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A Study of Women in Professional Organizations

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**Tidewater CC Portsmouth
Deborah Norris
OTED 636
Instructor: John Ritz**

A STUDY OF WOMEN IN PROFESSIONAL ORGANIZATIONS

A Research Paper

Presented to the Graduate Faculty

Of the Department of Occupational and Technical Studies

At Old Dominion University

In Partial Fulfillment

Of the Requirements for

The Master of Science Degree

By

Deborah Norris

September, 2002

APPROVAL PAGE

This research paper was prepared by Deborah D. Norris under the direction of Dr. John M. Ritz in OTED 636, Problems in Occupational and Technical Studies. It was submitted to the Graduate Program Director as partial fulfillment of the requirements for the degree Master of Science.

Approved by: John M. Ritz 9-16-02
Dr. John M. Ritz
Advisor and
Graduate Program Director
Date

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Deborah D. Norris

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CHAPTER I

Introduction

Women have marked significant gains in business and industry. However, women engineers are still represented as a minority in many business organizations. Studies suggest women engineers are the minority in these organizations because women do not perform as well in science, math and engineering (Lebeau, 2001). Therefore, women are less likely to choose engineering as a career or field of study. Today, however, several organizations have been developed to assist women on academic and professional levels.

Organizations, such as the Society of Women Engineers, who were established in the fifties, are now making significant progress and changes in the field of engineering for women. These organizations offer professional encouragement to women by giving them recognition and exposure which they may not otherwise receive on the job. The Society of Women Engineers is one organization that is committed to encouraging women engineers to attain high levels of educational and professional achievement. Its members are represented in academic and business organizations nationally. Northrop Grumman Newport News Shipbuilding, Mitsubishi Chemical America, and Norfolk Naval Shipyard and Naval Support are a few of the business organizations in the Hampton Roads area that have women who are active members in the Society of Women Engineers organization.

The Society of Women Engineers members from these business organizations are women who have made significant accomplishments and achievements within the engineering industry. Some are women who have excelled in their areas of expertise,

who are key decision and policy makers, and others are just women who inspire to make a difference in theirs and others professional careers. However, these women may not have always been high achievers in their professions and one should consider if such organizations as the Society of Women Engineers have contributed to the professional success of these women.

Statement of the Problem

The problem of this study was to determine the effects of professional women organizations, such as the Society of Women Engineers, on the professional growth and development of women engineers in the Hampton Roads Section.

Research Goals

The objectives that were establish to answer this problem were:

1. Identify how members of this organization perceive their job requirements and performance.
2. Identify what overall factors within the Society of Women Engineers organization led them to obtain membership.
3. Determine what types of specific skills these members obtained from this organization to assist them in their professional growth and development.
4. Determine whether these specific skills had any professional impacts by evaluating the current job status of these members in relationship to their job status before membership.

Background and Significance

The Society of Women Engineers organization has been in existence for fifty-two years. It has appealed to many women for over five decades and still remains to exist

even with the constant changes that have occurred within society. However, along with this organization are many others that may not have been around for quite as long but also appeal to many women as a means of personal and professional support. Some of these organizations are Women in Engineering Organization, Future Scientist and Engineers of America, National Society of Professional Engineers, and Minorities and Women in Engineering.

In today's society with more women choosing engineering as careers and as fields of study, there will be more women joining professional organizations. These memberships will often require financial commitments and public service obligations. However, many women may buy into these organizations for the prestige. It is important that these organizations are true to their stated professional missions and provide those women who are sincerely looking at becoming a part of them with the professional assistance and support they need.

The underlining purpose for such organizations should be services to its members. However, this is sometimes questionable when there is little evidence indicating the professional benefits membership has for the individual who decides to join these organizations. The only way to make this determination is to take a look at one of these organizations. The Society of Women Engineers is an organization that has appealed to many women in the past and present. As potential and active members, it is important for these women to understand what this organization is about and what it has to offer them.

Women who are members and those who obtain membership to this professional organization need to know what personal and professional benefits they gain from being a part of this organization. The Society of Women Engineers organization has

personalized a list titled “Your Benefits in SWE”. There are eight benefits listed. These include: (1) Building skills useful in your career, (2) Experience of other members, (3) Networking, (4) Effect on your career, (5) Fun, (6) Information, (7) Time for yourself, and (8) Support (SWE, 2002). Are these the benefits women are experiencing within this organization? It is important for potential members to know from active members how this organization has assisted them in improving their careers. It is also important to make sure this organization is providing services to ensure that these benefits will occur.

Limitations of the Study

The following limitations were applied to this research study:

1. This study was limited to the Society of Women Engineers members currently active and employed within the Hampton Roads Section.
2. The population was relatively small and the perspectives of Society of Women Engineers members in the Hampton Roads Section may not totally be representative of the perspectives of members nationally.
3. Participation by Society of Women Engineers, Hampton Roads Section members was voluntary.
4. Only active and employed members of the Hampton Roads Section of the Society of Women Engineers were provided a survey. This was provided to access the professional, motivational, attitudinal, and professional benefits of membership within this organization.

Assumptions

The following assumptions were made for this study:

1. All members have access to information concerning the Society of Women Engineers organization.
2. The information and data gathered in this study would be useful in planning recruitment into the Society of Women Engineers, Hampton Roads Section.

Procedures

A survey was developed and sent by e-mail to all the Hampton Road Section, Society of Women Engineers members. The survey was designed to be concise, yet extensive enough to obtain valuable information from respondents. The survey was constructed based on the Society of Women Engineers list of membership benefits listed for its members. A cover letter was included explaining the purpose of the study. Respondents were to e-mail their responses to an administrative officer, who then anonymously e-mailed the responses to the researcher. The results of the survey were tabulated and evaluated to illustrate information supporting this research topic.

Definition of Terms

The following terms are defined for the benefit of those reading this study.

1. NNS - Northrop Grumman Newport News Shipbuilding.
2. SWE – Society of Women Engineers – a non-profit educational service organization dedicated to making known the need for women engineers and encouraging young women to consider an engineering education.

Overview of Chapters

Chapter I of this study contained the introduction to the research study. This gives an overview of what the Society of Women Engineers organization is about. It also gives an overview of its members from various business organizations within the Hampton

Roads area. The introduction included the statement of the problem to address the underlining determinates of professional growth and development as the purpose of this research. It also included research goals that support the problem statement by addressing member's job perceptions, overall purpose for pursuing membership, specific skills gained, and professional impacts. The importance of the research topic was supported with the background and significance giving an overview of the historical perception of women engineers and the benefits offered to these women by the Society of Women Engineers. Variables that may influence the outcome to the research were defined with limitations. Chapter I concluded with assumptions that are believed to be true, research procedures to determine the methods of which the study was conducted, and the definition of terms used to clarify unknown abbreviations. This chapter defined and developed the need for this study.

Chapter II of this study is the Review of Literature. This chapter will provide current literature and other supporting documents that will provide information to assist in researching this topic. It will provide an historical perspective of women organizations that date back to the mid-eighteen hundreds. It will also address the importance of mentorship to the members of these organizations, women as engineers, and what the mission of the Society of Women Engineers organization is. Chapter III will provide the methods and procedures used to collect and analyze the data. Chapter IV is comprised of the findings of the survey. Chapter V will summarize the study, provide conclusions, and make recommendations based on the knowledge gained through this research.

CHAPTER II

Review of Literature

This research study was undertaken to determine the benefits and reasons why women in the Hampton Roads Section joined the Society of Women Engineers organization. It will begin with an historical perspective of how professional women's organizations originated and serviced women in the past. It will discuss how they have influenced service to women today. It will also define mentorship and its importance within these organizations. The economic and social issues that have a major influence on how women engineers perceive their positions within the business organization and lastly what is the Society of Women Engineers organization and how it enhances the professional and personal experience of professional women engineers.

Women Organizations – An Historical Perspective

The origin of how women's organizations came about can be traced to Elizabeth Cady Stanton and Susan B. Anthony who were known as the "leading feminists of the day." With the alliance of working-class and middle-class women, these women were critical in passing legislation to protect women in non-union jobs during the mid-eighteen hundreds. This was considered the foundation that contributed to the beginning of the numerous professional women's organizations of today.

In 1868, the Working Women's Association was formulated. It was started when Susan B. Anthony and Elizabeth Cady Stanton, a United States journalist, was excluded from an all male National Typographical Union. Susan B. Anthony and Elizabeth Cady Stanton organized the Working Women's Association. The Working Women's Association is known as the first women's organization whose members were the first

admitted to an all male union that established an alliance with the National Labor Union and challenged sexual discrimination within the workplace (Balser, 1987).

Another successful women's organization, formulated in the late eighteenth hundreds, was the Illinois Woman's Alliance, which encouraged trade unionism and social legislation on behalf of women workers and workers in general (Balser, 1987). In 1903, the American Women's Trade Union League, an alliance of wealthy women, called for the organization of all workers, equal pay for equal work, an eight-hour day, a living wage, and full citizenship for women (Balser, 1987). This organization also was known for assisting women to strike in the early nineteenth hundreds. These organizations were considered the beginning of the numerous women organizations of today because of their two underlying focuses as they strived toward unionization of "women workers as women and as workers" (Balser, 1987).

The focus of women workers as women and as workers has been a concern of women's organizations of the past and the present. Balser conducted a study comparing the Union Wage of 1971 and the Coalition of Labor Union Women of 1974, in order to give a clearer view of the integration of feminism and unionism that have impacted the ideals and issues of professional women's organizations of today (Balser, 1987).

The focus of Union Wage was "women as workers." Their major interest was the liberation of women in the work place, organization around workplace issues, and building unions that best met the needs of women workers. The Coalition of Labor Union Women was the largest national organization to represent union women in the United States. This organization was successful in bringing gender issues to the labor

movement, addressing issues of equality, and the need of organizing women workers (Balser, 1987).

Balser's study indicated that these two organizations both illustrated a coherent theory and practice toward double oppression to empower women, affecting issues that address women exclusively. Issues such as women's wages and job security, as they compare with men, gender issues such as maternity leave, pay equity, and affirmative action within the workplace, are practices that these two organizations used as a means to empower women. Balser's analysis of these organizations suggested ideals and issues addressed in many of today's professional women's organizations. Today, feminists are in a position both to forge a coalition of all oppressed groups and to articulate a comprehensive economic and social program (Balser, 1987). The emphasis of women working together to formulate ties to better handle workplace obstacles is also an important aspect of what these past organizations portrayed. These ties were more than likely due to the collaboration of ideas and portrayal of women acting as examples for other women which is what is known today as a form of mentorship.

Mentorship

A mentor can be defined as a trusted counselor, guide, tutor, or coach (Duff, 1999). Mentorship is considered one of the most important factors in how women's organizations successfully appeal to other women. Career functions and psychosocial functions are two aspects of mentoring that are relevant within women's organizations. A career function consists of sponsorship, exposure and viability, coaching, protection, and challenging assignments. A psychosocial function consists of role modeling, acceptance and confirmation, counseling, and friendship. The components of career

functions and psychosocial functions are consistent with the components used throughout many women's organizations to assist women in improving their professional and personal performances.

Women in male-dominated fields who have had female mentors are able to learn how to handle difficult job situations tied to tokenism more effectively than are those without female mentors (Dubeck & Borman, 1996). Mentorship's within women's organizations can have a positive influence on the motivation and quality of job performance of professional women. A woman's way of mentoring develops not a product but a person; not a performance but a confident performer. One who discovers new horizons for their potential is encouraged to excel (Duff, 1999).

Women as Engineers

Careers in technology, engineering, and science related fields tend to lead the list as having the lowest number of female employee, and also the highest pay (Lebeau, 2001). Even though there has been significant progress by women within these fields, women still continue to remain the minority, stereotypically viewed and unfairly treated when compared to their male counterparts.

Regardless of the many successful and productive collaborative activities started by executive women, thoughtless stereotypes continue to pervade our culture (Driscoll & Goldberg, 1993). Women engineers feel more isolated and under more scrutiny than men. They feel they have to prove they earned their positions because they are often perceived as not suited for their positions as engineers. Women are often one of the few persons in the profession. Stereotypes of science and engineering as male fields creates a workplace experience with gender bias, and difficulty of balancing life and work

becomes a problem in a not family-friendly career field (Lebeau, 2001). They feel more conflict between work and family responsibilities than men. Women also continue to be paid less, and they are the least likely to be promoted or seen in leadership positions.

Women in technology are nearly twice as likely as women in other professions to believe that their gender is a significant barrier to advancement (Lycos, 2001). The presence of women in mainstream professional organizations adds talent, expertise, and energy to advancing the objectives of women. Women are discovering that a coalition of women's organizations can be a powerful force for change (Driscoll & Goldberg, 1993).

Society of Women Engineers

The Society of Women Engineers is a member of the American Association of Engineering Societies. This organization was founded by nearly fifty women who were engineers from Boston, New York, Philadelphia, and Washington, D.C. They met at Green Engineering Camp of Cooper Union in New Jersey and formed the Society of Women Engineers (SWE, 2002). The Society of Women Engineers adopted a mission statement in 1985 that is stated to "stimulate women, expand their image and demonstrate the value of diversity within the engineering profession" (SWE, 2002). It offers an extensive awards and recognition program, honors outstanding accomplishments of women in the engineering professions, as well as those who have contributed significantly to the advancement of women in the engineering profession (SWE, 2002). Society of Women Engineers has members in twenty foreign countries and in every state of the United States. The Hampton Roads Section is the local organization of the Society of Women Engineers.

The Hampton Roads Section has made significant progress in informing and recruiting professional women engineers within the Hampton Roads area. They sponsor various college and professional events and job fairs that promote and encourage women who seek engineering as a career choice. The Hampton Roads Section is also known to serve as mentors for young ladies at the elementary and high school levels to encourage them into the scientific and technological fields at an early age. However, awareness and networking are their key events for women in the professional setting, offering numerous social and professional events that consist of successful women speakers in the engineering field and encouraging and motivating women in the engineering profession.

The Society of Women Engineers organization inspires women in the engineering field by providing services that promote them. There are many fields of engineering, but the challenges women face in the profession are so common that a diverse group of women are attracted to the Society of Women Engineers (Driscoll & Goldberg, 1993).

Summary

Chapter II, Review of Literature, showed the major impacts of how women's organizations historically influenced the development of today's women's organizations. It also examined mentorship and how prevalent it was within organizations of the past and today. The chapter defined the rationale behind why women engineers seek membership within these organizations by looking at women as engineers and their professional and personal perceptions. Finally, this chapter defined the Society of Women Engineers as an organization that sets out to appeal to the professional and personal needs of women within the engineering field. The next chapter, Methods and

Procedures, will describe how the study obtained the selection of its sample, constructed the survey instrument, how it was administered, and how the data were analyzed.

CHAPTER III

Methods and Procedures

Chapter III serves to define the methods and procedures used to gather the data for this research study. In this descriptive study, members of the Society of Women Engineers were surveyed to determine the level of their job performance due to association within a professional organization. Information detailing the population, data collection methods, research design, statistical analysis, and a summary are included.

Population

The data for this research study were collected from currently active members in the Hampton Roads Section of the Society of Women Engineers organization. Only those members, who were currently active and employed during the year of 2002, were used in the survey. An administrative officer within the Hampton Roads Section of the Society of Women Engineers organization anonymously identified a directory of currently active and employed members. The total number of members surveyed was fifty-two. There were 16 members employed at Northrop Grumman Newport News. There were three employed at NASA Langley Research Center. There were two employed at Norfolk Naval Shipyard and also two at CH2M Hill. Only one member each were employed at AITB Inc., BP – Amoco, CG National Strike Force, County of York, DLS Engineering Associates Inc., Fleet Technical Support Center, Jean and Luscomb, John McMullen Associates, Joint Battle Center, Mitsubishi Chemical America, Naval Facilities Engineering Command, Navsea CDSA Dam Neck, NN Waterworks, Spiegel Group Inc., The Lee Group, Woolpert LLP, and the US Navy CINCLANTFLT. There were 12 members whose place of employment was unknown.

Instrument Design

The instrument used in this study was a survey. The survey was developed using closed form questions based on the research goals. Survey questions were divided into four parts designating five questions to tabulate responses for each research goal. These goals were:

1. Identify how members of this organization perceive their job requirements and performance.
2. Identify what overall factors within the Society of Women Engineers organization led them to obtain membership.
3. Determine what types of specific skills these members obtained from this organization to assist them in their professional growth and development.
4. Determine whether these specific skills had any professional impacts by evaluating the current job status of these members in relationship to their job status before membership.

Survey questions were developed in accordance with the benefits listed on the Society of Women Engineers website. A five point Likert scale was used to offer possible responses. The choices were SA (Strongly Agree), A (Agree), NA (Not Applicable), D (Disagree), and SD (Strongly Disagree). A copy of the instrument use is included in Appendix A.

Data Gathering Procedures

A copy of the survey instrument was e-mailed to a Hampton Roads Section administrative officer. The administrative officer distributed a copy of the survey instrument to all active and employed members in the Hampton Roads Section. The 20-

question survey was accompanied with a cover letter explaining the importance and purpose of this study. The directions asked the respondents to complete the survey and respond by return e-mail to the designated administrative officer, who would then forward the survey responses by e-mail to a designated address, in order to protect and keep respondents anonymous. The cover letter and survey were sent electronically on June 4, 2002. A copy of the cover letter is included in Appendix B.

Statistical Analysis

The raw data from the survey instrument were given a preliminary review to assure that the data adhered to the goals of the research study. Results of the survey were tabulated by standard statistical methods. All responses were tabulated for numbers and percentages by category. A range of values from 5 to 1 were assigned to each possible response with 5 being most positive (strongly agree) and descending to 1 being the most negative (strongly disagree). A median was calculated for each survey question to quantify the findings.

Summary

Chapter III stated the methods and procedures employed in this research study. The population was identified as Society of Women Engineers members of the Hampton Roads Section. The e-mail process was described as the method of data collection. The specifics of the instrument design were indicated as a simple closed-form 20-question survey that was tabulated using statistical procedures to tabulate the median. Chapter IV, Findings, will present the study's findings according to survey tabulations accompanied by a complete data analysis.

CHAPTER IV

Findings

The purpose of this research was to determine the effects of professional women organizations, such as the Society of Women Engineers, on the professional growth and development of women engineers in the Hampton Roads Section. This chapter presents the results of the research and includes a summary of the chapter.

The research objectives set forth for this study were:

1. Identify how members of this organization perceive their job requirements and performance.
2. Identify what overall factors within the Society of Women Engineers organization led them to obtain membership.
3. Determine what types of specific skills these members obtained from this organization to assist them in their professional growth and development.
4. Determine whether these specific skills had any professional impacts by evaluating the current job status of these members in relationship to their job status before membership.

The method of collecting data for this study was by means of a survey that consisted of twenty questions that addressed the goals of this research study. This survey attempted to determine if membership in the Society of Women Engineers organization effected job performance. It also attempted to determine the benefits of such memberships. Lastly, it attempted to determine the specific professional skills acquired because of membership and if these specific skills had any professional impacts in the careers of the Society of Women Engineers organization members. This survey

attempted to determine what attractions and professional benefits that the Society of Women Engineers organization had to offer to women in the engineering field.

Report of the Findings

A total of fifty-two women were anonymously identified as active and employed members of the Society of Women Engineers in the Hampton Roads Section for the year 2002. All e-mail addresses were valid, as identified by the Hampton Roads Section, administrative officer. The actual valid e-mail addresses for members were fifty-two. There were a total number of fifty-two surveys distributed. The surveys were distributed on June 4, 2002, and the results were received by June 17, 2002. The total number of members who responded in this survey was thirty-two. Due to the informal nature of e-mail, twenty members had either erased or did not respond to the survey. The percentage of surveys returned was 32 or 61 percent. The results reported in this chapter were compiled from the data collected from these respondents.

**Table 1
Response Data**

Total Surveys Sent By E-mail	52
Completed Responses Returned	32
Effective Response Rate	61%

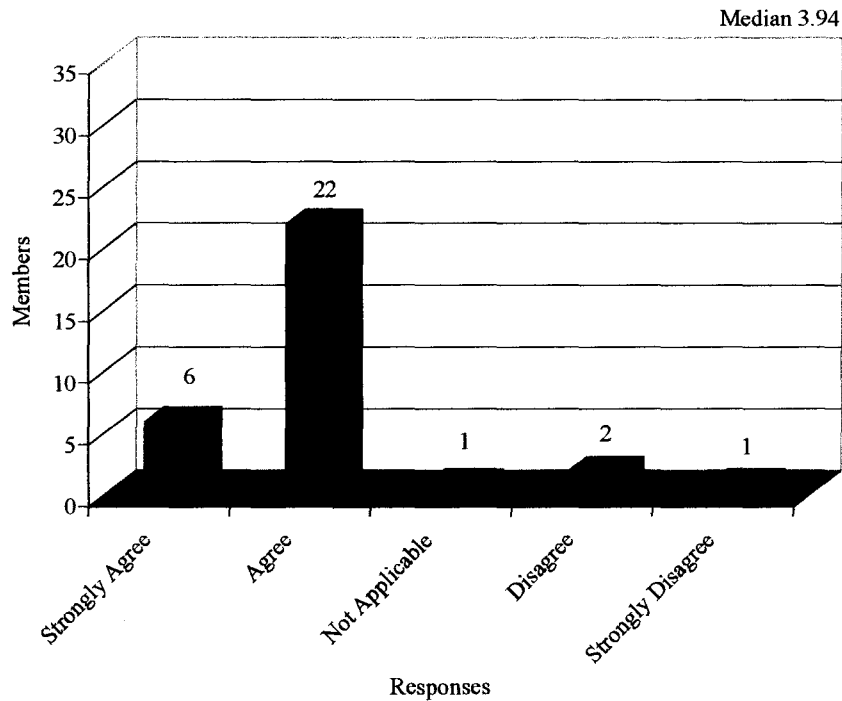
Summary of Results by Question

Perception of Job Requirements and Performance

Question 1, which was the experiences, knowledge and skills obtained, as a member of SWE, are not the same experiences, knowledge and skills that my job is capable of providing had six respondents indicating strongly agree (19%), twenty-two

respondents indicating agree (69%), one respondent indicating not applicable (3%), two respondents indicating disagree (6%), and one respondent indicating strongly agree (3%). The median was 3.94 indicating agree. See Figure 1.

Figure 1
Responses to Question 1



Question 2, which was the experiences, knowledge and skills obtained, as a member of SWE, are the same experiences, knowledge and skills that my job is capable of providing, had one respondent indicating strongly agree (3%), one respondent indicating agree (3%), nine respondents indicating not applicable (28%), sixteen respondents indicating disagree (50%), and five respondents indicating strongly disagree (16%). The median was 2.28 indicating disagree. See Figure 2.

Question 3, which was I am aware of my job requirements and feel that I am properly recognized for my performance outside of SWE, had two respondents indicating strongly agree (6%), eighteen respondents indicating agree (56%), three respondents indicating not applicable (9%), seven respondents indicating disagree (22%), and two

respondents indicating strongly disagree (6%). The median was 3.34 indicating not applicable. See Figure 3.

Figure 2
Responses to Question 2

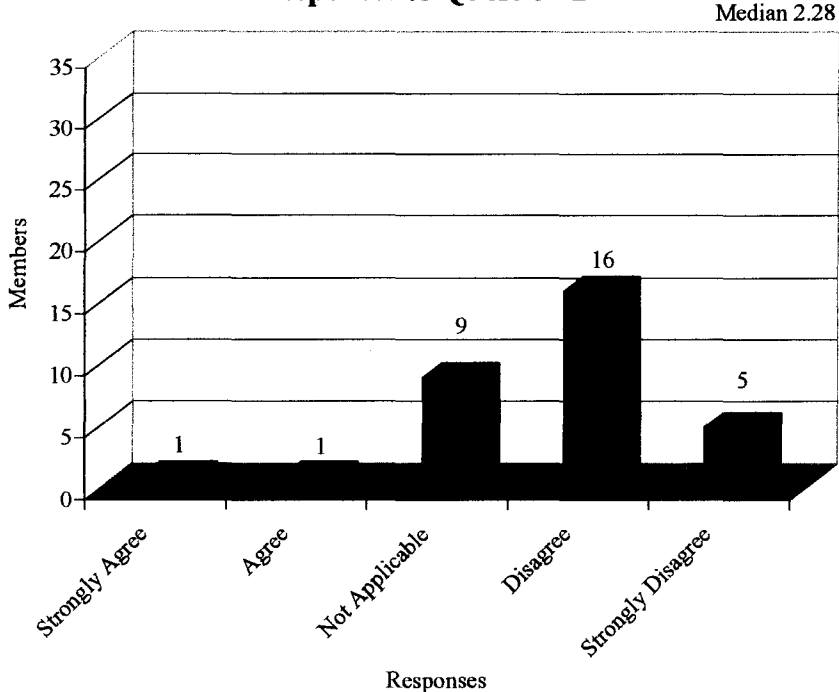
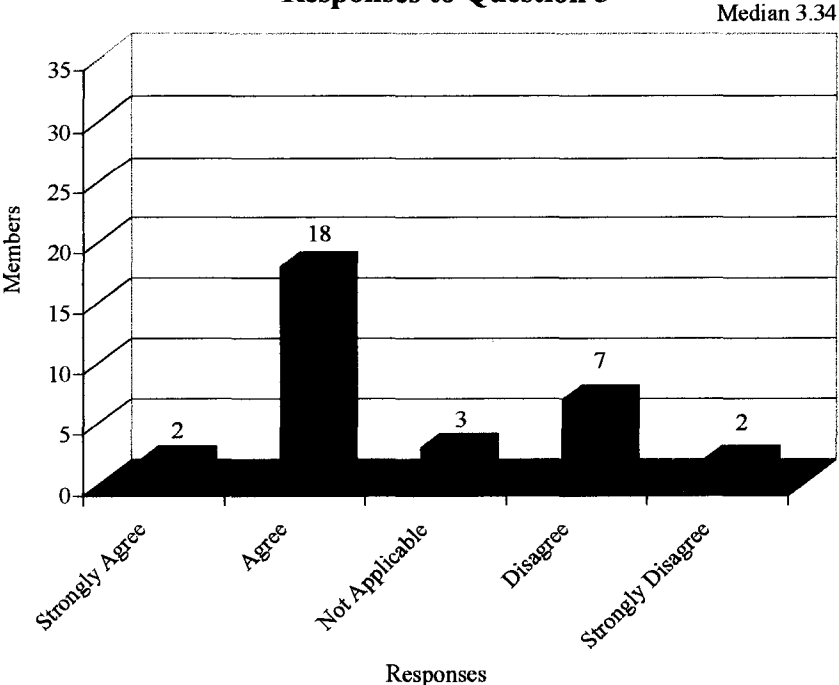
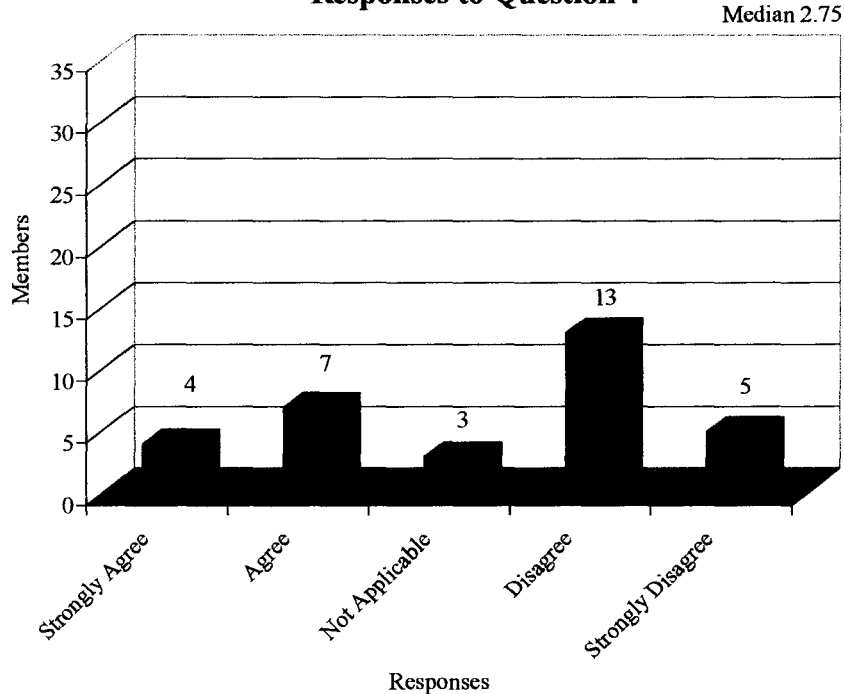


Figure 3
Responses to Question 3



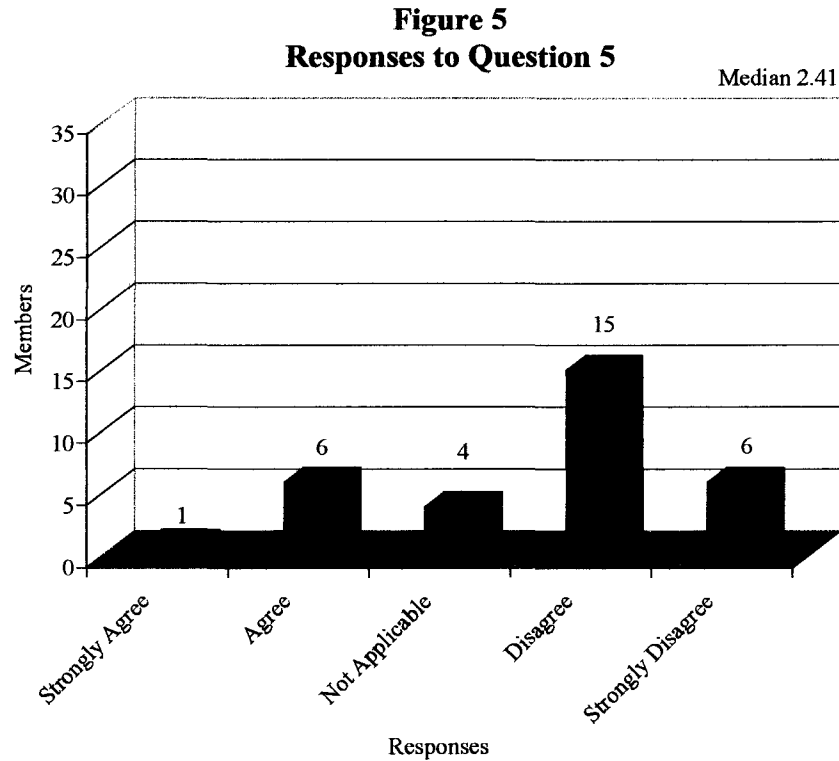
Question 4, which was I am aware of my job requirements, however, I feel that I am not properly recognized for my performance and I feel membership in SWE will provide me with a better opportunity to get the recognition I feel I deserve, had four respondents indicating strongly agree (13%), seven respondents indicating agree (22%), three respondents indicating not applicable (9%), thirteen respondents indicating disagree (41%), and five respondents indicating strongly disagree (16%). The median was 2.75 indicating not applicable. See Figure 4.

Figure 4
Responses to Question 4



Question 5, which was before obtaining membership with SWE, I feel my chances of being promoted were limited and membership with SWE has definitely made a difference, had one respondent indicating strongly agree (3%), six respondents indicating agree (19%), four respondents indicating not applicable (13%), fifteen

respondents indicating disagree (47%), and six respondents indicating strongly disagree (19%). The median was 2.41 indicating disagree. See Figure 5.



Factors for Obtaining Membership

Question 6, which was SWE is involved in several community activities, which was a major factor in my seeking membership, had three respondents indicating strongly agree (9%), twelve respondents indicating agree (38%), ten respondents indicating not applicable (31%), three respondents indicating disagree (9%), and four respondents indicating strongly disagree (13%). The median was 3.22 indicating not applicable. See Figure 6.

Question 7, which was networking with other women engineers was a major factor in my seeking membership, had fourteen respondents indicating strongly agree

(44%), sixteen respondents indicating agree (50%), no respondents indicating not applicable (0%), two respondents indicating disagree (6%), and no respondents indicating strongly disagree (0%). The median was 4.13 indicating agree. See Figure 7.

Figure 6
Responses to Question 6

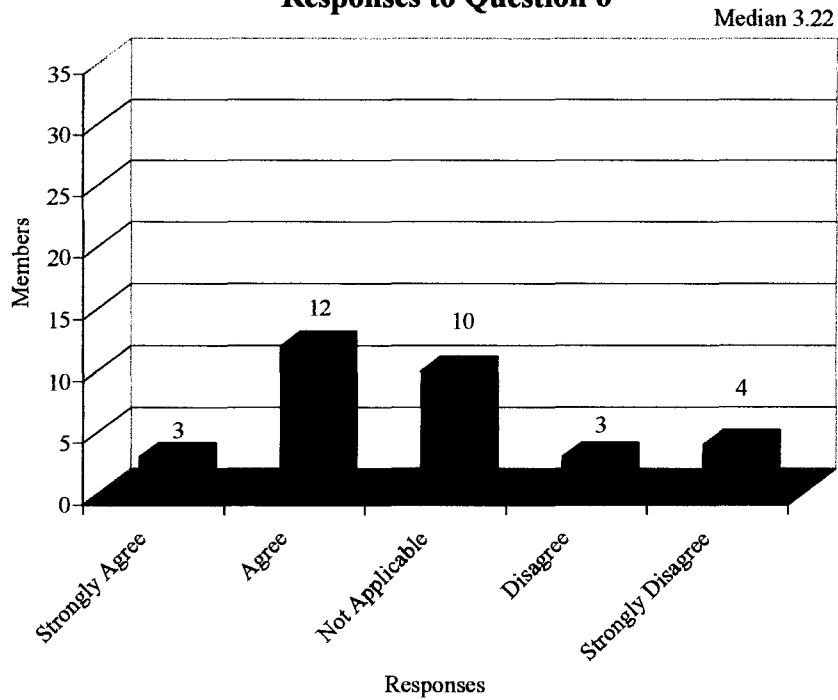
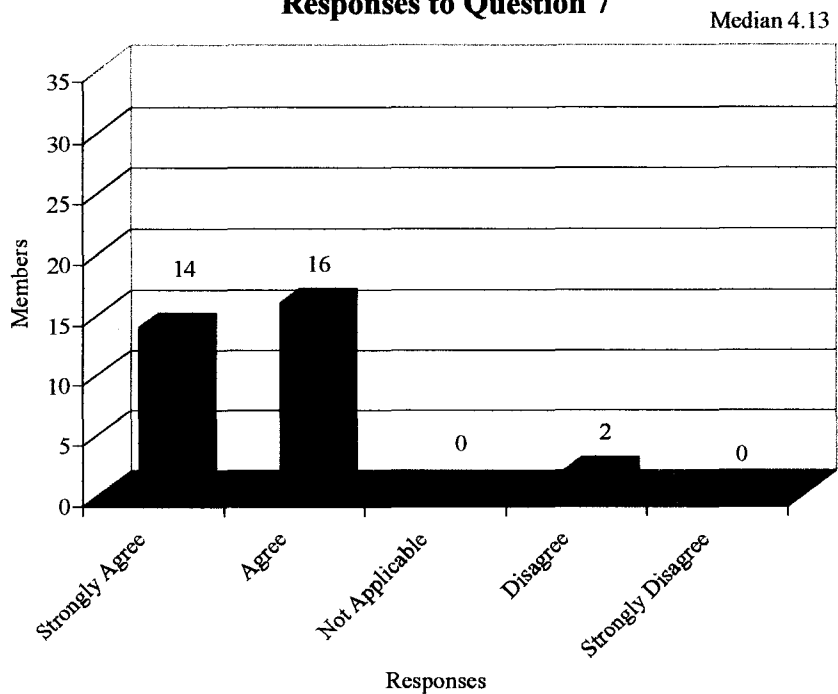
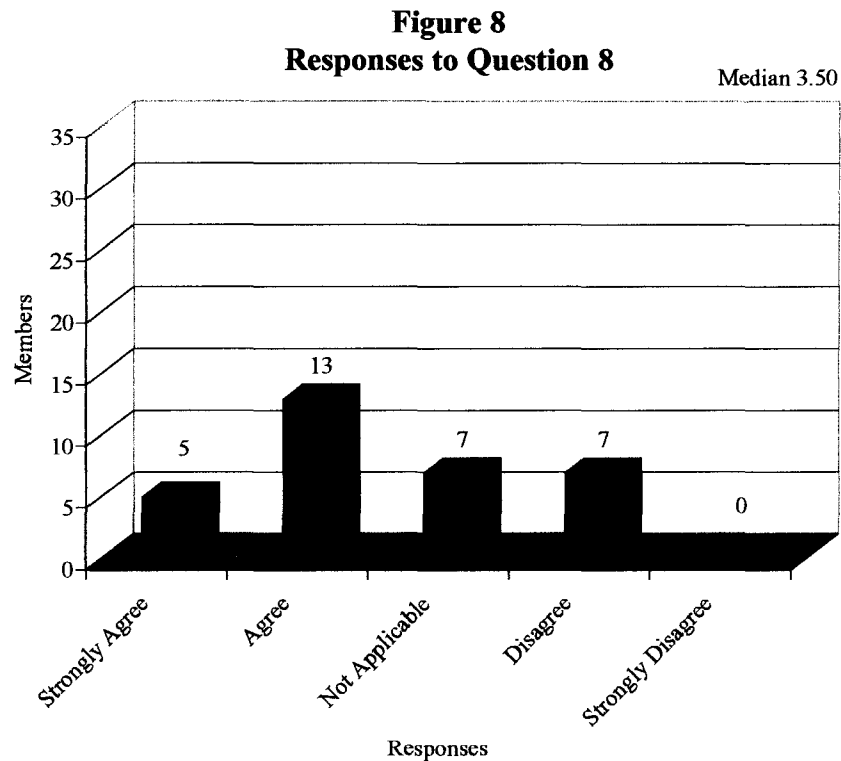


Figure 7
Responses to Question 7

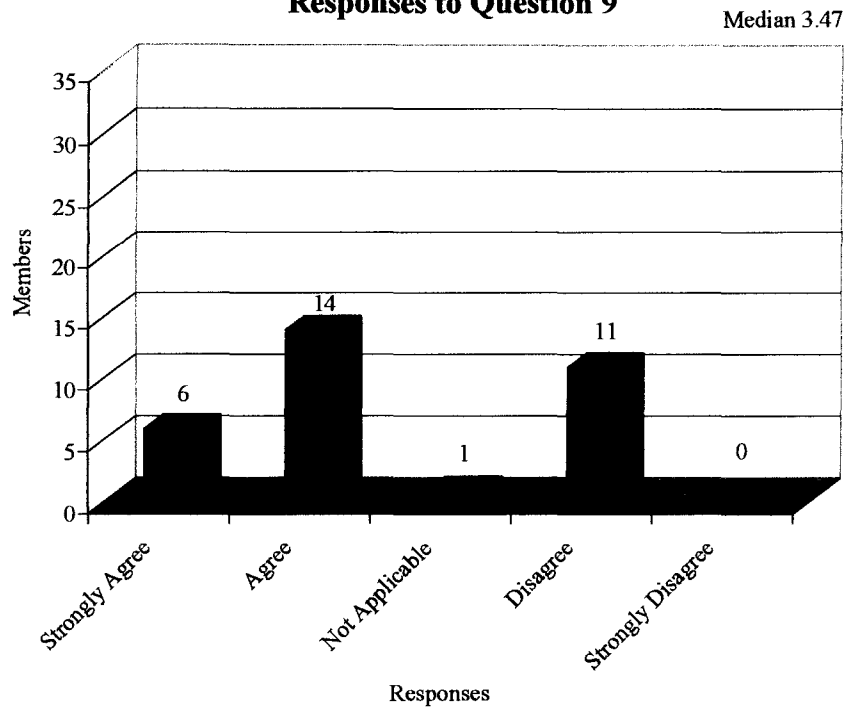


Question 8, which was mentoring professional and young women in the engineering field was a major factor in my seeking membership with SWE, had five respondents indicating strongly agree (16%), thirteen respondents indicating agree (41%), seven respondents indicating not applicable (22%), seven respondents indicating disagree (22%), and no respondents indicating strongly disagree (0%). The median was 3.50 indicating agree. See Figure 8.



Question 9, which was I believe being affiliated with any professional organization looks good to the company and this was the major factor in my seeking membership with SWE, had six respondents indicating strongly agree (19%), fourteen respondents indicating agree (44%), one respondent indicating not applicable (3%), eleven respondents indicating disagree (34%), and no respondents indicating strongly disagree (0%). The median was 3.47 indicating not applicable. See Figure 9.

Figure 9
Responses to Question 9



Question 10, which was membership within SWE affords me the opportunity to get involved in activities outside of my job, which was a major factor in my seeking membership, had nine respondents indicating strongly agree (28%), fifteen respondents indicating agree (47%), five respondents indicating not applicable (16%), two respondents indicating disagree (6%), and one respondent indicating strongly disagree (3%). The median was 3.91 indicating agree. See Figure 10.

Skills Obtained Due to Membership

Question 11, which was SWE has taught me management and leadership skills that assist me in facilitating engineering processes on my job, had four respondents indicating strongly agree (13%), sixteen respondents indicating agree (50%), four respondents indicating not applicable (13%), five respondents indicating disagree (16%), and three respondents indicating strongly disagree (9%). The median was 3.41 indicating not applicable. See Figure 11.

Figure 10
Responses to Question 10

Median 3.91

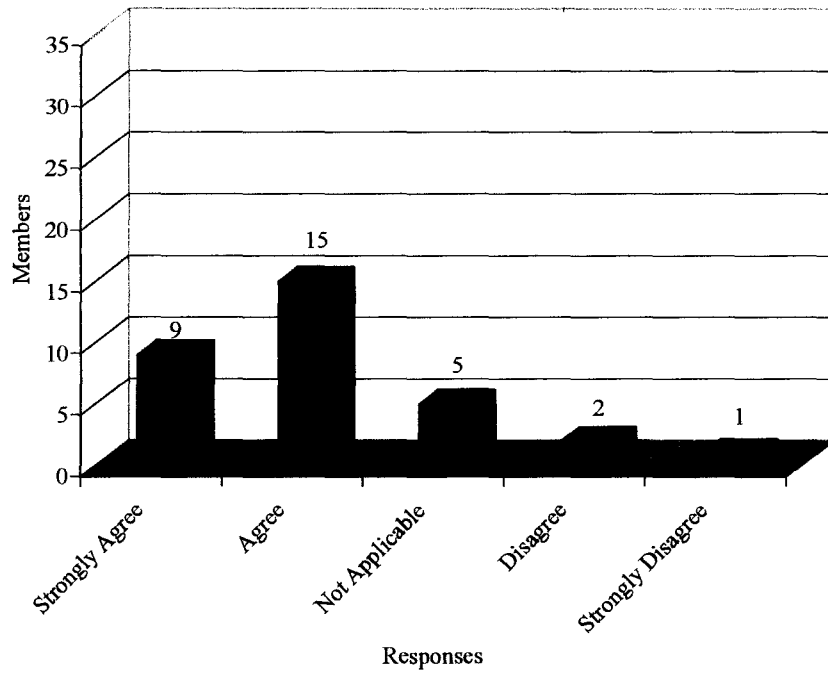
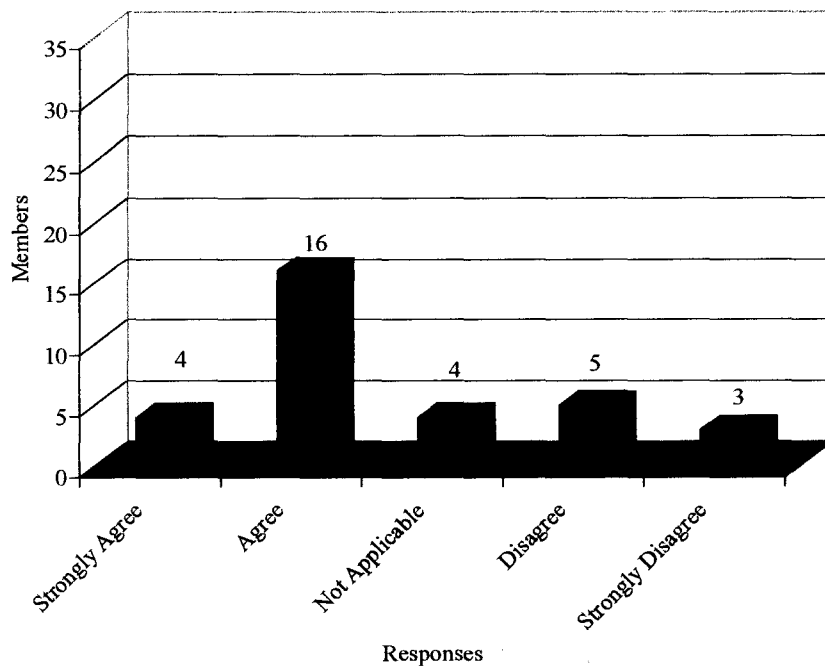


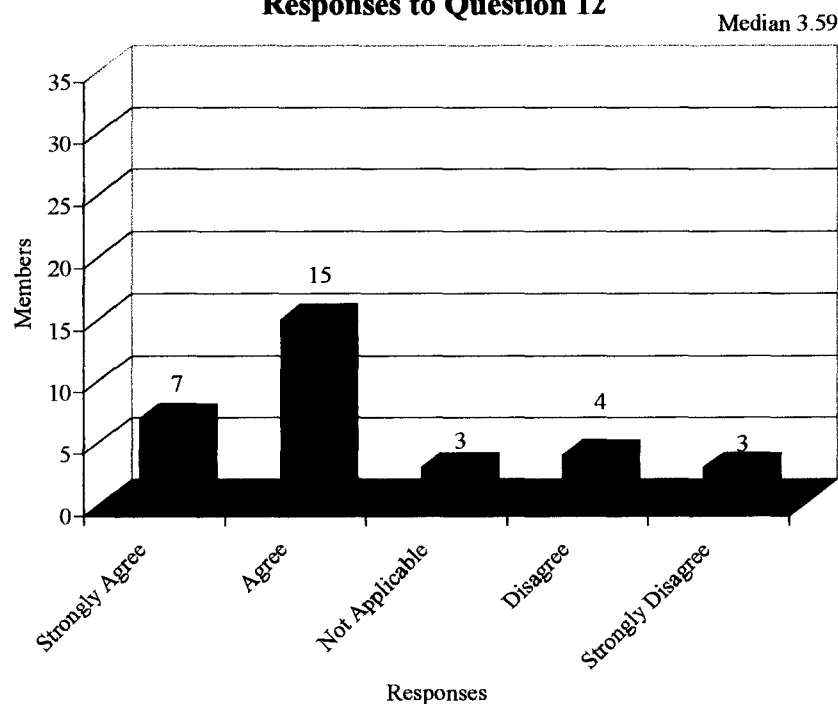
Figure 11
Responses to Question 11

Median 3.41



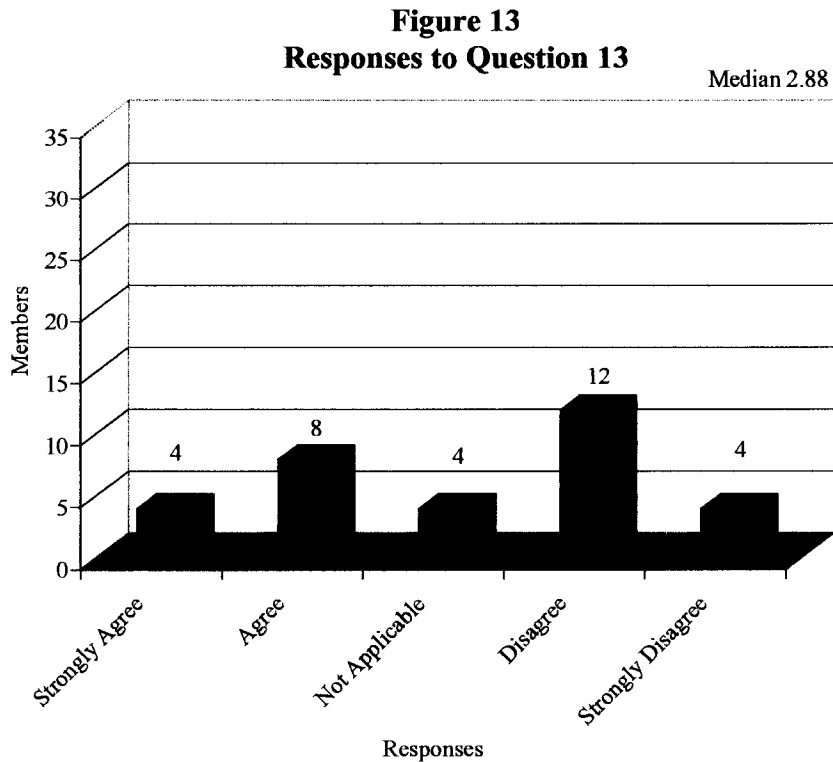
Question 12, which was the Society of Women Engineers organization has been a major contributor toward my understanding of the dynamics of teamwork as it relates to the engineering field, which has assisted me in becoming a more profound team player, had seven respondents indicating strongly agree (22%), fifteen respondents indicating agree (47%), three respondents indicating not applicable (9%), four respondents indicating disagree (13%), and three respondents indicating strongly disagree (9%). The median was 3.59 indicating agree. See Figure 12.

Figure 12
Responses to Question 12



Question 13, which was since obtaining membership, I have gained significant knowledge and skills in engineering functions and processes that are helpful to me in my professional growth and development, had four respondents indicating strongly agree (13%), eight respondents indicating agree (25%), four respondents indicating not applicable (13%), twelve respondents indicating disagree (38%), and four respondents

indicating strongly disagree (13%). The median was 2.88 indicating not applicable. See Figure 13.



Question 14, which was membership in SWE has afforded me the opportunity of professional development learned from the experience of other members, had seven respondents indicating strongly agree (22%), seventeen respondents indicating agree (53%), four respondents indicating not applicable (13%), one respondent indicating disagree (3%), and three respondents indicating strongly disagree (9%). The median was 3.75 indicating agree. See Figure 14.

Question 15, which was since obtaining membership, I have inherited effective communication skills that have contributed toward my motivation and ambition as an engineering professional, had six respondents indicating strongly agree (19%), sixteen respondents indicating agree (50%), three respondents indicating not applicable (9%),

four respondents indicating disagree (13%), and three respondents indicating strongly disagree (9%). The median was 3.56 indicating agree. See Figure 15.

Figure 14
Responses to Question 14

Median 3.75

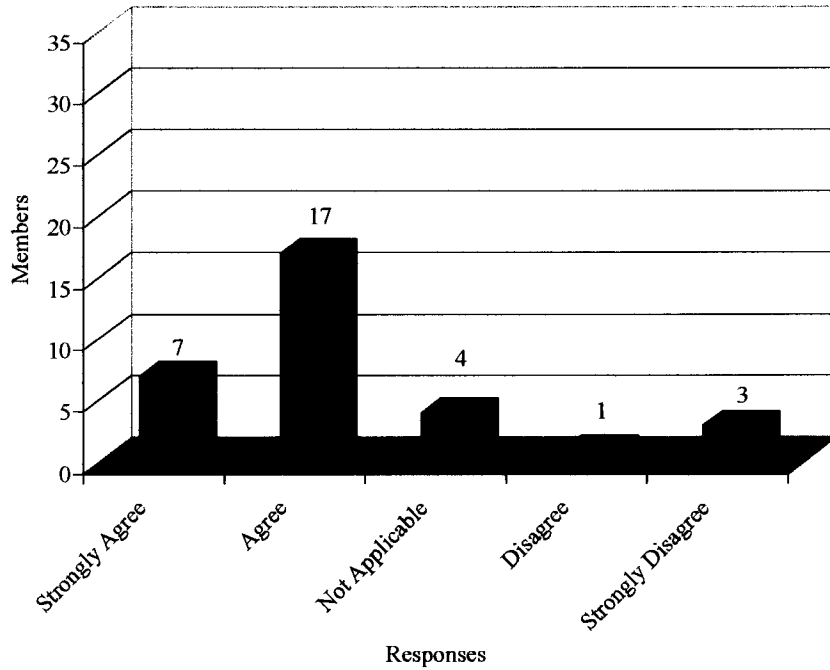
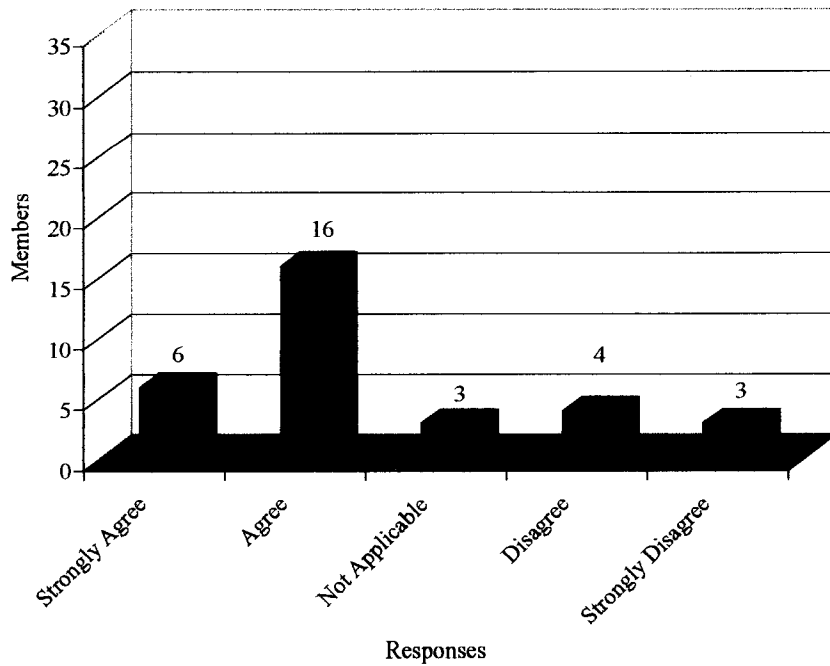


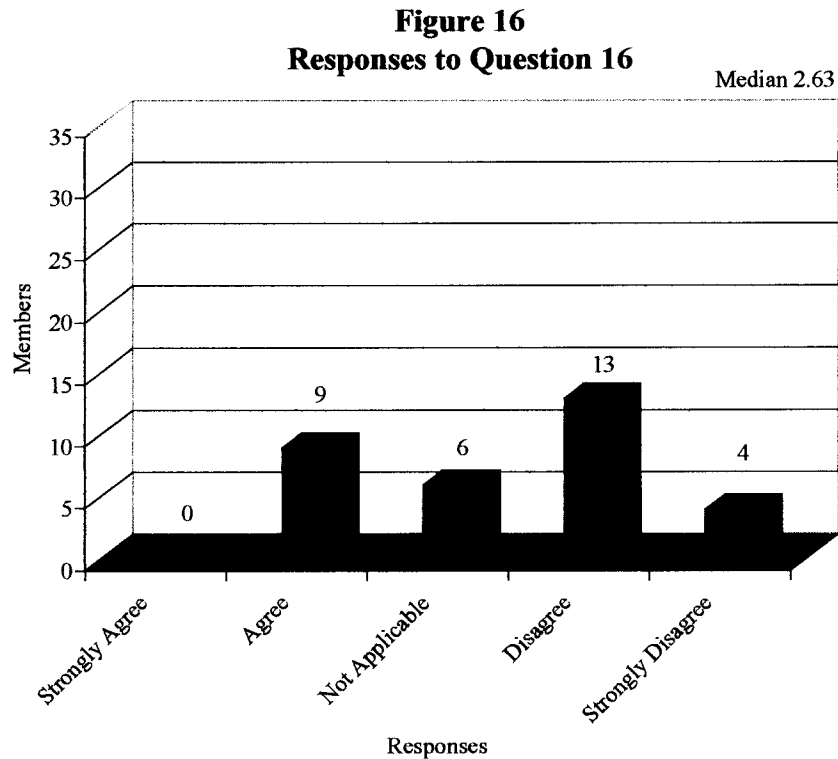
Figure 15
Responses to Question 15

Median 3.56



Professional Impacts

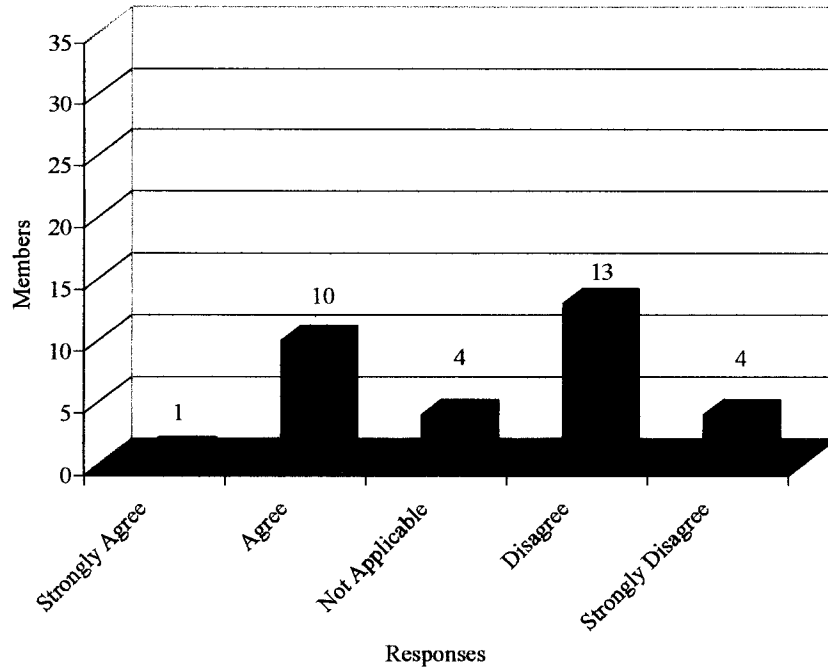
Question 16, which was since obtaining membership, I have gained more recognition on the job than I did before membership because of the professional skills gained as a member and it directly impacts my current job status, had no respondents indicating strongly agree (0%), nine respondents indicating agree (28%), six respondents indicating not applicable (19%), thirteen respondents indicating disagree (41%), and four respondents indicating strongly disagree (13%). The median was 2.63 indicating not applicable. See Figure 16.



Question 17, which was I feel that my chances of being promoted have greatly increased because of the specific skills I have learned since obtaining membership and my current job status outlook is better, had one respondent indicating strongly agree (3%), ten respondents indicating agree (31%), four respondents indicating not applicable

(13%), thirteen respondents indicating disagree (41%), and four respondents indicating strongly disagree (13%). The median was 2.72 indicating not applicable. See Figure 17.

Figure 17
Responses to Question 17 Median 2.72



Question 18, which was I believe specific skills gained from membership with SWE have not afforded me any greater promotional or professional opportunities that I may not have had before membership, had no respondent indicating strongly agree (0%), twelve respondents indicating agree (38%), four respondents indicating not applicable (13%), fourteen respondents indicating disagree (44%), and two respondents indicating strongly disagree (6%). The median was 2.81 indicating not applicable. See Figure 18.

Question 19, which was SWE has taught me specific skills that have assisted me in my professional development of my career experiences that will afford me more opportunities than I have had in my previous career experiences, had three respondents indicating strongly agree (9%), nineteen respondents indicating agree (59%), four

respondents indicating not applicable (13%), six respondents indicating disagree (19%), and no respondents indicating strongly disagree (0%). The median was 3.59 indicating agree. See Figure 19.

Figure 18
Responses to Question 18

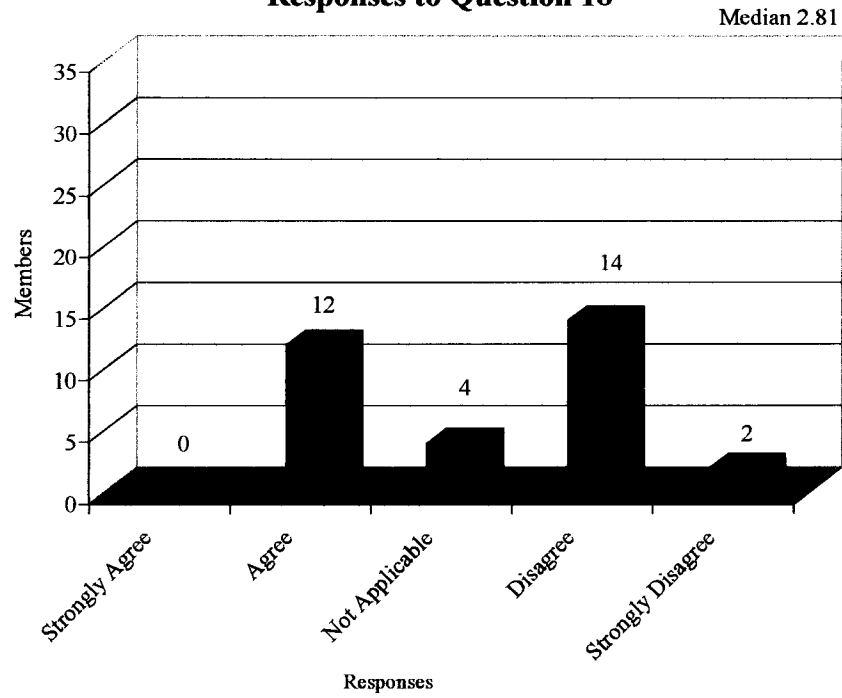
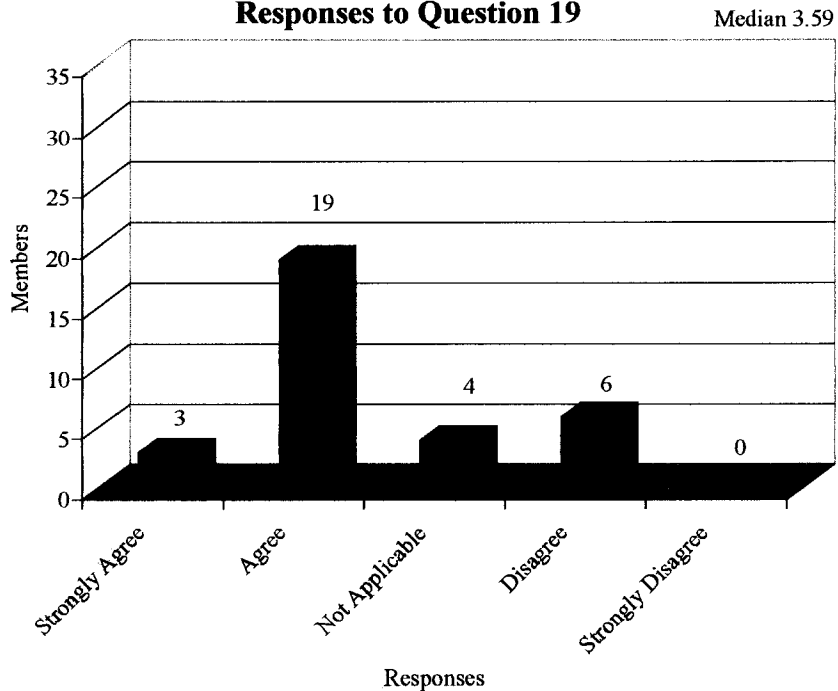
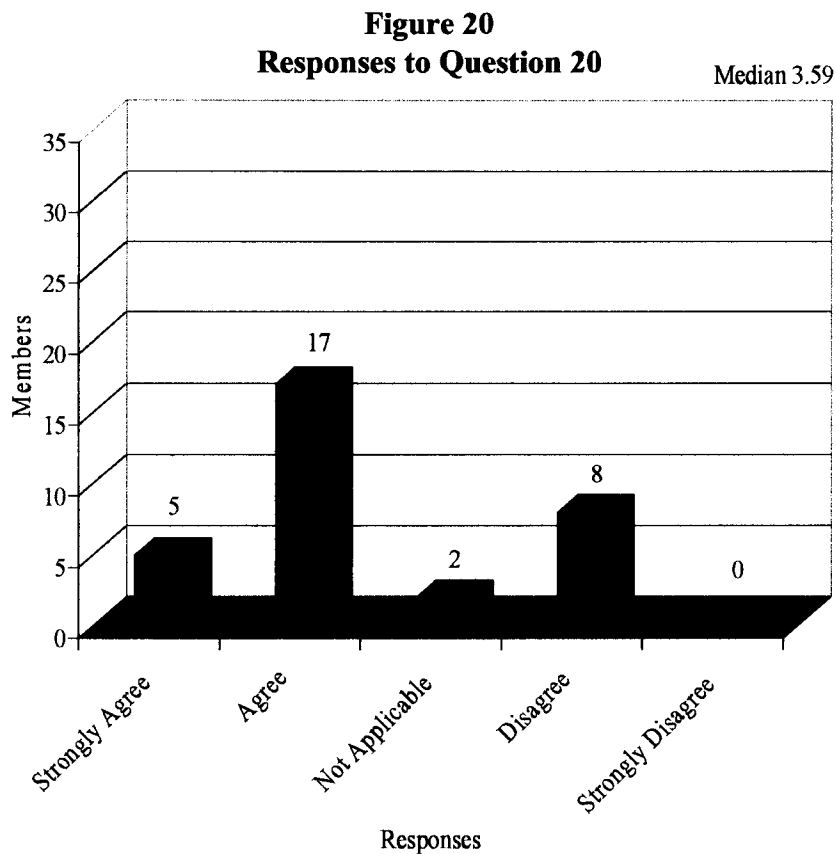


Figure 19
Responses to Question 19



Question 20, which was membership in SWE has provided me with skills and a networking system that increased my motivation and improved the quality of my job performance in my current career position as opposed to my previous career position before membership, had five respondents indicating strongly agree (19%), seventeen respondents indicating agree (53%), two respondents indicating not applicable (6%), eight respondents indicating disagree (25%), and no respondents indicating strongly disagree (0%). The median was 3.59 indicating agree. See Figure 20.



Summary

This chapter contained the findings of the research study. Data collected were analyzed and results were tabulated to determine what factors, influences, or skills contributed to the professional growth and development of women engineers in the

Hampton Roads area. A review of the factors with percentages and medians were given. Chapter V will include three functions, summarize the study, draw conclusions from the data collected and lastly make recommendations.

CHAPTER V

Summary, Conclusions, and Recommendations

The purpose of Chapter V, Summary, Conclusions and Recommendations, was to summarize the study. Conclusions were made in relation to the research goals. Recommendations were made as a result of the findings.

Summary

The problem with this study was to determine the effects of professional women organizations, such as the Society of Women Engineers, on the professional growth and development of women engineers in the Hampton Roads Section. Research goals were used as guidelines for generating survey questions. The limitations of the study were also used as guidelines for generating and administering survey questions. An administrative officer of the Hampton Roads Section identified a list of the Society of Women Engineers Hampton Roads Section members. The total population was 52 with 32 members responding to this study representing a 61 percent response rate.

Surveys were distributed to members during the first week of June 2002 by a designated administrative officer of the Hampton Roads Section and were anonymously returned to a designated e-mail address and returned to the researcher. All returned surveys were received by June 17, 2002. Data from these surveys were tabulated and the information presented. The information gathered by the survey was analyzed and served as the basis for the conclusions and recommendations made in this chapter.

Conclusions

The results of the study indicated there were certain factors that contributed toward the professional growth and development of women engineers in the Hampton

Roads Section. The research goals were established to assist in solving the problem of this study. The following are the research goals and the conclusion based upon the data collected.

(1) Identify how members of this organization perceive their job requirements and performance.

Question 1 results of the survey indicated a median of 3.94 that the experiences, knowledge and skills obtained, as a member of the Society of Women Engineers were not the same experiences, knowledge and skills that their job was capable of providing. Question 2 responses provided a median of 2.28 indicating that their experiences, knowledge and skills obtained, as a member of the Society of Women Engineers organization were not the same experiences, knowledge and skills that their job was capable of providing. Question 3 responses provided a median of 3.34 indicating that being able to obtain recognition outside of SWE was not a pertinent factor in how they perceived their job. Question 4 responses provided a median of 2.75 indicating that being able to obtain better opportunities to get recognition due to membership was also not a pertinent factor in how members perceived their job. Question 5 responses provided a median of 2.41 indicating that their chances of being promoted were not limited and that membership with SWE had not made a difference in improving their opportunities of being promoted. Based on the findings of these five questions, with an indicated median of 3.94 from Question 1, it was evident that members of this organization perceived their job requirements and performance as being positively influenced by their experiences, knowledge, and skills obtained from being a member of the Society of Women Engineers. It is also concluded, based on these findings, that members of this

organization perceived that their job was not capable of providing them with the experiences, knowledge, and skills they needed to positively influence their job requirements and performance.

(2) Identify what overall factors within the Society of Women Engineers organization led them to obtain membership.

Question 6 responses provided a median of 3.22 indicating that SWE's community service involvement was not a pertinent factor in their seeking membership. However, results of Question 7 indicated with a median of 4.13 that networking with other women engineers was a major factor for their seeking membership with the Society of Women Engineers organization. Question 8 responses provided a median of 3.50 indicating that mentoring professional and young women in the engineering field was also a major factor in their seeking membership with SWE. Question 9 responses provided a median of 3.47 indicating that looking good to the company by being affiliated with any professional organization had no relevance in their seeking membership with SWE. Question 10 responses provided a median of 3.91 indicating that membership within the Society of Women Engineering organization affords them the opportunity to get involved in activities outside of their job and was also a major factor that led them to seek membership. Based on the findings of these five questions, with an indicated median of 4.13 from Question 7, it was evident that the overall factors that led these women to obtain membership within the Society of Women Engineers were networking with other women engineers and opportunities to get involved in activities outside of their jobs.

(3) Determine what types of skills these members obtained from this

organization to assist them in their professional growth and development.

Question 11 responses provided a median of 3.41 indicating that management and leadership skills were not relevant skills taught by SWE. Question 12 responses provided a median of 3.59 indicating that the Society of Women Engineers organization has been a major contributor toward their understanding the dynamics of teamwork and has assisted them in becoming a more profound team player. Question 13 responses provided a median of 2.88 indicating knowledge and skills in engineering functions were also not relevant skills taught by SWE. Question 14 responses provided a median of 3.75 indicating that membership in SWE has afforded them the opportunity of professional growth and development learned from the experience of other members. Question 15 responses provided a median of 3.56 indicating that since obtaining membership, members have inherited effective communication skills that have contributed toward their motivation and ambition as an engineering professional. Based on the findings of these five questions, with an indicated median of 3.59 from Question 12, 3.75 from Question 14, and 3.56 from Question 15, it was evident that understanding the dynamics of teamwork, skills learned from the experiences of other members, and communication skills are the types of skills members obtained from this organization to assist them in their professional growth and development.

(4) Determine whether these specific skills had any professional impacts by evaluating the current job status of these members in relationship to their job status before membership.

Question 16 responses provided a median of 2.63 indicating that skills gained after membership were not relevant in determining any professional impacts of their

current job status in relationship to their job status before membership. Question 17 responses provided a median of 2.72 indicating that better job outlooks because of skills obtained were not relevant in determining any professional impacts of their current job status in relationship to their job status before membership. Question 18 responses provided a median of 2.81 indicating that increased promotional and professional opportunities because of skills obtained were not relevant in determining any professional impacts of their current job status in relationship to their job status before membership. Question 19 responses provided a median of 3.59 indicating that SWE has taught members specific skills that have assisted them in their professional development of their career experiences that have afforded them more opportunities than they had in their previous career experiences. Question 20 responses provided a median of 3.59 also indicating that membership in SWE has provided members with skills and a networking system that increased their motivation and improved the quality of their job performance in their current career position as opposed to their previous career position before membership. However only 53 percent agreed that membership in the Society of Women Engineers organization provided them with skills and a networking system that increased their motivation and improved the quality of their job performance in their current career positions as opposed to their previous career position before membership. Question 16 indicated the lowest response rank with a median of 2.63 that 41 percent disagreed that since obtaining membership, they had gained more recognition on the job than they did before membership. Based on the findings of these five questions, with an indicated median of 3.59 from Question 19 and Question 20, it was evident that these specific skills had professional impacts on their current job status by affording them more opportunities

than they had before membership. It is also concluded, based on these findings that they were also provided with a networking system that increased their motivation and improved the quality of their job performance in their current career position as opposed to their previous career position before membership.

Recommendations

Based on the findings and conclusions of this study, this researcher respectfully submits the following recommendations:

1. The Society of Women Engineers as a national organization should conduct a study to determine the effects of their organization on the professional growth and development of women engineers on a national level.
2. The Society of Women Engineers organization should closely monitor their recruitment efforts and make changes to suit the needs of its members.
3. The Hampton Roads Section members should work together with local school administrators to increase the awareness of women in science and technology to create a more effective mentoring system for perspective young women engineers.
4. The Society of Women Engineers organization should renew efforts to provide women with effective communication skills to assist them in their confidence and motivation on the job.
5. The Society of Women Engineers organization should provide more knowledge and skills in engineering functions to their members.
6. The Society of Women Engineers organization should design and conduct a series of professional development activities to assist all members in

developing techniques to maximize effective management and leadership skills.

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Appendix A

Survey

Women in Professional Organizations Research Survey

Purpose: To determine the effects of professional women organizations, such as the Society of Women Engineers, on the professional growth and development of women in the engineering field.

Please complete the following questions and respond by e-mail to the address given to you by your designated officer.

Directions: For each of the following questions, please underline or bold to enter your desired response.

SA = Strongly Agree

A = Agree

NA = Not Applicable

D = Disagree

SD = Strongly Disagree

1. The experiences, knowledge and skills obtained, as a member of SWE, are not the same experiences, knowledge and skills that my job is capable of providing.

SA A NA D SD

2. The experiences, knowledge and skills obtained, as a member of SWE, are the same experiences, knowledge and skills that my job is capable of providing.

SA A NA D SD

3. I am aware of my job requirements and feel that I am properly recognized for my performance outside of SWE.

SA A NA D SD

4. I am aware of my job requirements, however, I feel that I am not properly recognized for my performance and I feel membership in SWE will provide me with a better opportunity to get the recognition I feel I deserve.

SA A NA D SD

5. Before obtaining membership with SWE, I feel my chances of being promoted were limited and membership with SWE has definitely made a difference.

SA A NA D SD

6. SWE is involved in several community activities, which was a major factor in my seeking membership.

SA A NA D SD

7. Networking with other women engineers was a major factor in my seeking membership with SWE.

SA A NA D SD

8. Mentoring professional and young women in the engineering field was a major factor in my seeking membership with SWE.

SA A NA D SD

9. I believe being affiliated with any professional organization looks good to the company and this was the major factor in my seeking membership with SWE.

SA A NA D SD

10. Membership within SWE affords me the opportunity to get involved in activities outside of my job, which was a major factor in my seeking membership.

SA A NA D SD

11. SWE has taught me management and leadership skills that assist me in facilitating engineering processes on my job.

SA A NA D SD

12. The Society of Women Engineers organization has been a major contributor toward my understanding of the dynamics of teamwork as it relates to the engineering field, which has assisted me in becoming a more profound team player.

SA A NA D SD

13. Since obtaining membership, I have gained significant knowledge and skills in engineering functions and processes that are helpful to me in my professional growth and development.

SA A NA D SD

14. Membership in SWE has afforded me the opportunity of professional growth and development learned from the experience of other members.

SA A NA D SD

15. Since obtaining membership, I have inherited effective communication skills that have contributed toward my motivation and ambition as an engineering professional.

SA A NA D SD

16. Since obtaining membership, I have gained more recognition on the job than I did before membership because of the professional skills gained as a member and it directly impacts my current job status.

SA A NA D SD

17. I feel that my chances of being promoted have greatly increased because of the specific skills I have learned since obtaining membership and my current job status outlook is better.

SA A NA D SD

18. I believe specific skills gained from membership with SWE have not afforded me any greater promotional or professional opportunities that I may not have had before membership.

SA A NA D SD

19. SWE has taught me specific skills that have assisted me in my professional development of my career experience that will afford me more opportunities than I have had in my previous career experiences.

SA A NA D SD

20. Membership in SWE has provided me with skills and a networking system that increased my motivation and improved the quality of my job performance in my current career position as opposed to my previous career position before membership.

SA A NA D SD

Appendix B
Cover Letter

June 4, 2002

Dear Society of Women Engineers Member:

As a member, you have the unique combination of knowledge and skills that provide the ideal population for a current research study I have undertaken. This project is part of my preparation to receive my masters in Occupational and Technical Studies at Old Dominion University.

My goal is to determine the effects of professional women organizations, such as the Society of Women Engineers, on the professional growth and development of women engineers. I hope to make the findings available in an effort to contribute in some way to the appreciation and advancement of professional women's organizations. It is for this reason that I ask for your help in completing this study.

Please complete the attached twenty-question survey and return it by e-mail to your designated officer's e-mail address. Your designated officer will then anonymously return your survey responses to me at debra_ross@hotmail.com by June 17, 2002, in order that the results may be tabulated promptly. These survey responses will only be used to complete this study.

Thank you in advance for your assistance in furthering my research objectives.

Sincerely yours,

Deborah D. Norris

Deborah D. Norris

Enclosure