

GENDER IMPACT ON JOB RESPONSIBILITY IN INTERNATIONAL COMPANIES:
THAI FEMALE ENGINEERS' PERSPECTIVES

A MASTER'S PROJECT
OF
KRICH RAJPRASIT

Presented in Partial Fulfillment of the Requirements for the
Master of Arts Degree in Business English for International Communication
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AN ABSTRACT
BY
KRICH RAJPRASIT

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Stereotypes and discrimination against women in an engineering field seem to have an impact which can undervalue women's ability and block their job opportunities despite an increasing number of women in an engineering field. The primary purposes of this research were to investigate the perspectives of Thai female engineers toward themselves on job responsibility and the gender impact of female engineers. The questionnaire was used as an instrument for collecting data. The respondents were forty Thai female engineers from four international companies based in Bangkok. The result showed that most levels of agreement on stereotypical impact against Thai female engineers, and discrimination against Thai female engineers in the workplaces were low. According to the result of the study, Thai female engineers' work performance was evaluated by their engineering ability and high working experience, not by gender difference. Some female engineers' stereotypical characteristics which were caring and patient also facilitated them being promoted by their boss. Current job markets also opened more opportunities for female engineers. As a result, Thai female engineers were treated better in their workplaces.

ผลกระทบทางเพศต่อความรับผิดชอบในสายงานในบริษัทต่างชาติ:

ทัศนะของวิศวกรหญิงไทย

บทคัดย่อ

ของ

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เสนอต่อบัณฑิตวิทยาลัย มหาวิทยาลัยศรีนครินทรวิโรฒ เพื่อเป็นส่วนหนึ่งของการศึกษา
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“แบบตายตัว” (Stereotypes) และ “การกีดกัน” (Discrimination) ผู้หญิงในอาชีพวิศวกร ดูเหมือนยังคงมีผลกระทบต่อผู้หญิง ซึ่งทำให้ผู้หญิงบางคนถูกมองข้ามความสามารถในการทำงาน และถูกกีดกันโอกาสในการทำงานของตน แม้จะมีจำนวนของผู้หญิงที่สนใจอาชีพวิศวกรเพิ่มมากขึ้น งานวิจัยนี้มีวัตถุประสงค์ เพื่อศึกษาทัศนะของวิศวกรหญิงไทยต่อตนเอง ด้านความรับผิดชอบในสายงาน และผลกระทบทางเพศต่อความรับผิดชอบในสายงานวิศวกร เครื่องมือที่ใช้เก็บข้อมูลในงานวิจัยนี้ คือ แบบสอบถามสำรวจความคิดเห็น โดยสำรวจความคิดเห็นของวิศวกรหญิงจำนวน สิบคน ที่ทำงานในบริษัทต่างชาติทั้งหมดสี่บริษัทในกรุงเทพมหานคร ผลจากการเก็บข้อมูลแสดงให้เห็นว่า ระดับของการเห็นด้วยต่ออิทธิพลของ “แบบตายตัว” ที่มีต่อวิศวกรหญิงไทย และ “การกีดกัน” วิศวกรหญิงไทยในที่ทำงาน มีอยู่ในระดับต่ำ จากผลที่ได้จากการเก็บข้อมูลในงานวิจัยนี้ วิศวกรหญิงจึงถูกประเมินผลงานจากความสามารถทางด้านวิศวกรและประสิทธิภาพการทำงานที่สูง มากกว่าความแตกต่างระหว่างผู้หญิงกับผู้ชาย ลักษณะ “แบบตายตัว” ของวิศวกรหญิงไทย เช่น การเอาใจใส่ และ ความอดทน ยังส่งผลดีต่อในการทำงาน โดยได้รับการส่งเสริมจากผู้บังคับบัญชา อีกทั้งตลาดงานในปัจจุบันยังเปิดโอกาสให้วิศวกรหญิงแสดงความสามารถมากขึ้น ดังนั้นวิศวกรหญิงจึงได้รับการปฏิบัติที่ดีในที่ทำงานของตน

The Master's Project Advisor, Chair of Business English for International Communication Program and Oral Defense Committee have approved this Master's Project as partial fulfillment of the requirements for the Master of Arts degree in Business English for International Communication of Srinakharinwirot University.

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TABLE OF CONTENTS

Chapter	Page
1# INTRODUCTION	
Introduction.....	1
Significance of the Study.....	3
Purposes of the Study.....	4
Research Questions.....	4
Scope of the Study.....	4
Definition of Terms.....	5
2 LITERATURE REVIEW	
Stereotypical Influence on Female Engineers.....	6
Definition of Stereotypes.....	7
Stereotypical Characteristics of Women at Work.....	8
Appropriateness of Female Engineers in Engineering Fields.....	10
Block of Female Engineers in Certain Fields.....	11
Discrimination against Female Engineers in Workplaces.....	12
Definition of Discrimination.....	12
Job Evaluation of Female Engineers.....	13
Small Number of Women in Top Positions.....	16
Unsuitable Assignment of Female Engineers.....	18
Previous Studies.....	21

TABLE OF CONTENTS (continued)

Chapter	Page
3 METHODOLOGY	
Subjects of the Study.....	25
Research Instrument	25
Procedure of the Study	27
Interview.....	27
Pilot Study.....	27
Data Collection.....	28
Data Analysis	29
4# FINDINGS AND DISCUSSION	
Personal Information.....	30
Female Engineers' Perspectives on their Organizational Characteristics.....	36
Female Engineers' Perspectives on Gender Impact on Job Responsibility.....	38
Perspectives on Influence of Stereotypes against Female Engineers.....	39
Perspectives on Discrimination against Female Engineers in Workplaces.....	44

TABLE OF CONTENTS (continued)

Chapter	Page
5 CONCLUSION	
Conclusion.....	50
Limitations of the Study.....	53
Recommendations for Further Studies.....	54
BIBLIOGRAPHY.....	55
APPENDIX	
Questionnaire.....	62
VITAE.....	66

LIST OF TABLE

Table	Page
1 Stereotypes of Women and Men.....	10
2 Leader Behaviors Connect to Stereotypes.....	14
3 Meaning of Ranking Scale.....	29
4 Personal Information of Female Engineers	31
5 Personal Information of Female Engineers	32
6 Personal Information of Female Engineers	33
7 Mean of Female Engineers' Perspectives on Organizational characteristics.....	36
8 Mean of Female Engineers' Perspectives on Stereotypical Characteristics against Female Engineers.....	38
9 Mean of Female Engineers' Perspectives on Appropriateness of Female Engineers in Engineering Fields.....	40
10 Mean of Female Engineers' Perspectives on Block of Female Engineers In Certain Fields.....	42
11 Mean of Female Engineers' Perspectives on Job Evaluation on Female Engineers.....	44
12 Mean of Female Engineers' Perspectives on Small Number of Women in the Top Position.....	46
13 Mean of Female Engineers' Perspectives on Unsuitable Assignment of Female Engineers.....	47

CHAPTER 1

INTRODUCTION

1.1 Introduction

Over the decades, women in many parts of the world have entered in several fields of occupations in both governmental and private sectors. The number of women has increased, especially in the non-traditional occupations such as engineer, politician, police officer, and military cadet. It seems that women are becoming more accepted in these occupations. For example, Dr. Drew Gilin Faust was appointed at the beginning of 2007 as the first female president of Harvard University in their 371 year history (Gazette. 2007). This incident possibly shows that the role of women is more recognized in workplaces. Women are taking more important roles and are eventually reaching the top position. However, the appointment of Dr. Faust as the president of Harvard University also implies that women's role has been undervalued for centuries. It took over three centuries for the first woman to be the Harvard's president. This illustrates that women in top positions are still rare and may not be taking important roles in their organizations. Women may be blocked by gender barriers at work; namely stereotypes and discrimination against women (Patel; & Pamentier.2005).

Women make a hard effort to overcome gender barriers, especially in workplaces, but women are still undervalued or their ability is not recognized (Maddock.1999). In comparison to men, the role of women in high positions is barely recognized and still is a small proportion of men. In several fields of non-traditional occupations, women are continuously less dominant and undervalued by gender barriers in their workplaces. Therefore, women

may not perform their tasks with their full ability and succeed at work because they face gender barriers. Many researchers explain that women are linked to gender barriers inevitably. Gender barriers of women exist and block the complete utilization of women's capabilities. Many researchers study stereotypes and discrimination against women because gender barriers are commonly found in almost all organizations of many countries including the U.S.A., the U.K., India, Bulgaria, and Pakistan. These barriers affect women at work directly and inevitably (Moore; Grunberg; & Greenberg. 2004; Patel; & Pamentier. 2005; Prime. 2005; Welle; & Heilman. 2005; Grimshaw; & Rubery. 2007).

Stereotypes and discrimination against women are key factors determining the opportunity of women in terms of job responsibility in workplaces. Much research based on the psychological and sociological disciplines (Donnerstein; & Brown. 1984, Brehm; Kasin; & Fein. 1999, Taylor; & Peplau. 2000) studied the two barriers in recent years and the results demonstrated that women and men developed different perspectives and skill sets based on what was considered appropriate for each sex. Parents, teachers and other people in society develop and reinforce stereotypes and discrimination. In previous research, the two barriers were studied and showed the results that women were not equal to men in their workplaces in terms of the job responsibility even in the developed countries such as the U.S.A. and the U.K. In this research, the two barriers are a main focus to study the current situation of women's status in their workplaces. According to the previous research, there are many aspects of stereotypes and discrimination against women. However, stereotypes in the current study are seen in one aspect which is stereotypical characteristics of women, together with two problematic situations which are appropriateness of female engineers in male professional and block of female engineers in certain fields. As for the discrimination

against women, a job evaluation of women, a small number of women in the top position and an unsuitable assignment of female engineers are a main focus.

Stereotypes and discrimination have an effect on women, especially in the non-traditional occupations unavoidably. According to the evidence in the previous research mentioned, it is assumed that stereotypes and discrimination against women affect women on the job responsibility in terms of inequality between women and men. Women have fewer opportunities to perform their tasks well in their occupations. Therefore, an exploration of the contemporary situations of women in the non-traditional occupation is to prove an assumption of the study.

1.2 Significance of the Study

This study aims at exploring the perspectives of Thai female engineers in the international companies on gender impact. The results would help increase more understandings and awareness on the role of female employees in international companies. Moreover, the study would show the attitudes of Thai female engineers toward the status and role of female engineers, in terms of the equality between women and men at work. Women would be known that they have more potential and capabilities. In addition, the study would show the barriers in workplaces and opinions among female engineers. They would have an opportunity to perceive what stereotypes and what discrimination limited them and find out the solution to the problem.

1.3 Purposes of the Study

This study covers two purposes:

1. To explore perspectives of Thai female engineers toward themselves in terms of job responsibility in international companies.
2. To investigate gender impact on job responsibility of Thai female engineers.

1.4 Research Questions

This study is conducted to answer the following questions:

1. What are perspectives of Thai female engineers toward themselves on job responsibility in international companies?
2. In what way does gender affect Thai female engineers in terms of job responsibility in comparison to Thai male engineers in the same companies?

1.5 Scope of the Study

The current study focuses on the perspectives of 40 Thai female Engineers on the job responsibility in 4 international companies based in Bangkok which their headquarters are situated in Germany, Switzerland, the Netherlands and the U.S.A. Forty copies of the questionnaire were used to collect data and distributed in December 2007.

1.6 Definition of Terms

Job responsibility refers to responsibility on job related to which is electrical and industrial engineering. The level of job responsibility depends on how skillful engineers are and how many work experiences they have.

Stereotypes against women refer to a prejudiced idea about women that regards women less valuable and capable than men in their workplaces.

Discrimination against women refers to the treatment to working women unequally because of stereotypes against them.

Undervalue refers to the reaction not to recognize somebody to be good, valuable and important.

CHAPTER 2

LITERATURE REVIEW

Women in the present day are still undervalued in the workplace or are regarded less capable than men in the same fields of work. Many research projects and many theories in social psychology agree to this situation and prove that there is a correlation between stereotypes and discrimination against women (Brehm; Kasin; & Fein. 1999, Taylor; & Peplau. 2000). The correlation leads to a treatment between women and men at work where women may not be treated as equally as men. Job responsibility is one of the aspects of unequal treatment generally seen in workplaces. Women do not seem to reach senior positions or to reach the top position in their organization, even though they have the same educational background and working experience as men do.

This chapter consists of three main sections. The first two sections focus on (1) Stereotypical Influence on female engineers and (2) Discrimination against female engineers in workplaces. Each section is divided into subsections with some examples to illustrate their points. The last section (3) is on previous studies relating to the current study.

2.1 Stereotypical Influence on Female Engineers

Women participate in many occupations, especially the non-traditional fields such as engineers, military cadets, and politicians. However, women are still judged by stereotypes which play a vital role in determining the difference between women and men. Mostly, women are placed into categories which are not as good as men, especially characteristics in workplaces.

2.1.1 Definition of Stereotypes

Many researchers define stereotypes variously. Prime (2005) defines stereotypes as the difference between women and men that people make to differentiate categories or groups of women and men. This leads to the inappropriate generalizations that misrepresent reality about women and men. As a result of the misinterpretation, women are not as qualified as men, especially in the fields of the non-traditional occupations such as engineer, politician, police officer, military cadet. Women are regarded as less capable than men. Bostic (1999) points out that the difference between women and men also raise men's image higher than that of women because people always generalize women and men on bias. Most people who are not aware of how their thinking and behaviors are automatically influenced by stereotypes. In addition, Mahmood (2007) asserts that the idea of the difference between women and men is passed from generation to generation. The prejudiced idea does not seem easy to be changed. This is the most important point of stereotypes that they are deeply inside most people's mind. Many people are reared in families and grow up in societies which stereotypes play a key role in daily life; therefore, they have learnt stereotypes automatically within their environment and have started treating people, both women and men, according to stereotypes.

Stereotypes are alive and prevalent in every society. With stereotypes, people have their perceptions and judgment about other people, especially women, without paying their attentions carefully. The stereotypical idea is problematic for women (Prime. 2005). In this study, stereotypes are defined as a prejudiced idea about women that regards women less valuable and capable than men in their workplaces.

2.1.2 Stereotypical Characteristics of Working Women

Stereotypes provide a frame of characteristics between women and men on the basis of gender differences. According to stereotypes (see Table 1), the characteristics of women are completely different from men in all aspects. For instance, women are regarded as warm affectionate, appreciative, emotional, and friendly. On the other hand, men are regarded as dominated, achievement-oriented, active, ambitious and tough. These stereotypical characteristics lead to certain beliefs that women are not supposed to have authority and are not suited to take responsibility at work which requires challenge and capability (Georgi. 2000; Kivel, 2001; Moore; Grunberg;& Greenberg. 2004).

Stereotypes are an abstract idea, but create a concrete outcome especially at work. Working women suffer from stereotypes inevitably. Because of feminine characteristics, women are seen incapable and cannot perform their tasks at work well. Stereotypes also say masculine characteristics are needed to do more significant work. Welle and Heilman (2005) claim that some women try to have masculine characteristics at work in order to have more opportunities in job responsibility. Women who have similar characteristics to men are less likely to be considered for important job opportunities, even though those women are considered as capable as men at work.

TABLE 1 STEREOTYPES OF WOMEN AND MEN

Stereotypes of Women	Stereotypes of Men
affectionate	dominant
appreciative	achievement-oriented
emotional	active
friendly	ambitious
sympathetic	coarse
mild	forceful
pleasant	aggressive
sensitive	self-confident
sentimental	rational
warm	tough
whiny	unemotional

Source: Women “Take Care,” Men “Take Charge:” Stereotyping of U.S. Business Leaders

Exposed (2005)

2.1.3 Appropriateness of Female Engineers in Engineering Fields

In engineering fields, stereotypes are pervasive and are likely to block female engineers in their careers. Bruin (1997) asserts that certain characteristics of female engineers created by male engineers are against those female engineers in their workplaces. Female engineers cannot function well in a male professional world, take hard decision when it is necessary, be good in abstract thinking, or be accepted by subordinates or by other male engineers. In work environment with dirtiness, roughness and stressfulness, they are too emotional and intimidated. In addition, they lack physical strength for certain jobs. Besides, female engineers are expected to feel uncomfortable interacting with technology and machines because it seems that machinery is an essential part of male engineers. In many countries, the image of engineering is men with the more effective work skill. According to Hersh (2000), engineering in the U.K. is for strong men as it is often seen as a dirty, heavy, manual occupation. Therefore, engineering is not suitable for women.

The number of female and male engineers in each field is different. Female engineers can perform well in specific fields such as chemical, electrical and industrial engineering, but they may not work well in the fields like mechanical and aerospace engineering. The reason is that certain fields require physical toughness. The characteristic of physical toughness is found more in men than in women. As a result of this, women may not appear in certain fields of engineering such as mechanical and aerospace engineering. In addition, Bruin (1997) mentions that men in many organizations have problems to accept women in engineering. Those men who cannot welcome women in engineering are from a middle management level and insecure about their own capacities and position.

2.1.4 Block of Female Engineers in Certain Fields

Most female engineers unavoidably encounter stereotypes against them, because stereotypes are acceptable in some societies. For example, Patel and Parmentier (2005) discovered that stereotypes influenced those Indian female engineers in terms of job responsibility. The influence of stereotypes against female engineers limited those engineers not to succeed in the engineering field. To illustrate this, female engineers could not take part in IT sector which was higher technology, even though those engineers were well educated and trained equally as men in the same field of work. The researchers asserted that hardware was viewed as men's work and held in higher regard than software. It mentioned that hardware was considered the primary driving force and for men. In contrast, software was considered the secondary one and for women since female engineers were regarded as weaker and a less capable workforce than male engineers in India.

According to the example, Indian female engineers are undervalued by stereotypes in their society. Traditionally, engineering is thought to be suitable for men. Most people think that women cannot work in this professional arena, because engineering relates to machine, power and electricity. Women are not physically suited to the engineering field. Women still present these gender stereotypes at work in most people's mind. Men project the stereotypes, while women live with them.

Stereotypes are a big obstacle for women in workplaces where women are regarded as inefficient workers in comparison to men in the same organization. Certain researchers point out that stereotypes are misjudgment of women's qualifications. This idea is learnt as people grow up and many people especially men seem to think that stereotypes are acceptable and right to follow.

2.2 Discrimination against Women at Work

Discrimination against women is directly related to stereotypes. When women are regarded less capable than men in most people's mind, it leads to discrimination against women in their concrete treatment. In many workplaces, women are evaluated differently from men in spite of their equal abilities. As a result, some women can not perform their tasks properly according to their knowledge and work experience and may not make progress in their career, especially to higher positions in their organizations.

2.2.1 Definition of Discrimination

Discrimination is variously defined by researchers and organizations that study gender roles. Discrimination refers to a prejudice existing in society because of difference between women and men (Maddock.1999; Minnesota Advocates for Human Rights.1999; Grimshaw; & Ruberg. 2007). An obvious action of gender discrimination is to limit or deny women (in this study) from receiving opportunities and roles at work on the basis of gender difference (Bostic. 1999). Men in almost every modern culture in the world and throughout the history of social interaction have thought that men are the dominant and more important gender. These ideas have led to prejudice and pervasive discrimination directly against women.

According to the definition, women are discriminated against because of the attitudes or beliefs inside their society, especially in their workplaces. Georgi (2000) and Holm (2000) agree that the difference between women and men causes an unfair treatment to women. Women are treated less favorably than men and misjudged in terms of their ability at work. As a result of the treatment, women have to face with four problems; (1) salary equity that is women and men do not earn the same amount of money even if they take the same job responsibility at work, (2) entry-level equity that women and men do not take the same job

responsibility, even though they have the same educational background and work experiences, (3) promotion and tenure equity that women and men do not get promoted at the same pace, even if they have the same ability at work and (4) sexual harassment that women are sexually mistreated in unpleasant ways (Bostic.1999). In this study, only one problem is a main focus; entry-level equity or job responsibility.

Discrimination against women reveals the truth that women and men are not equal. The World Health Organization (2001) argues that discrimination against women affects human rights. That means women are not treated in the way they should be under human rights. Discrimination against women causes an impact on women directly. In this study, discrimination is defined as the treatment to working women unequally because of stereotypes against them.

2.2.2 Job Evaluation of Female Engineers

When stereotypes are used to make judgments about people, especially their capabilities at work, there is a high possibility that the judgment will be wrong. The stereotypical idea can diminish and block proficient women from promoting in their organizations.

Each organization employs different styles of evaluating their employees' performance. Performance at work is a main factor to determine whether employees will be promoted to higher positions that requires more challenges and capable. In the engineering field, the company pays attention to its employees' job performance. According to an interview (2007) of this study with the sales engineer in one of the biggest international companies in Thailand, the researcher finds that how the employee handles the project schedule and the budget will be evaluated first, and safety, leading time (a period of time to accomplish a

project) and customers' satisfaction will be evaluated later. Each field of engineering in one company will be assessed with the same procedure. The employee evaluation process will be used for all engineers. Nevertheless, certain factors such as well-educated background, well-qualified working experience and personal connection can provide employees with the opportunity for more skillful job responsibility.

Stereotypes against women affect women performance evaluations. Women are regarded as a person who cannot lead their organizations and fulfill the tasks in higher positions because women's behaviors at work are seen as "taking care", while men's behaviors are seen as "taking charge" (See Table 2). Women's behaviors are supporting, mentoring and networking, whereas men's behaviors are problem-solving, influencing-upward and delegating. Women are not sufficiently qualified to attain the higher level in their organizations (Prime. 2005). Unfortunately, some female employees cannot avoid stereotypes at work. They are aware of the risks that they take when they challenge stereotypes. This undermines their confidence. Women are under stereotypes which men are dominant and not secure about their status. It can mention that stereotypes are typically associated with women's job performance, and remain powerful throughout the world (Maddock. 1999; McLean. 2003).

TABLE 2 LEADER BEHAVIORS CONNECTED TO STEREOTYPES

Behaviors of Female Leader	Behaviors of Male Leader
-Taking Care-	-Taking Charge-
Supporting Encouraging, assisting, and providing resources for others	Problem-Solving Identifying, analyzing, and acting decisively to remove impediments to work performance
Rewarding Providing praise, recognition, and financial remuneration when appropriate	Influencing-Upward Affecting others in positions of higher rank
Mentoring Facilitating the skill development and career advancement of subordinates	Delegating Authorizing others to have substantial responsibility and discretion
Networking Developing and maintaining relationships with others who may provide information or support resources	
Consulting Checking with others before making plans or decision that affect them	
Team-building Encouraging positive identification with organization unit, cooperation and constructive conflict solution	
Inspiring Motivating others toward greater enthusiasm for, and commitment to, work objects by appealing to emotion, value or personal example	

Source: Women "Take Care," Men "Take Charge:" Stereotyping of U.S. Business Leaders

Exposed (2005)

Because of the prejudiced evaluation on job performance, women are clearly underrepresented at the higher levels of organizations which men are dominant. Gatta and Trigg (2001) found that it was very difficult for female engineers to find supporters in their organizations to help advance them through their careers to more senior positions. According to stereotypes, female engineers were regarded as less qualified employees than male engineers were. As a result of this, women could not easily move into the higher positions in their organizations. According to the researchers, gender stereotyped is one of the barriers blocking female engineers from advancement in their professional careers. Stereotypes against women apparently appear in these non-traditional occupations. Similar to the previous research of Gotta and Trigg (2001), Prime (2005) studied stereotypes of American business leaders. She found that stereotypes limit opportunities for women to advance in the workplaces and achieve their potential because women are regarded as poor problem solvers and weak leader to motivate their subordinates.

2.2.3 Small Number of Women in Top Positions

Women are still largely invisible in high status jobs. To move to higher positions which require more capability and responsibility within the organizations is another important issue in many countries. According to Ledwith and Colgan (1996), women who work harder and are better qualified do not reach senior managerial position easily because of discrimination against them.

In most organizations, women do not appear in higher positions. The proportion of women to men in high ranking positions in many workplaces is completely different. For example, the proportion of Thai working women in high ranking positions is still smaller than that of men in the past decade. The statistics presented by the National Statistical Office

(NSO) in 1998 demonstrates that Thai working women reached high position less than Thai men. At the department manager level, 66.7% were occupied by men while women occupied 33.3% of the positions. Furthermore, 77.2% of company directors were men, whereas 22.8% were women. These figures indicate that only a small percentage of working Thai women reach to executive level positions. According to the statistics of the National Statistical Office, the data implies that the gender inequality has always existed in the Thai society. While the number of working women in many organizations has been increasing, only certain women can access the highest position in the organizations compared to the figures of men in the same positions (Picavet. 2005).

Discrimination against women is still found because many men are still hesitant about their job responsibilities and are afraid of competition. Many women encounter hostile attitudes in their workplaces (Hersh. 2000). Igbaria and Baroudi (1995) say that women are perceived to have less favorable chances for promotion than men. Most of the time, women have fewer job opportunities to take proper job responsibility than men in their workplaces. In addition, Grimshaw and Ruberg (2007) mention that women faced undervaluation at work because of discrimination which plays a vital role in many organizations. As a result, the unfair treatment of women at work led to fewer opportunities for promotion to higher positions. They point out that there are five factors blocking women to advance in their occupations; low valuation of the productive activity, low valuation and visibility of skill and status, low valuation associated with high job satisfaction, low valuation of women's work associated with perceptions of women as second income earners, and low valuation embedded in payment systems.

2.2.4 Unsuitable Assignment of Female Engineers

Discrimination against women causes a prejudiced treatment to women and overlooks the value of women. For example, the researchers of the Minnesota Advocates for Human Rights (1999) found that Bulgarian female engineers suffered from gender discrimination concerning job responsibility. Although those female engineers were depressed at how they were treated at work, most of them had to tolerate this treatment and continue working in their job. One of the examples is in the American company under the management of Bulgarians. All engineers were men and all secretaries were women. Three of the four secretaries were also engineers and they were not considered for engineering positions. The reason was that women were good as secretaries because they were a service provider. According to the study, female engineers in Bulgaria were discriminated against in their workplaces. They could not utilize their knowledge and ability from their study and experiences to take proper job responsibility as engineers. In contrast, they were assigned to handle task of which they have no direct knowledge and experiences.

Many women realize that they are blocked from important responsibility at work. For instance, Gatta and McKay (2003) discovered that female engineers in the U.S.A. could not take significant responsibilities such as making decision, holding meetings and other opportunities. Those engineers realized that they were not a part of the organization and not important. Previous study shows that certain female engineers in the U.S.A. were discriminated against in the workplaces. Those female engineers were not assigned important responsibility equal to male engineers. In spite of having qualified background, female engineered were not recognized and were blocked from significant job responsibility. In addition, Gatta (2000) found that women's roles in these work fields; namely building

trades, financial services, health care, law and science and technology; men are dominant, while women are less significant. Discrimination against women still occurs in those work fields. Women are overlooked and not treated equally.

In spite of discrimination against women in workplaces, the number of female employees, especially in non-traditional occupations such as engineers, has been increasing. A female engineering scholar in the faculty of Engineering at a well-known university in Bangkok told that Thai women have an opportunity to take responsibility at work, especially in an engineering field. They are welcomed by organizations. However, there has been discrimination against some female engineers in the past. She claimed that female engineers know that unequal treatment of women in terms of job responsibility still keeps happening and is not easy to eradicate completely.

Female engineers seem to face a lot of difficulties at work in male-dominated fields of work. Despite the same educational background, female engineers may not receive the same entry position to some engineering fields in comparison to male engineers because they are discriminated against. As a result, the proportion of women and men is completely different. Women appear in most engineering fields less than men.

Discrimination against women is seen in many organizations around the world, especially in the male-dominated fields of work. Women may not be given job responsibilities because they are thought to be less qualified than men. Therefore, women are not evaluated properly at work and may not appear in the senior positions which mostly are occupied by men.

In conclusion, women are inevitably suffering in workplaces which men are dominant. Stereotypes are a problem which has existed for a long time and always occupy people's mind. Unquestionably, many people make a misjudgment, especially about the role of women at work. Women are obviously treated in a different way from men. In other words, women are discriminated against in their workplaces because of the influence of stereotypes. As a result, women may not take a proper job responsibility at work even if they are as well-educated and capable as certain men. One of the most obvious examples explaining this problematic situation is female engineers working in a male-dominated environment. These female engineers encounter many unequal treatments because it is believed that engineering is suitable for only men. Therefore, certain female engineers are not welcomed properly and are blocked in some fields. In addition, they are not assigned to do a suitable job responsibility in accordance with their knowledge and working experience.

2.3 Previous Studies

In order to fulfill the purposes of this study, the researcher collected the related previous studies from various secondary sources in the past decade in the fields of stereotypes and discrimination as follows;

Grimshaw and Ruberg (2007) studied the undervaluation of women's work in England. The researchers found that women were undervalued at work or they were overlooked at work because of the gender discrimination; and that stereotypes and gender discrimination played a vital role in the undervaluation of women's work performance by creating a prejudiced environment. Prejudiced treatment of women at work led to fewer opportunities for job advancement. There were five elements blocking women to advance in their occupations; low valuation of the productive activity, low valuation and visibility of skill and status, low valuation associated with high job satisfaction, low valuation of women's work associated with perceptions of women as second income earners, and low valuation embedded in payment systems. These elements are a prejudiced treatment to women at work. When companies apply these elements to women in the workplace, women may not be recognized for their value and ability, and prevented from their advancement in their profession.

Patel and Parmentier (2005) conducted research to examine how technology and its development could adapt to the existing social structure in India. Patel and Parmentier mentioned that women's participation in the professional arenas would contribute to a breakdown of the traditional gender roles. Indian female engineers in the information technology sector were interviewed. The result of the study shown that the number of women working in the Information Technology in India had been increasing, but their participation was based on a continuation of gender stereotypes, which place women in the lower

positions. The persistence of stereotypes did not enhance women's socio-economic and political status and did not provide equal participation in the information economy.

Prime (2005) studied the effects of stereotypes on American women's advancement in the business sector. The researcher argued that the effects of gender stereotypes could be devastating, potentially undermining women's capacity to lead, and posing serious challenges to women's career advancement. The perceptions of women and men leaders matched common stereotypes. Women were better at "caretaking skills" such as supporting and rewarding. Owing to the study, both men and women asserted that men excelled better at "taking charge" skills such as influencing superiors and delegating responsibility.

Welle and Heilman (2005) studied the role of stereotypes at work. They discovered that women were presumed to lack the attributes which were necessary for successful task performance and were more likely than men to be excluded from the key work opportunities. Moreover, women cited that there were two strategies which are essential to achieving success within their organizations. The first one was to exceed performance expectation and the second one was to adapt a style with which male managers are comfortable.

Moore, Grunberg and Greenberg (2004) studied the stereotype beliefs about women managers in workplaces. They found that female managers experience a number of obstacles; for example, it was not acceptable for women to assume leadership roles as often as men and women were not ambitious enough to be successful in the business world. Moreover, female managers faced more critical judgments about their work performance in comparison to male managers, and were always not recognized for their leadership at work.

Gatta and McKay (2003) studied education and workplace experiences of American female engineers to explore what factors encouraged and discouraged women to enter engineering careers. The researchers discovered that women were clearly underrepresented in engineering occupations. Moreover, most women who were senior students in many technical universities did not feel that they wanted to enter into the male dominated occupations such as engineering, even though they might show an interest in the fields.

Gatta (2002) studied the achievement of women at work in the U.S.A. Gotta explored women's roles in several work fields where men are dominant: building trades, financial services, health care, law and science and technology. The results were that the gender stereotypes and discrimination against women still occurred in those fields. Besides, the number of women working in those fields was also small.

Gatta and Trigg (2001) studied the gender inequality in science, engineering and technology fields in the U.S.A. Gatta and Trigg asserted that stereotypes were a complex issue that called for creative initiatives and solutions at all levels of the educational system and workforce structure. The findings were that female engineers were regarded as less qualified employees than male engineers were. As a result of that, women could not easily attain the higher positions in their organizations.

Minnesota Advocates for Human Rights (1999) examined discrimination against women in employment in Bulgaria. The outcome was that discrimination against Bulgarian women was serious and pervasive in their society. Bulgarian women experienced discrimination against them from recruitment and hiring process, the terms and conditions of women's

employment, and the environment in workplace. Those women had to be patient with discrimination against them, otherwise they would be unemployed.

In conclusion, previous studies on stereotypes and discrimination against female engineers revealed that the problems of gender difference at work still exist in many countries around the world and has existed for decades. These studies provide the evidence that stereotypes and discrimination against female engineers are not easy to eradicate and are still a big problem which undervalues women's ability and blocks women from top positions. Even if the world has been developed and changed dramatically, women in the non-traditional occupations such as engineer are still not recognized for their value and ability in their workplaces.

CHAPTER 3

RESEARCH METHODOLOGY

In this chapter, the researcher presents the methodology used in the current study which includes the subjects of the study, research instrument, procedure of the study and data analysis.

3.1 Subjects of the Study

The subjects of the study were forty Thai female engineers working in four electronic international companies located in Bangkok. The headquarters of these companies are situated in Germany, Switzerland, the Netherlands and the U.S.A. Because all information was kept confidential, names of the international companies were not mentioned throughout this study. These four companies were selected because their companies were worldwide and provided job opportunities for Thai people, including female engineers. In each company, ten female engineers were selected. These Thai female engineers were at an operating level and worked for the companies at least one year.

3.2 Research Instrument

The primary data in this study was collected through a questionnaire (see Appendix). The questionnaire was used in this study because the researcher could collect useful information relating to personal data, attitudes toward respondents' company managerial policy, and opinion toward job responsibility. The questionnaire was designed in English and

divided into 3 parts: personal information, organizational characteristics, and gender impact on job responsibility in the international companies.

Part I Personal Information

This part consists of general personal information: age, marital status, educational level, job title, job duration, job satisfaction and notion of leaving the current job. This information would show general background of the subjects and be beneficial in a process of data analysis.

Part II Organizational Characteristics

The questions in this part aim at studying characteristics of the company in terms of the managerial policy. The organizational characteristics of the company probably influenced the female engineers' role in the organization in terms of job responsibility.

Part III Gender Impact on Job Responsibility

In this part, the questionnaire consists of two sections of questions: (1) influence of stereotypes against women, and (2) discrimination against women in workplaces..

1. Influence of Stereotypes against Women

All questions were based on characteristics of stereotypes which would reveal the impact on the job responsibility and two problematic situations in engineering fields. The questions included these topics: appropriation of female engineers in engineering fields and block of female engineers in certain fields. This section would provide useful information about Thai female engineers' perspectives toward themselves and in comparison to male engineers at work and show the recent role of Thai female engineers in the international companies located in Bangkok.

2. Discrimination against Women in Workplaces

In this section, the questions asked about discrimination against women on the job responsibility. This section consists of three parts; (1) job evaluation of women (2) small number of women in the top position and (3) unsuitable assignment of female engineers. Responses of this section would provide the fact of women's job responsibility in terms of discrimination against women in the international companies at the present time. They would also reflex perspectives of female engineers in the international companies in Bangkok.

3.3 Procedure of the Study

3.3.1 Interview

Two interviews were given in February 2007. One was by a female engineering scholar in the faculty of Engineering at Chulalongkorn University in Bangkok and the second was by a sales engineer of SIEMENS Limited (Thailand). These interviews collected useful information relating to their opinions on contemporary situations about female engineers in Thailand. These interviews were very useful to this study and used as a guideline in creating the questionnaire. Further, the information from the interview was also used to discuss and explain the findings of the study.

3.3.2 Pilot Study

In order to examine whether the designed questionnaire was able to collect proper data from respondents, the researcher conducted a pilot study in November 2007. Ten Thai female engineers working in international companies in Bangkok and Rayong provinces were asked questions relating to their companies' managerial policy and work experiences as women working in an environment dominated by men. All questions were about stereotypes

and discrimination against female engineers in 6 topics as follows: (1) stereotypical characteristics of women at work, (2) an appropriation of female engineers in engineering fields, (3) a block of female engineers in certain fields, (4) a job evaluation of women, (5) the small number of women in the top positions and (6) an unsuitable assignment of female engineers.

All respondents provided interesting ideas and experiences relating to the purposes of the study. Some of them took more time to answer because the questionnaires were created in English and the respondents had to carefully consider what was asked. Therefore, the researcher edited the questionnaires by using English and examples in each sections which were simple to help all respondents in the current study answer more easily and provided suitable and correct responses. The researcher also added one question in part I (Personal Information) which was marital status, because in the last part of the questionnaire (comments and suggestions) some respondents mentioned marriage which had an effect on their working life. This question might tell the difference of respondents' attitudes toward their working life between who was single and who was married.

3.3.3 Data Collection

The researcher had initial contacts with the selected companies from Germany, Switzerland, the Netherlands and the U.S.A., and asked for informal permission for conducting the research. After receiving informal permission, the formal letters were sent to the departments of Human Resource Management of the companies in order to ask for formal permissions of the companies. The departments of Human Resources Management of the selected companies voluntarily distributed the copies of the questionnaire to 40 female engineers in December 2007.

3.4 Data Analysis

The responses of the questionnaire were categorized into 3 parts: personal information, organizational characteristics, and gender impact on job responsibility in terms of influence of stereotypes against female engineers and discrimination against female engineers in workplaces. In order to analyze the collected data, the percentage and the five-point Likert type scales were used to measure levels of female engineers' perspectives.

According to the mean of the standard ranking scale responses of Best (1981), the criteria and meaning of the ranking scale to measure the levels of female engineers' perspectives on gender impact on job responsibility are presented in the following table.

TABLE 3 MEANING OF RANKING SCALE

Rating of Scale	Level of Agreement
4.51-5.00	Highest
3.51-4.50	High
2.51-3.50	Moderate
1.51-2.50	Low
1.00-1.50	Lowest

After a calculation and an interpretation of the findings, the percentage and mean were presented in the form of tables.

CHAPTER 4

FINDINGS AND DISCUSSION

In this chapter, the findings and discussion of female engineers' perspectives on gender impact on job responsibility are presented. The results of the questionnaires are shown in three parts: personal information, female engineers' perspectives on their organizational characteristics and female engineers' perspectives on gender impact on job responsibility.

4.1 Personal Information

The personal information of female engineers in international companies were age, marital status, educational level, together with, five questions about job experiences and opinions toward their current job. The age of female engineers in this study was from below 25 years old to 40 years old. The age of 25-30 years old was 50%. As for marital status, many female engineers in the study (70%) were single, while the rest of them (30%) were married (see Table 4.)

The age of female engineers showed that more young-aged women were more interested and attended engineering fields. The findings also imply that nowadays women do not pay attention to stereotypical work for women and men. They may be better-educated and more self-confident than women in the past, so women select their job based on their educational background and working experience.

TABLE 4 PERSONAL INFORMATION OF FEMALE ENGINEERS

Item	Frequency	Percent (%)
Age (years)		
Below 25	8	20
25-30	20	50
31-35	8	20
36-40	4	10
Total	40	100
Marital Status		
Single	28	70
Married	12	30
Total	40	100
Length of time working for company (years)		
1-2	20	50
3-4	4	10
5-6	8	20
7-8	4	10
9-10	4	10
Total	40	100

According to Table 5, half of female engineers (50%) were promoted 1-2 times during working for the companies. Surprisingly, 40% of female engineers did not get promoted, even one time. The percentage of female engineers who were not promoted is almost a half. This probably shows that some of female engineers were not qualified enough to get promoted or some of them worked for their companies only 1-2 years. As a result of those

factors, their work performance might not be evaluated. In addition, half of female engineers (50%) were satisfied with their current jobs, whereas some of them (40%) were somewhat satisfied with their recent positions. These findings show that all female engineers were satisfied to work for their companies, even if levels of their satisfaction were different.

TABLE 5 PERSONAL INFORMATION OF FEMALE ENGINEERS

Item	Frequency	Percent (%)
How many times did you get promoted during working for your company?		
Never	16	40
1-2 times	20	50
3-4 times	4	10
Total	40	100
How satisfied are you with your current job?		
Very satisfied	4	10
Satisfied	20	50
Somewhat satisfied	16	40
Total	40	100

Table 6 contains the results of female engineers' personal opinions toward job resignation and reasons to quit their current job. Most female engineers (70%) sometimes thought about job resignation and provided different reasons. Of the four answers, 43% of them selected "others" and added in the questionnaire as follows: (1) income; (2) benefits; and (3) freedom and flexibility at work.

TABLE 6 PERSONAL INFORMATION OF FEMALE ENGINEERS

Item	Frequency	Percent (%)
Have you ever thought about job resignation?		
Sometimes	28	70
Never	12	30
Total	40	100
If you need to quit your current job, please identify reasons		
You need more time for your family.	8	29
You want to work in more challenging position than the current one e.g. making more decision on projects or taking a leading role of projects.	7	25
You have problems with male managers e.g. co-operation and unsuitable job assignment.	1	4
Others		
- Income	4	14
- Benefits	4	14
- Freedom and Flexibility	4	14
Total	28	100

Income and benefit are what all employees need (Maslow. 1943). When any organization wants to keep their valuable employees, they need to satisfy the needs of their employees by offering proper salary and benefits according to their work performance. In addition, some of employees wanted more freedom and flexibility when handling their projects and assignments. Some female engineers did not work independently and flexibly. Their companies might have assignments which employees including female engineers had to follow the regulations strictly. That probably causes uncomfortable feeling to those female engineers.

Other female engineers gave different reasons: the female engineers needed more time for their family, wanted to work in more challenging position than the recent position, and had problems with male manager. The results concerning opinion toward a current job from Table 6 imply that many of female engineers sometimes wanted to leave their job because of their personal reasons. Some female engineers needed to have more time with their family. According to an interview with a sale engineer manager of one selected company, engineers sometimes have to attend urgent meetings after work or go to other working sites and stay overnight. Female engineers may not therefore be able to spend some time with their family after work. This aspect is very important for female engineers who are married and have children. In family, women play a significant role taking care children. If they do not really have time to take care of their children, they may leave their job because of the reason.

Challenge at work is another aspect that female engineers wanted to have from their company. Some female engineers were not assigned to challenging projects or tasks at work. However, those female engineers believed that they were capable enough to work in the current fields and felt that they were overlooked by the companies. Besides, one female

engineer had problems with a male manager such as cooperation and unsuitable job assignment. This situation may happen when male managers undervalue female employees because of gender stereotypes. Then, he may assign tasks which are considered proper to women when compared to men at the same position.

To sum up, more women have entered the engineering field and are treated quite well by their organizations. According to the findings of the study, Thai female engineers were satisfied with their current job, even though levels of their satisfaction were different. Further, those female engineers were well recognized and got promoted at least one to two times during their time at their companies. Some of female engineers also worked for the companies up to ten years. However, more than half of those female engineers sometimes thought about job resignation because they wanted their companies to provide them with proper income and benefits; and more freedom and flexibility at work.

4.2 Female Engineers' Perspectives on their Organizational Characteristics

This section presents female engineers' perspectives on their organizational characteristics measured by five point Likert type scale. Managerial policy of the selected international companies is considered as follows: (1) an equal opportunity to perform tasks, (2) an expression of opinion at work, (3) a fair treatment in workplaces and (4) equal promotion (see Table 7).

TABLE 7 MEAN OF FEMALE ENGINEERS' PERSPECTIVES ON ORGANIZATIONAL CHARACTERISTICS

Managerial Policy	Mean	Level
1. The company provides all employees an equal opportunity to perform their tasks.	4.10	High
2. The company encourages all employees to express their opinion at daily, weekly and monthly meetings.	3.40	Moderate
3. The company takes care of all employees fairly.	3.40	Moderate
4. The company promotes job advancement to satisfy the need of all employees.	3.30	Moderate

Owing to the results of this study, the researcher found that: first, female engineers in the selected companies had a high level of perspectives on an equal opportunity to perform their tasks (4.10); second, level of perspectives on an expression of opinion at work was moderate (3.40); then, those female engineers agreed moderately to a fair treatment in workplaces (3.40); and finally, the perspectives on equal promotion were moderate (3.30.)

The findings in this section show that female engineers in the selected companies were satisfied with managerial policy of their organizations. Those female engineers did not have

any negative perspectives toward their companies. This means those companies' managerial policy was created fairly without any gender difference. Women and men were treated in the same way.

Surprisingly, the outcome is against the previous studies in the current research. Welle and Heilman (2005) mentioned that women were presumed to lack the necessary attributes for successful task performance and were more likely men to be excluded from the key work opportunities. The findings of this study also contrast to Grimshaw and Ruberg (2007) who stated that there was the prejudiced treatment to women at work leading to the fewer opportunities of the job advancement in workplaces. In addition, Minnesota Advocates for Human Rights (1999) asserted that Bulgarian women experienced discrimination against them from recruitment and hiring process, the terms and conditions of women's employment, and the environment in workplace. Those women had to be patient to this treatment; otherwise, they would be unemployed.

In brief, female engineers in this study were satisfied with their organizational characteristics. The selected companies in the recent research created proper managerial policies which concern about an equal opportunity to perform tasks, an expression of opinion at work, a fair treatment in workplaces and an equal promotion. As a result, female and male engineers work under the same managerial policy without any gender discrimination.

4.3 Female Engineers' Perspectives on Gender Impact on Job

Responsibility

This section presents perspectives of female engineers on gender impact on job responsibility. Two aspects are focused as follows: influence of stereotypes against female engineers, and discrimination against female engineers in workplaces. The first aspect consists of three topics: (1) stereotypical characteristics of women at work, (2) appropriateness of female engineers in engineering field, and (3) block of female engineers in certain fields. The second aspect comprises three topics: (1) job evaluation of female engineers, (2) small number of women in top positions, and (3) unsuitable assignment of female engineers.

TABLE 8 MEAN OF FEMALE ENGINEERS' PERSPECTIVES ON STEREOTYPICAL CHARACTERISTICS AGAINST FEMALE ENGINEERS

Item	Mean	Level
1. Female engineers are emotional and not sensible to take an important responsibility.	1.90	Low
2. Female Engineers are not ambitious enough to succeed in their workplace.	1.80	Low
3. Female engineers with feminine characteristics e.g. sympathetic, warm and sensitive are judged to be less capable than male engineers at work.	1.80	Low
4. Female engineers should have masculine characteristics e.g. aggressive, tough, and forceful to receive more opportunities in job responsibility.	1.80	Low

4.3.1 Influence of Stereotypes against Female Engineers

4.3.1.1 Stereotypical Characteristics of Women at Work

In this section, level of female engineers' perspectives on stereotypical characteristics at work is presented (see Table 8). The results showed that Thai female engineers of this study did not agree that they were emotional and not sensible to take an important responsibility (1.90). Besides, the female engineers did not agree that they were not ambitious enough to succeed in their workplace (1.80) as well as that feminine characteristics such as sympathetic, warm and sensitive were judged to be less capable at work (1.80). Thai female engineers also disagreed that they should have masculine characteristics such as aggressive, tough and forceful in order to receive more opportunities in job responsibility (1.80).

The result of this study shows that all female engineers do not agree with stereotypical characteristics of women at work which female engineers were emotional. In fact, Thai female engineers were sensible enough to take on important responsibilities. The findings of this section are not consistent with Prime (2005) who pointed out that women and men matched common stereotypes. Stereotypes could be devastating, potentially undervaluing women's capability, and posing serious challenges to women at work. Those female engineers in this study however did not encounter any barriers from stereotypes. Most of them disagreed to what stereotypes categorize women and men into unequal categories, since it leads to wrong judgment of women's ability.

4.3.1.2 Appropriateness of Female Engineers in Engineering Fields

Level of female engineers' perspectives on appropriateness of female engineers in engineering fields is from low to high (see Table 9). Of the four questions, Thai female engineers accepted that female engineers could perform better in tasks such as providing service (3.60), whereas Thai female engineers did believe that female engineers were capable in such areas as making a decision, taking a leading role, and negotiating with co-workers and customers (2.10).

TABLE 9 MEAN OF FEMALE ENGINEERS' PERSPECTIVES ON APPROPRIATENESS OF FEMALE ENGINEERS IN ENGINEERING FIELDS

Item	Mean	Level
5. Female engineers have to seriously consider appropriateness of working fields which male engineers are mostly dominated.	2.90	Moderate
6. Female engineers are not well recognized their working ability e.g. making a decision, taking a leading role, negotiating with co-workers and customers.	2.10	Low
7. Compared to male engineers, female engineers must continually prove themselves at work to be accepted by working harder.	2.60	Moderate
8. Female engineers can perform better in tasks e.g. providing service.	3.60	High

Regarding the results of this study, a notion that women could perform better than men in certain tasks such as service providing was agreed to by Thai female engineers. This aspect supports the study of Prime (2005). She indicated that women were better at “caretaking skills” such as supporting and rewarding (see Table 2). In this aspect, the female engineers agreed that “caretaking skills” is an advantage at work. Female engineers are seen to be neater than male engineers in providing service.

Female engineers in this study agreed moderately that some female engineers seriously considered appropriateness of being an engineer before entering into engineering fields because they would belong to a male-dominated environment (2.90). Besides, female engineers rather agreed that they had to continuously prove themselves at work to be accepted by their male coworkers by working harder (2.60). The findings support the study of Moore, Grunberg and Greenberg (2004). They asserted that some women were worried about being accepted at work since women faced more critical judgments about their work performance as compared to men. Thai female engineers in the current research may think about appropriateness of being an engineer as well when selecting their work fields.

Not having their working ability recognized such as making a decision, taking a leading role, and negotiating with co-workers and customers was not agreeable to some female engineers (2.10). The result shows that female engineers were well recognized for their work ability. Regarding the findings in Table 5, many of them were promoted at least one or two times during working for their companies.

4.3.1.3 Block of Female Engineers in Certain Fields

In this section, the level of female engineers' perspectives on block of female engineers in certain fields is low (see Table 10). Thai female engineers showed their low level of agreement to unfair treatments as follows: female engineers had unequal opportunities to take job responsibility (2.30), female engineers were usually criticized their tasks in negative ways by male engineers (2.20), female engineers took less important responsibility in comparison to male engineers (1.90), and female engineers had fewer opportunities to express their point of view at work (1.70).

TABLE 10 MEAN OF FEMALE ENGINEERS' PERSPECTIVES ON BLOCK OF FEMALE ENGINEERS IN CERTAIN FIELDS

Item	Mean	Level
9. Female engineers have unequal opportunities to take job responsibility. Male engineers always come first.	2.30	Low
10. In the same position as male engineers, female engineers take less important responsibility e.g. being unable to make a final decision, being able to mostly deal with paper work.	1.90	Low
11. Female engineers are usually criticized their tasks in negative ways by male engineers e.g. being weak and slow when making a decision or taking charge of projects	2.20	Low
12. Female engineers have fewer opportunities to express their point of view at work because male engineers should have better ideas and reasons in explanations.	1.70	Low

The findings in this study reveal that female engineers disagreed to block of female engineers in certain fields and that Thai female engineers had equal opportunities for job responsibility, were able to express their point of view at work, and were not usually criticized negatively by male engineers. The results support the findings in section 4.2 (see Table 7) that their companies provided all employees equal opportunities to perform their tasks; to express their opinion at daily, weekly, and monthly meetings; and to succeed in their career.

The outcome of this section however does not support prior studies of the subject. Thai female engineers did not suffer from working in their engineering fields. In contrast, Patel and Parmentier (2005) indicated that female engineers in India were not treated fairly in their engineering fields. Female engineers did not have equal opportunity to perform their tasks based on their experience and knowledge. Hardware in India was viewed as men's work for instance and held in higher regard than software, so women were not supposed to work in this field. Female engineers were regarded as weaker and less capable workforces than male engineers in India; therefore, software was considered the secondary one and for women.

One of the reasons that Thai and Indian female engineers were treated differently at work is due to cultural background. In India, women are still treated differently from men because in their society Indian men have taken a leading role inside and outside their family since the past. Their role does not seem to change. In Thailand, women are increasingly accepted in their workplaces. Besides, in Thai society women are not basically blocked at work when they are highly capable and well-educated.

Stereotypes against female engineers did not affect Thai female engineers of this study in a negative way. Thai female engineers did not agree to the stereotypes which regarded

women as less capable than men, since women had similar or even better qualifications both in education and working experience than men. According to the findings in this section, female engineers could do similar tasks as male engineers in the same position. Gender difference may not be a big problem in an engineering field anymore in Thailand.

4.3.2 Discrimination against Female Engineers in Workplaces

4.3.2.1 Job Evaluation of Female Engineers

All female engineers in this study had low level of perspectives on job evaluation on female engineers (see Table 11). Of the four questions, the respondents disagreed mostly that female engineers were evaluated not to have a capability of problem-solving (1.8). Further, that female engineers had to accept the dominant role of male engineers at work was unacceptable (2.0).

TABLE 11 MEAN OF FEMALE ENGINEERS' PERSPECTIVES ON JOB EVALUATION ON FEMALE ENGINEERS

Item	Mean	Level
13. Female engineers have to accept the dominant role of male engineers at work.	2.00	Low
14. Female engineers are evaluated their job performance with a standard differently from male engineers.	2.10	Low
15. Even though female engineers have well-educated background, and well-qualified work experience, female engineers are still evaluated worse than male engineers.	2.40	Low
16. Female engineers are evaluated not to have an ability of problem-solving e.g. identifying, analyzing, acting decisively to solve problems.	1.80	Low

The findings show that Thai female engineers did not have problems with job evaluations in their workplaces. Their job performances were evaluated with the same standard as male engineers in accordance with their educational background and work experience. Thai Female engineers were evaluated to have an ability of problem-solving as efficiently as male engineers in the same companies. The female engineers in this study may not have to accept the dominant role of male engineers at work since female engineers were evaluated as equally as male engineers.

On the other hand, the outcomes of this section are not consistent with one of the previous studies in terms of job evaluation. Grimshaw and Ruberg (2007) implied that prejudiced treatment of women at work leads to fewer opportunities for job advancement. They added that there are five elements blocking women in England: (1) low valuation of the productive activity, (2) low valuation and visibility of skill and status, (3) low valuation associated with high job satisfaction, (4) low valuation of women's work associated with perceptions of women as second income earners, and (5) low valuation embedded in payment systems. In the selected companies in this study, the companies did not apply all five elements to female engineers. Women were evaluated as equally as men by the companies.

4.3.2.2 Small Number of Women in Top Positions

Two levels of Thai female engineers' perspectives on the small number of women in the top position were low and moderate (see Table 12). Those female engineers thought that female engineers did not have to perform much better than male engineers to reach the higher position at work (2.40), and they were accepted by male engineers when they were in the higher position (2.20).

Some female engineers rather agreed that they were promoted slowly in their occupations and had fewer opportunities to take the position than male engineers. The findings support prior studies of Moore, Grunberg, and Greenberg (2004); Prime (2005); and Welle and Heilman (2005) that women were not always recognized for their leadership at work as they were presumed to lack the significant attributes for successful task performance. In addition, women were thought to be better at "caretaking skills", while men were regarded to be better at "taking charge".

TABLE 12 MEAN OF FEMALE ENGINEERS' PERSPECTIVES ON SMALL NUMBER OF WOMEN IN THE TOP POSITION

Item	Mean	Level
17. Female engineers are promoted very slowly in their occupations.	2.50	Low
18. Female engineers have fewer opportunities to take the position than male engineers.	2.60	Moderate
19. Female engineers have to perform much better than male engineers in order to attain the higher position at work.	2.40	Low
20. Female engineers in the higher positions are not accepted by male engineers.	2.20	Low

However, female engineers did not agree that they had to perform much better than male engineers in order to receive the top position at work. This implies that those female engineers did not want to be regarded less capable than male engineers. Further, the female engineers disagreed that female engineers in the top position were not accepted by male engineers. This means the female engineers may be qualified to attain the higher positions in their companies.

4.3.2.3 Unsuitable Assignment of Female Engineers

The level of female engineers' perspectives on unsuitable assignment of female engineers is low (see Table 13). The respondents of the current study mostly disagreed that female engineers were only considered as a service provider in their department (1.70). Besides, they believed that female engineers did not have to accept the truth of that unequal treatment when female engineers wanted to continue working in their professional field (2.10).

TABLE 13 MEAN OF FEMALE ENGINEERS' PERSPECTIVES ON UNSUITABLE ASSIGNMENT OF FEMALE ENGINEERS

Item	Mean	Level
21. Female Engineers cannot utilize their knowledge and ability from their study and experiences to take proper job responsibility as engineers.	2.40	Low
22. Female engineers are not assigned any responsibility related to their educational background.	2.20	Low
23. Female engineers are considered as a service provider, so they also work as secretary in their department.	1.70	Low
24. Female engineers have to accept the truth of this unequal treatment if they want to go on in this professional field.	2.10	Low

In respect to the results, the female engineers did not accept that they could not apply their educational background and work experience to take proper job responsibility. Besides, to work as a service provider such as secretary at their department was not agreeable to them. They also did not have to accept the truth of unequal treatment at work if they still wanted to go on working in the engineering field. The findings show that those female engineers denied the negative aspects of the questions because they thought that there was no discrimination against female engineers at work, and they were capable enough to be in the engineering fields.

The results do not support previous studies of Gatta and Trigg (2001) and Gatta (2002). They asserted that stereotypes and discrimination against women still existed in many work fields and that women are regarded as less qualified employees than men. Thai female engineers however were not regarded less capable than male engineers. They were assigned to do tasks in accordance with their knowledge and capability.

To sum up, female engineers in this study did not experience any discrimination against themselves in workplaces. Their work performance was evaluated as fairly as that of male engineers. Further, to attain a higher position was not a big obstacle for female engineers anymore, as they were more accepted by male engineers and had the same opportunity to advance in their career. In addition, female engineers were assigned their tasks according to their educational background and work experiences.

In conclusion, this study provides a further understanding of female engineers' roles in many aspects. First of all, gender impact on job responsibility in terms of stereotypical influence against female engineers, and discrimination against female engineers in workplaces did not have a strong impact on Thai female engineers in the four selected companies. Further, female engineers were capable, better-educated and became more self-confident to exist in their current fields. They did not agree to stereotypes against female engineers and did not encounter discrimination against them seriously at work. Female engineers such in India, Bulgaria or the U.S.A. faced greater gender impact of stereotypes and discrimination against them at work. They were not satisfied with their companies because they were undervalued and not treated equally to male engineers. Lastly, Thai female engineers in the study were satisfied with their current jobs, even though they were not sometimes treated well by the companies such as providing improper income and benefits to satisfy their needs and providing less freedom and flexibility at work.

CHAPTER 5

CONCLUSION

This chapter presents a conclusion, limitations of the study, and recommendations for further studies.

5.1 Conclusion

With high engineering ability and working experience, Thai women at the present time have participated increasingly in an engineering field because they do not seriously face gender impact on their job responsibilities in terms of stereotypical influence and discrimination against women in workplaces.

The findings show that female engineers in the four international companies were highly satisfied with managerial policy of their organizations: (1) an equal opportunity to perform tasks, (2) an expression of opinion at work, (3) a fair treatment in workplaces, and (4) equal promotion. In respect to stereotypical influence against female engineers, Thai female engineers did not agree to stereotypical characteristics of women at work. Most of them believed that what classifies women and men into behavioral categories was wrong and led to unequal judgment of women's ability at work.

In addition, the female engineers had different levels of agreement and disagreement regarding "appropriateness" of female engineers in an engineering field. Most Thai female engineers agreed that women could perform better than men in certain tasks such as service providing because women were good at caretaking skills than men. Most Thai female

engineers were capable in an engineering field and had equal opportunities to take job responsibility at work. As a result, the female engineers were rather well-recognized. They were able to openly express their point of view at work, and were not usually criticized in negative ways by male engineers.

Latest research of gender impact on female engineers discovered similar findings that some stereotypical characteristics such as care and patience and some behaviors of female engineers such as cautiousness and thoroughness are beneficial at work. Female engineers also thought in a more systematic manner. These characteristics and behaviors are not usually found in male engineers, so they help many women hold responsible for important projects that are also handled by male engineers, and are greatly supported by their boss (Le. 2007).

Regarding discrimination against women in workplaces, Thai female engineers were equally evaluated. The female engineers believed their job performance was evaluated with the same standard as male engineers in accordance with their ability and qualification. In addition, the female engineers in the top positions were accepted by male engineers. They however may have fewer opportunities to take the senior positions than male engineers (Thaler. 2006).

“Being female” and “being technically competent” such as detailed designing skills, site coordination and quality monitoring, are not a contradiction in an engineering field. Gender difference does not affect female engineers at work because female engineers are capable, well-educated as well as have a strong self-confidence based on an interest and motivation for an engineering field. Besides, Job market opens more opportunities for female engineers. Many German engineering companies, for example, recruit more female engineers.

Internships and project work in big German companies are provided to young female engineering students to get used to working atmosphere and to become part of the company network (Thaler. 2006). Female engineers therefore are welcomed in their field and are treated equally as male engineers in their workplaces.

In summary, Thai female engineers' perspectives on gender impact on job responsibility in terms of stereotypical influence against female engineers and discrimination against female engineers in workplaces were surprisingly interesting. According to the result of the current study, the female engineers had different experiences of job responsibility or they were treated differently at work from other female engineers in previous studies. Thai female engineers are evaluated by their ability, not by gender difference. This leads to better treatment of female engineers at work. Some stereotypical characteristics and behaviors also facilitate the female engineers being promoted and greatly supported by their boss. Thus, the recent study gives an indication that the female engineers at the present time do not encounter a stereotypical influence and discrimination against them at work. Thai female engineers are well-qualified as an engineer and tend to make a good progress in engineering fields.

5.2 Limitations of the Study

This study has some limitations that should be kept in mind when using the findings as follows:

5.2.1 This study used a questionnaire to collect data. In order to gain more accuracy, the study may conduct interviews with female engineers. Distributing copies of the questionnaire and conducting an interview at the same time may be beneficial for the study.

5.2.2 This study was conducted with forty respondents of the four selected international companies in Bangkok. The findings may not cover all of the facts on job responsibility happening in other international companies. Even if the role of Thai female engineers can be seen clearly, the study may need to make it clearer by increasing more respondents.

5.2.3 This study was based on only four western companies: Germany, Switzerland, the Netherlands, and the U.S.A. The study may need to extend more international companies to support the result of study, because each country may have different managerial policy and a style of employee treatment.

5.3 Recommendations for Further Studies

Further investigation on female engineers' perspectives will be required to determine following recommendations:

5.3.1 According to the findings of the study, Thai female engineers in the international companies were equally treated at work and had positive perspectives on their engineering field. A study on Thai female engineers' perspectives on gender impact on job responsibility in Asian and Thai owned companies should be conducted. Because of cultural background, each company may create managerial policy differently. The role of Thai female engineers would be seen most obviously by the comparison.

5.3.2 This study shows findings from the female engineers' perspectives toward themselves. The findings may be same or different when conducting a study on male engineers in the same workplaces. A study on Thai female and male engineers on gender impact on job responsibility therefore should be conducted. If the questionnaire was distributed to male engineers, there would be more evidence of male engineers' perspectives. The findings may support a role of female engineers either positively or negatively.

5.3.3 This study focused on job responsibility of Thai female engineers and showed interesting findings in an engineering field. In order to explain female engineers' perspectives at work in detail, further studies may be conducted in quest of female engineers' perspectives gender impact on job advancement or job performance. If these issues were studied more specifically in job advancement or job performance, there might be new evidence to clarify a role of female engineers.

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APPENDIX

Questionnaire on Gender Impact on Job Responsibility in International Companies: Thai Female Engineers' Perspectives

This questionnaire is designed for a Graduate Research Project in Business English for International Communication at Srinakharinwirot University to investigate the gender impact of Thai female engineers' perspectives on the job responsibility in international companies. Your kind co-operation in answering to this questionnaire is needed. All information you provide will be kept confidential.

Part I Personal Information

Directions: Please mark ☒ into the blank ☐ that suits your answer.

1. Age (years) ☐ below 25 ☐ 26-30 ☐ 31-35 ☐ 36-40
 ☐ 41-45 ☐ 46-50 ☐ 51-55 ☐ 56-60
2. Marital Status ☐ single ☐ married ☐ divorced
3. Educational Level ☐ Bachelor's Degree ☐ Doctoral Degree
 ☐ Master's Degree ☐ others.....
4. Job Title Department.....Field of Engineering.....
5. How long have you been working for this company?
☐ 1-2 years ☐ 3-4 years ☐ 5-6 years ☐ 7-8 years ☐ 9-10 years ☐ others.....
6. How many times did you get promoted during working for your company?
☐ never ☐ 1-2 times ☐ 3-4 times ☐ 5-6 times ☐ 7-8 times ☐ more.....
7. How satisfied are you with your current job?
☐ very satisfied ☐ satisfied ☐ somewhat satisfied ☐ dissatisfied ☐ very dissatisfied
8. Have you ever thought about job resignation? (If so, please answer the question number 9.)
☐ always ☐ sometimes ☐ never
9. If you need to quit your current job, please identify reasons (You may choose more than one item.)
☐ You need more time for your family.
☐ You want to work in a more challenging position than the current one e.g. making more decision on projects or taking a leading role of projects.
☐ You are not satisfied with working environment which male engineers are dominated.
☐ You have problems with male co-workers e.g. working in male-dominated environment.
☐ You have problems with male managers e.g. co-operation and unsuitable job assignment.
☐ You have insufficient working skills on a current position such as making a decision, taking a leader role work and dealing with customers.
☐ Others.....

Part II Organizational Characteristics

Directions: Please mark ☒ into the blank ☐ that suits your answer.

Organizational Characteristics (Managerial Policy)	Strongly agree	Agree	Somewhat agree	Disagree	Strongly disagree
1. The company provides all employees an equal opportunity to perform their tasks.					
2. The company encourages all employees to express their opinion at daily, weekly and monthly meetings.					
3. The company takes care of all employees fairly.					
4. The company promotes job advancement to satisfy the need of all employees.					

Part III Gender Impact on Job Responsibility

Directions: Please mark ☒ into the blank ☐ that suits your answer.

Gender Impact on Job Responsibility	Strongly agree	Agree	Somewhat agree	Disagree	Strongly disagree
<u>Stereotypical Influence on Female Engineers</u> Stereotypical Characteristics of Women at Work 1. Female engineers are emotional and not sensible to take an important responsibility.					
2. Female Engineers are not ambitious enough to succeed in their workplace.					
3. Female engineers with feminine characteristics e.g. sympathetic, warm and sensitive are judged to be less competent than male engineers at work.					
4. Female engineers should have masculine characteristics e.g. aggressive, tough, and forceful to receive more opportunities in job responsibility.					
Appropriateness of Female Engineers in Engineering Fields 5. Female engineers have to seriously consider appropriateness of working fields which male engineers are mostly dominated.					

Gender Impact on Job Responsibility	Strongly agree	Agree	Somewhat agree	Disagree	Strongly disagree
6. Female engineers are not well recognized their working competence e.g. making a decision, taking a leading role, negotiating with co-workers and customers.					
7. Compared to male engineers, female engineers must continually prove themselves at work to be accepted by working harder.					
8. Female engineers can perform better in tasks e.g. providing services.					
Block of Female Engineers in Certain Fields					
9. Female engineers have unequal opportunities to take job responsibility. Male engineers always come first.					
10. In the same position as male engineers, female engineers take less important responsibility e.g. being unable to make a final decision, being able to mostly deal with paper work.					
11. Female Engineers are usually criticized their tasks in negative ways by male engineers e.g. being weak and slow when making a decision or taking charge of projects.					
12. Female Engineers have fewer opportunities to express their point of view at work because male engineers should have better ideas and reasons in explanations.					
<u>Discrimination against Female Engineers in Workplaces</u>					
Job Evaluation of Female Engineers					
13. Female engineers have to accept the dominant role of male engineers at work.					
14. Female engineers are evaluated their job performance with a standard differently from male engineers.					
15. Even though female engineers have well-educated background, and well-qualified work experience, female engineers are still evaluated worse than male engineers.					
16. Female engineers are evaluated not to have an ability of problem-solving e.g. identifying, analyzing, acting decisively to solve problems.					

Gender Impact on Job Responsibility	Strongly agree	Agree	Somewhat agree	Disagree	Strongly disagree
Small Number of Women in Top Positions					
17. Female engineers are promoted very slowly in their occupations.					
18. Female engineers have fewer opportunities to take the position than male engineers.					
19. Female engineers have to perform much better than male engineers in order to attain the higher position at work.					
20. Female engineers in the higher positions are not accepted by male engineers.					
Unsuitable Assignment of Female Engineers					
21. Female Engineers cannot utilize their knowledge and competence from their study and experiences to take proper job responsibility as engineers.					
22. Female engineers are not assigned any responsibility related to their educational background.					
23. Female engineers are considered as a service provider, so they also work as secretary in their department.					
24. Female engineers have to accept the truth of this unequal treatment if they want to go on in this professional field.					

If you have any comments related to the gender impact on the job responsibility in your organization, please describe.

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Thank you for your kind cooperation

VITAE

VITAE

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