University of Southern Queensland Faculty of Engineering and Surveying

TOPIC: 07-053

Is there any difference in CEO characteristics between government, not-forprofit, private, publicly listed sector: Implications for Engineers aspiring to become Top-Senior Managers

A dissertation submitted by

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In fulfillment of the requirements of

Course ENG 4111 and ENG 4112 Research Project

towards the degree of

Bachelor of Engineering (Mechatronics)

Submitted: October 2007

Abstract

Till today, the top-senior management of corporate Australia seems to be dominated by professionals such as accountants, lawyers and economist. From the current situation, it seems that the attractiveness of senior engineers as potential candidate for top-senior management position such as managing director and CEO position tends to be low.

This thesis uses researches and analysis to assess the factors affecting the advancement of engineers to top-senior management levels and targeted to investigate one aspect of this observation. It involves undertaking literature survey in the area of leadership and management especially in the field of engineering and researching attributes of professionals, including engineers, who are in influential leadership positions.

The overall project has attracted interests from Engineers Australia and its leadership arm, Centre for Engineering Leadership and Management (CELM). Based on the results of such projects, they are able to modify the structure of education for engineering courses with the intention to prepare or groom them into potential future top-senior management staffs.

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ENG4111 Research Project Part 1 & ENG4112 Research Project Part 2

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Acknowledgements

I would like to take this opportunity to extend my appreciation to my project supervisor, Mr Steven Goh. Thank you so much for your patience and guidance throughout the course of this dissertation.

I would also like to specially thank my family members and friends who have rendered their help and support throughout the period of my study and especially to my wife who have given me countless words of encouragements and acts of supports throughout the process of this dissertation.

Finally, not forgetting to thank all the participants who have spent their precious time in completing the questionnaires and to whoever contributing one way or another to the success of this dissertation.

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General Statement

In most companies, there will be an important position which is called a Chief Executive Officer (CEO). A CEO is leader of a company with a vision and being highly capable of deciding a company's future which can either lead to success or failure. However there are still various factors which are required to complement the success of a company.

In this project, a research will be conducted on the general characteristics of a leader of a company – the CEO. Besides the research on the characteristics, the common roles and responsibilities of a CEO will also be touched on.

In addition, CEOs from four different company sectors - government, not-for-profit, private and publicly listed sector will be used as a comparison to find out about the differences between the attributes and factors identified. Since the four companies are from different sectors having different objectives, the visions set by the CEOs ought to be different too. A research through the internet has harvested four interesting companies whose core business or interest is related to engineering. The four companies that are chosen are Building and Construction Authority (BCS), Institute of Electrical and Electronics Engineers (IEEE), Mid Columbia Engineering, Inc. (MCE) and Creative Technology respectively. Their CEOs will be examined in depth with regards to their history and their attributes. This is done in order to come out with realistic findings of the actual characteristics that a CEO in this fast moving environment requires as well as to identifies how CEO with engineering background succeed.

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Lastly, the final portion of the dissertation will incorporate the use of questionnaires completed by employees from any of the four sectors to understand their expectation of CEOs and the attributes that the CEOs ought to have from their personal point of view.

The questionnaires and the findings with regards to the expectations of CEO will be further analyzed in order to come out with a concise research from the leader and follower perspective. This is to provide a more realistic review of the differences in characteristics of CEOs with and without engineering background. Furthermore, this dissertation upon completion will be send to the companies that have participated in the questionnaires and have shown interest with regards to the findings, in which it can be used as a form of reference for future promotion criterion.

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1.0 Introduction

The purpose of this project is to find out the possible factors which cause senior

engineers to lose out to other professionals such as accountants, lawyers and economist,

as potential candidate for top-senior management position such as managing director and

CEO position. Such scenario can be seen in corporate Australia where the top-senior

management is often dominated by other professionals instead of senior engineers.

This project involves undertaking literature survey in the area of leadership and

management styles especially in the field of engineering, and researching attributes of

CEOs and professionals, including engineers, who are in influential leadership positions.

Another task in this project is to find out whether there is any difference in CEO

characteristics between government, not-for-profit, private, publicly listed sector. Since

each of the CEOs from these four sectors has a different vision as they have their own

objectives and serve different types of customers, thus it is important to find out the

differences in their characteristics.

1.1 Project Aims and Objectives

This project aims to study and determine the different characteristics of a CEO working in government, not-for-profit, private and publicly listed sector. In order to proceed with this analysis, it is necessary to understand more about the CEO. Thus it is required to find out the definition of a CEO, including their roles and responsibilities and to conduct a research on the general attributes of a CEO. This project will also involve undertaking literature survey in the area of leadership and management styles.

The attractiveness of senior engineers as potential candidates for top-senior management positions such as managing director and CEO positions tend to be low due to the fact that the top-senior management of corporate Australia seems to be dominated by professionals such as accountants, lawyers and economist. In this research project, a further analysis will be conducted to assess the factors affecting the advancement of engineers to top-senior management levels. A research will also be conducted to find out the general attributes of Engineers so as to compare it with the general attributes of CEOs to find out the differences between them to support the factors affecting their advancement.

Case studies will be conducted to further support the findings in this project. A company from each of the four sectors will be chosen and the general characteristics of the CEO will be analyzed. The company is chosen such that the core business or interest is closely related to engineering field.

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Interviews and questionnaires will also be conducted on employees from various companies to better understand their expectations of their CEOs and how they gauge their current CEOs. Finally, there will be a comparison on these four sectors to conclude on whether there are any differences in the characteristics of the CEOs and to provide recommendations to prepare engineers as potential candidate for top-senior management positions.

2.0 Definition of a CEO

A Chief Executive Officer (CEO) is the highest-ranking corporate officer or executive officer in charge of total management of a corporation, company, organization or agency. It is sometimes known as the Chief Executive or Managing director in some other countries.

The CEO is usually a visionary person who oversees all aspects of the company which includes human, financial, and environmental and the technical operations while leaving the day-to-day operations to be handled by the President, Chief Operating Officer (COO) or division heads.

In closely held corporation, like family owned businesses, the CEO and Chairman of the board are usually held by the same person. However, in recent years, there has been an increase in the importance of corporate governance which recommend the splitting of the Chairman and CEO position in order to prevent independent oversight and reliance on an individual.

In United States, corporations are governed by the board of directors, which have the power to appoint the CEO. The CEO in this case has the power to manage the corporation on a daily basis. However, board approval is needed for certain major actions like capital expansion or acquiring of another company.

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CEOs often become members of the board of directors of one or more firms, typically as a director of their own firm and often as chair of its board of directors. Some top executives establish their own firms or become independent consultants.

2.1 Roles and Responsibilities of a CEO

The roles of a CEO have changed tremendously over the years. In the past, work of a CEO is seen as a public figure closely related to the company success or failure. His or her main responsibilities are to ensure that the company remains profitable and successful. However, as companies goes global and increasing importance of corporate governance has redefined the roles of the CEO.

All organizations have specific vision, goals and objectives that they strive to meet. They are usually being established by the CEO in collaboration with other top executives, who are overseen by a board of directors. The CEO is required to sell his or her vision for the future of the company and this is the most constant responsibility which he or she will face. Once the vision is set, it will be disseminated to all the staffs to ensure that every staffs knows the direction of the company and therefore work towards achieving success for the company.

CEO will lead the top executives to devise strategies and formulate policies to ensure that all the objectives are met and to direct the operations of businesses. In a large corporation, the CEO meets frequently with subordinate executives to ensure that operations are conducted in accordance with these policies. The CEO of a corporation retains overall accountability; however, a COO may be delegated several responsibilities, including the authority to oversee executives who direct the activities of various departments and implement the organization's policies on a day-to-day basis. In publicly

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held and nonprofit corporations, the board of directors ultimately is accountable for the

success or failure of the enterprise, and the chief executive officer reports to the board.

CEOs have overall responsibility for the operation of their organizations. Working with

executive staffs, they set goals and arrange programs to attain these goals. They appoint

department heads, who will manage the employees who carry out these programs. They

are also required to oversee budgets and ensure that resources are used properly and that

programs are carried out as planned.

The basic roles of the CEO in operation are to delegate, communicate and to plan for

mistakes. However, experiences and skills are required to perform all those tasks and

contingency plans have to be in place in order to minimize damage or resolve the

situation during unforeseen circumstances.

In addition to those that have been discussed above, there are three main focuses that

CEOs have to take note of. The three main focuses are people, money and customers.

People are affected through human resources, money is managed through the Chief

Finance Officer (CFO), and customers are managed through marketing. As a CEO, he

needs sufficient data about all three of them and examines the data.

When dealing with people, the CEO has to look for staff turnover rates, diversity,

promotions, loyalty, litigation, and how the litigation is resolved. When dealing with

money, the CEO needs to know the periodic profits or losses, the company's cash inside

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the bank and some of the balance sheets. When looking at customers, the CEO needs to

look for new customer growth, customer complaints and customer trends.

CEOs are also needed to carry out a number of other important functions, such as

meeting with staff and board members to determine the level of support for proposed

programs. In addition, they often nominate citizens to boards and commissions,

encourage business investments, and promote economic development in their

communities. To do all of these varied tasks effectively, they rely on a group of highly

skilled personnel. Some CEOs who control small companies, however, often do this work

by themselves.

There are also other focuses for the CEO such as social, economic, political and

international variables. This is a challenge for the CEO as he needs to understand all of

these in order to help the company achieve success.

In addition to being responsible for the operational success of a company, top executives

including the CEO, are increasingly being held accountable for the accuracy of their

financial reporting, particularly among publicly traded companies. For example, recently

enacted legislation contains provisions for corporate governance, internal control, and

financial reporting.

2.2 Attributes of CEO

The CEO is known as a leader of a company and thus it is a must for a CEO to have good leadership and management skills in order to run a company successfully towards his vision. The objective of this section is to examine the general characteristics of CEOs and to discuss the attributes, which is divided into two types of attributes – characteristics and knowledge & skills.

Characteristics are further divided into four categories – Personal, Intellectual, Ethical and Physical, whereas Knowledge and Skills is further divided into three categories - Human relations, Management and Cognitive ability. Knowledge and Skills can be trained through courses or developed through experiences over time. Knowledge and skills of the CEO is a crucial attribute that is required for the CEO to be competent in its area of responsibilities.

2.2.1 Characteristics

2.2.1.1 Personal

Personal characteristics refer to the CEO's personal attributes and values which have an effect on the way it bring along his or her vision to the company to achieve the desired success bestowed onto him when taking up the position.

With reference to the personal characteristics, personal insights identifies CEO to be a mature person with high tolerant of stress and frustration. A CEO with such qualities will never vent their anger on the subordinates when a situation turns and this will in turn convinces people to respect their opinions and look to them for guidance. By giving others credit for their achievements are also important as such acts will provide motivation to the staffs and in return, talents will be retained and tasks will be completed with the best possible results.

CEO must have highly developed personal skills. An analytical mind which is able to quickly assess large amounts of information and data is very important as it is the ability to consider and evaluate the relationships between numerous factors. They also must be able to communicate clearly and persuasively.

Trustworthy and responsible characteristics refer to the willingness to answer and account for their actions or decisions to the board of directors as well as to appear dependable and reliable towards others.

Furthermore, the CEO must have the courage to decide what he or she believes in and does what is right while acting in good faith of the company, despite the pressure given by the board or investors to act in favor of their own interest. The CEO also needs to be a risk taker or possess sound business judgment in order to anticipate the future to push the

company into new domains or growth area.

However before any risk is to be made, there should be adequate calculation and planning

as well as will thought out contingency plans in case of failure. When a situation outcome

is ambiguous, the CEOs may also need to display its decisiveness, determination and

authoritative characteristic to give instructions for all to follow without fail.

The CEO must have definite confidence in one's own judgment and the abilities of his

subordinates. Good judgment and sound thinking come into the picture and instructions

should never be changed over time to time as this will affect the trust in the decision

made. In addition, CEO should also possess the characteristics of an entrepreneurial

leader which allows its employees to make mistakes and understand the issues from all

the angles, that is crucial to the long-term success of the company.

On top of all the above characteristics, great CEO's yearn for feedback from an employee

perspective in order to understand themselves better and continue to grow with its people.

An example is the Singapore Police Force, which is a government organization in

Singapore, that implement Staff Suggestion Schemes (SSS) where the employees will

suggest improvements or changes to be carried out to make work easier or to make the

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working environment better. There will be a team to evaluate the feasibility of the suggestions and upon accepting a suggestion, the employee submit the idea will be rewarded with gifts or points to exchange for gifts. This in turn allows the CEO to understand what the employee values and expect from the organization..

On top of all these, the most important and critical quality for a CEO success is leadership. The different types of leadership will be discussed in the following section.

2.2.1.2 Intellectual

As a leader of a company, being visionary is important as it is a must for a CEO to have a

vision for both personally and for the organization. The vision should then be made

known to all the employees so that they know the direction which they are heading to and

to plan on how to work towards the objectives and attaining the vision.

Some CEOs seems to have an uncanny ability to predict the future, not referring to sixth

sense but it is called foresight. They may have unusual insights into their particular

markets, and luck may play a part as well. In addition, they are prepared to create their

own luck by cultivating an ability to see opportunities for their company and to make the

deals that convert those opportunities into realities.

CEOs are known to be intelligent people with practical judgment. Some things that may

seem like amazing foresight are actually the result of the hard work and discipline it takes

to constantly look forward to build a successful company. Great CEOs must also

constantly develop new products to build and retain a customer base.

Foresight is also the ability to hire and retain the right people, looking ahead toward the

growth of the company. Finally, over time, each company must develop a steady source

of business during both good economic times and bad, because there are sure to be bad

economic times during the life of a business.

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Setting business goals is a constant iterative process. Work sessions or activities should be held by companies periodically for the top staffs who are provocative thinkers to set goals such as periodic strategy, budget, and operations planning

2.2.1.3 Ethical

A CEO can never do without a code of ethics to maintain their self-discipline level to the extreme. Code of ethics can be personal or corporate but the important point is to have one that works personally and professionally for oneself.

People with a reputation for being ethical can guide others through a crisis. Those without such a reputation simply won't be trusted and therefore cannot get others to follow them to help things around. Even as the CEO, in a crisis you have to rely on others, who will only be reliable only if they believe that the CEO is reliable.

Personal integrity of a CEO is the basic requirement for leadership and it is also the number one criteria which can destroy an organization. People follow a leader because of his or her character, not only by the job title. CEOs are looked upon as role models and thus they are required to show the highest values and moral standards in order to set a good example for others to follow. Without integrity, greed will take over and the consequences will definitely be the company suffering financially and the culprit ending up in court with huge fines or even jailed.

A negative example showing the importance of integrity is the CEO of Sunbeam where Dunlap was exposed for fraud and drove Sunbeam into near bankruptcy.

2.2.1.4 Physical

Great CEOs seem to have boundless energy. They come to work everyday with the greatest enthusiasm. Even when they don't feel like it, they find ways and means to reenergize themselves and be ready to go all out. Being energetic with stamina will indeed help them to be able to achieve better results in a shorter time span.

CEOs are also able to take good care of themselves physically and emotionally so that they can be there for the employees and the company in times of need. They give much more than they take every day and they will not give up with their perseverance and persistence. Even when the wall is too high, they back down and find another way around. They do not blame, but they do look for solutions to problems so that those problems are less likely to happen again.

2.2.2 Knowledge & Skills

2.2.2.1 Human Relations

Even though knowledge and skills can be trained through courses or developed through experiences over time, however a lot of efforts are required to build up the relationship with fellow workers. In order to build a close relationship, one has to be tactful, sensitive and respectful to others when communicating with them even when CEO is the highest ranking officer in the company. This will convince them to perform their outmost as if they are helping a good friend in need.

Beside have close relationship with fellow workers, motivation through recognition rewards and actions are also very important. Through these, the employees will be motivated to work even harder and be loyal to the company. Since employees are considered as an asset to the company, ability to retain experience staffs will definitely save time and money consumed for training newcomers. In most cases, experience staffs from the sales department who left for the company for a rival company may end up having the customer base being brought along with them, causing great losses to the company.

Team work is another factor that can contribute to the success of all projects. It can make the completion of tasks easier and faster as compared to having a single person doing the same task. A team must strive to work in a synergistic way, so that the group effort is greater than the sum of the efforts of the individuals in the team. Team work is more

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effective when peers speak to peers. With the leader being the only one who brings out the issues, always having to criticize and commend, the team functions less effectively than it would if the peers were to speak up freely.

Most companies with the encouragement from the CEO will come out with team building activities such as outings, games or the most common activity is annual company's Dinner and Dance (D&D) night. Such activities will bring all the employees closer together and such bonds can enable them to work hand in hand more easily.

2.2.2.2 Management

CEO requires the knowledge and skills in performing the management process. The management process compromises of five elements, which are - Planning, Organizing, Command, Coordination and Control.

Planning could also be translated as foresight. Plans depended on organization's resources, work in process and future trends that could not be predetermined. Plans needed to have the characteristics of unity, continuity, flexibility and precisions. In order to fulfill the planning characteristics, knowledge arising from past experience is crucial.

Organizing consists of the design of the organization and the staffing of job. Structure of the organization had to be consistent with the objectives, resources and requirements of the organization. Staffing of job involved selection, evaluation and training of personnel.

Command is use in directing, leading and supervising. To command effectively certain qualities, knowledge and experience are necessary. For example, having thorough knowledge of personnel, eliminate the incompetent and be well versed in the agreements binding the business and its employees. Coordination is the harmonizing of activities in the organization. Control is the checking on performance to identify and make corrections if necessary.

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Planning, organizing and staffing skills are the major elements that are essential for top

management. Planning, Organizing, Command, Coordination and Control skills of CEO

can be gained from education and through experiences when working with others.

It also includes networking skills which is necessary to obtain information about the

market or competitor in today's competitive environment in order to stay ahead of the

competition. In addition, good problem solving skills will help CEO to come out with

good strategies and vision that are beneficial to the company success.

In higher management, conflict may exist. Therefore the CEO being the top of the

organization, will need to step in to resolve these conflicts. Conflicts in the higher

management may result in high damage as it affects the whole hierarchy. For instance,

conflict between the two leaders will affect productivity and effectiveness of each

department. If conflicts are not resolve fast, it may result in damaging effect to the

organization. Hence CEO requires the skills and knowledge to manage the conflicts that

occur in the higher management.

2.2.2.3 Cognitive ability

In day-to-day operations, CEOs must gather, integrate and interpret enormous amounts of information. Thus they are required to be intelligent enough to formulate suitable strategies, solve problems and make correct decisions even in short period of time given.

Howard and Bray found that cognitive ability predicted managerial success twenty years later in their AT&T study. Effective managers have shown to display greater ability to reason both inductively and deductively than ineffective managers.

Intelligence may be a trait that followers look for in a leader. If someone is going to lead, followers want the person to be more capable in some aspects than they are. Therefore, the follower's perspective of cognitive ability in a leader is a source of authority in the leadership relationship.

2.3 Types of Leadership

Leadership and management styles of a CEO will affect greatly on the performance of the company. There is abundance of such theories identified by different studies carried out.

In leadership, theories about the leader – follower relationship illustrated by the leadership process diagram below, will be emphasized in order to provide a framework for understanding this body of knowledge.

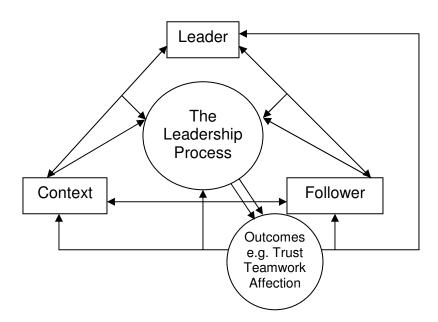


Figure 1: Leadership Process Diagram

In the diagram above, leader is the person who takes charge, and the follower is the person who performs under the guidance and instructions of a leader. Context refers to the situation surrounding the leader-follower relationship; the process is embedded in the act of leadership with the assumption and surrender of power to define the situation.

Lastly, outcome can include nearly anything arising from the interplay between the leader-follower and the context.

On top of that, personal traits of the leader have to be discussed so as to understand the personal traits that may enable a person to be a successful leader.

Ralph Stoghill in 1948 came out with the Great Person Theory and cited that individuals are supposedly born with a set of personal qualities that enabled them to be effective leader. However, a flaw of this theory is its inability to take into consideration the situation that the leader is in.

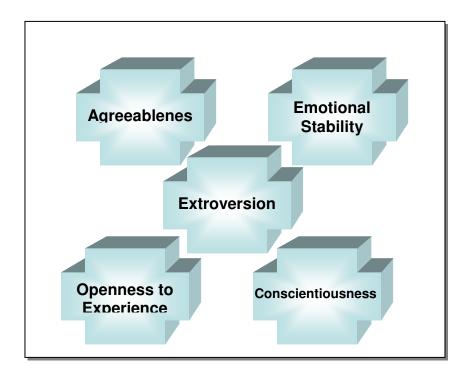


Figure 2: Big Five Personality Model

In the recent years, Chan and Drasgow came up with the Big Five Personality Model, which use five dimensions to capture several personality traits and describe the most

salient aspects of personality. The five dimensions are known as extroversion, agreeableness, emotional stability, conscientiousness, and openness to experience which is illustrated in the diagram above.

In addition to the traits, the ability to influence also plays an important part in accomplishing the tasks and goals defined. Power can exist in the form of personalized or socialized power and is defined in terms of influence of psychological change. Use of personalized power is effective in dealing with tasks of predictable nature whereas socialized power uses empowerment as a source of power to get things done, which is effective for ambiguous tasks in which the outcome is unpredictable.

Through the leader's influence or power tactic, personalized and socialized power can be used to incorporate the five bases of power which are known as reward power, coercive power, legitimate power, referent power, and expert power.

Different forms of power produce different forms of compliance. Therefore, use of different influence or power tactic can result in different response from the follower which will affect the performance, effectiveness, and satisfaction of the group or followers.

Another important leadership theory is the situational leadership theory. Situational leadership is a prescriptive approach that tells the leader how to assess their followers and how to respond to that assessment of follower readiness through the use of the situational

leadership model. The style is presented in the form of telling, selling, participating, and delegating with reference to the four levels of the follower readiness which is illustrated in the diagram below.

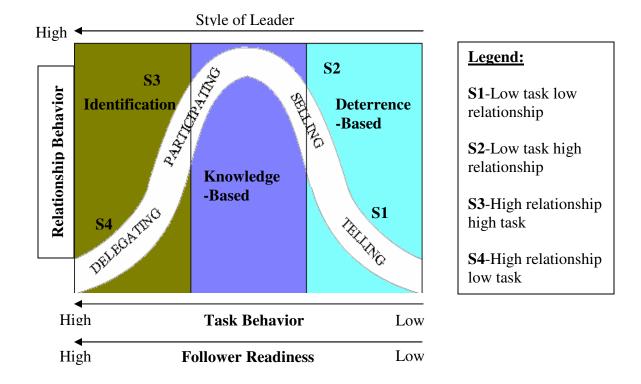


Figure 3: Situational Leadership Model

An example for S1 would be a newcomer who has no relationship with the leader and thus does not know what is expected by the leader. Therefore the leader will need to tell him what he has to do from A to Z. Whereas in S3, for a follower with a strong relationship with the leader will take initiative and do their work without the need for the leaders to tell them what to do.

Therefore, a good leader will find himself or herself switching instinctively between styles according to the people and work they are dealing with.

Furthermore, in order to influence followers, leaders need to be charismatic. Charismatic is a form of feeling that the followers feels about the leaders. This form of feeling can also be known as normative, affective, and continuance. The types of feeling can be positive or negative depending on the follower's perception towards the leader. On top of that, leaders also need to posses certain degree of EQ in order to influence followers as well as to make correct judgments. The components of the EQ framework can be seen in the diagram illustrated below.

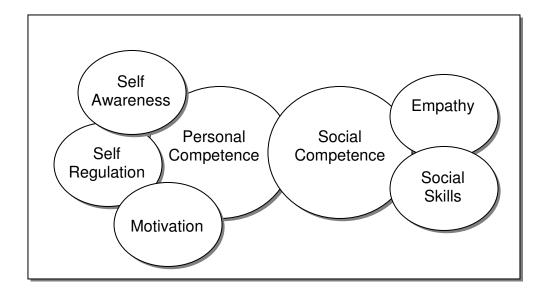


Figure 4: EQ Framework

Management is usually viewed as getting things done through other people in order to achieve stated organizational objectives. Successful CEO could be very different in terms of personal characteristics and behaviors, therefore different theories of management styles can be used to differentiate different types of CEOs in that aspect.

Douglas McGregor formulated the Theory X and Y grouping management style into 2 assumptions. They are the underlying beliefs about the nature of man that influence managers to adopt one strategy rather than another. Theory X which represent the traditional view of direction and control while Theory Y is the integration of individual and organizational targets and creates conditions such that the members of organization can achieve their own targets best by directing their effort towards the success of the organization.

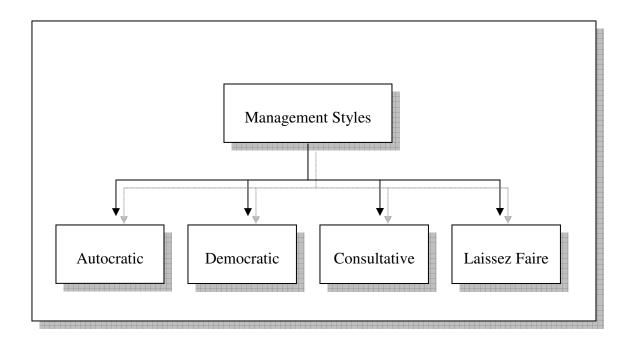


Figure 5: Four Different Types of Management Style

In autocratic management style managers makes all decision and command orders without consulting. Objectives and tasks are set and the subordinates are to follow exactly what they are told to do. It is effective in a time of crisis when quick decisions are needed and to control unskilled workers. However, the downside of this is that subordinates may become highly dependent upon the leaders and supervision may be needed thus leading

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to the decrease of motivation and increase staff turnover because subordinates are not

consulted and do not feel valued.

In contrast, democratic style allows subordinates to be involved. The managers will put

trust in their subordinates and encourage them to make decision by empowering them

with such authority and will listen to their advice. Being able to participate, subordinates

developed a sense of belonging and be motivated to come up with better contributions

each time. From the overall business's point of view, job satisfaction and quality of work

will improve. However, the decision-making process is severely slowed down, and the

need of a consensus may avoid taking the 'best' decision for the business. In additional,

employees may take advantage of the fact that their manager is democratic by not

working to their full potential and allowing other group members to cover for them,

which results in the issue of free-riders.

Consultative management style is viewed as a combination of both autocratic and

democratic management style. The managers will involve their subordinates by

consulting their views and opinion but the ultimate decisions will be made by the leader.

This allows the employee to feel involved and decisions can be made fast. However, if

consultative management is practice frequently by the management, employee may feel

unhappy and will not put in effort provide quality good suggestions.

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In Laissez Faire management style, there is complete freedom for employee in doing their tasks. Managers have minimum involvement in coordinating instead has more delegation role. This style is best practised in highly professional and creative groups of employees.

However in many cases, with little direct guidance from the manager, staff may begin to feel lost and not able to reach the goals originally set within the time frame.

3.0 Definition of Engineers

Engineer is a person who is qualified, trained or professionally engaged in any branch of engineering. He is given a problem and a specific set of goals and constraints, finds a technical solution to the problem that satisfies those goals within those constraints. The goals and constraints may be technical, social, or business related.

Engineers use technology, mathematics, and scientific knowledge to solve practical problems. They possess these technical skills and knowledge to tackle the technical problems and such knowledge and skills are obtained through their course of study or work experiences.

3.1 Roles and Responsibilities of an Engineer

Every technological product has to be designed and its fabrication overseen and this is what engineers do generally. Engineers and scientists are often confused in the minds of the general public. In actual fact, scientists explore nature in order to discover general principles, while engineers apply established principles drawn from mathematics and science in order to develop economical solutions to technical problems. The work of engineers is the link between perceived social needs and commercial applications.

A really broad but short definition of engineering is:

"Engineering is the application of math and science to create something of value from our natural resources."

Note that the definition above states that engineering is not science. Engineers generally don't "do" science. Science is about discovering the natural. Engineering is creating the artificial.

Theodore Von Karman, an aerospace engineer, said, "Scientists discover the world that exists; engineers create the world that never was."

Engineers consider many factors when developing a new product. For example, in developing an industrial



robot, engineers precisely specify the functional requirements; design and test the robot's components; integrate the components to produce the final design; and evaluate the design's overall effectiveness, cost, reliability, and safety. This process applies to the development of many different products, such as chemicals, computers, engines, aircraft, and toys.

In addition to design and development, many engineers work in testing, production, or maintenance. These engineers supervise production in factories, determine the causes of component failure and test manufactured products to maintain quality. They also estimate the time and cost to complete projects.

Some engineers move into engineering management or into sales. In sales, an engineering background enables them to discuss technical aspects and assist in product planning, installation, and use. Supervisory engineers are responsible for major components or entire projects.

Engineers use computers extensively to produce and analyze designs; to simulate and test how a machine, structure, or system operates; and to generate specifications for parts. Many engineers also use computers to monitor product quality and control process efficiency.

Since there are engineers with different job scopes, we shall examine on two general types of engineers - design & development and testing, production, or maintenance.

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Engineers who work in design and development:

• design, plan, and supervise the construction of buildings, highways, and transit

systems

• develop and implement improved ways to extract, process, and use raw materials

• develop new materials that both improve the performance of products and take

advantage of advances in technology

• analyze the impact of the products they develop or the systems they design on the

environment and on people using them

Engineers who work in testing, production, or maintenance:

• supervise production in factories

• determine the causes of breakdowns

• test manufactured products to maintain quality

• estimate the time and cost to complete projects

Engineers as a group are probably the most creative people. They synthesize, solve

problems and innovate ideas, meaning that they make new things and make old things

better. People in the arts are creative too; but their creativity deals with thoughts or

emotions. Engineering creativity is directed at things and objects, mainly targeting to

make things better and make life easier.

3.2 Attributes of Engineers

The objective of this section is to examine the common characteristics of engineers and to discuss the attributes. Similar to what is being done on the analysis on the attributes of CEOs earlier, they are also divided into two types of attributes – characteristics and knowledge & skills.

Characteristics are further divided into four categories – Personal, Intellectual, Ethical and Physical, whereas Knowledge and Skills is further divided into three categories - Human relations, Management and Cognitive ability.

3.2.1 Characteristics

3.2.1.1 Personal

Innovative and creativity are the most critical characteristics to be successful engineers. Engineers will be immediately noticed by all when fresh products are created or upgraded versions of products are produced. This allows the company to be a step higher than the competitors. An example is the creation of flash drives. The product engineer managed to foresee that diskettes storage is considered small with attachments getting larger. Thus users will require a product that can have larger storage capacity but smaller in physical size for convenience sake.

Upon the creation of flash drives, users turn to using them rather than the usage of diskettes due to the fact that flash drives having larger memory space but smaller in physical size as compared to diskettes. Other engineers will then try to be the pioneer to produce better visions of flash drives which can be in the form of even larger storage space, lower production cost resulting in lower retail price, smaller physical size or even more attractive outlook.

With reference to the personal characteristics, similar to a CEO, engineers must be equipped with high tolerant of stress and frustration as they are often required to complete the given objectives in the shortest period of time. This is due to the competition between rival companies in which usually the successful company is the pioneer to develop a new product. The new product will then be able to attract curious

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consumers in trying out the product and by the time rival companies managed to figure

out the technology used, the pioneer company will then be able to have a better or

upgraded version of the products. In this way, the company will be able to dominate the

market shares for a substantial period of time.

For any projects, engineers may be required to work as individually or as a team and thus

teamwork is essential. They are required to have the ability to think both critically and

creatively, independently and cooperatively. Engineers are generally compliant when

given instructions on a particular task. They can come out with suggestions but in the end

it is usually the management that makes the call. Upon given the tasks, engineers will be

responsible for them and being achievement oriented, they will be determined to

complete them on time.

Technology is ever-changing and in order for an engineer to survive in this line, it is

necessary to upgrade oneself constantly and having the desire to learn throughout one's

life. Companies will normally send their engineers for courses to upgrade their skills for

new programs or technology locally or overseas. Engineers also ought to have the ability

and self-confidence to adapt to rapid and major changes because at times, the result may

not be what is expected and thus flexibility need to be applied in such circumstances.

Engineers are generally non-risk takers since they are trained to do so right from the start.

For example for Civil Engineers, they are trained not to take any form of risk and must

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confirm that all the calculations are correct before carrying out the construction if not, the building might collapse.

3.2.1.2 Intellectual

Engineers usually only have short term objectives to complete certain targets given by the management and they are usually the ones following the business goals set by the CEO. However, they can still set their own personal goals and targets and plan on how to achieve the business goals set by the management. In this way, it shows the capability of oneself above others in the view of the management.

Engineers having the foresight to look at the possible future technology will also lead to new business opportunities for the company. Upon producing new products based on the possible future demands in the market, the company will be ahead of other competitors as it would definitely attract the attention of the consumers naturally through their curiosity to try out the new products in the market.

3.2.1.3 Ethical

The most basic and vital attributes of engineers is that they must have high ethical standards. Engineers can never do without a code of ethics. Code of ethics can be personal to maintain their self-discipline level or corporate to prevent infringement of copyrights or patents. This shows the professionalism of oneself. In cases of breech of code of ethics, it could result in great losses or even closure of a company due to legal suits requesting for great amount of compensations.

An example is product development engineers require integrity in designing of products to avoid being engaged in legal suits resulting in huge compensations for copying of product designs or software. There are also cases where engineers' integrity are being challenged when they are offered with bribed in return for certain classified information to be disclosed to the rival companies and such action will greatly affect the company as a whole if agreed upon.

3.2.1.4 Physical

Engineers also have boundless energy as come to work everyday with the greatest enthusiasm. They are also able to take good care of themselves physically and emotionally as they are often being put in great stress to complete tasks in short period of time. They will not give up on their tasks and will continue to pursue the desired results with their perseverance and persistence.

The job scope of engineers is very demanding and therefore they need to have a high tolerant of stress and physically strong as they are often required to work overtime to complete certain tasks or researches as time is usually one of the most common and critical constraint.

3.2.2 Knowledge & Skills

Knowledge and skills of engineers is a crucial attribute that is required for the engineers to be competent in its area of functions and responsibilities.

3.2.2.1 Human Relations

Basically, engineers require lesser communication but more physical activities and hands-on. They may not have a chance to be involved in huge project most of the time where they are required to work in a large group. Most of the time, they may be individually tasked to perform some minor research or analysis and this deters the chance for the bonding with fellow colleagues.

However during the process of work related discussions as a team, they will be able to understand each other personalities better and their capabilities in work. The results will usually be better than individual piece of work.

In times of despair where they encounter problems, they are usually the ones needed to be motivated by the leaders. This is even so when the engineers have produced good results, the leaders ought to motivate them with verbal or monetary awards to encourage them to continue the good work done or do even do better in future. This is the reason why the leaders ought to possess motivating skills.

3.2.2.2 Management

Engineers performing supervisory duties usually lead a small group of fellow workers as a team to tackle projects tasked upon them. As such, the engineers will also need to apply the management process throughout the process of the project, comprising the five elements - planning, organizing, coordination, command and control.

Prior to the commencement of a project, engineers are required to plan for the flow and timeline for the project. They are also required to organize the materials and staffing required and to coordinate the different roles of the staffs. In the process of the project, the use of command and control is being applied to make sure that all which are planned are carried out smoothly and according to plan and to make corrections if necessary.

In addition, good problem solving skills will definitely help engineers to come out with solutions to solve the problems easily.

Depending on the engineers' roles and responsibilities, it is compulsory for them to have relevant technical knowledge and skills to deal with their work or thorough understanding of design process and manufacturing.

Engineers are more focused on technical skills for application in work-related matters (hands-on activities), either individual or member or even leader in a team and usually need to take care of workplace relations and avoid conflict with fellow colleagues in order to perform well as a team.

3.2.2.3 Cognitive ability

Engineers are less likely to require this ability in their daily work as they are more focus on their technical skills to solve problems instead. They may be required to work with figures and formulas to solve problems given, but less on formulating suitable strategies and making final decision as these are normally done by the management level. They will be the ones proposing the possible solutions to the management but it is still up to the management committee to decide on his next step.

3.3 Factors Affecting Advancements of Engineers

From theoretical basis, the knowledge between the two CEOs, the CEO with engineering background is suppose to perform better than the other due to the extensive technical knowledge he or she possesses, which is useful in helping the company obtain a competitive edge above others. However in most cases, CEOs with engineering background are often entrepreneurial, who have managed to set up their own successful companies rather than getting promoted till the CEO position. This is one of the main objectives of this project which is to find out the possible factors which hinder engineers from advancing to the top-management positions.

In reality, due to the lack of exposure to management knowledge and issues, engineers are lacking in administrative and interpersonal skills which is required in order to effectively manage people as they climb up the corporate ladder. Based on the analysis on the different characteristics of CEO and engineer, it further supports the factors that may affect the advancements of engineers to top management positions.

In an article by Dr Michael Badawy, he commented that in order for engineer to become successful manager, or eventually CEOs, they need to build up their administrative and interpersonal skills in addition to their technical skills in order to compete with CEOs from finance or administrative background.

"Moving up the ladder means moving away from the technical skills." Dr Michael Badawy.

As management level increases, the importance of technical, administrative and interpersonal skills varies. This can be seen in Figure 6 which indicates that as managerial responsibilities increases, technical skills become less important.

Managerial failure rarely results from technical incompetence as one of the basic requirements of a CEO is to have the relevant knowledge in the industry he or she serves. The major cause of managerial failure among engineers is poor interpersonal skills. Many engineers are more comfortable in dealing with technical matters rather than with people. (Dr M. Badawy, 2006)

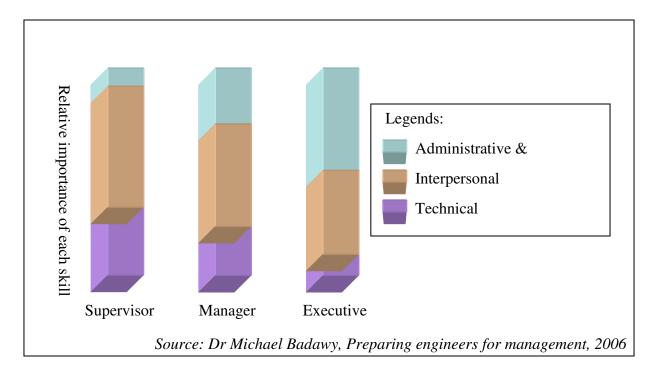


Figure 6: Importance of Skills at Different Management Level

Managing is a skill, and therefore, acquiring knowledge and putting the knowledge into use is the only way to develop managerial skills. Knowledge without putting them into use will only fade away as time passes.

CEOs are expected to be bear visions to lead the company as a whole, to a higher level of success, but engineers are trained differently. Engineers are required to foresee what consumers lack of currently and create innovative products to satisfy their needs. By improving the versions or specifications of products can also assist the company to compete with various competitors.

There are several different types of engineers but most of them have similar job scope.

The most common job scope of an engineer is to deal with machinery which includes repairing, maintaining or upgrading of the machines.

Only at a later stage where some engineers taking up supervisory roles, may be tasked to take charge of a small group of personals to assist him in larger projects but to handle small number of staff still differs from managing a company. In order to manage a company, it requires management skills not only learnt from books, but also experiences accumulated in managing people.

For engineers to handle a particular project or task, it is very straight forward as the expectation for the final result is laid out for him to plan the process to achieve it. However on the management side, new objectives and goals are to be set at intervals.

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Planning, organizing and staffing skills are the major elements that are essential for top

management. However, Planning, Organizing, Command, Coordination and Control

skills of CEO can be gained from education and through experiences when working with

others.

Once engineers are promoted to management level, they must delegate technical

responsibility to others. In some cases, they may be unable to adapt with changes in roles

and responsibilities

The inability to get along with others is also another factor for their failure. Managerial

failure rarely results from technical incompetence but lack of managerial competence.

The major cause of managerial failure among engineers is poor interpersonal skills. Many

engineers are more comfortable dealing with technical matters rather than people. It is

extremely important for a manager to interact and build harmonious relationship with his

or her superiors, associates and subordinates as failure to do so can turn into a major

hindrance to team work and obstacle to high performance standards. Being in good

relations with the subordinates, they will be more than willing to lay down their full

efforts to achieve the best results possible.

Since poor interpersonal skills are the most important causes of managerial failure, they

need to avoid the "me only" syndrome. If the manager is preoccupied with personal

rewards and recognition, the subordinates will gradually lose their motivation in work

and become unwilling to play their part, having seen that they are not appreciated for

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their efforts put in. Me-only managers are compulsively fixated on how much credit they

get, how much money they make and how fast they are moving up the corporate ladder.

Therefore it is important for manager to share the glories and rewards with the

subordinates as a form of motivation or showing of appreciation for their good work

done.

In some engineering courses, business related subjects are not being introduced into it

and therefore the graduates who became engineers will lack of business management

knowledge such as economics, leadership, marketing, etc.

Other job-related causes for managerial failure may include preoccupation with former

areas of interest, lack of balance in objectives and priorities and farming out

responsibilities.

Successful managers learn from their mistakes. They recognize their shortcomings and

try to correct them. However, some managers tend to react to failure differently. They

may become defensive and try to conceal their mistakes or even blaming others for the

mistakes.

This analysis does not means that all engineers will definitely be unable to advance to

management level because all the skills mentioned above can be trained and developed

through time. In time to come, the engineer can view engineering problems not only

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technically, but also able to take ethically, environmental, moral, economics and community issues into considerations.

4.0 Case Studies

In the following case studies, CEOs from four different company sectors - government, not-for-profit, private and publicly listed sector, will be examined and used as a comparison to find out about the differences between their attributes.

4.1 Government Organization

A government organization, government-owned organization or government business enterprise is a legal entity created by a government to exercise some of the powers of the government. They have been given autonomy to perform an operational function and direct administrations are usually funded through taxation. The delivering organization generally has no specific requirement to meet commercial success criteria, and production decisions are determined by government. Minimum advertisements or promotion activities are carried out as they usually sustain through budget given by the government.

The part of the economy concerned with providing basic government services. The composition of the public sector varies by country, but in most countries the public sector includes such services as the police, military, public roads, public transit, primary education and healthcare for the poor. The public sector might provide services that non-payer cannot be excluded from (such as street lighting), services which benefit all of

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society rather than just the individual who uses the service (such as public education),

and services that encourage equal opportunity.

Most government organizations may resemble not-for-profit organizations as they have

no need or goal of satisfying the shareholders with return on their investment through

price increase or dividends. Their main priority is to serve the community and satisfy

their living needs. However there are other government corporations which are

established as for-profit businesses, for example Australia Post. It differ from direct

administration in that they have greater commercial freedoms and are expected to operate

according to commercial criteria, and production decisions are not generally taken by

government (although goals may be set for them by government).

The current trend in government organizations for cost-cutting purposes is partial

outsourcing of duties to private companies. In this way, the government organization can

save manpower and time spent in that particular area. A few examples of duties being

outsourced are IT, security, cleaning services etc.

Government organizations may provide services involving housing, education (e.g.

schools), emergency services, law enforcement, healthcare, etc. They may also produce

goods like electrical infrastructure, water infrastructure, sewers, roads etc.

4.1.1 General Characteristics of CEO in Government Organization

The most important characteristic for CEO in government organization is integrity. If the integrity of the leader in the government organization is being breeched, having involved in bribery or frauds, the people's trust in the government will drop drastically as the money used to fund the government organizations are mainly collected from the people through taxation. The implications can even be worldwide as other countries having known about such incidents will think twice before engaging in any forms of trades with that country.

Since government organizations are usually not-for-profit organizations and operated to provide services to the community, the CEOs are therefore non-profit oriented but more of service and public-oriented. They tends to set targets to attain certain service standards such as ISO 9001 or Singapore Quality class, in order to prove their capabilities in providing excellent services to the people.

Though CEOs in government organizations may be public-oriented, it is useful to note that in order for government organizations to attract talents to join them, they will try to match the salary packet of the government sector positions with the private sector bearing similar job scopes to be as close as possible. One good example is Singapore where the government not only strives to match the salaries with the private organizations, bonus are also being benchmarked with private sectors.

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The CEOs are required to possess excellent cost management skill as government

organizations usually rely on funds given by the government and they need to make use

of the budget to run the organization. They may resort to cutting cost by reducing

manpower (outsourcing) or by keeping advertisements or promotions minimum.

These CEOs are usually low risk takers as they are required to answer not only to the

government, but also to people if great losses are incurred by bad investments. Their

yearly financial results will also be made known to all through their annual reports.

Therefore, they will normally use the excess funds to invest only in low-risk category

such as fixed-deposit or low-risk stocks, etc. just to generate small guaranteed profits for

the organization. They also have limited vision as they are less likely needed for overseas

expansion.

Government organizations normally operate in a monopolistic environment as they are

most likely the main operator for that particular service. Therefore they do not lack of

consumers but the price for their services are to be kept reasonable and affordable.

4.1.2 Case Study on Government Organization



An example of a government organization is the Building and Construction Authority (BCA), which is an agency under the Ministry of National Development. It is responsible for the development of an excellent buildings, structures and infrastructure environment for Singapore community's activities

BCA has a critical role to play in shaping the built environment. They have to ensure that all the buildings and other structures in Singapore are designed, constructed and maintained to a high standard of safety. They also spearhead the drive for better and higher quality construction works and lead the industry in providing a sustainable built environment, and champion the national effort to make our built environment more accessible for the disabled and the elderly.

The construction industry is BCA's key partner in delivering an excellent built environment. BCA works with the industry to strengthen capabilities and help provide a vibrant business environment.

BCA ensures its systems and people are always equipped to deliver service excellence and meet future challenges by strengthening its own internal processes and human resource development.

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It targets to continue working towards raising the capabilities and professionalism of the local construction industry in Singapore and to partner with the construction industry to create a distinctive built environment that embraces safety, high quality, sustainability and barrier-free accessibility. It also aims to meet future challenges to move the built environment beyond basics which needs it to be accessible and friendly to all users, including the elderly and the disabled, and to be environmentally sustainable.

BCA is committed to good corporate governance and have put in place a Code of Corporate Governance to formalize the principles and practices of governance within BCA to ensure accountability, responsibility and transparency.

4.1.3 General Characteristics of CEO in BCA



Dr John Keung Kam Yin, 53, obtained a 1st class honour degree in Arts (Geography) from York University, followed by a Master of Science (Town Planning) and a Doctorate in Philosophy from the University of Wales.

Dr John Keung started his career in Hong Kong, his place of birth, as a teacher. In 1981, he joined the then Planning Department of the Ministry of National Development, Singapore and started off as a planner and that was the time he started working for the government organization. He was promoted to a Senior Planner in 1989, when the then Planning Department merged with the URA, to appointed Director, Physical Planning Division, URA in 1993, and subsequently appointed Deputy CEO in 2001. He continued to display his capabilities and was appointed Deputy CEO (Building) of HDB on 1 March 2002 and finally in June 2006, he was appointed CEO for BCA.

Throughout his twenty-six years serving the public in various government departments, he has shown his leadership qualities with good inter-personal skills and he rose rapidly from a technical officer to a management position. He may not have any civil engineering background but was still able to lead in the area of building related sector. This proves

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that technical skills are not as important as leadership skills when it comes to the criteria for management positions.

Based on BCA's strategic thrusts, mission and vision led by him, it shows the public and service oriented mindset which he strongly adhere to. He also strongly believes in innovative, integrity, and service excellence. His overall main aim is to benefit the people of Singapore with a distinctive built environment and high quality of life they can all be proud of.

4.2 Not-For-Profit Organization

A Not-for-profit organization, also known as non-profit organization (NPO), is an organization whose primary objective is to support an issue or matter of private interest or public concern for non-commercial purposes. NPOs may be involved in an innumerable range of areas relating to the arts, housing, charities, early childhood education, healthcare, politics, religion, research, sports or some other endeavor.

A Not-for-profit organization is an organization created by statute, government or judicial authority that is not intended to provide a profit to the owners or members. NPO generally do not operate to generate profit, a characteristic widely considered to be defining of such organizations. However, a NPO may accept, hold and disburse money and other things of value. It may also legally and ethically trade at a profit. The extent to which it can generate income may be constrained, or the use of those profits may be restricted. They are therefore typically funded by donations from the private or public sector, and often have tax exempt status. Donations may sometimes be tax deductible.

A NPO is usually created with a specific purpose, such as for educational, charitable or related to other enumerated purposes, it may be a foundation, a charity or other type of non-profit organization. Such a corporation is subject to the general laws of corporations as adapted. In some cases it may also be a government corporation. In many countries these entities are subject to exemption from various tax laws, in certain circumstances.

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NPO often are charities or service organizations; they may be organized as a not-for-

profit corporation or as a trust, a cooperative, or they may be purely informal. Sometimes

they are also called foundations, or endowments that have large stock funds.

Most foundations give out grants to other NPOs, or fellowships and direct grants to

participants. However, the name foundations may be used by any not-for-profit

corporation, even volunteer organizations or grass roots groups.

A NPO may have members or participants or beneficiaries or students etc. as opposed to

customers in a for-profit organization. Unlike for-profit organization that needs to attract

and retain customers, NPOs will have people approaching to apply to become the

beneficiaries or members when they fitted the criteria for a certain benefit. Upon

receiving the application, a committee from the organization will then decide on

accepting or rejecting the application based on the criteria set as some applicants may be

trying to take advantage of the benefits without having fitted the criteria.

Most countries have laws which regulate the establishment and management of NPOs

and which require compliance with corporate governance regimes. Most of the larger

organizations are required to publish their financial reports detailing their income and

expenditure for the public. In many aspects they are similar to business entities though

there are often significant differences. Both nonprofit and for-profit entities must have

board members, steering committee members, or trustees who owe the organization a

fiduciary duty of loyalty and trust. A notable exception to this involves churches, which

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are often not required to disclose finances to anyone, not even its own members if the

leadership chooses.

NPOs can have members but many do not. The nonprofit may also be a trust or

association of members. The organization may be controlled by its members who elect

the Board of Directors, Board of Governors or Board of Trustees. Nonprofits may have a

delegate structure to allow for the representation of groups or corporations as members.

Alternately, it may be a non-membership organization and the board of directors may

elect its own successors.

A primary difference between a nonprofit and a for-profit organization is that a nonprofit

does not issue stock or pay dividends and may not enrich its directors. However, like for-

profit corporations, nonprofits may still have employees and can compensate their

directors within reasonable bounds.

In many countries, nonprofits may apply for tax exempt status, so that the organization

itself may be exempt from income tax and other taxes so that financial donors may claim

back any income tax paid on donations, or deduct from their own tax liability the amount

of the donation. However only for limited types of tax exempt, NPOs can offer to donors

the advantage of deductions for the amount donated.

Capacity building is an ongoing problem faced by nonprofits that rely on external

funding to maintain their operations, largely because NPOs have little control over their

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source of revenue due to their inability to fund growth from profits in the way that

conventional businesses can.

Many nonprofits rely on government funds to support their operations, often through

grants, contracts, or customer-sided subsidies, such as vouchers or tax credits. Some

nonprofits may also rely primarily on support from charitable foundations and donations.

Therefore these funds must be handled appropriately.

Changes in these sources of revenue may influence the reliability or predictability with

which the organization can hire and retain staff, sustain facilities, or create programs.

There are only few sources of revenue that allow nonprofits to develop their

organizational capacities.

It should also be noted that some non-profits are operated wholely by volunteers or with

paid positions. However there are cases which revealed that some paid positions have

come under question as the salaries of top level executives were in the millions of dollars

per year. One such example would be the CEO of Singapore National Kidney Foundation

(NKF) – Mr TT Durai. This negative example will be analysed in the later part.

4.2.1 General Characteristics of CEO in Not-for-Profit

Organizations

CEOs for Not-for-Profit Organizations must have the spirit of volunteerism and to be public oriented. The main purpose for being a CEO in NPO is to serve the community in need and non-profit oriented. As compared to for-profit organizations, the same paid positions will definitely receive a much lower salary. The common mindset is that since they are volunteers and are willing to serve the community in need, they should not be too mindful over the benefits received.

Being unable to generate profit by itself commercially, the CEOs are required to possess excellent cost management skill as the organization has limited funds collected from donations or government grants, the CEOs have to use these limited funds to run the entire organizations. The CEOs are also low risk taker as they cannot to afford to lose their funds on bad investments because they will have a hard time answering to the donors and without these funds, they will have difficulties in running the organizations. Therefore, they will normally use the excess funds to invest only in low-risk category such as fixed-deposit or low-risk stocks, etc. just to generate small guaranteed profits for the organization.

Integrity is also a must for the CEOs in this sector. As the organizations are unable to generate funds, when the funds are used for unofficial purposes, it will badly affect the operations of the organizations. The CEOs will also be highly tempted with bribery and

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frauds as they are not required to report to any investors on exactly how the money are

spent and some organizations such as churches are even not required to disclose finances

to anyone if the leader chooses.

The CEOs also have limited vision as the need for overseas expansion is usually very

low. However one good example of a worldwide NPO is the Salvation Army, which

operates in many different countries helping those in need worldwide.

Since NPO do not operate for profit, they also do not need to compete for customers

unlike for-profit organizations. People will approach to apply to become the beneficiaries

or members when they fitted the criteria for a certain benefit instead. It is the organization

which will then decide on accepting or rejecting the application based on the criteria set.

4.2.2 Case Study on Not-For-Profit Organization



An example of a Not-for-profit organization is the Institute of Electrical and Electronics Engineers (IEEE), which is an international non-profit, professional organization for the advancement of technology related to electricity. It is a leading authority in areas ranging from aerospace, computers and telecommunications to biomedicine, electric power and consumer electronics. It has the most members of any technical professional organization in the world, with more than 360,000 members in around 175 countries.

The IEEE was incorporated in the State of New York, United States. It was formed on the 1st January 1963 by the two organizations, Institute of Radio Engineers (IRE), which was founded in 1912, and the American Institute of Electrical Engineers (AIEE), which was founded in 1884, formally merged as the IEEE

IEEE's Constitution defines the purposes of the organization as "scientific and educational, directed toward the advancement of the theory and practice of electrical, electronics, communications and computer engineering, as well as computer science, the allied branches of engineering and the related arts and sciences."

conferences each year.

In pursuing these goals, the IEEE serves as a major publisher of scientific journals and a conference organizer. It is also a leading developer of industrial standards (having developed over 900 active industry standards) in a broad range of disciplines, including electric power and energy, biomedical technology and healthcare, information technology, information assurance, telecommunications, consumer electronics, transportation, aerospace, and nanotechnology. IEEE develops and participates in educational activities such as accreditation of electrical engineering programs in institutes of higher learning. It also sponsors or cosponsors more than 300 international technical

IEEE has a dual complementary regional and technical structure - with organizational units based on geography (e.g., the IEEE Philadelphia Section) and technical focus (e.g., the IEEE Computer Society). It manages a separate organizational unit (IEEE-USA) which recommends policies and implements programs specifically intended to benefit the members, the profession and the public in the United States.

The IEEE consists of 39 societies, organized around specialized technical fields, with more than 300 local organizations that hold regular meetings.

The IEEE has approximately 900 employees who support various IEEE activities. Through the IEEE Foundation General Fund and over 80 smaller special-purpose funds, the IEEE Foundation provides approximately US\$2 million in philanthropic support each year to IEEE-related programs worldwide.

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The support includes helping to develop educational and public-information programs, to

sustain historical research services, subsidize workshops that facilitate the exchange of

electronic information, propel technological innovation and increase public awareness

about the vast impact of engineering on society.

Most IEEE members are electrical engineers, computer engineers, and computer

scientists, but the organization's wide scope of interests has attracted engineers in other

disciplines (e.g., mechanical and civil) as well as biologists, physicists, and

mathematicians. The voting membership of the IEEE elects a new president each year,

who serves for three years - first as President-elect, then as President and CEO, and

finally as Past President. Elections are held annually for top IEEE officers.

IEEE produces 30 percent of the world's literature in the electrical and electronics

engineering and computer science fields, publishing well over 100 peer-reviewed

journals.

The IEEE provides learning opportunities within the engineering sciences, research, and

technology. The goal of the IEEE education programs is to ensure the growth of skill and

knowledge in the electricity-related technical professions and to foster individual

commitment to continuing education among IEEE members, the engineering and

scientific communities, and the general public.

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IEEE offers educational opportunities such as *Expert Now IEEE*, the *Education Partners Program*, *Standards in Education* and *Continuing Education Units* (CEUs). IEEE also sponsors a website designed to help young people understand better what engineering means, and how an engineering career can be made part of their future. Students between the age of 8 to 18, parents, and teachers can explore the site to prepare for an engineering career, ask experts' engineering-related questions, play interactive games, explore curriculum links, and review lesson plans.

4.2.3 General Characteristics of CEO in IEEE



Dr. Leah H. Jamieson is President and CEO of the Institute of Electrical and Electronics Engineers (IEEE) worldwide. She received the BS in mathematics from MIT and the MSE and PhD degrees in Electrical Engineering and Computer Science from Princeton University. She is also the John A. Edwardson Dean of the College of Engineering, Ransburg Professor of Electrical and Computer Engineering, and holds a courtesy appointment in Purdue's Department of Engineering at Purdue University.

Her technical interests include speech recognition, parallel signal processing algorithms, and engineering education; she has published over 160 papers. In 1976 she joined the faculty at Purdue University, West Lafayette, Indiana, USA, where she is Ransburg Distinguished Professor of Electrical and Computer Engineering and John A. Edwardson Dean of Engineering. She served as Director of the Graduate Program in Electrical Engineering at Purdue from 1990-94, Director of Graduate Admissions from 1994-96, Interim Head of the School of Electrical and Computer Engineering in 2002, and associate Dean of Engineering for Undergraduate Education from 2004 to 2006.

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She is also a co-founder and past director of the Engineering Projects in Community

Service (EPICS), which is an engineering design program that operates in a service-

learning context, initiated at Purdue and adopted by 17 universities. For her work with

EPICS, she was co-recipient of the U.S. National Academy of Engineering's 2005

Gordon Prize for Innovation in Engineering and Technology Education. She has served

on advisory committees of the U. S. National Science Foundation and on the Board of

Directors of the Computing Research Association.

She is an IEEE Fellow and a member of the U.S. National Academy of Engineering. The

main reason that she was elected as the CEO and president of IEEE by the members

might be because of her vast knowledge and experiences in the engineering sector. She

must have also projected good interpersonal skills in order to attract such strong support

from the members voting her to be the CEO of IEEE.

She has also received numerous awards for her contributions and achievements, naming a

few recent awards are IEEE Education Society/Hewlett-Packard Harriett B. Rigas

"Outstanding Woman Engineering Educator" Award in 2000; and IEEE Signal

Processing Society Meritorious Service Award in 2003.

From the information gathered, she is seen to be public oriented and having the spirit of

volunteerism as throughout all these years, she has been energetic and enthusiastic to be

involved in so many roles to help not only students, but also working adults in different

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ways. Being innovative, she has co-founded a program to assist students in their learning

process.

IEEE operates in a non-competitive environment because people who require information

will take their initiative to join as members and only very few organizations could match

IEEE's wide coverage. However IEEE is able to generate funds from its membership and

journal fees and with these funds, the CEO can run the organization efficiently and

expanding the coverage to even more countries.

Annual reports are released to the public every year, but since there are no investors

involved, the figures do not attract as much attention as compared to other profit

organizations. Therefore the leaders are required to be equipped with high integrity to

resist the temptation of committing frauds with the figures reflected. Dr Leah is also a

low risk taker as she does not perform any high risk investments using the available

funds.

Based on the vision and mission set for the organization, unlike traditional NPO, she

hopes to lead IEEE to continue promoting the engineering process of creating,

developing, integrating, sharing, and applying knowledge about electro and information

technologies and sciences for the benefit of humanity and the profession to the

community worldwide.

4.2.4 Case Study on Not-For-Profit Organization (Negative

Example)



The National Kidney Foundation Singapore (NKFS) is a Singapore-based foundation running kidney dialysis and prevention programmes. It is fully supported by charity donations.

In the past, many kidney patients died because they could not afford the high cost of dialysis. Many lost their life's savings and their homes to pay for expensive private dialysis - as high as \$3,000 a month. Due to the shortage of organ donors, transplantations were not an option for most.

NKFS was established in 1969 by Dr Khoo Oon Teik, a nephrologist, and a cohort of friends successfully established Singapore's first dialysis unit at the Singapore General Hospital. The late Yusof bin Ishak, the first President of Singapore and Patron of the Foundation, officially inaugurated the NKFS in Singapore on April 7, the World Health Day.

In 1987, the NKF embarked on an ambitious project to build dialysis centres all over Singapore to provide affordable dialysis to everyone who could not afford private treatment. Since then, public support has been garnering to provide highly subsidized dialysis and medication to our patients - as low as \$100 a month. With a record of over

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twenty strategically located dialysis centres, dialysis treatment has also become more

accessible and convenient for them.

NKFS is the largest charitable organization in Singapore and it is the world's first public-

funded subsidized dialysis programme in 1987. It is also the single largest not-for-profit

dialysis provider in the world. The NKFS introduced a novel fund raising method using

technology – the telepoll, in 1994.

NKF's reserves stood at S\$262 million as of July 2005.

4.2.5 General Characteristics of CEO in NKF (Singapore)



Thambirajah Tharmadurai, better known as T. T. Durai, is the former Chief Executive Officer of the National Kidney Foundation (NKF) in Singapore. He joined NKF as the CEO in 1992 and he was working as a lawyer prior to this appointment holding a Law Degree and a Master's of Law.

Durai was once highly respected as the head of an extremely successful fundraising organization. But in July 2005, Durai resigned amid controversy following the collapse of a defamation trial which the NKF brought against Singapore Press Holdings (SPH). All the financial information about NKF was kept as a secret not known to the public, until during the trial, many revelations were then made known to the public.

NKF's reserves stood at S\$262 million as of July 2005. It previously claimed that its expenditure is more than S\$60 million a year for dialysis and the reserves would last 3 years but in actual fact, after corrected calculations, if the NKF stopped all fundraising activities and concentrated on treating kidney patients, it would still have enough money to see through its operations for 30 years, based on its expenses scheduled for 2003. NKF in fact spent far less on dialysis than the public had been led to believe.

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The NKF had overstated its patient numbers by about 1,000 and the number had been

inflated possibly to create a false impression of need and given the impression to the

public that more funds were needed to run its operations. The overstating of figures with

the intention to deceive the public to donate more money has shown the lack of integrity

in the management of NKF.

It is also revealed that the NKF senior executives fly business class for long-haul flights

while making NKF business trips at the costs of NKF, which is deemed unnecessary

since NPO traditional basic role is to run the organization in a thrifty manner due to the

common problem in capacity building.

Further revelations during the trial were that the NKF had a fleet of eight cars with

company drivers and Durai was one of six officers who could make use of them at any

time. The office cars were also used to transport VIPs and guests of the charity. In his

sworn affidavit, he claimed that the office fleet was used by officers who had to visit

NKF facilities to attend to the needs of the centres and patients. As a CEO, he was

entitled to use any of the cars any time he wanted but he had also used the office cars for

personal use. He also had his own Mercedes-Benz 200 car for his personal and family use

and his wife also drove it. But the NKF paid the car's road tax and picked up the bills for

maintenance and repair and such acts could amount to misuse of company's funds since

the vehicle is wholly a private asset.

Investigations also revealed that while Durai worked full-time as CEO of the NKF, he was also a director of a number of other companies. He was paid sums of up to S\$25,000 a year by them, over and above his NKF remuneration package. He never told the NKF board about some of these, and did not list these directorships in his curriculum vitae.

It was also revealed that Durai had a business relationship with Matilda Chua, a one-time employee of the NKF, who left to start her own company, Global Net Relations. Not only did he invest in her business, but the NKF also gave her telemarketing contracts, and she eventually became a member of the NKF board as well. He did not disclose to the NKF board that he was a director of the company.

In days following the trial, around 30,000 donors terminated their monthly contributions to the NKF. An online petition was set up, calling for Durai to step down, which, as of writing, has 43589 signatures on it. Such strong reaction from the public shows the drastic fall of public confidence level in this Not-for-profit organization when such news were being exposed.

On 14 July 2005, the NKF called a press conference at which Durai and the entire NKF Board announced their resignations. An interim board was appointed by the government to keep the organization going and begin the task of restoring public confidence.

Based on the report issued on 16 December 2005 by the international accountancy firm KPMG who investigated the business activities of NKF and the conclusions are:

- In 1995 Durai's pay was increased from \$12,000 to \$18,000. The promotion was backdated six months, so he received another \$36,000. On top of that, Durai received a \$30,000 bonus "top-up" based on the revised salary.
- In 1997 Durai was offered a salary of \$30,000 a month but he chose to accept only \$25,000, a \$7,000 increase over his previous wage. The increment was backdated 11 months, amounting to an extra \$77,000.
- September 1997 to October 2003. His overtime pay amounted to \$187,000.
- May 1995 to November 2003. Encashing his leave entitlement brought in another \$350,000.
- In 2004 Durai chalked up an average bill of \$32,952 per month on his corporate credit card.
- In 2004 a \$70,000 "study trip" to Las Vegas for six of NKF's staff, including
 Durai, to get fresh ideas on doing charity shows.
- In 2004 \$430,000 on movie and concert tickets to be given free to "nurture" donors
- Staffs received pay increments as often as four times a year. Former director
 Matilda Chua's salary rose from \$1,300 to \$12,500 over nine years.
- Staffs were given exit payments of up to 10 months' salary.
- Durai used NKF funds to pay bills relating to his wife's Mercedes, including paying for petrol and repairing the car.
- In 2004 NKF made a surplus of \$993,677 from drug sales. Although NKF claimed it helped its patients save over \$3.5 million in treatment costs, it had

charged its patients a premium for certain discounted drugs, instead of passing the savings on to them.

Durai was earning over S\$600,000 per annum for his role as head of the charity, had taken first class air travel on business trips when he had previously insisted that he did not do this and sued members of the public who claimed he did, and that 'gold-plated taps' and pricey German toilet bowls had been installed in his private office at the NKF's expense. Even the maintenance bills for his wife's Mercedes also came from NKF funds. Durai had tried to give the impression in his affidavit that he was being thoughtful when he agreed to come on board as CEO in 1992 for just \$12,000 a month even though he had been offered \$20,000.

T.T Durai was then paid a monthly salary of S\$25,000 in 2002 and received 10 months performance bonuses (S\$250,000) for that year, making a total of S\$550,000 for 2002. He was paid a monthly salary of S\$25,000 and received 12 months performance bonuses (S\$300,000). He was paid a total of S\$600,000 in both 2003 and 2004. He was paid a total of nearly 1.8 million Singapore Dollars in 3 years from 2002 to 2004. These figures were closely guarded secrets until the court case. There were many occasions when he declined a pay rise but was paid the offered increase in salary, backdated to the time he was offered the pay rise, the following year.

From these conclusions, TT Durai had operated the NKF as if it was a for-profit organization instead of a non-profit organization. The main objective had veered from

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serving the community in need into creating a successful profitable organization with the

interest of themselves rather than the interest of the public in mind. The funds were

misused in various extravagances on numerous occasions and salaries and bonuses for

paid-positions were given out more than necessary.

TT Durai could have been a successful leader if he had worked for a for-profit

organization as he is able to lead the organization to become a successful charitable

organization with his characteristics. He led NKFS to be the first to introduce a

successful novel fund raising method using telepoll in 1994. This method of telepoll is

conducted by organizing a show broadcasted live nation wide, which include getting

overseas and local well-known media artists to perform stunts or shows. In addition to

that, lucky draws and prizes which are generally sponsored are included in the show and

the first prize could even win a private housing unit. This marketing strategy makes use

of technology and by exploiting of human psychology similar to gambling, it generates

large amount of funds for the organization yearly. However the main problem that led to

his downfall is his lack of integrity which causes him to be unable to resist the

temptations of fraud and misuse of funds.

Durai was formally accused of having submitted false invoices between 2003 and 2004 to

the NKF to make claims for various consultancy services which were never rendered.

One invoice was for \$20,000 and the other, \$5,000. Durai was said to have misled the

charity by using the false invoices knowingly with intent to deceive (the NKFS). Anyone

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who uses a false or erroneous document, which to his knowledge is intended to mislead, is guilty of an offence under Section 6(c) of the Prevention of Corruption Act.

4.3 Private Listed Organization

A private company has several advantages. It has no requirement to publicly disclose much, if any financial information and such information could be useful to its competitors. For example, Form 10-K which is an annual report required by the SEC each year that is a comprehensive summary of a company's performance.

Private companies do not file form 10-Ks. It is less pressured to "make the numbers" to meet quarterly projections for sales and profits, and thus in theory able to make decisions that are best in the long-run. It spends less for certified public accountants and other bureaucratic paperwork required of public companies by government regulations. The wealth and income of the owners remains relatively unknown by the public.

The norm is for new companies, which are typically small, to be privately owned. After a number of years, if a company has grown significantly and is profitable, or has promising prospects, there is often an initial public offering which converts the private company into a public company or an acquisition of a company by public company. Yet, some companies choose to remain private for a long period of time after maturity into a profitable company. Investment banking firm Goldman Sachs and shipping services provider United Parcel Service (UPS) are examples of profitable companies which remained private company for many years after maturing into profitable companies.

4.3.1 General Characteristics of CEO in Private Listed

Organization

CEO of Private listed organizations can be a medium to high risk taker. Depending on the

company's financial situation, they have variable funds to spend on investments and on

running of the company on manpower and advertisements etc. Since the shares are owned

by relatively few shareholders, the need to answer to people becomes lesser and there is

no requirement to publicly disclose much of the financial information. With the excess

variable funds in hand, medium or high risk investments can then be carried out. Possible

overseas expansion, diversification of businesses or even progress and upgrade to public

listed organization can also be carried out.

The CEOs are profit oriented as they are required to obtain the highest profits using the

shortest period of time for the expansion and running of the companies. However they are

less pressured to meet quarterly projections for sales and profits to attract investors as

they have lesser shareholders as compared to private listed companies.

Private listed organizations can range from small to big companies. In this competitive

environment, they must provide best service to attract and retain customers. Therefore in

order to attract and retain customers, they must be able to provide excellent services.

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The CEO of the company will usually set service standards for the staffs to follow. They will often target to attain certain standards such as ISO 9001 or Singapore Quality Class, in order to show the potential customers about their service oriented profile.

Similar to the previous organizations, the most important characteristic for the CEO is integrity. Without integrity, the CEO can be easily lured by lurutive bribery or committing fraud, which can cause the company to fall drastically or even bankrupt.

4.3.2 Case Study on Private Listed Organization



An example of a Private listed Organization would be MCE USA, Inc. Mid Columbia Engineering, Inc. (MCE) is an engineering and consulting firm. It was incorporated in the state of Washington in 1975. Initially, MCE provided engineering design and consulting services to the U.S. Department of Defense (DOD) and the U.S. Department of Energy (DOE) contractors at the Hanford nuclear reservation near Richland, Washington.

In recent years, under its parent company MCE USA, Inc., MCE has diversified and expanded into a more extensive range of products, services, and associated areas of expertise. Their client base includes local, state, and federal government agencies, municipalities, and an extensive private sector clientele.

MCE has divisions that specialize in Engineering, Manufacturing, Technical Staff Augmentation and Consulting Services.

Each of MCE's divisions has its own customer base, revenue structure, and marketing focus. The divisions function separately, but all operate under the same umbrella.

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MCE's primary objective is to provide the best possible service at the best possible price.

They recognize that their value as a company depends on the value they give to their

clients.

MCE is committed to results and has a proven track record of responsiveness to client

concerns, attention to detail, and ability to work within schedule and budget constraints.

By staying alert to changing customer requirements and industry demands, MCE has

become a multifaceted corporation that consists of separate but related divisions.

4.3.3 General Characteristics of CEO in MCE USA, Inc



The Chief Executive Officer (CEO) for MCE USA, Inc is Mr Patrick McDaniel. He has a Bachelor of Science degree in Mechanical Engineering from Oregon State University and is a licensed Professional Engineer in the states of Washington, Oregon, and Alaska. With his technical knowledge and experiences, he founded MCE in 1975.

Under his direction, MCE has flourished for over 30 years, providing engineering and speciality staffing services across the United States. He has been directly responsible for MCE's impressive history in providing technical services to the nuclear energy, nuclear environmental remediation, and coal/gas combustion power industries. He has created several other corporations providing a variety of construction, manufacturing, and technology-based products and services. This shows his characteristics of being business minded and profit oriented, having large funds available, he made this high risk investment by diversifying and expanding into a more extensive range of products, services, and associated areas of expertise a few years back in order to obtain a wider range of customers.

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With his innovative character, he holds more than 11 patents for equipment design, which are successfully implemented in a number of industries, and continues to develop innovative solutions to meet client requirements. Mr. McDaniel is actively involved in numerous organizations that contribute to the development of industries in Washington State.

He has earned such good reputations in his excellent services that even the US government Department of Defense engaged his company for engineering design and consultancy services in such competitive environment. However he has yet to show any intention of having the company publicly listed or overseas expansion, which he may have his own reasons.

4.4 Public Listed Organization

A public listed company usually refers to a company that is permitted to offer its securities (stock, bonds, etc.) for sale to the general public, typically through a stock exchange. Usually, the securities of a public company are owned by many investors while the shares of a private company are owned by relatively few shareholders. However, a company with many shareholders is not necessarily a public company.

A public company has several advantages. It is able to raise funds and capital through the sale of its securities. This is the reason why public corporations are so important, historically; prior to their existence, it was very difficult to obtain large amounts of capital for private enterprises. In addition to the ease of raising capital, public companies may issue their securities as compensation for those that provide services to the company, such as their directors, officers and employees.

While private companies may also issue their securities as compensation for services, the recipent of those securities often have difficulty selling those securities on the open market. Securities from a public company typically have an established fair market value at any given time as determined by the price the security is sold for on the stock exchange where the security is traded.

When company lists its shares on a public exchange, it will almost invariably look to issue additional new shares in order to raise extra capital at the same time. The money paid by investors for the newly-issued shares goes directly to the company (in contrast to

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distributed by the company.

a later trade of shares on the exchange, where the money passes between investors). An IPO, therefore, allows a company to tap a wide pool of stock market investors to provide it with large volumes of capital for future growth. The company is never required to repay the capital, but instead the new shareholders have a right to future profits

In addition, once a company is listed, it will be able to issue further shares via a rights issue, thereby again providing itself with capital for expansion without incurring any debt. This regular ability to raise large amounts of capital from the general market, rather than having to seek and negotiate with individual investors, is a key incentive for many companies seeking to list.

4.4.1 General Characteristics of CEO in Public Listed Organization

CEOs of public listed organizations are mainly high risk taker. Since the companies have

already managed to generate large amounts of funds through the sales of shares to

investors and so the funds can then be used for investments purposes and on running of

the company on manpower and advertisements etc. With the excess variable funds on

hands, investments such as overseas expansion or diversification of businesses can also

be carried out.

The CEOs are profit oriented as they are required to obtain the highest profit using the

shortest period of time and are pressured to meet quarterly projections for sales and

profits to attract more investors.

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Since the shares are owned by large number of shareholders and investors, therefore the

companies are needed to answer to them and they are required to publicly disclose their

financial information and their investments. Such information can also be made used by

competitors.

Public listed organizations can usually big well-known companies. In this competitive

environment, they must also provide the best service to attract and retain customers. They

need to compete with smaller companies in prices for the services offered and their

standard of services. Therefore in order to attract and retain customers, they must be able

to provide excellent services. The CEO of the company will usually set service standards

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guidelines for the staffs to follow. They will often target to attain certain standards such as ISO 9001 or Singapore Quality Class, in order to show the potential customers about their service oriented profile.

Similar to the previous organizations, the most important characteristic for the CEO is integrity. It is more critical for public organizations as they have even larger amount of funds and business connections available and so the leaders can be easily tempted to commit frauds or being bribed.

4.4.2 General Characteristics of CEO in Public Listed Organization



Creative is the worldwide leader in digital entertainment products for the personal computer and the Internet. It is now driving digital entertainment on the PC platform with products like its highly acclaimed Zen and MuVo lines of digital audio players. The company's innovative hardware, proprietary technology, applications and services leverage the Internet, enabling consumers to experience high-quality digital entertainment - anytime, anywhere.

Since launching the phenomenally successful Sound Blaster sound cards and setting the de facto standard for PC audio in 1989, Creative has been able to leverage on its cutting-edge audio technology, huge user base and strong brand name to expand into the exciting lifestyle Personal Digital Entertainment (PDE) market.

Creative is widely recognized today as a global leader for product innovation in the audio and PDE segments, offering PC users a complete, high quality digital entertainment experience through Creative's hardware, software applications and services.

Creative is expanding the power of the personal computer with a wide range of interactive PDE products that comprise MP3 players, portable media centers, multimedia

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speakers, digital and web cameras, PC peripherals, graphics solutions, revolutionary

music keyboards, and video & communications products.

Their product innovations have won numerous international awards and accolades

throughout the years. Creative has set new audio standards with the launch of its latest

Xtreme Fidelity(X-Fi) audio platform. The cutting-edge technology has gained wide

industry recognition and was selected by Popular Science as the "Best of What's New in

Home Entertainment" for bringing outstanding audio quality to MP3 music.

These products and solutions are marketed to consumers and system integrators through a

worldwide distribution network that include traditional marketing channels, original

equipment manufacturers (OEMs) and the Internet.

Creative has forged partnerships with some of the industry's top technology companies

and developers worldwide, fortifying their strength and leadership in product innovation

and research & development.

The company has also made strategic investments in a number of US-based companies.

Over the years, it has acquired US-based Ensoniq, E-MU® Systems, Cambridge

Soundworks, Ectiva Inc. (formerly the NetMedia group from OPTi), ShareVision®

Technology, Digicom Systems, Silicon Engineering Inc. and 3Dlabs. It is also a

shareholder in US-based Sigmatel, a Nasdaq-listed chip maker that supplies sound chips

to manufacturers of MP3 players.

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The mission is set to expand their leadership role in the lifestyle Personal Digital Entertainment market, using innovative technology, broadband and leading-edge designs for not just the technically progressive consumers. With strong focus on their user friendly interface, multiple features and cool industrial designs, the Creative brand is

synonymous with lifestyle Personal Digital Entertainment.

Creative was listed on the US Nasdaq stock exchange in the summer of 1992. We are the

first true-blue Singapore company to be listed on Nasdaq. In June 1994, Creative also

gained a listing on the main board of the Singapore Exchange. However in 31st August

2007, Creative had voluntarily delisting its Ordinary Shares from the NASDAQ Global

Market after considering all factors and proceed with this decision which is found to be

best for the company.

Over the years, Creative has set up regional headquarters in the US (Milpitas, California),

Europe (Dublin, Ireland) and Asia (Singapore). Sales and distribution activities are

carried out through an extensive, global network of subsidiaries located in North

America, Europe, Asia and Africa. These subsidiaries and sales offices enable Creative to

provide effective global support to our broad-based, multi-tiered channel distribution

network of 230 key distributors in more than 80 countries.

Creative has over 30 subsidiaries and associates worldwide, mostly in complementary

fields of audio and high technology. The company currently employs more than 4,500

people worldwide.

4.4.3 Case Study on Public Listed Organization



Creative Technology Ltd was founded in Singapore in 1st July 1981 by Sim Wong Hoo and was famous for its Sound Blaster sound cards and for launching the multimedia revolution. Sim Wong Hoo, being the Chief Executive Officer (CEO) and Chairman of the company, has set the vision that multimedia would revolutionize the way people interact with their PCs.

Sim Wong Hoo, who is born 1955 is the CEO and Chairman of Creative Technology, a pioneer of computer sound systems, a designer and manufacturer of products for personal computers and personal digital entertainment devices. He was born in Singapore and he graduated from the Electrical & Electronic Engineering faculty of Ngee Ann Polytechnic in Singapore in 1975.

In 1st July 1981, having acquired some technical knowledge through his studies and bearing an ambition, Sim Wong Hoo got his start running Creative as a computer repair shop together with his school friend Ng Kai Wa at Pearl Centre in Singapore. While doing this, he managed to develope an add-on memory board for the Apple II computer that they sold as well. Later, Creative started creating customized PCs adapted for the

Chinese language which included enhanced audio capabilities so that the device could produce speech and melodies.

In 1987, Creative released a 12-voice sound generator sound card for the IBM PC architecture, the *Creative Music System* (*C/MS*), and Sim personally went from Singapore to Silicon Valley and managed to get RadioShack's Tandy division to market this card. The card was however not successful and lost the competition against the AdLib card which was a capable gaming card and also a passable music synthesizer where the C/MS could not do it.

Being persistant to succeed, he made another attempt was with the Sound Blaster, a card featuring the same chip as found on the AdLib card and with additional digital audio capabilities for playing and recording digital samples. Creative used aggressive marketing and the card soon became a de facto standard for sound cards in PCs for many years, mostly by the fact that it was the first to bundle what today is considered as part of sound card functionality: digital audio, onboard music synthesizer, MIDI interface and a joystick port.

Creative and Sim Wong Hoo achieved its greatest success with the landmark Sound Blaster line of audio card products. It was among the first dedicated audio processing card to be made widely available to the general consumer. Monaural Sound Blaster cards were introduced in 1989, and stereo cards followed in 1992 (Sound Blaster Pro). Wavetable MIDI was added with the 16-bit Sound Blaster AWE32 and AWE64 with 32

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and 64 voices. In 1998, Sound Blaster Live! was the first PCI-based sound card. Over the

years, the Sound Blaster line has been greatly enhanced to provide 3D audio and home

theater quality sound directly from a PC. All these products display his innovative

capabilities, creativity.

Throughout the process, Sim Wong Hoo had exercised his creativity, innovation greatly

and having foresight in the future market demand, he managed to create products which

could excel in the market. Even when his products failed to defeat his competitors, he

refused to give up but to keep on trying and finally his persistance, perserverance and

determination led to his success.

One notable failure in the mid 1990s was Creative's venture into a high risk investment

on the CDROM market. Creative was forced to write off nearly USD \$100 million

dollars in inventory when the market collapsed due to a flood of cheaper alternatives

available in the market. However he did not give up but treated this as a lesson learnt

instead. He continued to lead the company to other high risk investments with better

judgment after this experience such as acquiring other overseas companies such as US-

based Sigmatel, Ensoniq, etc. All these high risk investments are deem necessary as he is

profit-minded and a high risk-taker, having to satisfy and attract investors with high

dividends and profit returns.

Creative first entered the portable audio player market in 2000 with the launch of the

Creative NOMAD Jukebox. Creative remained a serious competitor in the portable audio

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player market until the entry of Apple Computer with the iPod. In November 2004,

Creative Labs announced a \$100 million marketing campaign to promote their digital

audio products, including the ZEN range of MP3 players, mainly to compete with the

entry of Apple Computer's iPod. He is able to afford such high cost advertising campiagn

as Creative has a large variable funds available.

In the period of 2005, Creative having met with some stiff competition, mainly from

Apple computer, their shares plunged to a new all-time low of \$4.64 per share as a result

of poor sales in the last year.

Creative applied for U.S. Patent on January 5, 2001 and was awarded the patent on

August 9, 2005. The ZEN Patent was awarded to Creative for the invention of user

interface for portable media players. This opened the way for potential legal action

against Apple's iPod and the other competing players.

In May 2006, Creative sued media player rival Apple Computer, alleging patent

infringement. On 23rd August 2006, Apple and Creative settled all their patent lawsuits

out of court; with Apple paying Creative \$100 million to licence a software patent, and

Creative signing up to Apple's Made For iPod program, which opens new opportunities

for the company.

Under his leadership, Creative is not only in the sound card business but is also

continuously diversifying into other related hardware production such DVD players,

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graphics cards, digital audio players, and Prodikeys, with their current products including MP3 players, speaker systems, webcams, video cards, networking components, mobile

wireless headphones [1][2] and a Liquid crystal display (LCD).

Sim Wong Hoo won the "Best of CES" Consumer Electronic Show in 2004 in Las Vegas

for his Zen Portable Media Centre, which was jointly developed by Creative and

Microsoft. This product had won for its easy portability of digital music, video and

images.

At age of 45, Sim Wong Hoo became the youngest billionaire in Singapore. He was also

the first person to be named the Businessman of the Year twice, in 1992 and 1997. In

2002, he was named Person of the Year by the Singapore Computer Society in

recognition of his contribution to the IT industry. He is widely considered to be the star

entrepreneur of Singapore and he currently chairs Singapore's Technopreneurship 21

Private Sector Committee.

4.5 The Differences in CEO Characteristics

The main differences and similarities between the CEO characteristics in the 4 sectors can be summarized into the below table:

Government	Not-for-profit	Publicly listed	Private listed
Public oriented &	Public oriented &	Service oriented	Service oriented
Service oriented	Volunteerism		
Non-profit oriented	Non-profit oriented	Profit oriented	Profit oriented
Excellent cost	Excellent cost	Variable funds	More Variable
management skill	management skill		funds
Low risk taker	Low risk taker	Medium to high risk	High risk taker
		taker	
Limited vision	Limited vision	Unlimited vision	Unlimited vision
Monopolistic	Non-competitive	Competitive	Competitive
environment	environment	environment	environment
Highest Integrity	High Integrity	Integrity	Integrity

Table 1: Summary of differences in CEO characteristics of 4 sectors

CEOs of Government and NPO seem to have similar characteristics except for those in red being the differences.

Both sectors main priority is to serve the community or to help those in need and they generally do not operate to generate profit. Government organizations always targets to attain certain standards to prove their excellent service capabilities.

Government organizations sustain based on budget given by government by collecting of taxes, and for NPO, they sustain mainly based on donations or government grants. Therefore some may resort to cutting of operation cost or saving manpower. Even

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advertisements or promotion activities are kept minimum and only certain public

awareness programs are required.

Government organizations need to answer to the government ministers and citizens and

NPO need to answer to contributors/donors if any unnecessary losses are incurred

through investments. The most common way to generate some income would be through

fixed deposit or simple low risk investments.

CEOs from both sectors also tend to have limited vision since it is often unnecessary for

overseas expansion or diversification of businesses. The businesses are usually stable as

they are operating in a non-competitive environment and there is no lack of consumers

since they are most likely the main operator or only few operators for that particular

service.

The main difference between these two sectors is that the CEO in the NPO must have the

spirit of volunteerism as they will be receiving a much lesser amount of salary in a paid

position as compared to the government sector. Government organizations tend to try to

match the salaries of their staffs with the private sectors so as to attract talents to work for

them. Otherwise, these talents will flock to work in private sectors.

On the other hand, private and publicly listed organizations have similar characteristics

except for those in red being the differences too. Both provide services to obtain profits

and therefore both the CEOs are profit-oriented and would want to earn the most profits

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out of the shortest period of time. They always targets to attain certain service standards

as they are operating in a competitive environment, therefore they must provide best

service to attract and retain customers.

Depending on the company's situation, they have variable funds to spend on the running

of the company on manpower and advertisements etc. Public organizations have more

funds as compared to Private organizations as they are able to generate funds through the

sales of stocks.

For private organizations, medium to high risk investments are possible since it has

variable funds and the shares are owned by relatively few shareholders thus the need to

answer to lesser people and there is no requirement to publicly disclose much of the

financial information.

For publicly listed organizations, which are normally well-known brands, high risk

investment are often possible since they have great amount of funds generated from

shares on sales to public, to be used for investments in order to gain the highest returns in

the shortest period of time but are pressured to meet quarterly projections for sales and

profits to attract more investors.

Overseas expansion or diversifying businesses are the most common visions for most

companies. Private listed organizations may even set the vision to progress and upgrade

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to public listed in future. Basically both the CEOs from private and public case studies

are great entrepreneurs with engineering background.

Integrity is the main characteristic that is vital for the CEOs as it is shown constantly

throughout all the 4 sectors. Companies from any sectors will definitely fail if their CEO

lacks of integrity.

However when the CEO has characteristics not meant for that particular sector, problems

may occur. The former CEO of National Kidney Foundation of Singapore is a good

example of a Not-for-profit CEO having the characteristics of a private listed company

5.0 Survey

The main objective of conducting this survey is to find out public views about the expected CEO characteristics.

The below graph is generated based on the collated results from 70 participants whom are employees from government, not-for-profit, public and private sectors in Singapore. Most of them are non-management staffs and only some were managers. The age range is between 20 to 60 years old. The survey gets the participants to arrange 15 general characteristics of CEOs as seen on the right, in order of their importance.

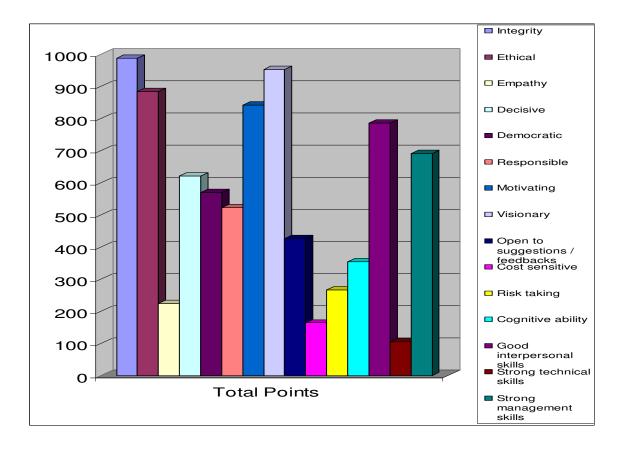


Figure 7: Survey Results

The survey results shows that the public still regards integrity, ethical, visionary and motivation as the top few most important characteristics for CEO above all whereas good technical skills, cost sensitive and empathy being the few least important characteristics.

From this survey results, it is supports the earlier comparison between CEOs of the 4 different sectors where integrity is one of the "must have" characteristics for CEOs. It can also be seen that the top few most important characteristics such as integrity, ethical and motivation for CEOs are actually self-development based which takes time to be developed. They are not as easy to be picked up like technical or management skills.

6.0 Recommendations

Managerial competency comprises of two inter-related components - professional developments and self development characteristics. Professional developments include technical, administrative and interpersonal knowledge & skills whereas self development characteristics refer to attitudes such as integrity, ethical and motivation.

For recommendations on professional developments, they can be acquired through formal training from internal & external training courses such as Executive Education, etc, or informal training such as management meetings with invited speakers. Other means of acquiring the skills could be through personal development efforts when knowledge and skills are gained from reading related books or through on-the-job training by mentoring method, which includes sharing of experiences & general familiarization with technical activities undertaken in the department and relationship with other company divisions.

The other component which is self development characteristics, are the ones voted to be the top three most important CEO characteristics by the public from the surveys conducted. These characters are generally referred as attitudes and are personal and they are difficult to be cultivated. They can only be developed through good mentoring and personal development efforts such as reading of related books. Engineers who lack of these important characteristics are definitely required to develop them in order to stand higher chances as potential candidate for top management positions.

7.0 Conclusion

From the comparison between the CEOs and Engineers general characteristics, I have found out the possible factors affecting engineers' advancement to top-senior management positions.

Form the case studies, it is showed that there are certain similarities and differences between the characteristics of CEOs of the 4 sectors and in order for engineers to be able to have such achievements, they need to develop the necessary attitudes and skills such as integrity, visionary, cost management skills, etc, through further development efforts.

Lastly the surveys result shows that the public views strongly stressed on the importance of attitudes such as integrity, ethical, & motivation, over knowledge and skills aspects. Therefore it is necessary for engineers to have developed the right attitude before being able to attain top management positions.

8.0 Implications for Engineers

In order to better equip engineers for future advancements to top-management levels, some training & development programs or changes can be tailored for engineers.

Schools can make changes in the course structure in order to prepare them for such future advancements. They can look into other business and administration courses and incorporate some of the relevant subjects into the engineering course. One of such example is the University of Technology Sydney (UTS) where economics, finance and other social-economics subjects are included in their engineering courses.

Engineer can also opt for Postgraduate education or even Professional development courses to upgrade their technical, administrative and interpersonal knowledge and skills.

The most important factor is that engineers must have self-development efforts to attain the attitude of leaders, such as motivation, ethics, integrity, etc.

9.0 Future Work

For recommendations for future work and investigations, I would suggest that further investigations could be done on the relevancy of the subjects in business and administration courses which could be useful or critical to be included in the engineering courses, in order to prepare the students for the future advancements.

This could be a major change in the engineering courses education structure and therefore the impact of the change must be analyzed carefully before any implementation.

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11.0 Appendix

11.1 Appendix A, Project Specification

University of Southern Queensland (Amended)

FACULTY OF ENGINEERING AND SURVEYING

ENG4111/4112 Research Project PROJECT SPECIFICATION

FOR: Chow Kai Wen

TOPIC: 07-053 – Is there any difference in CEO characteristics between government, not-for-profit, private, publicly listed sector.

SUPERVISOR: Mr Steven Goh

SPONSORHSIP: USQ

PROJECT AIM:

This project aims to study and determine the different characteristics of CEO working in government, not-for-profit, private and publicly listed sector. By using case studies, it can further support the findings in this project.

The project also involves undertaking literature survey in the area of leadership and management especially in the field of engineering, and researching attributes of professionals, including engineers, who are in influential leadership positions.

PROGRAMME: (Issue B, 01st March 2007)

1. Definition of a CEO, including the roles and responsibilities of a CEO.

Begin : 01st March 2007 Completion : 15th March 2007

Approx. Hours : 30 hours

2. Research and determine the attributes of a CEO.

Begin : 16th March 2007 Completion : 31st March 2007

Approx. Hours : 30 hours

3. Theories on Leadership and Management Styles.

 $\begin{array}{ll} \text{Begin} & : 01^{\text{st}} \text{ April } 2007 \\ \text{Completion} & : 15^{\text{th}} \text{ April } 2007 \end{array}$

Approx. Hours : 30 hours

4. Research and determine the attributes of an engineer.

 $\begin{array}{ll} \text{Begin} & : 16^{\text{th}} \text{ April } 2007 \\ \text{Completion} & : 31^{\text{st}} \text{ April } 2007 \end{array}$

Approx. Hours : 30 hours

5. Identify the factors affecting the advancement of engineers to top-senior management levels by comparing the differences in the attributes between a CEO and an engineer.

Begin : 01st May 2007 Completion : 15th May 2007

Approx. Hours : 60 hours

6. Determine the necessary characteristics required of a CEO for the four different types of companies - Government, not-for-profit, private, publicly listed sector

Begin : 16th May 2007 Completion : 31st May 2007 Approx. Hours : 30 hours

7. Compare their CEO to see whether there are any differences in their attributes.

Begin : 01st June 2007 Completion : 15th June 2007 Approx. Hours : 30 hours

8. Case Studies on Government sector

Government – Government-linked company (GLC)

• Building & Construction Authority (BCA) - development of an excellent buildings, structures and infrastructure environment for Singapore community's activities

Begin : 16th June 2007 Completion : 30th June 2007

Approx. Hours : 30 hours

- 9. Case Studies on Private companies sector Private company
- Mid Columbia Engineering, Inc. (MCE) an engineering and consulting firm

•

Begin : 01st July 2007 Completion : 15th July 2007 Approx. Hours : 30 hours

- 10. Case Studies on Publicly listed companies (PLCs) companies sector Publicly listed company (PLCs)
- Creative Technology manufacture digital entertainment products for the personal computer and the Internet

Begin : 16th July 2007 Completion : 31st July 2007 Approx. Hours : 30 hours

11. Case Studies on Not-for-profit Companies sector

Not-for-profit Company

- IEEE (Institute of Electrical and Electronics Engineers) A Non-profitable association
- National Kidney Foundation Singapore (NKFS) Negative example

Begin : 01st August 2007 Completion : 15th August 2007

Approx. Hours : 30 hours

12. Conducting questionaire or interviews

Begin : 16th August 2007 Completion : 31st August 2007

Approx. Hours : 30 hours

13. Compile and analysis on the findings through the questionaire or interviews.

Begin : 01st September 2007 Completion : 15th September 2007

Approx. Hours : 30 hours

14. Thesis initial drafting – each chapter in draft form is shown to supervisor so that the thesis can be finished reading by 20 October 2007.

Begin : 16th September 2007 Completion : 15th October 2007

Approx. Hours : 60 hours

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Name: Chow Kai Wen Student No: 0050001745

15. Final draft of thesis, to incorporate modifications suggested by supervisor.						
	Begin Completion Approx. Hours	: 16 th October : 31 st October : 30 hours				
16. Co	omplete the thesis in re	quested format				
	Completion	: 1 st November	r 2007			
AGRE (super		(stu	dent)			
	Date: /	/ 2007		Date:	/	/ 2007
Co-ex	aminer:					

11.2 Appendix B, Survey Form

Survey on your CEO

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This survey is conducted in order to understand CEO's cognitive ability to interact and react to business situations promptly and efficiently. Furthermore, this survey will also try to understand CEO's empathetic and human relations ability. We sincerely thank all participants in taking time to complete this survey.

Information given will be kept completely confidential.

General Information	1	2	3	4
Company Sector		□ Not-for-	□Private	□Public
	Government	profit	Listed	Listed
2. Position				
	Managerial	Admin	Technical	Sales
3. Age				
	20-30	30-40	40-50	50-60
4. Years in Service				
	1-5	6-10	11-15	>15
5. Total Staff in				
Company	<100	100-500	500-1000	>1000

1 = totally disagree 5 = totally agree1 2 01. Personal view 3 4 6. I respect the decisions passed down by the top management 7. I am given opportunities to advance in my current job scope 8. I am positive about the company's future 9. I understand what is expected of me from my job 10. I am proud to be part of the company 11. Overall, the company is a good place to work in Q2. About the company 1 2 3 4 5 1. The company set clear guidelines visible to all departments to follow 2. The company yearly business strategies is made known to all employees in the company 3. Top management employment benefits is reasonable as stated in employees handbook (e.g. travel benefits, leave entitlement) 4. The company acknowledge staffs performance and contributions (e.g. promotion, long service awards) 5. Staff suggestions are implemented if suggestions are beneficial to the company 6. The company encourages employees to upgrade themselves through training or higher education. 7. Overall, the company balances business and welfare well Q3. **About the CEO** 1 2 3 4 5 1. CEO is viewed as a person with high integrity 2. CEO is authoritative and demanding 3. CEO is stronger in technical skills rather than management skills 4. CEO makes an effort to know every employees 5. CEO makes time to attend company events 6. Overall, CEO manages the company well

Q4.	Expected characteristic of CEO	
	list the followings in order of importance from 1 to 15	
1 bein	g the MOST important and 15 being the LEAST important	
1.	Integrity	
2.	Ethical	
3.	Empathy	
4.	Decisive	
5.	Democratic	
6.	Responsible	
7.	Motivating	
8.	Visionary	
9.	Open to suggestions	
10	. Cost sensitive	
11	. Risk taking	
12	. Cognitive ability	
13	. Good interpersonal skills	
14	Strong technical skills	
15	. Strong management skills	