



Exploring the role of professional networks for women in the IT sector

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Abstract

The purpose of this paper is to investigate: what is the significance of professional networks for women within the IT industry. Previous research shows that there are barriers women in the field of IT face when entering and advancing in the industry. To investigate the potential connection between barriers and professional networks ten women were interviewed. Professional networks for women within the sector are examined through a qualitative lens. This study support previous research that showed that women in the IT industry face barriers. Moreover, this study highlights benefits of professional networks, representing that women receive and develop personal skills that can make them more successful at work. This study also provides criticism towards the networks and shows that there is room for improvements. The professional networks described by the respondents in this study seem to miss out on the opportunity to fundamentally discuss the barriers women face as professionals.

Keywords: Professional network, gender, social barriers, structural barriers

1 Introduction and research question

Equal gender representation at work is a hot topic. Still, there is a major lack of competence in the Information Technology (IT) sector, and many more employees are needed. It can be argued that in particular more women are needed within the IT sector since it is a male-dominated industry. In most OECD countries women make up less than 20% of ICT professionals and apparently considerable efforts to reach a gender balance has too small effect (Castaño & Webster, 2011). In Sweden 2006, the percentage of women overall in the IT and Telecom industry was 32% and the proportion of female managers 25%. Ten years later, the proportion of female managers has increased to about 28%, thus, firms in the IT sector need far more women in top management positions in order to reach equal gender representation. The proportion of women in the industry in total has on the other hand actually decreased to about 29% (Womentor, 2016). However, another source of statistic indicate that the actual number of women in management positions are lower. In a study conducted listing 43 IT and telecom companies within the industry, in Sweden, there are 307 people in company management. Out of these there are 49 women, or 16%. Furthermore, in 21 of the companies listed, there are no woman in a management position, which translates to 49% out of the population listed (Ny Teknik, 2015). Due to the discrepancy between these two sources of statistic it is reasonable to believe that the actual number is somewhere in between 16-28 %.

In an academic study on gender differences in IT careers it has been concluded that this field is not immune to the problems of discrimination (Truman & Baroudi, 1994). The competitiveness among global firms and between countries appears to be affected by the gender differences in IT careers. Salaries vary by gender in many jobs and countries (Ahuja, 2002). This is a problem for the whole society when women are less included than men. Since IT is becoming an integrated and essential part in our everyday lives around the world, the

lack of women in the IT sector becomes increasingly important in order to reflect the general population. Wajcman (2009, p. 149) writes: “The marginalization of women from the technological community has a profound influence on the design, technical content and use of artefacts”. With a balanced workforce creativity increases and therefore companies can break new ground and become more innovative (Campbell & Mínguez-Vera, 2008). Equal numbers of both genders involved in the industry strengthens the country’s competitiveness. Sweden need, among the rest of the world, to increase the proportion of women in the IT workforce. If not, Sweden will continue to have few women involved in the IT industry and around half of the population will remain as unused potential contributors. No nation in the 21st century is going to lead the world if they only use half of their human potential for ideas, innovation and growth. This is also a problem for the development of technology. The Swedish minister for gender equality, Nyamko Sabuni, wrote in an article that the IT industry needs more of people’s perspectives to achieve better results. As users of IT products, both women and men need women and men to influence technological development (Sabuni & Torstensson, 2007). The former Swedish IT-minister Mehmet Kaplan said “Contained within half of the population is also half of the future potential, half of the ideas, half of the innovations. There is no industry that can afford to miss out on that” (Kaplan, 2015).

Researchers have highlighted why the gender imbalance continues to exist. Previous research shows that there are barriers women in the field of IT face when entering and advancing in the industry. Those barriers have many consequential effects. Barriers affect women’s career entry, persistence and performance in IT (Ahuja, 2002). Research indicates that barriers occur in several different situations, e.g. the problem occurs when there is a male perspective of the expectations placed on women’s skills. It can also be seen already in school and by studying differences between boys and girls views of IT. According to feminist theories, the problem with underrepresentation of women in the IT sector does not lie with women (Wajcman, 2009). The question is whether and in what way the technology sector can be reshaped in order to accommodate women (Dautzenberg, 2012).

While women remain an underrepresented minority (Morgan, Quesenberry & Trauth, 2004) various efforts are being made by people, organizations and groups in order to improve gender equality in the IT sector. Much is happening here and several of those initiatives are being made through networks. This study illustrates professional networks’ impact on women in the IT industry. Networks have previously been shown to have an important and meaningful role (Aichner & Jacob, 2015) for underrepresented groups and minorities at workplace (Friedman & Holtom, 2002). In society it has become increasingly important to have the right network, to be seen and be a member of the “right” groups. Possibly, networks might provide an interesting way to counteract barriers. To investigate the potential connection between barriers and networks we will in this paper follow ten women who describe their experiences and perceptions of the networks they are members of. Therefore, the main purpose of this paper is to investigate *what is the significance of professional networks for women within the IT industry?*

The structure of this paper is as follows: Section 2 gives an overview of current research within the field, Section 3 describes the methodology used and in Section 4 the results are presented, followed by a discussion in Section 5. The final section is the conclusion.

2 Related Research

By looking at the male dominated IT field it can be argued that technology is mainly associated with masculinity since the hegemonic form of masculinity in Western society is associated with technical prowess and power (Wajcman, 1991).

Statistics indicate an underrepresentation of girls in schools, universities and at work. Moreover, the underrepresentation of women is present in all segments of the information technology career pipeline, from enrolment in secondary school and university courses, to positions in the IT workforce, to IT management positions (Margolis & Fisher, 2003; Teague, 2002; Ross & Thomas, 2008). Several researchers have shown that the lack of women in the IT workforce is a worldwide phenomenon (Huyer 2005; Galpin, 2002; Rosser, 2005). Various efforts are being made to change this to a more equal industry, and there are several benefits of having a diverse workforce. More and more frequently published research proves what should be an obvious conclusion for everyone in a leading country like Sweden in 2016 - that gender balance benefits business performance and success. Diversity is positively correlated with innovation (Miller & del Carmen, 2009). Diversity breeds innovation. With a balanced workforce creativity increases, consequently, companies can break new ground and become more innovative (Campbell & Mínguez-Vera, 2008). Additionally, diversity unlocks innovation and drives market growth. This is a finding that should increase efforts to ensure that executive ranks both embody and embrace the power of differences (Hewlett, Marshall & Sherbin, 2013). Furthermore, a more diverse workforce will increase organizational effectiveness (Thomas & Ely, 1996). There is also research that shows that the mixture increases the ability and job satisfaction and increases performance. Once we have equal teams it breaks down old norms. Companies can actually find economic growth in this. The benefits with diversity are several and since technology businesses occupy a central position in economic growth there is a lot to win by working for a diverse work field (Dautzenberg, 2012). However, in an academic study on gender differences in IT careers it has been concluded that the IT field is not immune to the problems of discrimination. Previous research shows that there are both social and structural barriers that prevent the IT industry from increasing the proportion of women and that these barriers make it more difficult to achieve gender equality. Social factors include social expectations, work-family conflict and informal networks. The structural factors are occupational culture, lack of role models and mentors, demographic composition and institutional structures (Ahuja, 2002). Women in the field of IT face barriers when entering and advancing in the industry and those barriers affect women's career entry, persistence and performance in IT (Ahuja, 2002). In this study, issues related to women's career entry, persistence and performance are being discussed without a specific order. Ahjua (2002) states that even if a woman finds a way to overcome barriers that may have stopped her from choosing an IT career, these factors may still act as barriers and challenges to her persistence and affect her performance in IT.

2.1 Social barriers

Social barriers are social and cultural biases that include the internal view that women have of themselves (self-expectations) as well as the external view of women that is held by society in general (for example stereotyping). In addition, social expectations and work-family

conflict are social barriers (Ahjua, 2002). Social barriers play a major role and lack of participation in informal networks is the main social barrier (Ahuja, 2002). Informal networks are described in the part titled Professional networking.

2.1.1 Social expectations

Women have in general higher levels of computer anxiety compared to men (Morrow, Preix, & McElroy, 1986; Igarria & Chakrabarti, 1990). As a result of higher computer anxiety among women lower self-efficacy can arise and thereby women's computer avoidance increase (Igarria & Parasuraman, 1989). Since anxiety has been negatively related to performance and persistence (Humphreys & Revelle, 1984) it may reduce women's prospect of both entering and persisting in the industry. Furthermore, the culture of computing education excludes and discourages many girls from pursuing this field of study (Castaño & Webster, 2011). Moreover, the image and practice of technology with respect to gender mismatches enormous. Plenty of men have a lack of technical competence, meanwhile plenty of women have extremely technical jobs (Faulkner, 2001). The gender differences in computer anxiety, attitudes towards computers and computer usage may be reduced through sufficient training, experience and lack of gender stereotyping (Stowers, 1995; Venkates, Morris & Ackerman, 2000). To summarize, in general, women tend to have a larger step into the IT industry, larger mismatches in expectations both from society and their own.

2.1.2 Work-family conflict

Work and family issues are identified as career barriers. It is likely that work-family conflict was more overpowering at the career choice stage before their children grow up. It continues to be a barrier but less overpowering when women have been working within IT long enough for managing issues by for example hiring help and when their children have grown up and become less consuming (Ahuja, 2002). Challenges are associated with personal and work demands, unnecessary time away from family and the hours required for work and travel (Orser, Riding & Stanley, 2012). Work-family conflict can be a cause of occupational stress. Conflict arises when demands of participation in one domain are incompatible with demands in another domain of life. This conflict can have an effect of the quality of family life as well as work (Netemeyer, Boles & McMurrin, 1996). Since women, throughout history, have focused on family and children, Ahjua (2002) proposes that women generally will experience the work-family conflict more than men. Furthermore, women and men who are in dual-career marriages do not get enough flexibility due to organizational structures in the workplace (Higgins & Duxbury, 1992). Research suggests that it is when women are trying to manage a career, are marrying and start their family they begin to lag behind men in terms of promotion (Ahjua, 2002). The stereotype of women being more committed to family than to their employer can be reinforced when women with full personal lives are perceived to have lacking commitment to their work and compared with men, therefore women may give the impression of being less serious about their careers (Barinaga, 1992). Employers' expectations on women may be based on social norms and organizational awareness of work-family issues, for example women are generally expected to be the prime caretaker in their households. Employers' may not promote women to critical positions because of their expectations that women will take maternity leave or reduce work hours after childbirth

(Ahjua, 2002). Furthermore, Truman and Baroudi (1994) found that women receive lower salaries than men even though they had the same levels of work experience, age, education and job level. Konrad and Cannings (1997) have suggested that one factor that explains gender differentials in salary and promotions is the variety of roles that women are expected to take. The roles as wife, mother and caretaker are generally taken by women during peak periods of their professional and academic careers.

2.2 Structural barriers

Ahjua (2002) draws on Kanter (1977) and Hennig and Jardin (1981) and state that the structure of institutions can work to limit opportunities. Moreover, structural barriers account for almost half of the variance in the percentage of female managers in organizations (Blum, Fields & Goodman, 1994). In the stage of career advancement, after several years of work experience, structural barriers are hardest for women in IT to overcome (Ahujua, 2002). In addition, examples of structural barriers are the industry structure of IT, the lack of role models and mentors and the existing proportion of women in the top ranks (Ahujua, 2002). Lack of role models and mentors are described in the part titled Professional networking.

2.2.1 Occupational culture

Several factors have influenced women's perceptions of occupational culture negatively. Many girls are left unprepared for and uninterested in computer careers (Wright, 1997). The technology sector has been described as "masculine, white, and heterosexual, associated with hard programming, obsessive behaviour, and extensive working hours" (Simard, Henderson, Gilmartin, Schiebinger & Whitney, 2008, 10). Also, there is a perception that the IT industry is a male and stereotypical "geek and nerd" domain (Tapia, Kvasny & Trauth, 2004). The IT culture is described as "largely white, male-dominated, anti-social, individualistic, competitive, all encompassing, and non-physical" (Tapia et al., 2004, 154). Moreover, women are perceived to be family-oriented and unwilling to travel or work late (Ahujua, 2002), therefore trends in IT towards globalization have also hampered women's chances of hiring, retention and advancement in positions that require travel and long hours of work. Moreover, employees within the IT sector requires constant updates of their skills, and this requirement can lead to long working hours which in turn can be difficult to manage (Castaño & Webster, 2011). There is also a belief that women perceive a career in an IT workplace negatively because of their negative self-perception of their technical skills. Women have perceived that they do not have the qualities that the IT industry requires in a job (Tapia et al., 2004). Industry-related barriers reflect the working condition and culture in the sector, such as colleague's inappropriate and dismissive assumptions with respect to women's performance, merit and career advancement (Orser, Riding & Stanley, 2012). Furthermore, gender bias in hiring, promoting and evaluating practices such as e.g. salary levels are industry practices that affect women's ability to attain leadership positions (Simard et al., 2008).

2.2.2 Organizational/institutional structure

Women's underrepresentation at the top is a gender bias that can be seen at board level in board memberships (Bilimoria & Piderit, 1994) and in top management roles (Fagan,

Menéndez & Ansón, 2012). There is no doubt that top-level leaders are disproportionately white men and that women remain underrepresented in top leadership positions (Morgenroth, Rink, Ryan & Stoker, 2015). People tend to promote those who are similar to themselves, therefore white men are more inclined to select and promote other white men (Hekman & Johnson, 2016). Traditional negative sex stereotypes, for example lower competence judgments, are placed upon female leaders. Furthermore, if high status groups, mainly white men choose to hire someone who look like them or to deviate from the status quo they are given the freedom to do so (Hekman, Johnson, Der Foo & Yang, 2016). In the opposite, when women advocate for other women it activates the stereotype of incompetence. Therefore once women have reached positions of power they may choose to not advocate for other women since they do not want to be perceived as incompetent, poor performers (Hekman et al., 2016). Thus it can be claimed that gender issues arise from other women as well as from men (Orser et al., 2012). Also, the need to travel increases with firm's globalization. Women travel considerably less than men and according to Gustafson (2006) this reflects the different positions in working life between genders and this reflect traditional gender and family role expectations. While the travel activities of women reduces when they have young children men in general travel considerably more than women regardless of family situation (Gustafson, 2006). Stereotypes of being family-oriented and unable or unwilling to travel may prevent women from chances to get high-level positions requiring international travel (Ahuja, 2002). Since female actors within the IT sector, in top positions, tend to take on more household responsibilities compared to men and have few children, (Djerf-Pierre, 2007) it indicates that women in top positions have a hard time balancing the professional and personal life (Edling, Farkas & Rydgren, 2013).

The composition of boards in IT companies, with predominantly male board members, affect opportunities for women to get access to positions as board members, nevertheless become board directors. Also, gender-diverse boards increase corporate reputation (Brammer, Millington, & Pavelin, 2009). That gender balance benefits business performance and success is confirmed yet again by a recent study by the Peterson Institute for Worldwide Economics in Washington. Researchers have examined the management structures of nearly 22 000 businesses from 91 countries and concluded that there is a link between the number of women in top and profitability. The results suggest that the presence of women in corporate leaderships position and female board members may improve firm performance (Noland, Moran & Kotschwar, 2016). Since structural barriers are present in several aspects within the industry they affect women in every position, but in different ways as illustrated in previous research. The following section will describe another aspect that has an impact on women in the IT industry.

2.3 Professional Networks

Professional networking is networking with focus on professional goals and the purposes of professional networks are many. It can be described as the exchange of information among like-minded individuals or groups or a community of practice where people with something in common share for example an interest or a problem. Individuals can improve their careers

and establish and maintain professional contacts within those networks (Aichner & Jacob, 2015).

A lot of the network research focuses on social networking websites, but in this study the focus is based on social networking activities that require physical meetings. Within the social networking activity research it is concluded that although people can participate in the network, they choose not to participate. Professional networking is known for being beneficial to people's careers, still people avoid professional networking because it makes them feel physically dirty (Nobel, 2015; Casciaro, Gino & Kouchaki, 2014) or do not feel safe in those types of environments where the feeling of being forced to meet new people may occur (Llopis, 2012). Networking behaviour of managers and professionals differs between people. According to Forret and Dougherty (2001) behaviours like socializing, maintaining contacts, engaging in professional activities, participation in community and increasing internal visibility are related to gender since women and men tend to interact in different ways. There are professional networks specifically for women. Those can for instance include workshops, mentor program or helps women with their careers by setting goals and strategies (Li & Wang Leung, 2001). Networks, mentoring and lack of role models is described in the same section since they can connect to each other if networks establish mentorship programs or provide role models. Some industry associations offer networking and mentoring opportunities that seek to inform women about career opportunities. Also initiatives such as programs can be offered to improve core skills that provide confidence in e.g. computer programming or through networking increase the sense of belonging (Cukier, 2004). Critics of many of these initiatives exist because of the slow rate of progress for women's advancement. Most corporate-sponsored organizations and programs are largely undertaken for symbolic reasons critics argue (Orser et al., 2012).

Mentors, sponsorship and role models can provide advice and social contacts that are essential for advancing in corporate ranks. Women tend to have less access to this social support (Tapia et al., 2004). Ahjua (2002) draws on Pfleeger and Mertz (1995) that the lack of role models is a major problem in attracting and keeping women in the IT sector. Research has found that educational and career encouragement becomes more important for women than for men (Tharenou, Latimer & Conroy, 1994), therefore role models become vital for women. It may be possible that professional networks can provide role models and mentors. Even mentors are important for individual's success in organizations (Ragins & Cotton, 1991). Ahuja (2002) argues that mentorships may be beneficial for women to develop and advance in their IT carrier. A relationship with a mentor may be formal or informal (Ragins, Cotton & Miller, 2000). There are career benefits associated with mentoring. Those women who have one or more mentors experience greater job satisfaction and job success (Allen, Eby, Poteet, Lentz & Lima, 2004, Riley & Wrench, 1985). Since individuals are comfortable interacting with those who are similar to them (Dreher & Ash, 1990) and prefer interacting with those of the same gender (Orser, Riding & Stanley, 2012) there is a lack of female mentors in this male-dominated industry that is not keeping pace with the women needing mentors. The lack of mentors may be problematic, as there are not many women in the sector, and since males seem to want to mentor other males there is a lack of mentoring

(Orser., 2012). In order to meet potential mentors, professional networks might be a way to go.

Also, informal social networks exist in the IT sector. Informal networks are important for advancement within the organization and within the IT industry. Those networks are primarily made up of men and are effective tools for male advancement. A typical characteristic of this network is masculine activities with sports talks and golf events or other traditional and cultural roles (Ahjua, 2002). Those networks are often termed the “Old Boy’s Network” where information in a less formal setting being shared between men. In these networks men learn to trust each other and establish personal relationships. Social networks are important in areas like status and power in organizations (Morgan et al., 2004). Relationships are important for men in their later carrier stages, while it for women in the other hand are important through all of their carrier stages (Gallos, 1989). Problems with those networks arise when women become excluded from important information and recourses. In fact, social networks may play a critical role in the exclusion of women from opportunities in the field (Morgan et al., 2004).

2.3.1 Significance of professional networks

To summarize, a model of barriers faced by women in the field of IT has been presented. Social barriers include social expectations, work-family conflict and informal networks. The structural barriers are occupational culture, lack of role models and mentors, and organizational/institutional structures (Ahuja, 2002). Informal networks, lack of role models and mentors are described in the previous section titled Professional Networks and therefore presented under Network factors in table 1, a summary of related research. This study aims to provide deeper understanding about the significance of professional networks within the studied context.

Theoretical concept	Content	Description	Key references
Social barriers	Social expectations	Computer anxiety, gender bias	Castaño & Webster, 2011.
	Work-family conflict	Personal and work demands, hours required for work and travel, roles as wife, mother and caretaker	Orser et al., 2012. Truman & Baroudi, 1994
Structural barriers	Occupational culture	Perception about IT culture, self-perception, gender bias	Simard et al., 2008. Tapia et al., 2004.
	Organizational/ Institutional structures	Gender bias, board members	Noland et al., 2016. Hekman, et al., 2016.
Network factors	Perceptions of networks	Establish personal contacts, career opportunities, provide confidence, increase the sense of belonging, exclusion	Aichner & Jacob, 2015. Steir & Yaish, 2014. Forret & Dougherty, 2001.
	Role models and mentors	Benefits such as greater job satisfaction and job success, lack of mentors	Ahuja, 2002. Orser et al., 2012.

Table 1. A summary of related research

3 Theoretical framing/Research methodology

3.1 Method

Professional networks for women in the IT sector are examined in the study through a qualitative research method and the use of qualitative data, interviews, has been used in this study. The aim with qualitative research is to create a deeper understanding of e.g. attitudes and to understand people's perspectives and motivations. In this case it is suitable with the research method that is to understand and explain the social phenomena: to find out what significance professional networks have for women in the IT industry (Myers, 1997). Due to the scope and research question of this study the choice of a qualitative approach became a natural choice. Since the approach is suitable to form a deeper understanding in a specific context and perceptions of a phenomena the qualitative research approach tend to capture such aspects (Yin, 2007). Another connection to a qualitative approach was made through, as Yin (2007) describes as a favourable approach when studying a current area in its real context. In this study the qualitative method helps to seek to understand women's perception of networks, role models, mentors and how they think about social and structural barriers. However, if a quantitative research approach were chosen for this study it might have been more cumbersome to capture perceptions and expectations. Interviews are not, traditionally,

a part of the quantitative approach which is another reason for the choice of a qualitative research method.

3.2 Data collection

Qualitative interviews are the data-gathering tool chosen in this qualitative research. This is a very powerful data gathering technique since the researcher can interview key individuals about both facts but also their personal opinions (Yin, 2007) which suits this study's scope and research question. Data was collected through semi-structured interviews rather than structured. This means that there are frames to follow in the interviews based on some prepared questions but the interview form is also open for improvisation and flexibility (Myers & Newman, 2007). Further, questions have been asked to selected respondents in a more discussing form. The questions were asked so that respondents could elaborate, which were the plan B if the answers were short. Ten respondents were chosen for the study. In order to find women who are members in those networks an act of search began with googling female networks in Sweden. When no open member list was found, the next step was to find out who had joined the largest network's Facebook-page. LinkedIn provided information about how many years women had been working within the sector since it was important that the respondents had experience and not was new in the industry. Private messages at Facebook and LinkedIn were used to make contact with those women. After finishing the first interview the respondent were asked to give e-mail addresses to colleagues who also were members of the network. E-mail request were then send to three women. Interviews took about one hour depending on how much the respondents did elaborate and answer on the questions. Respondents were women in the IT industry who had worked in the sector five years or more in order to have experience to share which they most likely would have less of if they recently begun to work in the sector and therefore have not explored e.g. barriers. These ten women together were located at four different workplaces, in this study named W1, W2, W3 and W4. The respondents were at a varying firm levels and had titles such as developer, analyst and consultant manager. These ten women together represented four different networks, in this study named N1, N2, N3 and N4.

Respondent code	Operating position	Workplace	Network number
R1	Consultant Manager	W1	N2, N1, N3
R2	Consultant Manager	W2	N1, N4
R3	Expert Analyst	W3	N1, N4
R4	Developer	W4	N1
R5	Consultant Manager	W4	N1
R6	Consultant Manager	W4	N1
R7	Consultant	W1	N1, N2
R8	Sales Manager	W2	N1, N4
R9	System Analyst	W1	N1, N2
R10	Consultant	W1	N1, N2

Table 2. Respondents code, operating position, workplace and networks

The interviews were conducted during March-April 2016. All of the interviews were staged in an office with conference room so that no external person could hear or disturb the interview. Each of the interviews were audio-recorded and then transcribed.

3.3 Data analysis

The author transcribed the ten audio-recorded interviews. Respondents name, company where they work as well as which network they are members in are not mentioned in order to protect the respondents' privacy. Based on related research about barriers women face in the IT industry three concepts, social barriers, structural barriers and networks, were coded as concepts in the study. Table 3 displays the coding scheme. The analysis has been made on the basis of those concepts. Each transcript was read carefully and the respondents' answers, descriptions of and explanations for various barriers and network were highlighted by the use of colored post-it notes. The content were then subjected to a more rigorous analysis. Computer was used to write down the content in a document, from highlighted notes in each interview and quotes were included at the same time. The same process was used methodically for interview 1-10. Since interviews were made with Swedish-speaking respondents this process was done in Swedish as well. Translation begun after the ten interviews were analysed.

Theoretical concept	Content	Questions asked while coding
Social barriers	Social expectations Work-family conflict	How do they talk about social barriers? Have they experienced it by themselves, or talked about it at work or in network?
Structural barriers	Occupational culture Organizational/Institutional structures	How do they talk about structural barriers? Have they experienced it by themselves, or talked about it at work or in network?
Network	Perceptions of networks Role models Mentors	What is the deal and characteristics with networks for these women? How do they talk about mentorship and have they experienced it? Have they been having role models or experienced the lack?

Table 3. The coding logic

3.4 Critical reflection

The qualitative interview has some difficulties, problems and pitfalls that can have impact on the result. During interviews the researcher is talking to respondents who are complete strangers or have met a few times. This means that the respondent may have a lack of trust for the interviewer and therefore may not reveal information that might be considered to be sensitive to share with a stranger. To help build the trust that encourages more open interviews the first impression were important, dressed in professional clothes, provide a background to the study and give an introduction to the interview and its structure before begun. Also, asked for permission to record the conversation and clearly explain the purpose

of the record, which was that it would only be used in order to transcribe the interview. Furthermore, questions can be hard to answer since some of the respondents do not consciously think of the subject of women in IT or equal gender representation very often (Myers & Newman, 2007). It is not always clear that respondents fully understand the questions since the meaning of words often is ambiguous (Fontana & Frey, 2000). To make it easier to talk about the subject, open-ended questions were asked. Depending on the level of responsibility questions were to some respondents asked several times in different ways in order to get a complete answer. Moreover, the respondents may have felt they were under time pressure since many questions were asked and some of the respondents had meetings to attend to after the interview and therefore may not have elaborated with their answers as much as they may have without time pressure (Myers & Newman, 2007). Once a respondent expressed that she had a meeting to attend to after one hours interview, the interviewer took responsibility to keep track of the time and ensured the respondent that the interview would be completed in time for the next meeting. In addition to the aforementioned aspects another assumption were made as to where the interviews were held. Yin (2007) expresses a difficulty in gaining trust and good rapport with respondents when interviews are held in unrecognized, for the respondent, locations. This risk was mitigated through conducting all of the interviews at each respondent's local office in which the respondent felt comfortable.

4 Findings

Respondents were ten women in the IT industry. In common is that they had worked in the IT sector five years or more. They were at a varying firm levels and had titles as developer, system analyst, sales manager, expert analyst and consultant manager. Some of the respondents worked at the same office or at the same company but in another city while some respondent worked in other companies.

4.1 Social barriers

In this section the main barriers discussed are social expectations and work-family conflict, which all of the respondents mentioned. Prioritization and expectations, whether they come from the women themselves or from people around them colour their everyday life. Moreover in their professional roles they experience several social barriers that affect the women in this study in various ways.

Women in the IT industry have a constant struggle between the multiple roles as wife, mother, caretaker, responsibility for the household and childcare according to the respondents. One woman said *“Do I prioritize right, should I be with my kids more, there is a constant process in my head”* (R1) and when women have talked about this in the network they confirm that they bring their role as project manager home. The boundary between work and spare time is not clear. One respondent (R1) described a woman who had a challenging situation at another company, she said *“when I am at work, I never think about family, but when I am with family, it happens quite often that I think of the job, I would not want it too be this way”*. To combine job and family, the respondents recognize that their parents and parents-in-laws think it is hard for the husband in case the woman traveling with the job. As

an answer to this one woman expressed *“but no one thinks it's hard for me when he is traveling and I have to take care of the children”* and *“certainly there are expectations of women that they should take care of all this”* (R3). A woman said *“Now that I travel a lot for my job, my mom and mother-in-law commented that I am going away and I hear what their values are”* (R9). In the same time she described the travel with work as *“fun with new challenges, but they think I should stay home and take care of family”* (R9). More external expectations are described as *“The family thinks it is strange that I should travel and if it would have been my husband, they had certainly not said anything, and that is typical, even though they say ‘you are so good’, there is something there, they do not think it should be like this”* (R9). Questioning comments appear when women take maternity leave for short periods as six months. A woman said, *“I do not think there is any difference in the IT industry and other industries in society today”* and *“I have been on maternity leave more than my husband, but it is very common”* (R4). A consultant manager felt that the employees have fairly equal families but the women take care of the children more. She said *“I feel pressure at work while the kids are sick and I have a thousand things to do at home. If I should see for myself I am between job and family very much and it is a major conflict to be able to handle it when I want to perform at both places”* (R5). It is complicated to have children at the same time as women want to make a career according to respondents. Female characteristics such as high ambition, commitment, empathy, difficulty in letting go of control of things, are often characteristics that are liable to lead to exhaustion. Therefore it is important to find the balance so it does not get too much at work in relation to the home, the respondents indicate. One said *“I have always worked hard, had full time at home and have been stressed out because of it and it is a dangerous trap to fall into, having 100% at home and 100% on the job”* (R7). Women are expected to have several roles, do it all, and have a career and family at the same time. Even though it is many roles respondents felt that they were not enough. When considering changing jobs the security becomes an important factor. In connection with a reorganization many colleagues left that company but the respondent chose to stay because she had just given birth to a baby and wanted to feel secure at work.

Respondents have experienced preconceptions of gender roles and stereotypes. Respondents see it as a problem that women are devalued, there is a belief that women can not engage in the same way as men based on perceptions as they are weaker and they do not believe that they have the same potential. One woman said, *“Girls and boys have different conditions, it should not be denied, still. Just look at how to take out parental leave and salary and yes there is still much to work with”* (R2). Respondents have experienced guys having an easier time advancing and one said *“I can see it on my colleagues here that it is so, women more often have more reasons to not be able to travel in the form of children and family, and you should take care of the grandchildren, and there are hobbies that are playing a larger role”* (R2). One of the respondents talked about one incident when she was told she had a male behaviour since she were results-oriented and targeted. Companies have arranged activities such as sauna and bath, where the women did not feel comfortable. A company had only one female employee and wanted to get her to thrive by protecting her from too much work, with the consequence that she had not developed and therefore she searched for a new workplace. Moreover respondents highlighted the importance of language

and that women have to speak up. One woman described the problem as *“even small things about stereotypes, how to treat men and women differently. Both men and women are involved. We do it because it is rooted in us and it requires a lot of thought”* (R8). In an earlier workplace a woman experienced that *“everyone took for granted that I was secretary to one of the men when I came to meetings”* (R10). When someone says or does something inappropriate it is important to say something about it directly after it occurred. It has happened that male colleagues have spoken to women in the form of talented schoolgirl. One woman said *“I notice it especially among those older developers that have this preconceived notion that I can not, it shows terribly clearly, little one”* (R4). The feeling respondent expressed was that women have to prove themselves more than if they were guys. They do not want to look like an idiot and therefore they do not want to ask men for help. One woman said, *“If I have a problem to solve, I will go to a woman”, “I do not want to look like an idiot”* and *“then I have some anxiety about why I am so bad, that is what many women do”* (R4). If there were a better gender balance it would certainly look different, it might be a different jargon, a different way to be and behave towards each other, it would be a different softer and more forgiving climate, several respondents described. More feedback would probably be given, more transparency and it might become easier to ask for help. One woman said *“it will be nicer, softer, a different atmosphere”* (R7). In line with her, other respondents said that a better gender balance would lead to *“a different atmosphere and softer if you mix women”* (R10) and *“more cheerful atmosphere, pleasant environment...more respectful”* (R9).

4.2 Structural barriers

In the following section both occupational culture and organizational/institutional structures are covered in accordance to what the respondents discuss. There are some barriers which cover competence and others that touch upon culture within both the industry but also within the organization the respondent/s belong to. Another main aspect of this section is the “built-in” perceptions and assumptions made by others when it comes to female managers in a male dominated domain.

The main answers on why the respondents begun to work in the IT industry were that it just happened by chance. Respondents were asked why few women compared to men seek out to the IT industry. They believed one main reason is because of a false picture about IT, that it is only computers and technology. One woman said *“When I think IT itself I think of technicians who work with computers. My children would never think of working with what I do and they do not understand what I do, I work with the data but there is not much data actually”* (R10). Another respondent said *“We may be poor at explaining what it means and we live in gender roles where technology is masculine”* (R8). Girls fear of technology and the belief that it is difficult might increase by the idea that IT is hard and that IT require you to be intelligent and clever, one respondent stated. Guys who have spent much time playing computer games are not afraid and dare to try more. According to respondents people in general do not know what it means to work with IT. There is no one who knows what they are doing at work. The image of a stressed computer nerd shown on film might deter many girls. One woman said, *“I think there is a notion that technology is not suitable*

for women and that IT is very technology oriented. When you are young you might not see the connection with the business operations and the desire to improve the world through IT” (R5). Another respondent said, “People do not realize what you can choose to be, there is such an incredible variety. There are always new ways, new tracks to choose to engage in. You have to understand what kind of choices you can make and early get up interest in technology” (R6). The fact that men dominate the industry does not make it easier. It may seem hard to study and work with almost only guys and it becomes a lot of boyish talk about e.g. typical male interests such as snowmobiles and whiskey. Another aspect is that girls tend to go toward project management. Consequently, very few women remain as role models in the technology such as e.g. architects. More role models are needed who stay close to the technology. Women are looking for companies where the gender balance is good so it is an important factor. A female boss has influenced the choice positively for women when considering applying for a new workplace.

The picture of the IT sector, where nerds drinking coke and does work during nights is completely wrong according to the respondents. Respondents argue that the perception of occupational culture of IT in universities and colleges that incorporates extremely long hours, late nights, high focus and nearly obsessive behaviour are old and probably were true about twenty years ago. Few firms have it that way today one believed. Furthermore, there are women who are interested in technology. In a culture sending signals that no women are welcome, the profitability will most likely reduce. The culture from above touches the entire company. Respondents have been exposed to colleague’s inappropriate and dismissive assumptions with respect to their performance. One woman said *“I have naturally experienced in the social context in which it is assumed that I am not a local manager if I am there with a man. I must in a different way clearly present my role and me in a different way than I think a man have to do” (R1). Also, there is a big difference how men and women act in what they believe about themselves. One of the respondents said “It will come with a different image of yourself if you are a woman than if you are a man because there are perceptions in the community how a man and woman should be” (R5). One woman described her self-perception by saying “I have no technical training. I know billions of abbreviations, but I do not know how it is to work with them so that has been a challenge for me and there perhaps that is a lot about confidence... I know nothing about the technology” (R2).*

There are still structures with male activities like whiskey clubs and it makes a difference because the activities will allow participants to get knowledge and feeling for both individuals and businesses in a different way. Women’s networks are a way to meet this with. One woman said *“Earlier in my career, it has been very clear how this male sphere affected a lot” (R2) and at previous workplaces it was a very boyish culture and it was male management the entire time. As one single woman working at a company with only men she were yelled at when she was working on a policy on alcohol and drug use. The atmosphere was significant with old men and one of them yelled that they have to have a little fun at work. Another woman said that one possibility is that “there are things you do not think of” (R9) counted as sexual harassment and another woman said, “you get used to male jargon, sexist jokes” (R7) and several respondents have described a situation where there has been*

calendar with naked women at their previous workplace. In a male-dominated workplace there was a calendar with naked girls when the first woman started working there. Shortly thereafter they hired another woman and the gender distribution became much better, also the situation for the woman was better and she noted that, *“something is happening with the culture when the gender representation is better”* (R5). A woman working at a company with unusual 40% share of women in the office said *“We have employees who come from other companies and competitors saying we have a different culture, a different feeling, a different atmosphere, and then several pointed out that it is good that we have female managers”* (R2).

There are barriers women faces in order to advance and make a career. One women commented her career as *“I do not think I have acted correctly every time and I have not received favours at all times because I am a woman and behave like a woman in many ways. I have to change my female behaviour and do something more manly, but if I would do it all again maybe I should have made it the male way to get the job that I would like to have”* (R8). It is easy to recruit people who are similar to the recruiter, as a consequence, *“when the IT nerds and computer nerds are hiring new employees, they hire nerds. So you hire like-minded”* (R4). Likewise *“men recruit men”* (R9) and *“it is easy for men to hire those they know, they can relate to the person and when they should recruit a woman she thinks differently”* (R6). On several occasions one of the respondents have noticed that *“I earned less than men with similar tasks“* in terms of statistics and locally in the office, *“then I felt disappointed“* (R6). Another woman said that *“nothing has happened to the differences in salary in 30 years, why not? Why is it so slow?...Is it because of how to communicate this?”* (R1). Also, if women go to events, they notice that they in general are underrepresented, which corresponds to how the industry looks overall.

To have a predominant proportion of women at the top are unusual but it does matter, it will be *“focus on other issues, talks about other things. The women may have it more difficult to be heard and take space in the room if there are few women in the room. Is it more evenly distributed in gender tends to give in better”* (R8). The respondents agree that *“it should be mixed boards”* (R9) and that an overwhelming proportion of women in management have been shown to play a role. One woman said *“I think a mixed board is better than a whole-dominated board regardless which way it may be”* (R10). Based on the management teams one of the respondents have been in she said *“girls have significantly more nerves outward”* and *“I think girls are more sensitive and perhaps more caring about others and more concerned about that others feel good”* (R3). There are beliefs in equal gender representation, one woman said *“if there was a better balance of feminine and masculine at the top, the company would make more money, it is more profitable”* (R2). Another respondent claimed *“there is an incredible amount of research showing that equitable management, equal boards give better results, provide better financial results and I believe this is because men and women have different risk mindset and I think the combination of how to think about the risks, investment areas, more successful than if you have a management team with only men or only women”* (R3). Additional, one woman said that *“you can get other perspectives and other qualifications in boards or in other contexts if you have mixed both men and women”* (R4). It is important that there are women in

leading positions, but *“when it comes to the top, nothing happens”* (R8). One woman said *“I think that like-minded employ like-minded so in that way it might be good with women on boards but looking at the women who come into the boards, they are quite masculine women I think. They will continue to employ women or men hiring men to show that they are not women who only employ women, so I think it is a big problem”* (R4). Another woman commented the losses companies does by saying *“It's a big miss by companies that do not handle it. You see things in a different way, it becomes another dialogue and communication about things and that you get with every perspective, I think it is really important”* (R6). Other respondent also believed that it is good when both sexes are represented. One said *“It will be a softer attitude or problems taken from a different direction, to get a good discussion”* (R7). Another respondent said *“There must be female leaders at all levels, I think it looks pretty good at my level as local manager but when looking above the gaps becomes major”* and *“It is very important that women are represented at all levels, the board groups, management groups, at all levels of management so it is very important factor for the industry to become more equal”*, and she wonder why, *“it can not possibly be that there is no competent woman for regional positions. I can get angry, surprised and thoughtful. What is it? Are there no women looking for top roles?”* (R5). The belief is that it is common that men travel at work. A woman had a role with international travel to another Nordic country where *“everyone was very sceptical that there would be a girl from Sweden, organizing and work there”* (R3). Another woman was not interested to travel with work after she had her baby, *“I myself have not wanted to go since I got my child”* (R6).

4.3 Networks

Perceptions of networks, role models and mentors are the three main take-aways' from the following section. The respondents shine light upon their perceptions of what roles professional networks play in their professional lives and in their roles. First the networks that the respondents belong to are described and second, reasons for joining the networks are discussed. Furthermore benefits of and criticism towards the networks are described. Several respondents view the possibilities given via networks as positive and a way to enhance their professional lives although there are room for improvements.

The majority of the respondents were members in two networks for women. Some were members in one network and one of the respondents had experience from three female networks. The one who have been in a network the least time was about 1 year while the one who has been involved in a female network for the longest time had been active for 13 years now.

One of the networks, N1, was started by an IT consulting company and has approximately 3 000 members in several locations in Sweden. Meetings are continuously arranged around the country and women within the IT sector are welcome. Second, an initiative to promote female leaders in the company is the newly established N2. The network was started in recent years and aims to increase opportunities and to improve conditions for female employees to develop and thrive in the company. Meetings are being organized in local offices around the country and therefore the number of attendants varies as the amount of women in each office

differs. Third, N3 is a leadership-training, a change and trade program that was established about ten years ago and run by a member organization for companies in the IT and telecom sector. Around 20 companies are participating in efforts to bring the issue of gender equality and pursue leadership issues, with the purpose of getting more women, particularly in senior positions. The program is assigned a mentor and network formation. Fourth, N4 is aimed for female leaders in organizations with significant position in this region. The network is open to all local companies, even competing businesses. There are 140 participants. New participants can join the network by being recommended by existing participants. The network is based on a voluntary basis and expectation is that participants are willing to be involved in and responsible for the arrangement of a network meeting per year. The purpose is to achieve personal development, share experience, get experience in different areas, business and professional role, replacement of leadership, exchange in a relaxed group, social sharing, a network to collect and receive energy from. Also, “high ceilings”, with the opportunity to touch many areas, integrity in the group and to get to know each other and enabling unplanned contact and support.

When women approached networks the motives for them were to increase their knowledge and get inspiration in an area that they have interest and passion for. One respondent were motivated to get more women into the industry and several of them expected to meet like-minded people, get suggestions, ideas, input and development. Other reasons for becoming a member was to discuss issues between the women, sharing experiences, take advantage of all the opportunities available and because it sounded exciting and fun. One respondent expected to develop her leadership skills and get a mentor outside the company who had the courage to provide feedback in a different way. Some of the respondents saw career and business opportunities. Since networks can have an impact on their career it is a good channel for making new contacts, a lack of networks may have a negative impact. One women said *“I wanted to join the network partly to make contacts and meet the other women in the IT industry and listen to what they do, it can open up opportunities for jobs in the future, business opportunities, recruitment opportunities so it is both for me personally and for my company”* (R5). Another respondent said the network is *“good for me as a seller to be able to build relationships with these women I can sell to, that can help me and the company to sell more”* (R8).

4.3.1 Benefits

When evaluating what female networks have given so far for those women the main answers were that it gave lots of contacts, female colleagues, role models and energy. Also, networks affect the ability of women to make a career and get a job. The perception is that during the meetings you can talk about what ever you want. The respondents said they learn lots from others, gets inspiration and information. One woman said *“If you have experienced a situation where you did not know how to handle it, then there is someone to talk to about it”* (R9). Respondents feel that those networks make a difference, mainly, it has made a difference socially since they met women in the same role, in other workplaces or positions. They get to know people and get an insight into different businesses and companies. They see each other and get a better picture of those who are in the industry. It is an opportunity to see other’ faces and their offices when the network change local for the meetings. Respondents

have received external contacts and shared their experiences and knowledge. One woman said, *“I have learned things I would not otherwise have learned”* (R2). They get new positive energy and support that they can share with their colleagues. The meetings are described as interesting with good speakers, it provides a variety of topic and gives a energy-boost. The atmosphere is described as *“incredibly good”* (R6) and another said *“It is fun to see these girls, women and ladies, you get to know each other in a different way than if it is in roles as the supplier and the customer”* (R2). They can help each other to get new jobs, recruit to their own organization, give and receive tips and carrier advice. They share thoughts of others how they solved challenges and problems. It is also an opportunity to buy someone over who seems not satisfy at her current workplace. Respondents have used their contacts to do better in their jobs. One woman felt *“It is always a strength when one belongs to a group and feel that you have community to create a We, I fit in, and that feeling makes you inspired”* (R8). The networks provide personal development by meeting other women with similar challenges. With everyone involved it becomes good discussions. In some of the networks women have read how gender affects business and how people that are about to recruit someone think when they read CVs. One woman said the networks have given her *“the rhetoric, the arguments to be able to talk for myself and for a more equal gender balance”* (R3). Several of the respondents have described how those networks have helped them grow and by making contact with others by going outside of their comfort zone.

The networks significance for the underrepresentation of women in the industry one respondent commented as *“there is so much that affects, how many people are looking to IT education and conjunctures. I would say that the networks had great impact on the IT industry”* (R5). There are many benefits with an equal sector, a woman said that *“You get the views, opinions, perspectives in a different way if you are represented by both sexes. IT systems can not be produced by males if they are for both men and women, society is composed of an equal number of men and women around, and on which should also the industry look like... it is important for IT systems we are building that it is good for the whole community and it is important for companies to become more profitable. We (the company) get different views and opinions because we are different”* (R5). Another women said *“if you want to keep up with the industry that develop much as everyone uses technology so the more different people are with the more ideas you get, which affects the company's competitive”* (R9).

Another perception is that female leaders and role models can make it easier for women to advance. *“I would not be where I am today if I had not leaders who have seen me and ensured that I had been given those opportunities”* (R3). One benefit with the networks is that they can show role models. One woman said *“When I see that my role model can do something that I want, then I think that if she did it then I can do it too”* (R2), likewise *“you can have role models and see that she has succeeded in what I want but do not dare to do”* (R8) and *“it is great with strong role models and see that we are so different from everyone but everyone is needed in one way or another”* (R2). According to the respondents the IT sector and society need to generally become better at highlighting women. One respondent described that most of the women she hears about are specific ones and said *“it would have been great to have other female role models than those found in society in general, for the*

women who are the real IT-nerds but there are others that are just as important as filling a great feature” (R4). This woman explained what she have seen as a current lack when it comes to role models when she said “I think there is no female role models or those who are here are the female IT nerds that we see in movies” and “Why not ordinary talented women who may have a family life alongside and who have other interests but still make it work” (R4). After a while, women tend to take on project manager roles and less technical roles. Consequently, there are few women who remain in the technical field and more role models are needed who remains in this field. As one respondent said women in IT could have a male role model as well as a female, “A role model is a role model. I see no difference between having a female role model and a male, however to have women higher up in status can be a completely different atmosphere, work environment, jargon and much can change by having women in senior decision-making positions too” (R10). Respondents believed that companies would provide more money and become more profitable if they had a better balance of feminine and masculine at the top. A woman referred to research and said that an “equitable management, equal boards provide better results, provide better financial results and I believe this is because men and women have different risk-mindset and I think the combination of how to think about the risks, areas of investment, will be more successful than if you have a management team with only men or only women” (R3). Some of the respondents had a mentor at their previous workplace, while others have a mentor today. A mentor was someone either within the same organization or in another company in order to receive tips and perspectives from other angles.

4.3.2 Criticisms and improvement possibilities

One respondent felt that her network has not fulfilled its purpose in a way she had hoped. Another said, “It is very nice and rewarding, but it is nothing that I can prioritize as first” (R2). Some networks have been focusing on inspiration rather than problem-focused discussion. In the consulting industry there is interference from the top to perform, as one respondent experienced it has surfaced in the discussion on the network, but there has been no lecture or deeper talk about it. Conflicts between work and home, work-life balance and how to have time and prioritize has been discussed in some of the networks, beyond that, no initiatives have been taken in those networks to create lectures or discussions about barriers. The respondents have several suggestions for network improvements. Some respondents expressed criticism of a company using their female network to build their brand and thus use the network for commercial purposes. When participating in companies’ own female networks is not paid working hours it signals how much the company want to invest. One said, “I have neither the time or energy to get involved” and “if you want to promote this kind of stuff, I think it should be at paid working hours” (R10). When networks are open to all women in the industry it makes it difficult to find the right ones to talk to. Women feel there is a lack of interaction when the lecture is more in focus than discussions. In order to start talk in a different way where it feels easier to discuss problems one suggestion were to create small groups. Problems such as the balance of family life and work have generally not been discussed in the networks but it is still a challenge to get together home life, career and job. Respondents were interested in discussing how others perceive these issues. One woman said “as one of our consultant managers participate it is not quite the right forum to talk if

there are any problems you feel you would like to talk about when the manager listening” (R9). When companies own female network are lead by a manager respondents think it might be better if it is employee-led when it is a network for all women in the company. One respondent describes that instead of developing and helping the industry to make a difference outside the network, the risk is that focus stays at a friendly level where participants exchange experiences. According to her there are two problems. First, if participants get stuck in the pattern they will not use the network to make a difference in their career or to improve gender equality in the industry. Second, the risk is that some companies exploit that they have a female network symbolic without realization. She described what she would like to add more time to by saying *“we should take the opportunity to actually discuss how we can change this, how can we help to make it a little different for the next generation and society as whole”* (R8). Moreover this respondents said *“right now questions about our spare-time steals time from discussing gender issues, leadership issues, work-life balance, career, how I as a woman can relate myself to different things”* (R8). To have a clear goal and a common mission strengthens the group. To get more knowledge of why the network is important has been requested.

In women’s networks *“it is a little taboo to talk business while in men it is more natural to use the network to talk business”* (R8). The respondent who described this felt that if it would be a mixed network with both women and men, the male culture would take over and women would probably adapt to it, consequently, nothing would stop her from talking about the services she sells. Another respondent explained that in female networks there are a lot of talk but in a network dominated of men they have been trying things she would not otherwise have tried, such as developing her technical skills. Within networks that are aimed towards both men and women with a focus on core-technology subject women experience to feel lost and uncertain. One woman described it as *“I have a different language than what they have so that way I’m a little off”* and *“I feel that I’m not as smart or as technically clever as they (the men)”* (R4). For women with technical positions those types of subject are of interest but the belief is that if the network only were aimed for women there would be a different openness and stupid questions would feel more allowed to ask.

When there are networks with only women, it is not possible to change the other genders behaviour and knowledge and with only women who talk about the problem of underrepresentation in IT this will solve nothing since *“men have to be involved for a gender equality policy”* (R7). It requires that men change their way of thinking. Even if women become aware of their behaviour and issues, men also need to know about them. One respondent said *“I would like to see us working broadly across gender boundaries with gender equality issues instead of leaving it to the women’s network with just women”* and *“It is a management issue to have men and women included. Make it clear, perhaps mandatory to attend the meetings”* (R8). Suggestions are to instead of those networks specific for women either create male networks or mixed network with both men and women where the aim should be to discuss issues and achieve gender equality. This woman-question is sensitive, one respondent said *“to get men to be involved it can not be called a women’s thing, instead you have to call it a company-thing”* (R9). Networks for only women can segment men, therefore one respondent suggested that *“maybe it should be a network where*

we focus on female issues but where we welcome men when there is a lecture that can be shared, otherwise they would be wondering what we are doing and why they can not join” (R7). One respondent suggested that companies should create male networks for a year to increase knowledge and insights, and then shape gender networks in the organization where men and women together discuss how to become better.

5 Discussion

To begin, the respondents believed that the benefits with diversity are many and that the underrepresentation of women is a very important issue of good reasons. The respondents had social as well as economic arguments that goes in line with research stressing that since technology businesses occupy a central position in economic growth there is a lot to win by working for a diverse work field (Dautzenberg, 2012). This study support previous research that showed that women in the IT industry face barriers (Ahuja, 2002). This study also provides benefits of and criticism towards the networks and shows that there is room for improvements.

Many of the women say they came into the IT industry by chance or because there was available jobs in the sector. According to respondents people in general do not know what it means to work with IT. The description of the technology sector as “masculine, white, and heterosexual, associated with hard programming, obsessive behaviour, and extensive working hours” (Simard et al., 2008, 10) does not according to the respondents encourage girls to join since they more likely will be anxious or uninterested. Instead, according to the respondents, the belief that IT is difficult might increase due to the complexity of IT within organizations and that the stereotype of a male industry might frighten women, at the point of entry to the sector. So, the picture of the IT sector is completely wrong according to the respondents and this can damage the chances of getting girls to choose IT.

5.1 Social barriers

If there were a better gender balance it would certainly look different, it might be a different jargon, a different way to be and behave towards each other and it would be a different softer and more forgiving climate. More feedback would probably be given, more transparency and it might become easier to ask for help according to the respondents. One woman noted that *“something is happening with the culture when the gender representation is better”* (R5). Another said *“We have a different culture, a different feeling, a different atmosphere, and then several pointed out that it is good that we have female managers”* (R2). Organizational cultures make few women attracted to the IT industry. Female employees face the expectations of others and stand out according to respondents. Respondents have met assumptions from men that they have a lack of knowledge and men expect them to be no good at their jobs. Since the respondents express feeling low confidence in some issues they tend to not ask men for help, with a fear of feeling like an idiot. It might be beneficial for them to be surrounded by more women, creating a better atmosphere and not causing individuals feeling like they know nothing about technology. In addition to this, research has shown that colleague’s inappropriate and dismissive assumptions with respect to women’s

performance, merit and career advancement exist and industry-related barriers reflect the working condition and culture in the sector (Orser et al., 2012).

Respondents have experienced preconceptions of gender roles and stereotypes. They felt that they are expected to have several roles, do it all, and have a career and family at the same time. As research have shown women have a constant struggle between the multiple roles as wife, mother, caretaker, responsibility for the household and childcare. It is complicated to have children at the same age as women want to make a career and this can certainly be part of the reason that fewer women are in high positions. Answers from respondents corresponded with research that shows that personal and work demands, unnecessary time away from family and the hours required for work and travel are associated challenges (Orser et al., 2012). Research has shown that the travel activities of women decline when they have young children (Gustafson, 2006) and one woman clarified that she was not interested to travel for work after she had her baby. Women who have traveled explained that they have received disgruntled comments from parent's in-laws. What concerns parental leave most of the respondents were home during a longer period than their husband and for those women who were back at work soon after having a baby they received comments. Some women have noted, what research have shown, that women receive lower salaries than men (Truman & Baroudi, 1994; Stier & Yaish, 2014).

5.2 Structural barriers

There are barriers affecting women in IT according to the respondents, concerning how few women work within IT, that they are excluded from top positions and in boards. This goes in line with publicized research that indicate that gender bias in hiring, promoting and evaluating practices such as e.g. salary levels are industry practices that affect women's ability to attain leadership positions (Simard et al., 2008). According to research considerable efforts to reach a gender balance has too small effect (Castaño & Webster, 2011) and respondents are frustrated, one wondering why nothing has happened to the differences in salary in 30 years. To increase the proportion of women, we need to engage the corporate management. Research as well as the respondents indicates that equality creates greater profitability and that it is important that women are represented at all levels of management, the board groups and in management groups (Noland et al., 2016). There is a belief that companies have better profitability by having women in management. Research has shown that it is important that there are women in leading positions. In other words it can be argued that if companies has better balance of women and men at the top they make more money and become more profitable. The respondents agree that "*it should be mixed boards*" (R9) and that an overwhelming proportion of women in management have been shown to play a role. Respondents believed that companies would provide better money and become more profitable if they had a better balance of feminine and masculine at the top. That women are represented at all levels is according to the respondents as well as researches an important factor for the industry to become more equal. As research implies, respondents believe the presence of women in corporate leaderships position and female board members may improve firm performance (Noland et al., 2016). Also, to have women within the company can lead to more women applying for positions at that workplace. One of the respondents

asked why women are underrepresented in high position and said *“It can not possibly be that there is no competent woman for regional positions...What is it? Are there no women looking for top roles?”* (R5). To have other women in the position would probably encourage more women to those positions and as research showed, a gender-diverse board increase corporate reputation (Brammer, et al., 2009). Based on research and respondents answers we have found that female leaders and role models can make it easier for women to advance. As one woman said *“I would not be where I am today if I had not leaders who have seen me and ensured that I had been given those opportunities”* (R3). Unfortunately, women tend to have less access to this social support (Tapia et al., 2004). One respondent presumed that it is likely to believe that once women have reached positions of power they may choose to not advocate for other women. Likewise, researchers have argued that women do so since they do not want to be perceived as incompetent, poor performers (Hekman et al., 2016). Moreover, there are problem for the industry that hampers the possibilities to recruit women and become more equal. It is easy to recruit people who are similar to the recruiter self, as a consequence *“you hire like-minded”* (R4). Women’s perceptions is that white men are more inclined to select and promote other white men, for instance one respondent said *“men recruit men”* (R9). This is comparable with research that showed that people tend to promote those who are similar to themselves (Hekman & Johnson, 2016).

5.3 Networks

Role models, mentors and networks are important pieces for women. Female leaders and role models can make it easier for women to advance. Mentors can push women forward and make it easier to achieve advancement. As research indicate mentors are important for individual’s success in organizations (Ragins & Cotton, 1991) and one respondent expressed the value of having someone who were not at the same company to give feedback and input that made her develop her professional skills. Networks can be the solution of those barriers if they provide mentorship and creates role models within the network. Within networks women meet others who can give the inspiration and encouragement to succeed in their carrier, therefore in order to meet potential mentors, professional networks might be a way to go.

Women join networks primarily for their development, to receive inspiration and energy, exchange experiences in their position, develop their leadership and interact in order to get to know those other women. Also, women use networks in their profession, to make contacts that could e.g. increase the company’s portion of customers and to develop their leadership. Moreover, when women approached networks the motives for them were to increase their knowledge and get inspiration in an area that they have an interest and a passion for. One respondent was motivated to get more women into the industry and several of them expected to meet like-minded people, get suggestions, ideas, input and development. Other reasons for becoming a member was to discuss issues between the women, sharing experiences, take advantage of all the opportunities available and because it sounded exciting and fun. Some of the respondents saw carrier and business opportunities. Networks can have an impact on their career since it is a good channel for making new contacts a lack of networks may have a negative impact. This can be associated with the aspects that Steir and Yaish (2014) mention

as job quality and as to how content employees are at their workplace. Since women in Steir and Yaish (2014) study are less content than men, professional networks can support the women in their roles and therefore create a professional life where they are more content than without the networks.

This study supports previous research that has showed that networks have an important and meaningful role (Aichner & Jacob, 2015). According to the respondents networks gave lots of contacts, female colleagues, role models and energy. Respondents believed that networks affect the ability for women to make a career and get a job and that those networks make a difference. Mainly, those networks have made a difference socially since they met women in the same role, in other workplaces or positions, this is in line with research presenting that within those networks individuals can improve their careers and establish and maintain professional contacts (Aichner & Jacob, 2015). Also, networks create business opportunities. Indirectly, one can say that the networks made a difference even when women have not changed jobs. Several of the respondents have described how those networks have helped them grow and by making contact with others by going outside their comfort zone. The networks have helped women to become successful in their professional roles for those who have used it a bit like one recruitment- or sales-channel, and especially networks has given individual boost. Moreover, women are strengthened by belonging to a group and get a team spirit amongst each other.

Networks can however be improved. They should have a clear goal and a common mission in order to motivate women to participate and to strengthen the group. When women's spare-time take time from the opportunity to discuss gender issues and career, the question is what the goal for women's networks are. Some networks have been focusing on inspiration rather than problem-focused discussion. Conflicts between work and home, work-life balance and how to have time and prioritize has been briefly discussed in some of the networks, beyond that, no initiatives have been taken in those networks to create lecture or discussions about barriers. The risk is that focus stays at a friendly level where participants exchange experiences but where issues for women in the IT sector not are paid attention too. It is surprising that barriers have not been discussed in those networks and that no arranged inspiration speech or discussion sessions related to this topic have been held. Some respondents were critical, meaning that many of these initiatives exist because of marketing reasons to provide a stronger brand. Similarly, critics argue most corporate-sponsored organizations and programs are largely undertaken for symbolic reasons (Orser et al., 2012).

It is interesting to note that several respondents talked about female networks as excluding men, which in itself is wrong. An unequal society with old habits is nothing new. Now when the IT sector tries to be equal, it is by excluding the other half of the population. Initiatives such as programs can be offered to improve core skills that provide confidence and through networking increase the sense of belonging (Cukier, 2004). Respondents felt that they belonged to the female networks but the down-side of this benefit is that men might feel left outside. When the doors are closed to discuss gender issues in the sector, it is not surprising that the change goes extremely slowly. There are positive aspects that can be gained by the men involved. It is more important to focus on the entire workforce. One cannot discuss gender issues with only one sex without involving the other.

Critique has been directed at male networks but by creating networks for only women the problem is not solved, it is just a way to meet the exclusion by letting only one gender participate. As respondents discussed to change this it requires that men change their way of thinking. Even though women consider that calendars with naked women now belong to history, there are issues based on gender that still exist in the industry. Even if women begin to talk in networks about issues and barriers, men also need to know about the barriers and issues at hand. It is ineffective and irresponsible to leave it to the women's network with just women. Gender equality issues are an area to work broadly across gender boundaries with. Both men and women need to be included in order to achieve gender equality. Expectations and perceptions of what women can achieve is not at the individual level, it sits in a social construction. To involve men to discuss barriers might be hard, they might not be able to relate when women explain gender prejudice they face. On the other hand it might be beneficial gaining experience for them hearing women's stories. Suggestions from respondent were to create male networks or mixed network with both men and women instead of those networks specific for women. As one respondent suggested "*maybe it should be a network where we focus on female issues but where we welcome men when there is a lecture that can be shared, otherwise they wondering what we are doing and why they can not join*" (R7). Moreover, this woman-question is sensitive and therefore it is an idea to consider changing the name of companies own network so that it do not segment men, as one respondent said "*to get men to be involved it can not be called a women's thing, instead you have to call it a company-thing*" (R9). The names of networks do matter, according to statements made by the respondents and an idea might be to start being more inclusive by changing the name of an equality network to not have "woman" in the name. That would in turn create a network for both men and women, if that is the purpose of the network, however, to have a mixed network might be something to do parallel with a female network.

It may be worthwhile to consider how the networks would work with the men involved. Respondents express themselves being positive to bring women in a male-dominated workplace to the atmosphere and argued that the results will be better. One woman said "*The financial results will be better to have both women and men. What I feel is that there will be another dialogue ... more openness, less prestige You look at things in a different way, it becomes a completely different dialogue and communication about things and you get all perspectives*" (R6). Is it possible that the same effect would occur if the situation were the opposite? According to Forret and Dougherty (2001) behaviours like socializing, maintaining contacts, engaging in professional activities, participation in community and increasing internal visibility are related to gender since women and men tend to interact in different ways. Due to the statements made by Forret and Dougherty (2001) one ought to believe that a network with the equality issue at the center with a mixed gender group as members of the network, would have another set of character, when both sexes are represented. It might create a different atmosphere and a different result.

The difference networks can have for women in the IT sector is clear, they can support and guide women in their professional life. The idea of having a supporting network that can back up women's competence, boost inspiration and morale and further strengthen the bonds between individuals both within an organization but also outside of organizational

boundaries. That idea is both a profitable one, for the organizations but also a job quality related aspect. Since this study shows that there are several different opinions about how well these networks work and operate when it comes to bridging barriers one ought to state that the design of networks activities and purposes and goals are important. If we take a look at the opinion where one of the respondents discussed that she thought it was negative that the network was used for commercial and marketing purposes of the host organization the aforementioned goal and purpose idea becomes even more important.

It is hard to ignore the fact that the IT industry is imbalanced when it comes to gender equality and diversity. Due to this fact, the role networks play becomes an important one. However, if they are not executed properly, it becomes harder to meet the goals of a 50/50 organization when it comes to proportion of men/women. The entire industry is battling over the skilled women and the organization with the most “women-friendly” environment might be the winners in that battle. In order for organizations to even be in the race for innovation, diversity and equality they need to harness the power from both genders of skilled workers.

For the women in this study there are still barriers that need to be overcome both on an individual level for the social barriers, at organizational and societal levels for the structural barriers. Networks can be seen to have a bridging role when it comes to these barriers but since some of the barriers mentioned above are deeply rooted in culture and preconceptions the winds of change might blow quite slowly. However, as mentioned above, the empowering role of networks should not be underestimated and can be seen as the foundation building blocks for incremental change in organizations and the entire industry where new blocks needs to be added in order for the IT sector to become more equal to all.

The professional networks described by the respondents in this study seem to, in general, miss out on the opportunity to fundamentally discuss the barriers that women face in their everyday life as professionals. Accompanied with that, one ought to say that the networks do discuss barrier-related topics and centre lectures on such aspects that can bridge barriers. There are, however, still a few questions unanswered when it comes to the networks. As mentioned above mixed networks might take on a different approach and atmosphere but how they could balance gender inequality is still unclear. Networks for women counteract some of the barriers seen in the industry but in order to realize more equal wages more needs to be done at organizational level. Another barrier closely related to structural barriers is the top management issue, where there are still very few women at those levels. That aspect can be eased by interactions within women’s networks due to the aforementioned empowerment and inspirational character of the networks. Since women, in those settings can make the connections needed in order to advance on the career ladder, not necessarily within the same organization, but in general within the sector, the networks can be seen as to have an important role for career advancement.

6 Conclusions/Suggestions for future research

The lack of women in the IT sector becomes increasingly important. There is a lot to win by working for a diverse work field and firms that want to be successful have many reasons to be equal. However, even though firms in the IT sector need far more women in all level in order to reach equal gender representation, but especially in top management positions to make the gap less huge, it is still a male-dominated industry. Apparently considerable efforts to reach a gender balance have too small effect and even though this issue is a well-known problem, women in the IT sector remain underrepresented. Previous research shows that there are social and structural barriers women in the field of IT face when entering and advancing in the industry. Those barriers have many consequential effects. Professional networks might provide an interesting way to counteract barriers. To investigate the potential connection between barriers and professional networks we have in this paper followed ten women who describe their experiences and perceptions of the networks they are members of. Therefore, the main purpose of this paper was to investigate *what is the significance of professional networks for women within the IT industry?* Professional networks for women in the IT sector are examined in the study through a qualitative research method. The use of qualitative data, interviews, has been used in this study when interweaving women at varying firm levels. These ten women together represented four different networks.

This study support previous research that showed that women in the IT industry face barriers. Moreover, this study provides benefits of professional networks, representing that women receive and develop personal skills that can make them more successful at work. This study also provides criticism towards the networks and shows that there is room for improvements. Networks might provide an interesting way to counteract barriers. Structural and social barriers were shown to have an impact on the respondents in this study in different ways. There were aspects that affected the respondents more, such as the gender differences when it came to language and communication, for instance. However, several respondents pointed out that the professional networks of which they were members could be beneficial for their careers and personal development. The professional networks described by the respondents in this study seem to, in general, miss out on the opportunity to fundamentally discuss the barriers that women face in their everyday life as professionals.

As recommendations for the networks one could propose that the overall aim and goal of the particular network should be clearly defined. Thus enabling activities and sessions that could counteract barriers faced by women that for instance could be workshops with the aim of discussing and processing factors that cause the barriers. If the barriers are broken down into smaller pieces it might be more manageable to address the issues. Which could be done via the networks and the purpose of the activities within the networks would then tie more closely to the general aims and goals of the networks. Clarity can be viewed as a key word here, without clear goals it might be hard to counteract barriers or to promote the benefits that professional networks can yield.

Limitations of this study, other than the ones mentioned in the method section concerns the respondents and the time in which they have been members of the networks. Some of the respondents had been members of professional networks for just a few years. Consequently, for most of the respondents the networks were newer there when they got their current

position at work, therefore they cannot argue that the networks have been involved in leading them to existing job position.

There are professional networks for men as well as it is for women (men's network). For future research it would be interesting to do a comparative study about the significance of professional networks for women in IT and to compare those significant aspects with those who can be found in professional networks mainly for men within the industry. Moreover, some of those who were interviewed started their careers in the construction industry, a sector with even higher underrepresentation of women than the IT sector. Therefore, those respondents may compare to this sector, thus they experience the IT sector less gender problematic. Other respondents who had worked within a sector dominated by women, e.g. healthcare, gave answers with other perceptions and experiences, which may reflect the result of their perception of the IT industry.

Thus if men are included in the network where today only women are included, it is possible that gender equality would be strengthened by this, that the atmosphere and the results would be better. It might be too narrow scope to have networks only for men when you are trying to achieve gender equality. Is the mix beneficial or is there a risk that the male culture takes over and the efforts to achieve equality is lost? Would it be good or bad? These are some questions that need to be answered and could be parts of further research where studies could be conducted at more sites, in more organizations and across even more networks. A limitation to further research might be the hardship of finding networks with visible results in the gender equality issue, and by visible results we can also name such results as measureable and quantifiable.

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Appendix

Interview questions

Bakgrund och arbetsuppgifter

1. Vilken bakgrund har du och hur kom du dit du är idag? Hur länge har du jobbat inom IT branschen?
2. Vilken tjänst har du och vad består jobbet av?
3. Vad var det som gjorde att du valde att jobba inom IT branschen?

Underrepresentation av kvinnor i branschen

4. Funderade du på att det var en mansdominerad bransch som du valde?
5. Varför tror du det är så få kvinnor som söker sig till den här branschen?
6. Hur många kvinnor är ni på kontoret? Är det något du tänker spelar någon roll i ditt yrke? Tror du att det hade sett annorlunda ut om det var en jämnare könsfördelning?
7. Upplever du att underrepresentationen av kvinnor innebär en skillnad för arbetsplatsen? Vilken skillnad tror du det skulle innebära?
8. Arbetar ditt företag aktivt för att rekrytera fler kvinnor eller behålla de man har?

Nätverk och förväntningar

9. Vilken eller vilka kvinnliga nätverk är du med i?
10. När och hur kom du i kontakt med nätverket?
11. Varför valde du att gå med i ett nätverk? Vilka förväntningar hade du?
12. Hur är det upplagt? Använder ni en facebooksida eller hur kommunicerar ni? Går du på de träffar som arrangeras eller varför inte?
13. Upplever du att nätverket gör någon skillnad? Ja, nej, på vilket sätt?

Nätverkets påverkan på karriären

14. Vad har du fått ut av att vara med i nätverket?
15. Tycker du att nätverket haft påverkan på din karriär? Varför, varför inte?

Barriärer

16. Sociala förväntningar på att balansera familj och arbetsliv påverkar karriäravancemang. Kvinnors karriärval kan påverkas av inre förväntningar på sig själv och av yttre förväntningar på att som kvinna inta flera roller som hustru, mamma och omhändertagande av familjen. Är det något som du känner igen?

17. Kvinnor upplever jobb-familj konflikter i större grad än vad men i IT branschen gör. Har den typen av utmaning tagits upp i nätverket?

18. Trenden inom IT mot globalisering har försvårat kvinnors möjligheter att bli anställda, behållas och avancera i positioner som kräver resor och många timmar, det beror på att kvinnor upplevs vara familjeinriktade och inte villiga att resa eller arbeta sent. Stereotyper om att kvinnor inte vill resa kan leda till en lägre rekrytering av kvinnor till höga positioner som kräver internationella resor. Är det nått av det här du känner igen?

19. Den föränderliga IT branschen kräver att anställda ständigt anpassar och uppdaterar sina kunskaper, vilket kan leda till mer arbetsbörda och långa timmar. Hur har företaget hanterat det? Diskuteras det i nätverket något?

20. Yrkeskulturen i IT kännetecknas av långa nätter och ett nästan besatt beteende. En arbetsetik som för många kvinnor strider mot säkerhet och familjeansvar. Hur upplever du att er företagskultur är? Har det diskuterats något inom nätverket?

21. Bristen på kvinnliga förebilder och mentorer, och den befintliga andelen kvinnor i toppen är ett stort problem för att attrahera och behålla kvinnor inom IT, hur jobbar ditt företag med de här sakerna? Är det något du haft eller saknat under din karriär?

22. En annan faktor som har en livslång effekt på kvinnors yrkeskarriär är de strukturella krafter som verkar inom organisationer. Kvinnors underrepresentation på toppen syns tydligt i styrelser. Vad har du för syn på styrelsen och betydelsen för företagets konkurrens?

23. Upplever du att sociala sammankomster är dominerade av män? Känner du dig hemma i dessa nätverk eller upplever du ett utanförskap? Tycker du att en brist på nätverk för kvinnor har negativ påverkan på kvinnors avancemang inom IT?

24. Det är konstaterat att könsfördomar finns. Upplever du att det är några som du möter (i ditt yrkesliv) och har du isåfall några strategier för att hantera/bemöta dem?

25. Upplever du att det varit särskilda hinder och utmaningar för att komma in i branschen och andra för att avancera?

26. Har nätverket haft någon betydelse för att övervinna hinder och utmaningar? Om inte, vad kan nätverken göra på den fronten?

Bedömning av nätverket

27. Om du ska göra en bedömning nu då, vad tycker du, har nätverket levt upp till dina förväntningar?

28. Är det något du saknar som skulle kunna göra nätverket ännu bättre?

29. Sista frågan är öppen, är det något du tänker på kring nätverk som du vill tillägga?