms with a product, or line of business organizational structure, are likely to choose an insider as their CEO.

Carey and Ogden (2000) insist that strong boards must make rigid and systematic CEO selection standards and link the development of their succession plans to the new CEO's compensation. At the same time, the boards need to establish a Global

Intelligence comprehensive evaluation system to review the talented executives both from inside and outside the company in order to increase the probability of a successful succession of the new CEO.

The Announcement Effect of a New CEO on the Stock Market

The stock market immediately reflects the firm's value based on the perception and reputation of the new CEO. The large institutional investment company's analysts rather than individual investors, judge the new CEO when they buy or sell the firm's stocks. When a company first announces a new CEO, the market studies and judges the CEO based upon his past experiences and accomplishments, leadership style, and personality based on social and industrial and organizational psychology (Morris & Maisto, 2005). The market judges whether or not the new CEO can act as a decision maker and handle the firm's current and future problems. If the company has existing problems, then the market asks if he is the right person for the job.

Other scholars (Warner, et al., 1988) begin their arguments with the major hypothesis that the probability of a top management change is inversely related to stock price performance. Whenever a CEO is hired or fired, the capital markets react to that news. Even though the wealth effect for stockholders caused by appointments of new CEOs (Furtado & Rozeff, 1987) is small, the significance is meaningful. Furtado and Rozeff found that internal promotions gave good signals to the capital markets rather than external ones due to the existence of firm-specific human capital and the higher information costs associated with external hire. At the same time it minimizes the internal disruption during a change of the CEO (Vancil, 1987). For small companies, the frequency of internal promotion tends to decline due to less well-developed labor markets

(Furtado & Rozeff, 1987). Accordingly, the announcement and dismissal effects of a CEO in the stock market are directly related to shareholder wealth maximization.

In selecting candidates for the CEO position from both the inside and outside, macro and micro factors should be considered. Micro factors are firm-specific and macro factors are, in general, non-firm specific. Under limited competition as is found in insurance and utility industries, micro factors are considered more important than macro-factors. On the other hand, under unlimited competition, macro factors are considered more important than micro-factors. Therefore, Hi-Tech industries may select their CEO from the outside more comfortably than a CEO from the inside (Joos, et al., 2003).

Warner, et al. (1988) claim that stock returns are a potential source of information, even though the top managers' impact on establishing the firm's value is not directly observable. They maintain stock return itself is a noisy measure of management performance and is influenced by other exogenous factors. In other words, stock return cannot incorporate all the information about management performance. They hypothesize that the probability of a top management change is inversely related to stock price performance. Changes in management are followed by poor stock performance. They claim that:

Abnormal stock return at announcement is the sum of two components. One is an information component that is negative if the change signals worse management performance than anticipated. The second is a real component that is positive if the change is in shareholders' interest. A positive net effect is expected only if the real component is larger in absolute value than the information component. (Warner, et al., 1988, p. 466)

They then conclude that there is usually no average stock price reaction detected at the announcement date.

However, Furtado and Rozeff (1987) say that Warner, et al.'s result was partly contaminated due to the inclusion of a large number of executive retirements and departures, and should have been limited only to the appointment of a new CEO. Empirical research regarding stock price reaction to management change gives conflicting results about the possible benefits of internal mechanisms of corporate control.

Summary

In order to ensure that a company evaluating CEO candidates will choose the one who is most qualified and capable, the following three areas need to be reviewed: (a) Leadership Theory based on personality, (b) the selection process of the new CEO, and (c) the announcement effect of the new CEO. When CEOs are replaced, questions are asked about the successor. The CEO's personality, his/her knowledge of the market and his firm, his prior experiences, and his demographic information are useful in analyzing and predicting the firm's future direction.

The CEO's personality is a critical and influential factor in the firm. The analysis of CEO's traits (personality) is more important than ever before for successfully implementing major organizational objectives based on inside and outside environmental changes. Even though those traits are very subjective and unique to CEOs, and the traits are very tough to convert into numbers for each potential CEO in order to predict who the right CEO would be for the company, fortunately some demographic factors and past experiences through the CEO's biography could be used as proxies to predict the firm's future.

Since a CEO's general management skills, along with firm and industry-specific knowledge, increase with firm size, there is a positive correlation between firm size and the CEO's age. Those skills are normally obtained from prior experience through jobs. In brief, the above argument can be summarized into a simple multiple regression model as follows:

$$\begin{aligned} \text{Company's performance} = & \text{age} + \text{education level /quality} + \text{prior experience} + \\ & \text{origin (insider/outsider)} + \text{tenure} + \text{€ (CEO's personality and leadership style} \\ & \text{+other factors)} \end{aligned}$$

However since the CEO's personality and leadership style could not be assigned numbers, "€" was used to denote the CEO's personality and leadership style.

Chapter 3 – Research Design and Methodology

Problem Statement

What relationship, if any, exists between a firm's performance and a new CEO's personality and leadership style, as well as his/her demographics of age, education, and prior experiences?

Research Hypotheses

Research hypothesis 1. Is there a difference between the new insurance CEOs' age, their education level, and tenure before and after the repealing of the Glass-Steagall Act in 1999?

(*The Glass-Steagall Act of 1933 was legislation passed by Congress authorizing deposit insurance and prohibiting commercial banks from owning brokerage firms. President Bill Clinton repealed the act in 1999. The repealing of the act reduced the constraints in the financial industry, thus rendering more competition among financial companies.)

Specific hypotheses:

1. There is/is not a significant difference in the new insurance CEO's age before and after the repealing of the Glass-Steagall Act in 1999.
2. There is/is not a significant difference in the education levels of newly-hired CEOs in the insurance field prior to and following the repeal of the Glass-Steagall Act in 1999.
3. There is/is not a significant difference in the new insurance CEO's tenure before and after the repealing of the Glass-Steagall Act in 1999.

Method

The sample size consists of 110 incoming CEOs from 48 companies in the insurance industry during the period 1988 to 2006.

For specific hypothesis 1, a two-sample t-test was used to compare the means of two populations (groups) by taking independent samples from each. This is sometimes referred to as a parallel-groups design (Kleinbaum & Kupper, 1978). The mean represents the center of the population. If the means are different, then the populations are different. Other parameters of the two populations (such as the variance) are also considered when performing this analysis.

First, the means and variances for the CEOs' age, education level, and tenure pre- and post- 1999 were obtained. The means were then analyzed and the differences calculated. Then the differences in the means were tested for statistical significance using a t-test, where the critical value $\alpha = 0.05$. It is assumed that the true difference between the means is zero.

For specific hypothesis 2, chi-square test (Kleinbaum & Kupper, 1978) was employed.

A chi square statistic was used to investigate whether distributions of categorical variables differ from one another. Here education level is a categorical variable. Eventually each categorical variable is expressed in numerical form. On page 51, a CEO who has a master degree or above is categorized as "0" and a CEO with a bachelor degree or less is categorized as "1".

This allows for a 2 x 2 contingency table comprising the number of CEOs who have a master degree or above and number of CEOs with a bachelor degree or less, pre and post the GBL Act.

For specific hypothesis 3, the same two-sample t-test used in specific hypothesis 1 was used to compare the means of two populations (groups) by taking independent samples from each.

Research hypothesis 2. Is there a correlation between the new CEO's age, school tier, degree and prior experiences and the change in company's performance?

Specific hypotheses:

1. There is/is not a significant correlation between the change in revenue and the variables of age, school tier, degree, and prior experience for new CEOs.
2. There is/is not a significant correlation between the change in stock price and the variables of age, school tier, degree, and prior experience for new CEOs.
3. There is/is not a significant correlation between the change in return on equity and the variables of age, school tier, degree, and prior experience for new CEOs.

Method

The sample size consists of 214 incoming CEOs from 120 companies in the financial industry during the period 1988 to 2006. Multiple regression analysis was used for studying the straight-line relationships among two or more variables. In the more general multiple regression model, there are p independent variables:

$$y_i = \beta_0 + \beta_1 x_{1i} + \cdots + \beta_p x_{pi} + \varepsilon_i,$$

The x es are the independent variables. The y is the dependent variable. The β s are the unknown regression coefficients. The critical value α is 0.05.

The following models were used:

- Y_t (Change in revenue) = $\beta_0 + \beta_1$ (Incoming CEO's age) + β_2 (School Tier) + β_3 (Degree) + β_4 (Prior Experiences) + ϵ
- Y_t (Change in stock price) = $\beta_0 + \beta_1$ (Incoming CEO's age) + β_2 (School Tier) + β_3 (Degree) + β_4 (Prior Experiences) + ϵ
- Y_t (Change in return on equity) = $\beta_0 + \beta_1$ (Incoming CEO's age) + β_2 (School Tier) + β_3 (Degree) + β_4 (Prior Experiences) + ϵ

Research hypothesis 3. Is there a correlation between the size of the firm (small, medium, or large based on the rank of asset sizes), the new CEO's origin (insider/outsider) and tenure, and the change in company's performance?

Specific hypotheses:

1. There is/is not a significant correlation between the change in revenue and the variables of firm size, the new CEO's origin, and tenure.
2. There is/is not a significant correlation between the change in stock price and the variables of firm size, the new CEO's origin, and tenure.
3. There is/is not a significant correlation between the change in return on equity and the variables of firm size, the new CEO's origin, and tenure.

Method

Same Multiple Regression Analysis was used for studying the straight-line relationships among two or more variables. The critical value α is 0.05.

The following models were used:

- Y_t (Change in revenue) = β_5 (Firm Size) + β_6 (Insider/Outsider) + β_7 (Tenure) + ϵ

- Y_t (Change in stock price) = β_5 (Firm Size) + β_6 (Insider/Outsider) + β_7 (Tenure) + ϵ
- Y_t (Change in return on equity) = β_5 (Firm Size) + β_6 (Insider/Outsider) + β_7 (Tenure) + ϵ

Research hypothesis 4. Is there a difference in demographic independent factors (particularly in age, level of education, and tenure) among new CEOs of insurance companies and their counterparts at both other financial institutions and IT companies?

Specific hypotheses:

1. There is/is not a significant difference in the independent demographic factor of age among new CEOs of insurance companies and their counterparts at both other financial institutions and IT companies.
2. There is/is not a significant difference in the independent demographic factor of level of education among new CEOs of insurance companies and their counterparts at both other financial institutions and IT companies.
3. There is/is not a significant difference in the independent demographic factor of tenure among new CEOs of insurance companies and their counterparts at both other financial institutions and IT companies.

Method

The analysis of variance (ANOVA) model was used to compare the means of each independent nominal variable such as age, level of education, and tenure among CEOs in insurance companies and their counterparts at both other financial institutions and IT companies. ANOVA is simply an extension of the t -test. ANOVA calculates an F statistic or F ratio.

$$F = \frac{\left(\frac{RSS_1 - RSS_2}{p_2 - p_1} \right)}{\left(\frac{RSS_2}{n - p_2} \right)}$$

where RSS_i is the residual sum of squares of model i . F here is distributed as an F-distribution, with $(p_2 - p_1, n - p_2)$ degrees of freedom. Here the critical value α is 0.05.

Methodology

As shown in Chapter 2, the stock price movements that subsequently follow the announcement of the new CEOs are related to reputation (Karuna, 2006) - skills, capabilities, and performances - which in turn are derived from unique leadership. Furthermore, leadership style is related to personal traits as well as other demographic factors that include: age, level of education (school tier and type of degree), prior experiences (whether as a Chief Operating Officer (COO), Chief Financial Officer (CFO) or otherwise), the size of the firm, the new CEO's origin (whether as an insider/outsider), and tenure.

There are limitations in this study. Because a company's performance is not solely depended on one CEO's leadership, we have to add each division's head in the organization to this study in order to get the clear result. A CEO has a power to hire a core team of unusually qualified persons (Marsh, 1989) in order to cope with the problems and uncertainties in the future.

Sample selection. The population is made up of U.S. companies in the insurance, securities, diversified financial, commercial banks, and IT industries that file financial statements with a government agency.

First, sample companies are chosen from the 2007 annual edition of *Fortune* magazine's "Fortune 1000" companies. Companies are ranked by revenue. The sample

size is 264 incoming CEOs from 120 companies from 1988 to 2006. The sample size of financial industry consists of 214 incoming CEOs from 95 companies whereas that of the insurance consists of 110 incoming CEOs from 48 companies, and sample size of IT industry consists of 50 incoming CEOs from 25 companies. However, depending upon each hypothesis, sample sizes are different because of insufficient data. For example, an incoming CEO's age was not available but tenure was available in one set of data. Hence the sample sizes are different in the output of tests in chapter 4.

Companies were excluded if those companies are delisted from stock exchanges through merger, acquisition, or change of company's structure. All statistical data, such as company revenues, were obtained from numbers reported by *Fortune* magazine, Standard & Poor's Net Advantage, and *Yahoo! Finance*. The NCSS 2001 statistic software package was used to analyze the collected data. Other demographical data were obtained from online sources such as *Who's Who in Finance and Industry*, LexisNexis Academics, *Reuters*, *Yahoo! Finance*, *Wall Street Journal (WSJ)* on line, and *U.S. News and World Report*. CEO's name, age, prior experience, and tenure were mainly collected from LexisNexis Academic.

IRB approval. The researcher completed the National Institutes of Health's Web-based training course, "Protecting Human Research Participants," sponsored by the NIH Office of Human Subjects Research on March 26, 2008. The researcher obtained IRB approval to proceed with the research. The study was considered exempt as the research was limited to secondary data available to the public in books, periodicals and on-line resources. The study did not involve personal interviews or surveys.

Test Measures

Dependent Variable(s):

- Change in revenue – Observe change in revenue during new CEO's tenure.
- Change in stock price – Observe stock price changes during new CEO's tenure.
- Change in return on equity – Observe the change in return on equity during new CEO's tenure. Return on equity is the amount, expressed as a percentage, earned on a company's common stock investment for a given period. It is calculated by dividing common stock equity (net worth) at the beginning of the accounting period into net income for the period after preferred stock dividends but before common stock dividends (Downes & Goodman, 1991).

Independent Variable(s):

- Age – the new CEO's age his first year in office
- Level of education – the school tier and type of degree obtained
 - a) School Tier – school rank, according to *U.S. News and World Report*
 - b) Type of Degree – Bachelors, Masters, Ph.D, etc.
- New CEO's prior experiences and expertise – previous job positions, such as Chief Operating Officer (COO), Chief Financial Officer (CFO), CEO of another company or other
- Company size rank – determined by annual revenue in the Fortune.

- Insider/Outsider – whether the new CEO is from within the firm or is an outsider.
- Tenure – the period the new CEO is in office (the length of time that new CEO position is occupied)

Test Models

The following three regression models were used:

- Y_t (Change in revenue) = $\beta_0 + \beta_1$ (Incoming CEO's age) + β_2 (School Tier) + β_3 (Degree) + β_4 (Prior Experiences) + β_5 (Firm Size) + β_6 (Insider/Outsider) + β_7 (Tenure) + ϵ
- Y_t (Change in stock price) = $\beta_0 + \beta_1$ (Incoming CEO's age) + β_2 (School Tier) + β_3 (Degree) + β_4 (Prior Experiences) + β_5 (Firm Size) + β_6 (Insider/Outsider) + β_7 (Tenure) + ϵ
- Y_t (Change in return on equity) = $\beta_0 + \beta_1$ (Incoming CEO's age) + β_2 (School Tier) + β_3 (Degree) + β_4 (Prior Experiences) + β_5 (Firm Size) + β_6 (Insider/Outsider) + β_7 (Tenure) + ϵ

For the characteristics of these data, multiple regression analysis with dummy variables was used. A dummy variable or indicator variable (Kleinbaum & Kupper, 1978) is any variable in a regression equation that takes on a finite number of variables for the purpose of identifying different categories of a nominal variable. Examples of dummy variables include the following:

$$\beta_2 = \begin{cases} 1 & \text{if the school is in tier 1} \\ 0 & \text{if the school is in tier 2} \\ -1 & \text{if the school is in tier 3 or 4} \end{cases}$$

School tiers are based on data from *U.S. News and World Report* (2006)

$$\beta_3 = \begin{cases} 1 & \text{if CEO has a BA (AB) /BS degree or below} \\ 0 & \text{if CEO has a Master degree or above} \end{cases}$$

Some CEOs have a BS degree in accounting, economics, political science, social science, finance, business, commerce, law or industrial management. However, those BS degrees are changed to BA degrees. A BA degree in engineering, applied math, or statistics is changed to BS degree.

In the graduate degree, a MS degree in operation research, industrial management, finance, banking, management, management information, or actuarial study is equivalent to MBA degree.

$$\beta_4 = \begin{cases} 1 & \text{if CEO was previously a COO (Chief Operating Officer)} \\ 0 & \text{otherwise} \\ -1 & \text{if CEO was previously a CFO (Chief Financial Officer)} \end{cases}$$

$$\beta_5 = \begin{cases} 1 & \text{if firm size is below rank 300 according to } \textit{Fortune} \text{ magazine} \\ 0 & \text{if firm size is above rank 301, but below 700} \\ -1 & \text{if firm size is above rank 701, but below 1000} \end{cases}$$

$$\beta_6 = \begin{cases} 1 & \text{if the CEO is from inside, or within, the firm} \\ 0 & \text{if the CEO is from outside the firm} \end{cases}$$

Before becoming a CEO, if he/she was not at the company, the CEO is regarded as an outsider even though most of his time was spent at that company. For example, CEO A spent most of his life in company X before moving to Company Y. He returns to company X to be a CEO after spending two years in company Y. In this case he is still regarded as an outsider.

Chapter 4 – Results

The following is an examination of the findings related to the research hypotheses in Chapter 3. Each research hypothesis and its null hypothesis is presented followed by the findings, which are displayed in both table and visual form.

Research Hypothesis 1

Is there a difference between the new insurance CEOs' age, their education level, and tenure before and after the repealing of the Glass-Steagall Act in 1999?

(*The Glass- Steagall Act of 1933 was legislation authorizing deposit insurance and prohibiting commercial banks from owning brokerage firms. President Clinton repealed the Act in 1999, reducing the constraints in the financial industry and thus rendering more competition among financial companies.)

Specific hypothesis 1. There is/is not a significant difference in the new insurance CEO's age before and after the repealing of the Glass-Steagall Act in 1999.

Appendix A shows that there was an increase of approximately three years in the average age of new CEOs following the repeal of the Glass-Steagall Act in 1999. The time frame for this comparison is from 1988 to 2006. As mentioned in Chapter 1, the average age of new CEOs following deregulation is slightly older than the average age of new CEOs prior to deregulation. Before deregulation, previous CEOs' offspring and relatives became CEOs at a younger age because regulated firms are less complex and easier to manage (Joos, et al., 2003). The value of α is 0.031, which is less than the 5% critical level. Therefore we reject the null hypothesis.

Accept the alternative hypothesis for specific hypothesis 1

There is a significant difference in a new insurance CEO's age before and after the repeal of the Glass-Steagall Act in 1999.

Specific hypothesis 2. There is/is not a significant difference in the education levels of newly-hired CEOs in the insurance field prior to and following the repeal of the Glass-Steagall Act in 1999.

The number of CEOs who have a graduate degree or an undergraduate degree is shown in Table 1. At a value of $\alpha = 0.157$, which is greater than the 5 percent critical level, there is not a significant difference therefore the alternate hypothesis is rejected. Chi square was used to test the specific hypothesis 2.

Table 1

CEO's Education Level Pre and Post GBL (1999)

	Before GBL	After GBL
Bachelor	39	14
Graduate	31	23

Accept the null hypothesis for specific hypothesis 2.

There is not a significant difference in the education levels of newly-hired CEOs in the insurance field prior to and following the repeal of the Glass-Steagall Act in 1999.

As Table 2 shows, since 1988 an increasing number of incoming CEOs have more MBA degrees. As explained in the previous chapter, the incoming CEOs are becoming more professional. The securities industry has the highest proportion, 55 % of CEOs with MBA, followed by commercial banks (44%), and diversified financial industry (39%) in the financial industries. The industry with the lowest percentage of CEOs with MBAs is healthcare (20%) and the property and casualty insurance industry with 21%.

The above data are not surprising given the CEO's role as decision-maker in the rapidly changing and highly competitive world of business. Today a CEO must have a professional education background to know how to process information and act upon it, or to predict how competitors might act if given the same data. MBA degrees give future CEOs the thinking skills necessary to put fundamental business concepts and theories into practice.

Table 2

The CEOs Who Had an MBA Degree vs. Non MBA Degree Between 1988 and 2006

MBA	# of Companies	# of CEOs	# of MBA	# of non- (MS)
<i>P & C</i>	23	47	10 (21%)	11
Life & Health	14	38	12 (32%)	8
Healthcare	11	25	5 (20%)	5
Commercial Bank	23	54	24(44%)	7
Diversified Financial	11	28	11(39%)	7
Securities	13	22	12(55%)	2
Information Technology	6	16	2(13%)	(6)
Computer Software	7	17	4(24%)	(2)
Internet Services and Retailing	7	9	4(44%)	(2)
Financial Data Services	5	8	4(50%)	0

- # of CEOs who have only BA/BA or below are not counted on the above table.
- (%) is a percentage of # of MBA / # of CEOs
- () is # of MS degree.

Most finance major graduate students with MBA degrees join high paying security and investment companies as well as diversified financial companies on Wall Street (Myser, 2009) and in commercial bank areas. This trend is partly due to the atmosphere within these industries and the professional knowledge that is required because of the complexity of the work itself. The security industry in particular must compete with

investment companies throughout the world by using quick and precise judgment.

Moreover, the CEOs in this industry must have multi-dimensional intelligence to digest and to overcome in order to endure the higher stress level.

The educational data for the IT industries in Table 2 show that CEOs in the IT industry have fewer MBA degrees than their counterparts in the financial industries. On the other hand, the IT industry has a higher number of CEOs with MS degrees.

Similarly, the financial data services and the internet service and retailing companies have a higher proportion of CEOs with MBA degrees than do their counterparts in computer software and information technology, no doubt because of the nature of the work itself. Financial data services and internet service and retailing are more business oriented and much more competitive than information technology companies, who are often forced to specialize, thus having fewer direct competitors.

Specific hypothesis 3. There is/is not a significant difference in the new insurance CEO's tenure before and after the repealing of the Glass-Steagall Act in 1999.

Appendix B shows the result of two-sample test for CEOs' adjusted tenure. The tenure of a current incumbent CEO is based on year 2006. However, adjusted tenure is excluded if a current CEO has continued to serve in this capacity for less than 7 years. In other words, current CEOs are not included unless they have served in this capacity (for the same company) for at least seven years.

The results show that since 1999, 30 percent of CEOs are still working as CEOs for the same company, so tenure cannot yet be determined. As previously mentioned, the period after 1999 (6 years) is far shorter than the period before 1999 (12 years), so the data may not be unbiased. This study does not include data from 2007 and 2008, mainly

because of the current recession, which began in 2007. The thinking here is that in many cases the performance of CEOs often had little or nothing to do with the performance or failure of a business.

As Appendix B shows, the value of α is 0.000, which is less than the 5% critical level. Therefore we reject the null hypothesis. However, because of the shorter period range after 1999, this result might be inconclusive. However, if we assume that CEOs hired after 1999 remain in this position for five more years, the average, approximately 10.569 years ($5.569 + 5.0$), is still much less than the average of those hired before 1999, approximately 15 years (14.958). As expected, the average tenure of CEOs is decreasing significantly.

Accept the alternative hypothesis for specific hypothesis 3.

There is a significant difference in the new insurance CEO's tenure before and after the repealing of the Glass-Steagall Act in 1999.

Research Hypothesis 2

Is there a correlation between the new CEO's age, school tier, degree, and prior experiences and the change in company's performance?

Specific hypotheses

1. There is/is not a significant correlation between the change in revenue and the variables of age, school tier, degree, and prior experience for new CEOs.
2. There is/is not a significant correlation between the change in stock price and the variables of age, school tier, degree, and prior experience for new CEOs.
3. There is/is not a significant correlation between the change in return on equity and the variables of age, school tier, degree, and prior experience for new CEOs.

Method

The following models were used:

- Y_t (Change in revenue) = $\beta_0 + \beta_1$ (Incoming CEO's age) + β_2 (School Tier) + β_3 (Degree) + β_4 (Prior Experiences) + ϵ
- Y_t (Change in stock price) = $\beta_0 + \beta_1$ (Incoming CEO's age) + β_2 (School Tier) + β_3 (Degree) + β_4 (Prior Experiences) + ϵ
- Y_t (Change in return on equity) = $\beta_0 + \beta_1$ (Incoming CEO's age) + β_2 (School Tier) + β_3 (Degree) + β_4 (Prior Experiences) + ϵ

In multiple regression output, the coefficient of determination, R^2 , is a useful tool which gives the proportion of the variance of dependent variable that is predictable from the independent variables. The coefficient of determination is a measure to determine how much the dependent variable can be predicted using a certain model. For example, if R^2 is 0.46, it means that 46 percent of the total variation in Y can be explained by the linear relationship between X and the values of Y in the regression model. The rest 0.54 (54%) of the total variation in Y cannot be explained.

R, correlation coefficient, may be defined either as a ratio or a percentage. Since we use the percentage form, its values can range from minus one to one. A value of R near 0.0 indicates no linear relationship between the Y and the Xs, while a value near 1.0 indicates a perfect linear fit. Although popular, R should not be used indiscriminately or interpreted without scatter plot support for each of independent variables. Moreover, it is important to check the F-ratio in the analysis of variance to see if correlation is significant.

The company performance data are based on each company's fiscal year. For example, in the financial industry, 99% of the companies have accounting periods that end on December 31st of each year. However, the accounting periods in IT and software industries often vary, with some periods ending on March 31, June 30, or January 31, etc.

Therefore, for example, if a CEO is appointed on September 1, 2000 the company's performance is based on year 2001 when that company's accounting period ends on December 31. In other words, the figures for 2000 belong to the prior CEO. However, if a CEO is appointed on July 1st on exactly middle of a year the company performance data are assigned to both CEOs.

Even though some companies were listed as Fortune 1000 companies, these companies are excluded if they are acquired by or have merged with other companies, or if they have been de-listed (dropped) from the stock market because of a change in the company's structure (i.e. from stock company to mutual company). The company's performance data unit is a million dollar.

Specific hypothesis 1. There is/is not a significant correlation between the change in revenue and the variables of age, school tier, degree, and prior experience for new CEOs.

Appendix C gives the output of the model in the following equation: Y_t (Change revenue) = $\beta_0 + \beta_1$ (Incoming CEO's age) + β_2 (School Tier) + β_3 (Degree) + β_4 (Prior Experiences) + ϵ . The output is displayed to explain the relationship between the change in revenue and the independent variables such as incoming CEO's age, school tier, level of education (degree), and prior experience. As the Pearson correlations matrix shows,

prior experience, 0.076, correlates more closely with a change in revenue than with the other independent variables.

In this model the coefficient of determination, R^2 , is only 0.011, which says that there is little way of prediction by the independent variables of age, level of education, and prior experience for the dependent variable, the change in revenue.

Since the F-ratio is 0.275, giving α a value of 0.948, which is greater than the 5 percent critical level, the null hypothesis is accepted.

Accept the null hypothesis for specific hypothesis 1.

There is not a significant correlation between the change in revenue and the variables of age, school tier, degree, and prior experience for new CEOs.

Specific hypothesis 2. There is/is not a significant correlation between the change in stock price and the variables of age, school tier, degree, and prior experience for new CEOs.

Appendix D shows the output of the model Y_t (Change in stock price) = $\beta_0 + \beta_1$ (Incoming CEO's age) + β_2 (School Tier) + β_3 (Degree) + β_4 (Prior Experiences) + ϵ .

The data suggest that undergraduate school tier has a higher negative correlation with the change in stock price. This is followed by data showing incoming CEO's age, level of degree, and prior experience. The value of R^2 , 0.041, is higher than 0.011 in the previous model. So change in stock price is a better predictor with four independent variables than change in revenue. CEOs are more concerned with the change of stock price which reflects the value of the firm.

Only the null hypothesis of the schools in tiers 3 or 4 coded as "-1" is rejected. The α level is 0.047 which is less than 0.05, which means there is a significant correlation

between the change in stock price and the CEOs having graduated from a school in tier 3 or 4 which is not good private or public school. This is the result of simple correlation between change in stock price and schools in tiers 3 or 4.

The F-ratio equals 1.047, giving α value of 0.397, which is greater than the 5 percent critical level, and therefore the null hypothesis is accepted.

Accept the null hypothesis for specific hypothesis 2.

There is not a significant correlation between the change in stock price and the variables of age, school tier, degree, and prior experience for new CEOs. There is, however, a significant correlation between the change in stock price and school tier 3 or 4.

Specific hypothesis 3. There is/is not a significant correlation between the change in return on equity and the variables of age, school tier, degree, and prior experience for new CEOs.

As Appendix E shows, there is some correlation between the change in return on equity and the variables of age, 0.171, and prior experience, -0.134. The correlation between the variables of level of education and school tier and the change in return on equity is much lower. The value of R^2 , 0.204, is more predictable than the previous two instances of R^2 , 0.01 and 0.04 respectively. Since the value of the F-ratio equals 6.047, giving α value of 0, which is less than at the critical level of 0.05, the null hypothesis is rejected.

Accept the alternative hypothesis for specific hypothesis 3.

There is a significant correlation between the change in return on equity and the variables of age, school tier, degree, and prior experience for new CEOs.

Research Hypothesis 3

Is there a correlation between the size of the firm (small, medium, or large based on the rank of asset sizes), the new CEO's origin (insider/outsider) and tenure, and the change in the company's performance?

Specific hypotheses

1. There is/is not a significant correlation between the change in revenue and the variables of firm size, the new CEO's origin, and tenure.
2. There is/is not a significant correlation between the change in stock price and the variables of firm size, the new CEO's origin, and tenure.
3. There is/is not a significant correlation between the change in return on equity and the variables of firm size, the new CEO's origin, and tenure.

Method

The following models were used for insider and outsider separately.

- $Y_t (\text{Change in revenue}) = \beta_5 (\text{Firm Size}) + \beta_6 (\text{Insider/Outsider}) + \beta_7 (\text{Tenure}) + \epsilon$
- $Y_t (\text{Change in stock price}) = \beta_5 (\text{Firm Size}) + \beta_6 (\text{Insider/Outsider}) + \beta_7 (\text{Tenure}) + \epsilon$
- $Y_t (\text{Change in return on equity}) = \beta_5 (\text{Firm Size}) + \beta_6 (\text{Insider/Outsider}) + \beta_7 (\text{Tenure}) + \epsilon$

Specific hypothesis 1. There is/is not a significant correlation between the change in revenue and the variables of firm size, the new CEO's origin, and tenure.

Appendix F shows the result of the model Y_t (Change in revenue) = β_5 (Firm Size) + β_6 (Insider/Outsider) + β_7 (Tenure) + ϵ . The value of R^2 , 0.224, has improved significantly when compared to the previous model in research hypothesis 2. As the correlation matrix shows, there is greater predictability between change in revenue and a firm's size and tenure.

Since the value of the F-ratio equals 6.435, giving α a value of 0.0001, which is less than the 5 % critical level, the null hypothesis is rejected.

Accept the alternative hypothesis for specific hypothesis 1.

There is a significant correlation between the change in revenue and the variables of firm size, the new CEO's origin, and tenure.

Specific hypothesis 2. There is/is not a significant correlation between the change in stock price and the variables of firm size, the new CEO's origin, and tenure.

Appendix G shows the result of the multiple regression model Y_t (Change in stock price) = β_5 (Firm Size) + β_6 (Insider/Outsider) + β_7 (Tenure) + ϵ . The value of R^2 is 0.185. Since the value of the F-ratio equals 3.235, giving α value of 0.018, which is less than at the critical level of 0.05, the null hypothesis is rejected. Apart from the adjusted tenure, there is not a significant correlation between the change in stock price and the variables of firm size and the new CEO's origin. Tenure is one of the most important factors affecting the stock price, the value of the firm. That is to say, the volatility of stock price is closely related with the CEO's tenure.

Since the value of the F-ratio equals 3.235, giving α a value of 0.018, which is less than the 5 percent critical level, the null hypothesis is rejected

Accept the alternative hypothesis for specific hypothesis 2.

There is a significant correlation between the change in stock price and the variables of firm size, the new CEO's origin, and tenure.

Specific hypothesis 3. There is/is not a significant correlation between the change in return on equity and the variables of firm size, the new CEO's origin, and tenure

Appendix H shows the result of the model Y_t (Change in return on equity) = β_5 (Firm Size) + β_6 (Insider/Outsider) + β_7 (Tenure) + ϵ in research hypothesis 3. The value of R^2 is 0.173. The value of the F-ratio equals 2.930, giving α a value of 0.029, which is less than the 5 percent critical level, therefore the null hypothesis is rejected.

Accept the alternative hypothesis for specific hypothesis 3.

There is a significant correlation between the change in return on equity and the variables of firm size, the new CEO's origin, and tenure.

Research Hypothesis 4

Is there a difference in demographic independent factors (particularly in age, level of education, and tenure) among new CEOs of insurance companies and their counterparts at both other financial institutions and IT companies?

Specific hypotheses

1. There is/is not a significant difference in independent demographic factor of age, among new CEOs of insurance companies and their counterparts at both other financial institutions and IT companies.

2. There is/is not a significant difference in independent demographic factor of level of education among new CEOs of insurance companies and their counterparts at both other financial institutions and IT companies.

3. There is/is not a significant difference in independent demographic factor of tenure among new CEOs of insurance companies and their counterparts at both other financial institutions and IT companies.

Method

The analysis of variance (ANOVA) model was used to compare the means of each independent nominal variable such as age, education level, and tenure among CEOs of insurance companies and their counterparts at other financial institutions and IT companies. ANOVA is simply an extension of the t -test. ANOVA calculates an F statistic or F ratio.

$$F = \frac{\left(\frac{RSS_1 - RSS_2}{p_2 - p_1} \right)}{\left(\frac{RSS_2}{n - p_2} \right)}$$

where RSS_i is the residual sum of squares of model i . F here is distributed as an F -distribution, with $(p_2 - p_1, n - p_2)$ degrees of freedom.

Analysis of Variance can be used when the following assumptions are met:

- The data are continuous (not discrete).
- The data follow the normal probability distribution. Each group is normally distributed about the group mean.
- The variances of the populations are equal.
- The groups are independent. There is no relationship among the individuals in one group as compared to another.

- Each group is a simple random sample from its population. Each individual in the population has an equal probability of being selected in the sample.

Specific hypothesis 1. There is/is not a significant difference in the independent demographic factor of age, among new CEOs of insurance companies and their counterparts at both other financial institutions and IT companies.

Here the value of the F-ratio equals 7.66, giving α a value of 0.001 (see Appendix I), which is less than the 5 % critical level. Therefore, the null hypothesis is rejected.

Accept the alternative hypothesis for specific hypothesis 1.

There is a significant difference in the independent demographic factor of age between both new CEOs of insurance companies and their counterparts at other financial institutions, and IT companies.

Specific hypothesis 2. There is/is not a significant difference in the independent demographic factor of level of education among new CEOs of insurance companies and their counterparts at both other financial institutions and IT companies.

Since the value of F-ratio equals 1.73, giving α value of 0.179 (see Appendix J), which is greater than the 5 % critical level, the null hypothesis is accepted.

Accept the null hypothesis for specific hypothesis 2.

There is not a significant difference in the independent demographic factor of level of education among new CEOs of insurance companies and their counterparts at both other financial institutions and IT companies.

Specific hypothesis 3. There is/is not a significant difference in the independent demographic factor of tenure among new CEOs of insurance companies and their counterparts at both other financial institutions and IT companies.

Since the value of the F-ratio equals 1.49, giving α a value of 0.227 (see Appendix K) which is greater than the 5 % critical level, the null hypothesis is accepted.

Accept the null hypothesis for specific hypothesis 3.

There is not a significant difference in the independent demographic factor of tenure among new CEOs of insurance companies and their counterparts at both other financial institutions and IT companies.

Summary

Research hypothesis 1. The findings indicate that there is indeed a significant difference in a new insurance CEO's age and tenure before and after the repeal of the Glass-Steagall Act of 1999. However, the findings also indicate that there is little or no difference in education level.

Research hypothesis 2. The findings show that there is not a significant correlation between a new CEO's age, school tier, degree and prior experiences, and a company's change in revenue. There is also no significant correlation between the above demographic factors and the change in stock price.

There is, however, a significant correlation between the change in stock price and a new CEO who graduated from school tier three or four. There is also a significant correlation between the change in return on equity and the variables of age, school tier, degree, and prior experience.

Research hypothesis 3. The findings indicate that there is a significant correlation between changes in revenue, changes in stock price, and changes in return on equity and the variables of firm size, the new CEO's origin, and tenure.

Research hypothesis 4. The findings show that there is a significant difference in the independent demographic factor of age among new CEOs of insurance companies and their counterparts at other types of financial institutions or their counterparts at IT companies. However, there is no significant difference in the level of education or tenure.

Chapter 5–Major Findings and Conclusions, Recommendations, and Summary

This chapter provides an overall summary of the dissertation. The problem statement, the purpose of the study, literature review, and the methodology used to find the results to the research questions are addressed again. Finally, the summary of the major research findings from the data are presented with the recommendation of further studies.

Major Findings and Conclusions

The research findings of this study were presented in Chapter 4. Statistical and descriptive procedures for the research questions were delineated along with findings. From these findings we drew the conclusions described below.

Research hypothesis 1 looked at whether or not there was a significant difference between the new insurance CEOs' age, their education level, and tenure before and after the repeal of the Glass-Steagall Act of 1999. The findings indicate that there was indeed a significant difference in a new insurance CEO's age and tenure before and after the repeal of the Glass-Steagall Act of 1999. However, the findings also indicate that there is little or no difference in education level.

Appendix I shows that there is an increase of approximately three years in the average age of new CEOs following the repeal of the Glass-Steagall Act in 1999. As mentioned in Chapter 1, the average age of new CEOs following deregulation is slightly older than the average age of new CEOs prior to deregulation. Before deregulation, previous CEOs' offspring and relatives became CEOs at a younger age because regulated firms were less complex and easier to manage (Joos, et al., 2003).

It is also interesting to note that, according to the demographic data, when incumbent CEOs are replaced from within a company that the successor is always younger. Only when a company is hiring from the outside, after an internal scandal for example, do they tend to select someone older. This was an altogether unexpected finding.

In regards to education levels, even though there is not a significant difference at the critical level, CEOs who have been hired after 1999 have a higher percentage of master's degrees. Therefore, we can conclude that the average level of higher education among incoming CEOs post 1999 is higher than in years prior.

The three specific hypotheses in research hypothesis 2 looked at whether there is a significant correlation between a new CEO's age, education level, and prior experiences, and the company's performance. The findings show that there is not a significant correlation between a new CEO's age, school tier, degree and prior experiences, and a company's change in revenue. There is also no significant correlation between the above demographic factors and the change in stock price. There is, however, a significant correlation between the change in stock price and a new CEO who graduated from school tier three or four. There is also a significant correlation between the change in return on equity and the variables of age, school tier, degree, and prior experience.

The three specific hypotheses in research hypothesis 3 were used to determine if there is a significant correlation between the size of the firm (small, medium, or large based on annual revenue), the CEO's origin (insider/outsider) and tenure, and the company's performance. First, there is a significant correlation between the change in

revenue and the variables of firm size, the CEO's origin, and tenure. Second, there is a significant correlation between the change in stock price and the variables of firm size, the CEO's origin, and tenure. Third, there is a significant correlation between the change in return on equity and the variables of firm size, the CEO's origin, and tenure.

As per the results of research hypotheses 2 and 3, the new CEOs try to maximize the stockholder's wealth through the change of return on equity. At the same time, the size of the firm, the CEO's origin, and tenure are more significantly correlated with the company's performance than a new CEO's age, education level, and prior experiences. Tenure and the size of the firm are especially important factors in predicting the future company's performance.

The last research hypothesis tested whether there is a significant difference in independent demographic factors such as age, level of education, and tenure among CEOs of insurance companies and their counterparts at both other financial institutions and IT companies. The findings show that there is a significant difference in the independent demographic factor of age between new CEOs of insurance companies and their counterparts at other types of financial institutions and IT companies. However, there is no significant difference in the level of education or tenure.

These results show that there is difference in age because of industry characteristics, but the factors such as level of education and tenure are not big differences among new CEOs of insurance companies and their counterparts at other types of financial institutions or their counterparts at IT companies.

Finally, after removing underperformed CEO's data so as to determine the successful CEO's demographic factors, we can conclude that the outperformed CEO is

slightly above 48 years old, and would be slightly older if we removed the founders of companies and their offspring. In addition, the successful CEO is more often an insider with previous COO title and a graduate from school tiers 1 and 2 with preferably a master degree. This finding applies to firm size above 700th rank. Finally, the ideal tenure for a CEO is between 10 and 12 years. Three multiple regression models are given in the appendix , each giving a detailed descriptive summary and the output of multiple regression for outperformed CEOs.

Given these findings, when a Board of Directors selects a new CEO they must give the above demographic factors priority if all other factors are equal, though these demographic factors may vary between industries. For example, until December 9, 2009, Bank of America's Board (Carney, 2009) still could not find the right CEO. The bank was considering both inside and outside candidates to succeed the incumbent CEO, Ken Lewis. In this situation, the bank's first course of action could be to apply my multiple regression formula in order to better evaluate several candidates.

$$Y_t (\text{Change in revenue}) = \beta_0 + \beta_1 (\text{Incoming CEO's age}) + \beta_2 (\text{School Tier}) + \beta_3 (\text{Degree}) + \beta_4 (\text{Prior experiences}) + \beta_5 (\text{Firm Size}) + \beta_6 (\text{Insider/Outsider}) + \beta_7 (\text{Tenure}) + \epsilon$$

Estimated Model

$$Y_t (\text{Change in Revenue}) = -28569.30 + 586.12 * \text{Age} + 10865.22 * (\text{Education Level}=0) - 10754.31 * (\text{Firm Size}=-1) - 11818.34 * (\text{Firm Size}=0) - 4071.79 * (\text{O}=0) - 1793.70 * (\text{Prior Exp}=-1) + 7860.67 * (\text{School Tier}=-1) + 2635.33 * (\text{School Tier}=0) + 972.71 * \text{Tenure}$$

To illustrate how this formula would work, let us assume that Bank of America's board has two candidates and that the candidates' demographic factors are as shown in Table 3.

Table 3

Demographics of Imaginary Bank of America CEO Candidates

	Candidate A	Candidate B
Age	49	52
School Tier	2	1
Degree	MBA	BA
Prior Experience	COO	CFO
Insider/Outsider	Insider	Outsider
Expected Tenure	9	9

Because we already know the size of the firm (1), we do not need to include this factor in the formula. When we plug in the above candidate's demographic factors into the Estimated Model 1 above, the change in revenue (\$mil) after the selection of candidate A is 22,405.53. In contrast, for candidate B, the change in revenue is 4,797.84. Therefore Candidate A should be given greater consideration.

On December 16, Bank of America's board of directors chose consumer banking chief Brian Moynihan, 50, to replace Ken Lewis as CEO on January 1, 2010 (Brandon, 2009). Dr. Walter E. Massey, chairman of Bank of America, who led the CEO search, said "Brian's wide range of experience, his relationship

inside and outside of the company, and his demonstrated ability to understand business dynamics and effect constructive change made him the best person for the position” (Brandon, 2009). The new CEO, Brian Moynihan, is a graduate of Brown University and the University of Notre Dame Law School. He faces regulatory investigations into the bank’s 2008 acquisition of Merrill Lynch.

As one can see, the above model is very practical and easy to apply when searching for a new CEO. However, this should be followed by a detailed interview asking candidates what course of action they would take based on the company’s current situation.

This study examined the relationship between the financial performance of a company over time and specific demographic factors of the company’s CEO, including age, tenure, education and prior experience, as well as whether he/she was hired from within or outside the company. The goal is to establish a prediction model for companies to aid them in their selection of a new CEO. This prediction model is only applied to the financial industries in selecting a new CEO. This model also supports Hogan and Kaiser’s leadership definition that leadership should be defined in terms of the ability to build and maintain a group that performs well compared to its competition and be evaluated in terms of the performance of the group over time (Hogan & Kaiser, 2005). At the same time, the model used to support the selection of a new CEO can be changed dependent upon the size of firms, tenure, age, and the types of firms whether regulated or unregulated (Joos, et al., 2003).

The average age of new CEOs following deregulation is slightly older than the average age of new CEOs prior to deregulation. Before deregulation, previous CEOs' offspring and relatives became CEOs at a younger age because regulated firms are less complex and easier to manage. Finally the model supports Keiser's claim that CEOs are becoming professionalized with higher degrees such as MBA, MS, MA, or JD because of the intellectual difficulty of the job and the extensive training required (Keiser, 2004).

Recommendations

This study has focused on the CEOs of large, Fortune 1000 companies. However, in the real world, a company is not operated solely by the CEO, even though he or she plays a vital role in the company's success. Newly appointed CEOs most often appoint their immediate followers or people they have known throughout their career, people who will assist them in accomplishing both their own personal goals and the company's goals.

Therefore, further research should focus on the study of a CEO's immediate followers, such as the CEOs of affiliate companies, or divisional heads, and the roles they play in a company's success. By analyzing their personal traits or demographic factors we can study how the organizational framework and chemistry influence company performance as a whole.

During this present economic crisis, several companies which were listed in the Fortune 500 have collapsed or have been acquired by other competitors. If the current recession lasts much longer, many more companies will have gone

bankrupt. Therefore, there is more pressure than ever before for CEO's and their immediate followers to steer their companies through this time of crisis.

Because there is a significant time gap between the period before 1999 and the period after, the study of tenure is limited. If a study is carried out in another 6 years, the results should clarify the results of this study.

For the study of CEOs in the insurance industry, which consist of two types of companies, mutual and stock (Williams, 1987). For the purposes of this paper, CEOs of mutual companies have been excluded because a company's stock performance cannot be studied. Therefore, further research is needed to understand the relationship between their changes in revenue and net income and the CEOs' demographic factors. Because their stocks are not traded in the stock markets, there may be differences in demographic factors such as tenure, age, and level of education. In the execution of strategic planning, the CEOs of mutual companies might be more powerful than their counterparts in the stock companies, as they do not have to pay attention to their own daily stock movement and other factors related to stock movement. On the other hand, because there are no monitoring forces such as shareholders, they may be more resistant to both change and risk. Sometimes they might not notice that their own mistakes have resulted in poor planning and execution. If a CEO in a mutual company is not a good leader, the company's future will be disastrous because there is no strong monitoring power like in a stock company.

Another area ripe for further study is the relationship between company's debt ratio and the demographic factors of its CEO, such as age, education level

and prior experience. A company which has a high debt ratio needs a CEO who is able to endure high levels of stress and still perform well, or perhaps a more optimistic, sociable personality that can inspire others.

It would be interesting to study the hiring rates and performance of CEOs with only undergraduate degrees. There might be significant differences in their traits and their performance, depending on their major. In the Information Technology and Computer Software areas, several of the CEOs dropped out of school without receiving their bachelor degree. This would not be expected in other industries. Founding new companies in the financial industries, for example, is virtually impossible due to the huge of initial investment. Perhaps, future studies linking various educational backgrounds with success in specific industries might throw more light on the importance of education on a CEOs future success. In other words, the success of CEOs may not only depend on the amount of higher education, but on specific majors that best prepare them for success.

Because of non-numerical value, personality and leadership style were excluded in this research. However, if the personality and leadership style data can be obtained from the well designed questionnaire, we can add these data through encoding to our model. In that case the model would be far more robust. It would support Hogan and Kaiser's (2005) argument.

Finally it would be interesting to study the relationship between the change in a company's performance and other demographic factors. For example,

if the CEO's compensation factors are added to the multiple regression estimated model, the results will likely be more robust.

Summary

Because of new technologies as well as increased competition, from both within and outside the industry, CEOs must be able to sort through and analyze vast amounts of information. This requires considerable cognitive ability as well as higher education and training. Moreover, CEOs are under more pressure than ever before to act quickly, to recognize potential problems or opportunities and to take action immediately. For these and other reasons, companies are turning to "younger" CEOs with shorter tenure than incumbent CEOs, as they are more familiar with new technologies, better able to endure high stress environments, more open to new ideas and less reluctant to take necessary challenge.

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APPENDIX A

Two-Sample Test Report for CEO's Ages Pre and Post 1999

Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Age pre- 1999	57	47.72	7.70	1.02	45.68	49.76
Age post 1999	36	50.94	5.46	0.91	49.10	52.79

Note: T-alpha (Age before GBL) = 2.0032, T-alpha (Age after GBL) = 2.0301

Equal-Variance T-Test Section

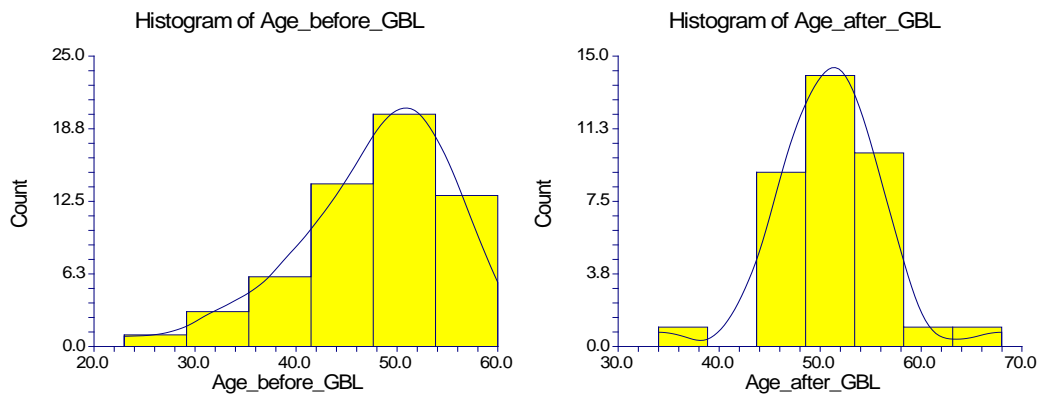
Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference \neq 0	-2.1883	0.031	Reject Ho	0.581	0.335
Difference $<$ 0	-2.1883	0.016	Reject Ho	0.701	0.432
Difference $>$ 0	-2.1883	0.984	Accept Ho	0.000	0.000

Difference: (Age before GBL)-(Age after GBL)

Median Statistics

Variable	Count	Median	95% LCL of Mean	95% UCL of Mean
Age before GBL	57	49	47	51
Age after GBL	36	50.5	49	53

Plots Section



APPENDIX B

Two-Sample Test Report for CEO's Adjusted Tenure Pre and Post GBL (1999)

		Standard	Standard	95% LCL	95% UCL	Variable
Tenure after GBL	58	5.569	2.933	0.385	4.798	6.340
Tenure before GBL	119	14.958	10.126	0.928	13.120	16.796

Note: T-alpha (Tenure after GBL) = 2.0025, T-alpha (Tenure before GBL) = 1.9803

Confidence-Limits of Difference Section

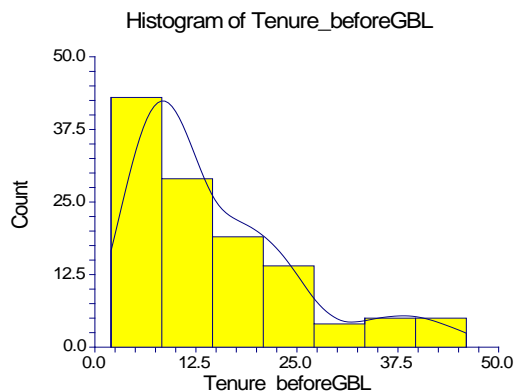
Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	175	-9.389	8.482	1.358	-12.070	-6.708
Unequal	152.74	-9.389	10.542	1.005	-7.404	-11.374

Note: T-alpha (Equal) = 1.9736, T-alpha (Unequal) = 1.9756

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	-6.913	0.000	Reject Ho	1.000	0.999990

Difference: (Tenure_afterGBL)-(Tenure_beforeGBL)



APPENDIX C

Output of Multiple Regression for Research Hypothesis Two

Specific Hypothesis (1)

Pearson Correlations Section

	Age	Prior Exp	School Tier	Change in Revenue	Degree
Age	1.000	-0.040	-0.172	-0.002	0.157
Prior Exp	-0.040	1.000	-0.142	0.076	0.033
School tier	-0.172	-0.142	1.000	-0.026	-0.122
Change in Revenue	-0.002	0.076	-0.026	1.000	-0.030
Degree	0.157	0.033	-0.122	-0.030	1.000

Cronbachs Alpha =- 0.000004 Standardized Cronbachs Alpha =- 0.150887

Run Summary Section

Parameter	Value	Parameter	Value
Dependent Variable	Change in Revenue	Rows Processed	307
Number Ind. Variables	6	Rows Filtered Out	0
Weight Variable	None	Rows with X's Missing	141
R2	0.011	Rows with Weight Missing	0
Adj R2	0.000	Rows with Y Missing	12
Coefficient of Variation	2.070	Rows Used in Estimation	154
Mean Square Error	2.865949E+08	Sum of Weights	154

Square Root of MSE	16929.12	Completion Status	Normal Completion
Ave Abs Pct Error	3016.032		

Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Minimum	Maximum
Age	154	49.130	7.494	23	66
(Degree=0)	154	0.623	0.486	0	1
(Prior Exp=-1)	154	1.948052E-02	0.139	0	1
(Prior Exp=0)	154	2.597403E-02	0.160	0	1
(School tier=-1)	154	0.227	0.420	0	1
(School tier=0)	154	0.299	0.459	0	1
Change in Revenue	154	8180.361	16686.65	-5100	96206

Estimated Model

$$6697.868 + 8.773 * \text{Age} + 1293.647 * (\text{Degree}=0) - 5330.492 * (\text{Prior Exp}=-1) - 7912.504 * (\text{Prior Exp}=0) + 294.075 * (\text{School tier}=-1) + 1632.307 * (\text{School tier}=0)$$
Regression Equation Section

Independent Variable	Regression Coefficient b(i)	Standard Error Sb(i)	T-Value to test H0:B(i)=0	Prob Level	Reject H0 at 5%?
Intercept	6697.868	9642.558	0.695	0.488	No
Age	8.773	187.704	0.047	0.963	No
(Degree=0)	1293.647	2866.792	0.451	0.653	No
(Prior Exp=-1)	-5330.492	9919.694	-0.537	0.592	No
(Prior Exp =0)	-7912.504	8725.904	-0.907	0.366	No
(School tier=-1)	294.075	3592.166	0.082	0.935	No
(School tier=0)	1632.307	3251.765	0.502	0.616	No

Analysis of Variance Section

Source	DF	R2	Sum of Squares	Mean Square	F-Ratio	Prob Level
Intercept	1		1.030542E+10	1.030542E+10		
Model	6	0.011	4.725222E+08	7.87537E+07	0.275	0.948
Error	147	0.989	4.212946E+10	2.865949E+08		
Total(Adjusted)	153	1.000	4.260198E+10	2.784443E+08		

Analysis of Variance

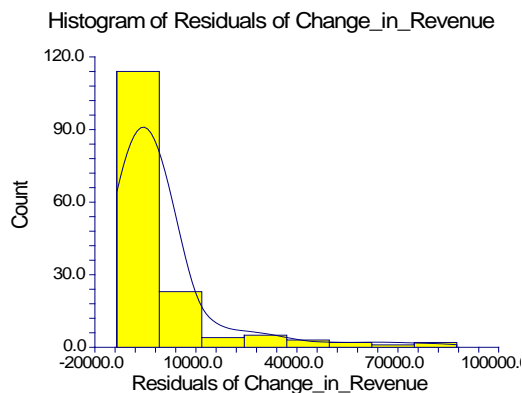
Model Term	DF	R2	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (5%)
Intercept	1		1.030542E+10	1.030542E+10			
Model	6	0.011	4.725222E+08	7.87537E+07	0.275	0.948	
Age	1	0.000	626065.1	626065.1	0.002	0.963	
Degree	1	0.001	5.835898E+07	5.835898E+07	0.204	0.653	
Prior Exp	2	0.007	3.088295E+08	1.544148E+08	0.539	0.585	
School tier	2	0.002	7.62998E+07	3.81499E+07	0.133	0.876	
Error	147	0.989	4.212946E+10	2.865949E+08			
Total(Adjusted)	153	1.000	4.260198E+10	2.784443E+08			

PRESS Section

Parameter	From PRESS Residuals	From Regular Residuals
Sum of Squared Residuals	4.520033E+10	4.212946E+10
Sum of Residuals	1602749	1543773
R2	0.0000	0.0111

Normality Tests Section

Test Name	Test Value	Prob Level	Reject H0 At Alpha = 20%?
Shapiro Wilk	0.5761	0.000000	Yes
Anderson Darling	22.9095	0.000000	Yes
D'Agostino Skewness	9.1851	0.000000	Yes
D'Agostino Kurtosis	6.3418	0.000000	Yes
D'Agostino Omnibus	124.5836	0.000000	Yes



APPENDIX D

Output of Multiple Regression for Research Hypothesis Two

Specific Hypothesis (2)

Pearson Correlations Section (Row-Wise Deletion)

	Age	Prior Exp	School Tier	Change in S	Degree	
Age	1.000	-0.041	-0.174	-0.100		0.159
Prior Exp	-0.041	1.000	-0.141	0.017		0.031
School Tier	-0.174	-0.141	1.000	-0.125		-0.127
Change in Stock Price	-0.100	0.017	-0.125	1.000		
Degree		0.159	0.031	-0.127	1.000	
Cronbachs Alpha =-	0.000267	Standardized Cronbachs Alpha =-		0.363045		

Parameter	Value	Parameter	Value		
Dependent Variable	Change in Stock Price	Rows Processed	307		
Number Ind. Variables	6	Rows Filtered Out	0		
Weight Variable	None	Rows with X's Missing	141		
R2	0.041	Rows with Weight Missing	0		
Adj R2	0.002	Rows with Y Missing	11		
Coefficient of Variation	11.9402	Rows Used in Estimation	155		
Mean Square Error	6.669676E+07	Sum of Weights			
	155.000	Completion Status			
Square Root of MSE	8166.809				
Ave Abs Pct Error	Normal Completion				
	62054.263				
Variable	Count	Mean	Standard Deviation	Minimum	Maximum
Age	155	49.110	7.474	23	66
(Degree=0)	155	0.626	0.485	0	1
(Prior Exp=-1)	155	1.935484E-02	0.138	0	1
(Prior Exp =0)	155	2.580645E-02	0.159	0	1
(School tier=-1)	155	0.226	0.419	0	
(School tier =0)	155	0.297	0.458	0	1
Change in Stock Price	155	683.979	8174.287	-20.85	101790

Independent Variable	Regression Coefficient b(i)	Standard Error Sb(i)	T-Value to test H0:B(i)=0	Prob Level	Reject H0 at 5%?	Power of Test at 5%
Intercept	5344.154	4650.190	1.149	0.252	No	0.208
Age	-126.373	90.545	-1.396	0.165	No	0.284
(Degree=0)	1042.520	1381.172	0.755	0.452	No	0.117
(Prior Exp=-1)	315.649	4784.728	0.066	0.948	No	0.051
(Prior Exp =0)	200.824	4207.705	0.048	0.962	No	0.050
(School tier=-1)	3461.820	1729.618	2.001	0.047	Yes	0.511
(School tier =0)	338.820	1564.877	0.217	0.829	No	0.055

APPENDIX E

Output of Multiple Regression for Research Hypothesis Two

Specific Hypothesis (3)

Pearson Correlations Section

	Age	Prior Exp	School Tier	Change in ROE	Degree	
Age	1.000	-0.039	-0.174	0.171	0.147	
Prior Exp	-0.039	1.000	-0.147		-0.134	0.030
School tier	-0.174	-0.147	1.000	-0.013	-0.119	
Change in ROE	0.171	-0.134	-0.013	1.000	0.049	
Degree	0.147	0.030	-0.119	0.049	1.000	
Cronbachs Alpha = 0.091152	Standardized Cronbachs Alpha = - 0.126015					
Parameter	Value			Parameter		Value
Dependent Variable	Change in ROE	Rows Processed		307		
Number Ind. Variables	6	Rows with X's Missing		141	Rows Filtered Out	0
Weight Variable	None	Rows with Y Missing		17		
R2	0.204	Rows Used in Estimation		149		
Adj R2	0.170	Sum of Weights		149.000		
Coefficient of Variation	8.3790	Completion Status		Normal Completion		
Mean Square Error	700.642					
Square Root of MSE	26.470					
Ave Abs Pct Error	359.644					
Variable	Count	Mean	Deviation	Standard Minimum	Maximum	
Age	149	49.215	7.430	23	66	
(Degree =0)	149	0.631	0.484	0	1	
(Prior Exp =-1)	149	2.013423E-02	0.141	0	1	
(Prior Exp =0)	149	2.684564E-02	0.162	0	1	
(School tier =-1)	149	0.235	0.425	0	1	
(School tier =0)	149	0.295	0.458	0	1	
Change in ROE	149	3.159	29.052	-52	297.9	
Independent Variable	Regression Coefficient b(i)	Standard Error Sb(i)	T-Value to test H0:B(i)=0	Prob Level	Reject H0 at 5%?	Power of Test at 5%
Intercept	-28.374	15.425	-1.839	0.068	No	0.447
App (Degree =0)	0.594	0.301	1.975	0.050	No	0.501
(Prior Exp =-1)	-2.286	4.566	-0.501	0.618	No	0.079
(Prior Exp =0)	-14.976	15.519	-0.965	0.336	No	0.160
(School tier =-1)	73.995	13.661	5.416	0.000	Yes	0.100
(School tier =0)	2.044	5.664	0.361	0.719	No	0.065
	5.359	5.197	1.031	0.304	No	0.176

APPENDIX F

Output of Multiple Regression for Research Hypothesis Three

Specific Hypothesis (1)

Pearson Correlations Section

	Tenure	Origin	Change in Revenue	Ranking of Firm
Tenure	1.000	0.145	0.219	-0.079
Origin	0.145	1.000	0.072	0.146
Change in Revenue	0.219	0.072	1.000	0.360
Ranking of Firm	-0.079	0.146	0.360	1.000
Cronbachs Alpha = 0.000423	Standardized Cronbachs Alpha =- 0.402325			

Run Summary Section

Parameter	Value	Parameter	Value
Dependent Variable	Change in Revenue	Rows Processed	307
Number Ind. Variables	4	Rows Filtered Out	0
Weight Variable	None	Rows with X's Missing	213
R2	0.224	Rows with Weight Missing	0
Adj R2	0.190	Rows with Y Missing	0
Coefficient of Variation	1.922	Rows Used in Estimation	94
Mean Square Error	1.600888E+08	Sum of Weights	94.000
Square Root of MSE	12652.62	Completion Status	Normal
Completion			
Ave Abs Pct Error	773.246		

Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Minimum	Maximum
(Outsider =0)	94	0.128	0.335	0	1
(Ranking of Firm=-1)	94	0.234	0.426	0	1
(Ranking of Firm=0)	94	0.309	0.464	0	1
Tenure	94	9.798	8.728	1	45
Change in Revenue	94	6582.394	14054	-3554	96206

Regression Equation Section

Independent Variable	Regression Coefficient b(i)	Standard Error Sb(i)	T-Value to test H0:B(i)=0	Prob Level	Reject H0 at 5%?	Power of Test at 5%
Intercept	8912.119	2429.293	3.669	0.0004	Yes	0.952
(Outsider =0)	-782.007	4093.475	-0.191	0.8489	No	0.054
(Ranking of Firm=-1)	-11980.405	3389.051	-3.535	0.0006	Yes	0.938
(Ranking of Firm=0)	-11697.168	3077.973	-3.800	0.0003	Yes	0.964
Tenure	426.902	153.096	2.788	0.0065	Yes	0.788

Estimated Model

8912.119 -782.007*(Outsider =0)-11980.404*(Ranking of Firm=-1)-11697.168*(Ranking of Firm=0)+426.902*Tenure

APPENDIX G

Output of Multiple Regression for Research Hypothesis Three

Specific Hypothesis (2)

Pearson Correlations Section (Row-Wise Deletion)

	Origin	CiS	Ranking of Firm	Adjusted tenure	
Origin		1.000	0.038	0.266	0.111
Change in Stock Price	0.038	1.000	0.137	0.367	
Ranking of Firm		0.266	0.137	1.000	-0.083
Adjusted tenure		0.111	0.367	-0.083	1.000
Cronbachs Alpha = 0.000753	Standardized Cronbachs Alpha = 0.392506				

Run Summary Section

Parameter	Value	Parameter	Value
Dependent Variable	Change in Stock Price	Rows Processed	307
Number Ind. Variables	4	Rows Filtered Out	0
Weight Variable	None	Rows with X's Missing	245
R2	0.185	Rows with Weight Missing	0
Adj R2	0.128	Rows with Y Missing	0
Coefficient of Variation	7.1821	Rows Used in Estimation	62
Mean Square Error	1.456433E+08	Sum of Weights	62.000
Square Root of MSE	12068.28	Completion Status	Normal Completion
Ave Abs Pct Error	49889.506		

Descriptive Statistics Section

Variable	Standard		Minimum	Maximum
	Count	Mean Deviation		
Adjusted tenure	6211.75806	9.613319	1	45
(Outsider =0)	628.064516E-02	0.2745122	0	1
(Ranking of Firm=-1)				
62	0.2741936	0.4497488	0	1
(Ranking of Firm=0)				
62	0.3225806	0.4712799	0	1
Change in Stock Price				
62	1680.338	12922.52	-0.47	101790

Regression Equation Section

Independent Variable	Regression Standard		T-Value Prob Level	Reject H0 at 5%?	Power of Test at 5%
	Coefficient b(i)	Error to test Sb(i)H0:B(i)=0			
Intercept	-1392.42642935	6116-0.474	0.6371	No	0.0753
Adjusted tenure	552.6524164	98413.350	0.0014	Yes	0.9087
(Outsider =0)	932.58796048	51330.154	0.8780	No	0.0526
(Ranking of Firm=-1)					
-5047.8710	3987.8632	-1.2660.2107	No	0.2378	
(Ranking of Firm=0)					
-6561.0666	3701.2865	-1.7730.0816	No	0.4141	

Estimated Model

-1392.426+ 552.652*Adjusted tenure+ 932.588*(Outsider =0)-5047.871*(Ranking of Firm=-1)-6561.067*(Ranking of Firm=0)

APPENDIX H

Output of Multiple Regression for Research Hypothesis Three

Specific Hypothesis (3)

Pearson Correlations Section (Row-Wise Deletion)

	Origin	CiROE	Ranking of Firm	Adjusted tenure
Origin	1.000	-0.317	0.277	0.106
Change in ROE	-0.317	1.000	0.094	-0.045
Ranking of Firm	0.277	0.094	1.000	-0.060
Adjusted tenure	0.106	-0.045	-0.060	1.000
Cronbachs Alpha =- 0.065700	Standardized Cronbachs Alpha = 0.035346			

Run Summary Section

Parameter	Value	Parameter	Value
Dependent Variable	Change in ROE	Rows Processed	307
Number Ind. Variables	4	Rows Filtered Out	0
Weight Variable	None	Rows with X's Missing	245
R2	0.173	Rows with Weight Missing	0
Adj R2	0.114	Rows with Y Missing	1
Coefficient of Variation	10.9946	Rows Used in Estimation	61
Mean Square Error	107.7824	Sum of Weights	
	61.000		
Square Root of MSE	10.38183	Completion Status	
	Normal Completion		
Ave Abs Pct Error	204.459		

Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Minimum	Maximum
Adjusted tenure	61	11.59016	9.601002	1	45
(Outsider =0)	61	8.196721E-02	0.2765913	0	1
(Ranking of Firm=-1)	61	0.2622951	0.4435328	0	1
(Ranking of Firm=0)	61	0.3278688	0.4733326	0	1
Change in ROE	61	0.9442623	11.02966	-31.8	32.4

Regression Equation Section

Independent Variable	Regression Coefficient b(i)	Standard Error Sb(i)	T-Value to test H0:B(i)=0	Prob Level	Reject H0 at 5%?	Power of Test at 5%
Intercept	1.1166	2.5314	0.441	0.6608	No	0.0718
Adjusted tenure	-0.0329	0.1433	-0.230	0.8192	No	0.0559
(Outsider =0)	16.8127	5.2340	3.212	0.0022	Yes	0.8843
(Ranking of Firm=-1)	-6.3743	3.5057	-1.818	0.0744	No	0.4315
(Ranking of Firm=0)	1.5339	3.1861	0.481	0.6321	No	0.0760

Estimated Model

1.117 -3.291E-02*Adjusted tenure+ 16.813*(Outsider =0)-6.374*(Ranking of Firm=-1)+ 1.534*(Ranking of Firm=0)

APPENDIX I

Analysis of Variance Report for Age

Expected Mean Squares Section

Source	Term	DF	Term	Denominator	Expected Mean Square
	Fixed?		Term		
A (...)	2		Yes	S(A)	S+sA
S(A)	250		No		S(A)

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source	Term	DF	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (Alpha=0.05)
A (...)	2		1003.697	501.8483	7.66	0.001	0.945992
S(A)	250		16373.89	65.49557			
Total (Adjusted)			252	17377.59			
Total		253					

* Term significant at alpha = 0.05

Kruskal-Wallis One-Way ANOVA on Ranks

Hypotheses

Ho: All medians are equal.

Ha: At least two medians are different.

Test Results

Method	DF	Chi-Square (H)	Prob Level	Decision(0.05)
Not Corrected for Ties		2	14.44103	0.000731
Ho				Reject
Corrected for Ties		2	14.46785	0.000722
Ho				Reject
Number Sets of Ties		30		
Multiplicity Factor		30024		

Group Detail

Group	Count	Sum of Ranks	Mean Rank	Z-Value	Median
IT Age	50	4590.00	91.80	-3.7971	45
Ins Age	100	13488.00	134.88	1.3847	50
OFC Age	103	14053.00	136.44	1.6997	51

Means and Effects Section

Term	Count	Mean	Standard Error	Effect
All	253	48.58		47.90262
A:				
IT Age	50	44.58	1.144514	-3.322621
Ins Age	100	49.39	0.8092933	1.487379
OFC Age	103	49.74	0.7974204	0.7974204
		1.835243		

Duncan's Multiple-Comparison Test

Response: IT Age, Ins Age, OFC Age

Term A:

Alpha=0.050 Error Term=S(A) DF=250 MSE=65.49557

Group	Count	Mean	Different From
IT Age	50	44.58	Ins Age, OFC Age
Ins Age	100	49.39	IT Age
OFC Age	103	49.74	IT Age

Notes:

This report provides multiple comparison tests for all pairwise differences between the means. According to Hsu(1996, page 130), the specified family-wise error rate (alpha) is overstated and the Tukey-Kramer method is recommended instead.

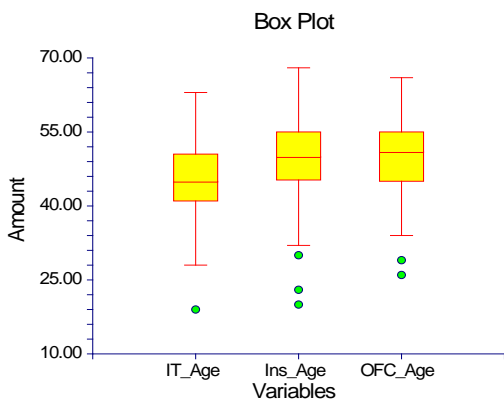
Kruskal-Wallis Multiple-Comparison Z-Value Test

Variable	IT Age	Ins Age	OFC Age
IT Age	0.0000	3.4020	3.5422
Ins Age	3.4020	0.0000	0.1517
OFC Age	3.5422	0.1517	0.0000

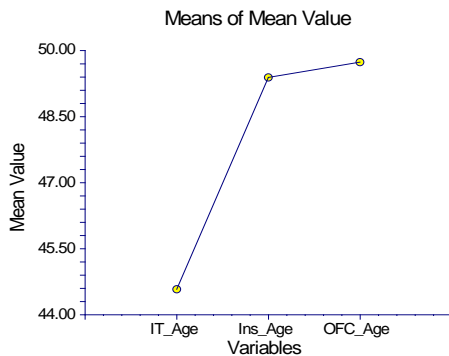
Regular Test: Medians significantly different if z-value > 1.9600

Bonferroni Test: Medians significantly different if z-value > 2.3940

Box Plot Section



Plots of Means Section



APPENDIX J

Analysis of Variance Report for Level of Education

Expected Mean Squares Section

Source	Term	DF	Term Fixed?	Denominator Term	Expected Mean Square
A (...)		2	Yes	S(A)	S+sA
S(A)		228	No		S(A)

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source	Power	Sum of Squares	Mean Square	F-Ratio	Prob Level
A (...)	2	0.8193162	0.4096581	1.73	0.179
S(A)	228	53.89064	0.2363625		
Total (Adjusted)	230	54.70996			
Total	231				

* Term significant at alpha = 0.05

Kruskal-Wallis One-Way ANOVA on Ranks

Hypotheses

Ho: All medians are equal.

Ha: At least two medians are different.

Test Results

Method	DF	Chi-Square (H)	Prob Level	
Not Corrected for Ties	2	2.447354	0.294147	Accept
Ho				
Corrected for Ties	2	3.444396	0.178673	Accept
Ho				
Number Sets of Ties	2			
Multiplicity Factor	3568026			

Group Detail

Group	Count	Sum of Ranks	Mean Rank	Z-Value	Median
IT Edu Level	86	10191.50	118.51	0.4389	0
Ins Edu Level	99	10774.50	108.83	-1.4115	0
OFC Edu Level	46	5830.00	126.74	1.2179	0

Means and Effects Section

Term	Count	Mean	Standard Error
All	231	0.39	
		0.4028233	
A:			
IT Edu Level	86	0.41	5.242519E-02
		4.153432E-03	
Ins Edu Level	99	0.32	4.886205E-02
		7.959099E-02	
OFC Edu Level	46	0.48	7.168204E-02
		7.5437	

Duncan's Multiple-Comparison Test

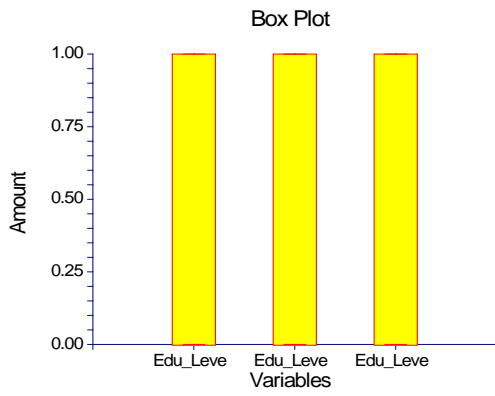
Response: IT Edu Level, Ins Edu Level, OFC Edu Level
 Term A:

Alpha=0.050 Error Term=S(A) DF=228 MSE=0.2363625

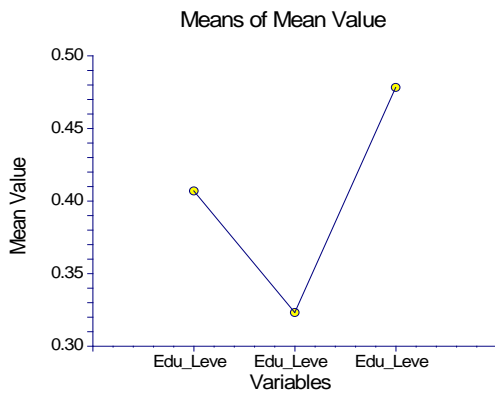
Group	Count	Mean	Different From Groups
IT Edu Level	99	0.41	
Ins Edu Level	86	0.32	
OFC Edu Level	46	0.48	

Group	Comparison Coefficient	Count	Mean
IT Edu Level	-3	86	0.4069767
Ins Edu Level	1	99	0.3232323
OFC Edu Level	1	46	0.4782609

Box Plot Section



Plots of Means Section



APPENDIX K

Analysis of Variance Report for Tenure

Expected Mean Squares Section

Source	Term	DF	Term Fixed?	Denominator Term	Expected Mean Square
	A (...)	2	Yes	S(A)	S+sA
	S(A)	249	No		S(A)

Note: Expected Mean Squares are for the balanced cell-frequency case.

Analysis of Variance Table

Source	Power	Sum of Squares	Mean Square	F-Ratio	Prob Level
Term	DF				
	(Alpha=0.05)				
A (...)	2	246.1834	123.0917	1.49	0.227
		0.316498			
S(A)	249	20548.5	82.52408		
Total (Adjusted)	251	20794.68			
Total	252				

* Term significant at alpha = 0.05

Kruskal-Wallis One-Way ANOVA on Ranks

Hypotheses

Ho: All medians are equal.

Ha: At least two medians are different.

Test Results

Method	DF	Chi-Square (H)	Prob Level	
Not Corrected for Ties	2	1.72557	0.421985	Accept
Ho				
Corrected for Ties	2	1.732566	0.420512	Accept
Ho				
Number Sets of Ties	26			
Multiplicity Factor	64620			

Group Detail

Group	Count	Sum of Ranks	Mean Rank	Z-Value	Median
IT Tenure	99	13179.00	133.12	1.1600	8
Ins Tenure	103	12327.50	119.68	-1.2341	7
OFC Tenure	50	6371.50	127.43	0.1008	8.5

Means and Effects Section

Term	Count	Mean	Standard Error	
All	252	10.96429		
		10.97141		
A:				
IT Tenure	99	12.10101	0.9130041	
		1.129605		
Ins Tenure	103	9.893204	0.8951004	-
		1.078201		

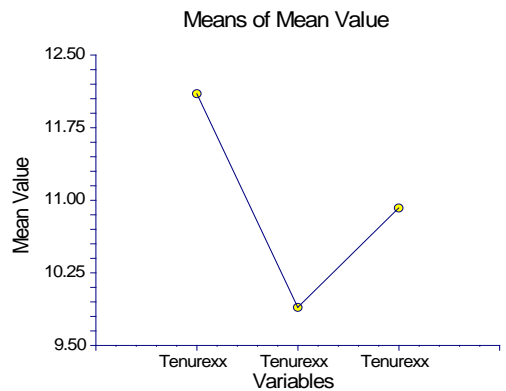
OFC Tenure 50 10.92 1.284711
 5.140466E-02

Duncan's Multiple-Comparison Test

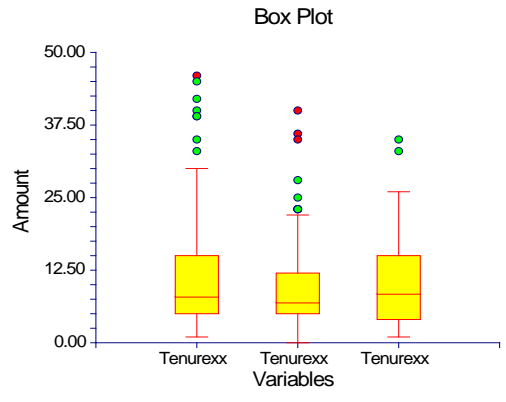
Term A:
 Alpha=0.050 Error Term=S(A) DF=249 MSE=82.52408

Group	Count	Mean	Different From Groups
IT Tenure	103	9.89	
Ins Tenure	50	10.92	
OFC Tenure	99	12.10	

Plots of Means Section



Box Plot Section



Notes:
 This report provides multiple comparison tests for all pairwise differences between the means. According to Hsu(1996, page 130), the specified family-wise error rate (alpha) is overstated and the Tukey-Kramer method is recommended instead.

APPENDIX L

Output of Multiple Regression for Outperformed CEOs

The following is the multiple regression for outperformed CEOs in order to determine their general demographic characteristics. Here outperformed means that the percentage of change in revenue is greater than the percentage of change in the S & P 500 index during the same period.

$$Y_t (\text{Change in revenue}) = \beta_0 + \beta_1 (\text{Incoming CEO's age}) + \beta_2 (\text{School Tier}) + \beta_3 (\text{Degree}) + \beta_4 (\text{Prior Experiences}) + \beta_5 (\text{Firm Size}) + \beta_6 (\text{Insider/Outsider}) + \beta_7 (\text{Tenure}) + \epsilon$$

From the result, we can now conclude that the average age of the outperformed CEO is approximately 49 years old, and he/she is an insider with previous COO title and graduated from school tier 1 and 2 with preferably a master degree. This result applies to firm size above 700th rank. The ideal tenure for CEO is between 10 and 12 years. One interesting finding is that more CEOs have only undergraduate degrees than any other degrees.

Summary Section of Age

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
146	48.81	7.989921	0.6612505	20	66	46

Counts Section of Age

Rows	Sum of Adjusted Frequencies	Missing Values	Distinct Values	Sum	Total Sum Squares
303	146	157	33	7126	357064 9256.63

Means Section of Age

Parameter	Mean	Median	Geometric Mean	Harmonic Mean	Sum	Mode
Value	48.80822	50	48.0558	47.15127	7126	51
Std Error	0.6612505				96.54258	
95% LCL	47.50129	48			6935.188	
95% UCL	50.11515	51			7316.813	
T-Value	73.8120					
Prob Level	0.000000					
Count	146		146	146		12

Variation Section of Age

Parameter	Variance	Standard Deviation	Unbiased Std Dev	Std Error of Mean	Interquartile Range	Range
Value	63.83883	7.989921	8.003708	0.6612505	10	46
Std Error	9.220871	0.8160458		6.753643E-02		
95% LCL	51.36035	7.166613		0.5931131		
95% UCL	81.5162	9.028632		0.7472149		

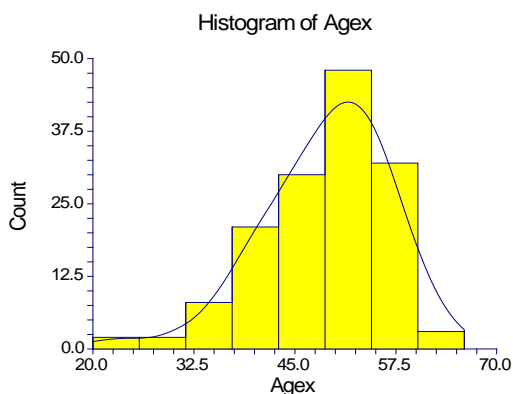
Mean-Deviation Section of Age

Parameter	X-Mean	X-Median	(X-Mean)^2	(X-Mean)^3	(X-Mean)^4
Average	6.24545	6.136986	63.40158	-393.4879	16263.87
Std Error	0.3984393		9.157715	170.1796	5543.633

Quartile Section of Age

Parameter	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
Value	39	44	50	54	58
95% LCL	34	42	48	53	56
95% UCL	41	45	51	56	60

Plots Section of Age



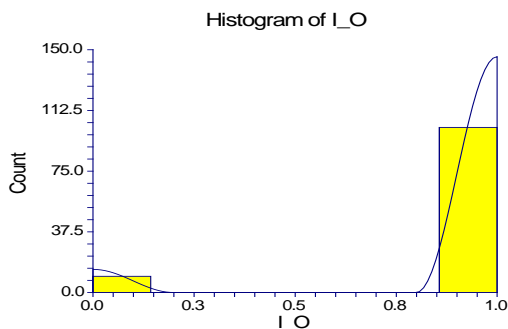
Summary Section of I/O

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
112	0.9107143	0.2864373	2.706578E-02	0	1	1

Counts Section of I/O

Rows	Sum of Adjusted Frequencies	Missing Values	Distinct Values	Sum	Total Sum Squares
303	112	191	2	102	102

Plots Section of I_O



Percentile Section of I_O

Summary Section of Prior Experience

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
104	0.9423077	0.3061481	3.002029E-02	-1	1	2

Counts Section of Prior Experience

Rows	Sum of Frequencies	Missing Values	Distinct Values	Sum	Total Sum Squares	Adjusted
303	104	199	3	98	102	9

Summary Section of School Tier

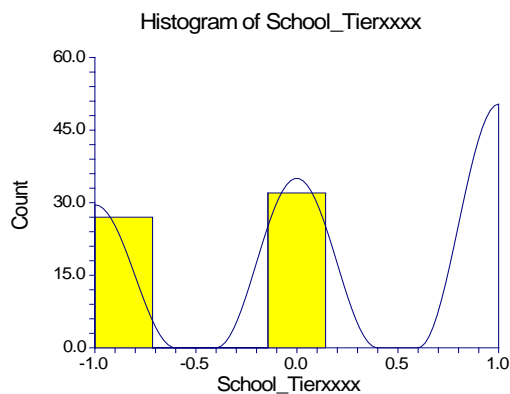
Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
105	0.1809524	0.8178414	7.981315E-02	-1	1	2

Counts Section of School Tier

Rows	Sum of Frequencies	Missing Values	Distinct Values	Total Sum	Total Sum Squares	Adjusted Sum Squares
303	105	198	3 19	73	69.5619	

Quartile Section of School Tier

Parameter	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
Value	-1	-1	0	1	1
95% LCL	-1	-1	0	1	1
95% UCL	-1	0	1	1	1

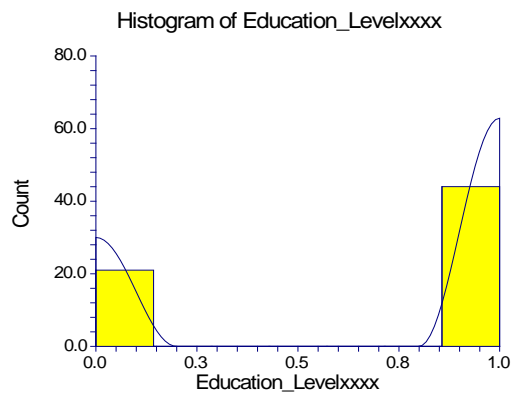
Plots Section of School Tier**Summary Section of Education Level**

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
65	0.6769231	0.4712912	5.845648E-02	0	1	1

Counts Section of Education Level

Rows	Sum of Frequencies	Missing Values	Distinct Values	Total Sum	Total Sum Squares	Adjusted Sum Squares
303	65	238	2	44 44		14.21538

Plots Section of Education Level



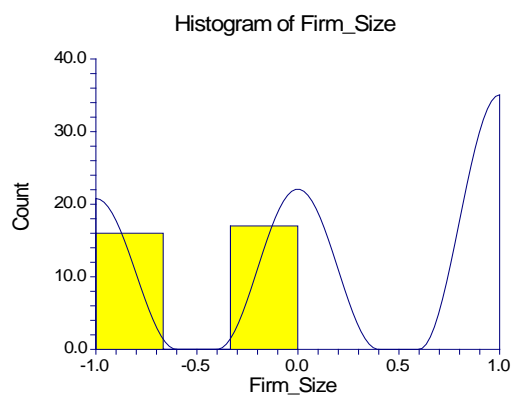
Summary Section of Firm Size

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
60	0.1833333	0.8334463	0.1075975	-1	1	2

Counts Section of Firm Size

Rows	Sum of Frequencies	Missing Values	Distinct Values	Sum	Total Sum Squares	Adjusted Sum Squares
303	60	243	3 11	43	40.98333	

Plots Section of Firm Size



Summary Section of Tenure

Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	Range
111	11.73	9.999042	0.9490671	1	45	44

Counts Section of Tenure

Rows	Sum of Frequencies	Missing Values	Distinct Values	Total Sum	Adjusted Sum Squares	Total Sum Squares
303	111	192	32	1302	26270	10997.89

Means Section of Tenure

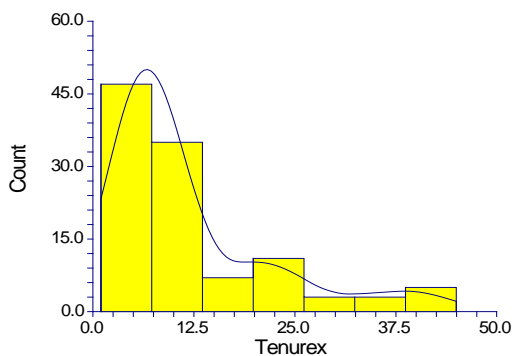
Parameter	Mean	Median	Geometric Mean	Harmonic Mean	Sum	Mode
Value	11.72973	8	8.598675	6.26896	1302	9
Std Error	0.9490671				105.3464	
95% LCL	9.848902	7			1093.228	
95% UCL	13.61056	9			1510.772	
T-Value	12.3592					
Prob Level	0.000000					
Count	111		111	111		11

Section of Tenure

Parameter	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
Value	3	5	8	15	27.4
95% LCL	2	4	7	10	22
95% UCL	4	6	9	22	36

Plots Section of Tenure

Histogram of Tenurex



Multiple Regression Report Run Summary Section

Parameter	Value	Parameter	Value
Dependent Variable	Change in Revenue(C6160)	Rows Processed	303
Number Ind. Variables	9	Rows Filtered Out	0
Weight Variable	None	Rows with X's Missing	266
R2	0.444	Rows with Weight Missing	0
Adj R2	0.251	Rows with Y Missing	1
Coefficient of Variation	1.4811	Rows Used in Estimation	36
Mean Square Error	2.466152E+08	Sum of Weights	36.000
Square Root of MSE	15703.99	Completion Status	Normal
Completion			
Ave Abs Pct Error	305.148		

Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Minimum	Maximum
Age	36	47.61	7.979537	23	60
(Education Level=0)					
	36	0.25	0.439155	0	1
(Firm Size=-1)	36	0.25	0.439155	0	1
(Firm Size=0)	36	0.1944444	0.4013865	0	1
(I_O=0)	36	0.1388889	0.3507362	0	1
(Prior Exp=-1)					
	36	2.777778E-02	0.1666667	0	1
(School Tier=-1)					
	36	0.2777778	0.4542568	0	1
(School Tier=0)					
	36	0.1944444	0.4013865	0	1
Tenure	36	11.77778	10.4036	2	42
C6160	36	10603.21	18143.86	155	96206

Regression Equation Section

Independent Variable	Regression Coefficient b(i)	Standard Error Sb(i)	T-Value to test H0:B(i)=0	Prob Level	Reject H0 at 5%?	Power of Test at 5%
Intercept	-28569.3041	36588.7512	-0.781	0.4420	No	0.1169
Age	586.1209	656.5067	0.893	0.3802	No	0.1381
(Education Level=0)						
	10865.2235	7446.9538	1.459	0.1565	No	0.2900
(Firm Size=-1)	-10754.3086	11134.1122	-0.966	0.3430	No	0.1536
(Firm Size=0)	-11818.3370	8748.7420	-1.351	0.1884	No	0.2556
(I_O=0)	-4071.7898	11226.4033	-0.363	0.7198	No	0.0641
(Prior Exp=-1)						
	-1793.6966	19754.8905	-0.091	0.9283	No	0.0509
(School Tier=-1)						
	7860.6687	6296.6154	1.248	0.2230	No	0.2252
(School Tier=0)						
	2635.3303	8997.9331	0.293	0.7719	No	0.0592
Tenure	972.7071	477.8034	2.036	0.0521	No	0.5002

Estimated Model

-28569.30+ 586.12*Age+ 10865.22*(Education Level=0)-10754.31*(Firm Size=-1)-11818.34*(Firm Size=0)-4071.79*(I_O=0)-1793.70*(Prior_Exp=-1)+ 7860.67*(School_Tier=-1)+ 2635.33*(School_Tier=0)+ 972.71*Tenure

Regression Coefficient Section

Independent Variable	Regression Coefficient	Standard Error	Lower 95% C.L.	Upper 95% C.L.	Coefficient
Intercept	-28569.3041	36588.7512	-103778.5593	46639.9511	0.0000
Age (Education Level=0)	586.1209	656.5067	-763.3478	1935.5897	0.2578
(Firm Size=-1)	10865.2235	7446.9538	-4442.2093	26172.6563	0.2630
(Firm Size=0)	-10754.3086	11134.1122	-33640.8041	12132.1868	-0.2603
(I_O=0)	-11818.3370	8748.7420	-29801.6337	6164.9597	-0.2615
(Prior Exp=-1)	-4071.7898	11226.4033	-27147.9924	19004.4127	-0.0787
(School Tier=-1)	-1793.6966	19754.8905	-42400.4557	38813.0624	-0.0165
(School Tier=0)	7860.6687 0.1968	6296.6154	-5082.2096	20803.5469	
Tenure	2635.3303 0.0583	8997.9331	-15860.1860	21130.8467	
	972.7071 0.5577	477.8034	-9.4318	1954.8461	

Note: The T-Value used to calculate these confidence limits was 2.056.

Analysis of Variance Section

Source	DF	R2	Sum of Squares	Mean Square	Prob F-Ratio	Power Level (5%)
Intercept	1		4.047407E+09	4.047407E+09		
Model	9	0.4435	5.109996E+09	5.677773E+08	2.3020.0468	0.7902
Error	26	0.5565	6.411994E+09	2.466152E+08		
Total(Adjusted)	35	1.0000	1.152199E+10	3.291997E+08		

Analysis of Variance Detail Section

Model Term	DF	R2	Sum of Squares	Mean Square	Prob F-Ratio	Power Level (5%)
Intercept	1		4.047407E+09	4.047407E+09		
Model	9	0.4435	5.109996E+09	5.677773E+08	2.3020.0468	0.7902
Age	1	0.0171	1.965694E+08	1.965694E+08	0.7970.3802	0.1381
Education Level	1	0.0456	5.249764E+08	5.249764E+08	2.1290.1565	0.2900
Firm Size	2	0.0415	4.780627E+08	2.390314E+08	0.9690.3927	0.1998
I_O	1	0.0028	3.244212E+07	3.244212E+07	0.1320.7198	0.0641
Prior Exp	1	0.0002	2033146	2033146	0.0080.9283	0.0509
School Tier	2	0.0334	3.850918E+08	1.925459E+08	0.7810.4685	0.1684
Tenure	1	0.0887	1.022081E+09	1.022081E+09	4.1440.0521	0.5002
Error	26	0.5565	6.411994E+09	2.466152E+08		
Total(Adjusted)	35	1.0000	1.152199E+10	3.291997E+08		

Plots Section