A Qualitative Study Exploring the Role of Formal Networks on the Career Advancement of Female Leaders

Insights from the Technology Sector

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Abstract

The underrepresentation of female executives is a well studied phenomenon, despite this awareness, the Swedish labor market continues to be characterized by segregation on its hierarchical positions, where females who aspire for executive roles, do not reach the same career advancement as males. When trying to find answers to female underrepresentation in executive roles, evidence points to a shortage of networks that are deemed appropriate for such career advancement. Using qualitative research, this study explores the perceived value of formal networks among female leaders in the tech industry and their influence on the career advancement of women, considering the challenges posed by male-dominated cultures and gender biases. The conclusion of this study acknowledges that the underrepresentation of women in executive positions may be attributed to a scarcity of informal networks, where homosocial behavior restricts female participation within such networks. The findings demonstrate that due to exclusion from the informal sphere, women actively engage in formal networks. Womens formal networks offer various psychosocial and instrumental advantages, and these benefits are interconnected and mutually reinforcing, ultimately promoting women's professional growth. The findings underscore the significance of comprehending the interplay between organizational culture, gender, and network dynamics to cultivate diverse and inclusive networks that enhance female representation and facilitate knowledge sharing.

Keywords: Networks, women-only networks, formal networks, female career advancement

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1. Introduction

1.1 Background

Despite a strong representation of females in bachelor and master degrees, a vertical segregation emerges in the labor market, where women who aspire for executive roles, do not reach the same career advancement as their male colleagues (Statistics Sweden, 2022; Hill et al., 2016). When trying to find answers to female underrepresentation in executive roles, evidence points to a shortage of networks that are deemed appropriate for such career advancement (De Janasz et al., 2003; De Janasz & Forret., 2008; Jackson, 2001; Seibert et al., 200; Socratous 2018; Villesèche and Josserand, 2017).

Various scholars have recognized the significance of networks in career advancement (Ahuja, 2002; Lyness and Thompson, 2000; Socratous 2018; Villesèche and Josserand, 2017), where several purposes has been identified, such as acquiring knowledge about job prospects and adapting to the social norms of the organization (Ahuja, 2002). Thus, scholars have suggested that networks have traditionally been perceived as a man's field, where networking by men is viewed as legitimate whereas the presence of women has been limited (Ahltorp & Franke 1991; Socratous 2018). With respect to the traditional view of networks as a man's field, scholars stress the importance of recognizing gender biases to intersect and shape powerful cultures in gendered organizations, where the construction of networks is subjective to gender bias (Gibson et al. 2014; Johansson & Ringblom, 2017). Moreover, the authors argue that the organizational culture can significantly impact the network opportunities, where male-dominated fields such as the technology sector, can pose network challenges for females due to its inherited masculine culture. This understanding can shed light on how minorities, such as women, are often excluded from informal networks due to homosocial behavior, in which males tend to network with individuals of the same gender in male-dominated fields.

To conceptualize, the creation and development of informal networks appears in the changing room, on different training activities or in the sauna, where the access of females is limited (Nielsen & Huse, 2010). The authors of the study present results conducted on the dynamics of executives, where professional decision making and promotion opportunities were observed to occur in the sphere of informal networks (Nielsen & Huse, 2010). Consequently, such limited presence of females has left its mark on women's opportunities for career advancement,

since the informal recruitment of senior positions within these male dominated networks is deemed to be a vital factor to climb the career ladder (Jackson, 2001). In order to overcome the challenges associated with informal networks, women tend to rely more on formal networks and often view gender-based networks as a valuable type of network (Lyness & Thompson, 2000).

Today, several networks offer meetings, training, and mentoring programs tailored for women working in the technology sector. One such network is #addher, initiated by Sogeti, which is one of Sweden's largest networks for women in tech. The network aims to attract more women to the industry and increase their representation in all positions within organizations (Capgemini, 2023). Sweden has several other network initiatives with similar goals, including Datatjej (n.d.), Pink Programming (n.d.), and Women in Tech Sweden (n.d.).

The existence of women's formal networks and their continuous development suggests a demand for the resources they could potentially offer. However, the actual value they can generate remains limited, and the current body of literature on women's formal networks requires significant development (Villesèche & Josserand, 2017; O'Neil et al., 2011).

Moreover, gender scholars emphasize the importance of evaluating the role of organizational culture when exploring network opportunities (Bajdo & Dickson 2002; Gibson et al., 2014; Lyness & Thompson, 2000; Marshall 1993). The authors suggest male-dominated cultures to hinder network opportunities that are beneficial for both genders. This realization emphasizes the importance of considering organizational culture when evaluating the benefits of formal network opportunities. By acknowledging the challenges associated with informal networks, such as the intersection of gendered organizations, homosocial behavior, and gender biases, the exclusion of women from the informal sphere becomes apparent, subsequently driving their engagement in the formal sphere. This perspective enables a comprehensive understanding of the value of formal networks for women's career progression, as it explores the intersectionality of organizational culture, gender, and network dynamics.

1.3 Purpose

The aim of this thesis is to explore the perceived value of formal networks among female leaders in the technology industry, specifically examining the impact of formal networks on the female career ladder. Examining organizational culture is deemed necessary to accomplish the aim of comprehending the perceived impact of formal networks on the career advancement of female leaders in technical roles. This is due to the vital role that organizational culture plays in shaping the development and efficacy of networks. In male-dominated fields such as the technology sector, female professionals may encounter challenges when participating in networks due to the sector's inherent masculine culture. By acknowledging the organizational culture, which emphases the influence of male-dominated cultures, homosocial behavior, and gender biases on the inclusivity of informal networks, a more comprehensive understanding of formal networks and its value for the female career ladder can be made. The following research question was constructed to achieve the aim of this paper:

1.4 Research Question

How do female leaders perceive the value of formal networks when climbing the career ladder within a male dominated culture?

2. Literature review

The following chapter outlines the theoretical framework that serves as the foundation of this thesis. The framework comprises network theory and organizational culture theory. The first section will conclude theory in the context of networks and its subcategories informal, formal, and adverse perceptions of women's formal networks. Next section will conclude theory in the context of organizational culture and its subcategories gendered organizations and stereotypes.

2.1 Networks and its effects on female career advancement

Networks have been widely recognized as crucial for career advancement, as evidenced by several studies (Ahuja, 2002; Socratous, 2018; Lyness & Thompson, 2000; Villesèche & Josserand, 2017). The phenomenon is acknowledged to serve multiple functions, including the acquisition of knowledge about job prospects and adaptation to an organization's social norms (Ahuja, 2002). Gibson et al. (2014) define networks as a goal-directed behavior that occurs both inside and outside of an organization, with a focus on cultivating, creating, and utilizing interpersonal connections. They suggest that networks are influenced by three broad categories: individual level factors, such as, self-esteem, and gender; job level characteristics, such as the level in the organization and the type of job; and organizational level factors, such as culture and industry. These factors can lead to enhanced prominence and influence, job proficiency, organizational exposure to strategic insights, and career advancement. Furthermore, they suggest that aspects of the organizational culture can heavily impact the networking opportunities of employees.

Networks can be either formal or informal (Bierema, 2005). Durbin (2011) emphasizes the importance of differentiating the two types of networks and how informal networks are often inaccessible and tend to exclude senior women. The literature indicates that women often see a lower return on networking activities than men (Forret & Dougherty, 2004). Villesèche and Josserand (2017) as well as Ragins and Cotton (1991) argue that most influential business networks are informal and male-dominated, which can be an explanation for women's low return on networking activities. Lyness and Thompson's (2000) study shows that female executives face more challenges in advancing their careers compared to male executives, particularly due to a lack of cultural alignment and exclusion from informal networks. In the following section, we will highlight informal networks, their character and influence on career

advancement, followed by a focus on women's formal network, which can be seen as a response by women to overcome the constraints of informal networking.

2.2.1 Informal networks

Informal networks tend to be personal with fluid boundaries (McGuire, 2000), which can make them harder to identify than formal networks (Durbin, 2011). Durbin (2011) describes how informal networks are characterized by the interactive behavior of individuals who have chosen to form relationships for the purpose of achieving work-related objectives, social benefits, or a combination of both. Participation in an informal network is not a result of an explicit agreement and involves elective patterns of interaction based on mutually reinforcing self-interests, often formed through personal chemistry (Kingsley & Malecki, 2004). Informal professional networks can include relationships based on interaction or friendships among those who choose to connect informally for work-related or social benefits (Papafilippou et al., 2022), built on common interests or hobbies both inside and outside of work. Cooper Jackson (2001) highlights the significance of informal networks in advancing one's career, such as exchanging information, planning and strategizing for future career growth, receiving professional support and encouragement, and gaining increased visibility. Informal networks offer valuable resources, including information, influence, and status (McDonald, 2011). This points to how informal networks, with their personal and fluid nature, are essential professional contexts. Informal networks offer valuable resources and play a significant role in career advancement and personal growth.

Dawson et al (2011) highlights how men’s informal networks tend to involve more professionally oriented ties and with more acquaintances, whereas women report more ties with friends and people they know well. Granovetter (1983) describes the structure of social networks and how they are made of strong and weak ties. Strong ties are usually between people who know each other well, it could be between family members, close friends, or colleagues we tend to interact with daily. Weak ties on the other hand tend to be between people who do not know each other well, such as casual friends and acquaintances, or people we interact with only occasionally. Granovetter (1983) argues for the strength of weak ties and their importance for providing access to new information, resources, and opportunities that are not available within our close-knit social circles. Women are more likely to want to build network relationships with individuals whom they share a considerable level of empathy,

confidence, and trust (Hoang & Antoncic, 2003), which could potentially be a barrier for women in informal networks.

Groat (1997) argues that informal networks in an organization serve as the key carriers of information that sustain, modify, and communicate the organizational culture. Due to the traditional male domination of certain environments, women are often left out of informal communications among men (O'Neil et al., 2011). According to O'Neil et al (2011), men often feel more comfortable engaging in conversation and working with other men who have been socialized in a similar manner by society and share a common language. This relates to the notion that people tend to network with others they perceive as highly similar to themselves (Villesèche & Josserand, 2017). Villesèche & Josserand (2017) and Ragins & Cotton (1991) argue that most influential business networks are informal and male-dominated. The barriers for women to participate in these informal networks, which the literature suggests are valuable for careers, contribute to the development of formal networks for women.

2.2.2 Formal networks

To overcome the constraints of informal networking, women are more likely than men to engage in formal networks, and they often identify gender-based networks as a valuable network type (Villesèche & Josserand, 2017). Formal networks relate to business and are relatively easy to identify compared to informal networks (Durbin, 2011), as formal networks tend to be public and official with clear boundaries, while informal networks tend to be personal with fluid boundaries (McGuire, 2000). Recognizing how women are likely to engage in formal networks as a way to overcome constraints of informal networking contributes to understanding the value the formal networks can offer.

Previous literature has acknowledged the development and importance of women-only networks. These networks can provide opportunities for female leadership and management to identify potential ties and mentors (Noe, 1988). Women-only networks can provide both psychosocial and instrumental benefits for women (Bierema, 2005; Durbin, 2011). Singh et al. (2006) found that participants in women-only networks considered psychological and emotional support as a key benefit. Donnellon and Langowitz (2009) found that the women's network was the means by which many women endure in the workplace. However, Donnellon and Langowitz (2009) highlight how the combination of emotional support, career advice, and knowledge sharing provided within the network could lead to instrumental value. This

understanding advocates that the psychosocial and instrumental benefits can amplify each other, creating a positive cycle where professional opportunities can occur.

Nevertheless, Sobczak (2018) suggests that women may create barriers against each other in a male-dominated culture. In relation to this, Singh et al. (2006) argue that when formal networks are present, senior women in management are more likely to exhibit supportive behavior towards junior women in their organization compared to situations where only informal networking is available. Villesèche and Josserand (2017) suggest that formal networks have the potential to ease the tensions between women in senior management positions and their female peers in mid-management levels. In such situations, women in higher positions often tend to maintain their positions by creating a sense of distance from other women. Moreover, awareness should be brought to stereotypes that are subject to gender bias, where the problem is a gendered culture that mirrors stereotypes and bias against female leaders (Chin, 2011), where such awareness will inspire solidarity among women and provide tools to recognize unfavorable structures and gender inequality (Webber & Giuffre, 2019). Recognizing and addressing broader cultural factors, such as gender bias and stereotypes, is essential in dismantling barriers to women's career advancement. While formal networks can play a role in fostering support and mentorship, a comprehensive approach is necessary to promote solidarity among women and overcome the challenges that persist in male-dominated environments.

Gibson et al. (2014) argue that networks and mentors are closely related concepts, and some interactions in an organizational context can be classified as both mentoring and networking. Formal networks for women can often include mentorship programs and mentoring has been characterized as providing multiple forms of career and psychosocial support (Kram, 1983; Noe, 1988). Ragins and Cotton (1991) highlight the significance of mentors in an individual's accomplishments within an organization, stating that mentorship is related to career advancement, increased organizational impact, and progression within the organization.

When women are making crucial decisions about their professional paths, having role models can play a significant role in guiding them towards a particular direction (Ahuja, 2002). Kram (1983) argues that young female managers tend to seek guidance and support from other female peers when there is a lack of an adequate role model in a male mentor. Some researchers suggest that individuals are more comfortable interacting with people who are similar to themselves, and that gender similarity is a key factor in the success of mentoring relationships (Dreher & Ash, 1990; Larwood & Blackmore, 1978). Ahuja (2002) notes that there is a

shortage of female role models and mentors in organizations, especially in the technology sector. Female role models can serve as evidence of a successful career, but since there are few women in upper management positions in the technology sector, guidance and support for women with less experience is limited (Ahuja, 2002). The scarcity of female role models and mentors, particularly in industries like technology, presents a significant barrier for women seeking guidance and support in their career, underscoring the need for increased representation and support systems for aspiring women. Since networks and mentors are closely related concepts, the networks can potentially offer value in the form of mentorships.

2.2.3 Adverse perceptions of women's formal networks

Harrison et al (2020) argues that although women's formal networks aim to empower and encourage women, they are creating gendered niches and maintaining the marginalization of women. Kanter (1977) argues that women's formal networks, which concentrate on individual development in areas like decision-making, communication, and management skills, inadvertently reinforce the idea that women have deficiencies in the workplace. The author argues that such programs perpetuate the system by subtly implying that women need compensatory education to overcome their shortcomings before they can compete with men, rather than questioning the underlying organizational structure that gives rise to these issues.

O'Neil et al. (2011) emphasize how perceptions, from both members of the network and the organization, affect the outcome of the network. Negative perceptions of the value of women networks results in a less likely contribution to the career advancement of women. Participants of these networks have shown concerns that women's networks may be perceived as mere social gatherings or exclusive groups for women (O'Neil et al., 2011). Bierema (2005) who studied a failed internal women's network, found that the network suffered from participants' negative attitudes, a lack of awareness and participation and the organization's culture which was not receptive to a women's network. This calls for a critical examination of the network's impact, addressing negative perceptions, and challenging the organizational culture to effectively support women's career advancement.

Villesèche and Josserand, (2017) highlights how the development and continuous existence of women formal networks suggest a demand for the resources they could potentially offer. The understanding of the actual value that they can generate remains limited and the current body of literature on women's formal networks still requires significant development (Villesèche &

Josserand, 2017). O'Neil et al. (2011) claims that although previous research has offered insights into the formation and structures of networks, there has been limited research conducted on the significance attributed to women's networks and their influence on the progress of women's careers. The authors further stress how environmental factors including organizational culture need to be fully recognized in future research. If one grasps the intersectionality of organizational culture, gender and network dynamics, a more comprehensive understanding of formal networks and its value for the female career ladder can be made.

2.1 Organizational culture

When searching for factors deemed appropriate to climb the career ladder, numerous scholars have identified networks as one of the most important elements for professional success (De Janasz et al., 2003; De Janasz & Forret., 2008; Seibert et al., 2001; Socratous., 2018). Favorable network constellations require different components, where a diverse culture in the environment which it operates is considered to be the primary strength of networks (Lann, 1996). The diversity within the environment of a network can foster creativity and contribute to future success by enhancing the unique experiences and knowledge channels of each member (Lann, 1996). Albeit, scholars assert that organizational cultures have largely been shaped by men, where such male-oriented cultures can serve as barriers to women' participation in networks as well as their career advancement (Bajdo & Dickson 2002; Marshall 1993). When evaluating the role of diversity in creating favorable network opportunities, it becomes evident that male-dominated cultures can hinder the development of networks that are beneficial for both genders. This realization underscores the need for a diverse culture, where inclusivity is aspired within networks, to foster network opportunities where females are not excluded. Thus, when observing individuals' behaviors in organizations, males are more prominent to create connections with colleagues of the same gender as well as creating weaker connections with the opposite gender which is known as homosocial behavior (Ibarra 1992). The impact of homosocial behavior can restrict network opportunities and valuable relationships for females. This recognition puts further pressure on the need to challenge homosocial norms and to ensure equal network opportunities for women.

Considering earlier research on the topic, it becomes clear that understanding organizational culture which acknowledges the influence of male-dominated cultures, homosocial behavior,

and gender biases is crucial since scholars argue for a male dominated culture to be the primary barrier for female network opportunities and career advancement (Bajdo & Dickson, 2002; Ibarra, 1992). A more nuanced understanding of network opportunities and the environment in which it operates can be made by recognizing the interplay between such factors, where we can comprehend the complex nature of networks and cultural factors to impact its usefulness.

2.1.1 Gendered organizations and its relation to networks

The concept of gendered organizations suggests the need to critically examine gender-based meanings, values, and structures that shape the individuals in the organization, and how traditional gender roles tend to be replicated in the organizational culture, resulting in unequal network and career opportunities (Alvesson & Billing, 2009). With respect to such knowledge, scholars have recognized gendered organizations to possess homosocial behavior, which affects the inclusivity of informal networks, such as generating exclusion of contact and network opportunities for the group of minority (Klenke, 1996). Professional contacts and network opportunities are considered essential for career advancement (De Janasz et al., 2003; De Janasz & Forret, 2008; Seibert et al., 2001; Socratous., 2018), and the exclusion of such valuable assets will constrain or slow down the advancement of women into managerial roles.

By recognizing gendered organizations and homosocial behavior to intersect and shape powerful cultures, a more comprehensive understanding of how the construction of networks is subjective to gender bias can be made. This understanding can shed light on how minorities, such as women, often are excluded from informal networks due to homosocial behavior, in which males tend to network with individuals of the same gender. To conceptualize, the creation and development of informal networks appears in the changing room, on different training activities or in the sauna, where the access of females is limited (Nielsen & Huse, 2010). The authors present results from a study conducted on the dynamics of executives, where professional decision making and promotion opportunities were observed to occur in the sphere of informal networks (Nielsen & Huse, 2010). Consequently, limited opportunities for females within the organization will be provided, since the informal recruitment of senior positions within these male dominated networks is deemed to be a contributing factor to the underrepresentation of female leaders (Jackson, 2001). When excluding females from informal networks, women will be deprived of critical information and mentorship opportunities, which constrains their career progression. This realization underscores the need for a diverse culture

where equal network opportunities are aspired for both genders, to avoid a cycle of exclusion to be perpetuated, where the underrepresentation of female leaders will be reinforced.

Campuzaono (2019) provides further insight into the phenomenon of gendered organizations, where organizations tend to reinforce the value system of the dominant gender (Klenke, 1996; Marshall, 1993; Campuzaono, 2019). Underlying assumptions are suggested to be perpetuated through social learning within such organizations and where leaders are more likely to be accepted if they embody the traditions and cultural values of the organization (Campuzaono, 2019). Consequently, the author argues that employees who conform to the traditional workplace culture are more likely to ascend to networks and leadership roles within the organization, whereas those who diverge from such norms gets overlooked. Such knowledge from the literature within organizational culture and gendered organizations provides an understanding of how gender stereotypes and biases intersect, shaping powerful cultures in gendered organizations that affect the functioning of networks and its impact on the career ladder. The following section draws on literature related to gender stereotypes and biases to gain a better understanding of how these factors influence networks and its contribution to the underrepresentation of female leaders in technical roles.

2.1.2 Gender stereotypes and its relation to networks

An agreed explanation among scholars for the shortage of networks that are deemed appropriate for female career advancement is gender stereotypes and bias (Carli & Eagly, 2001; Heilman & Parks-Stamm, 2007), where's stereotypes subjective to gender bias can result in denial and devaluations of female credibility and performance (Heilman, 2001). By delving deeper into the issue of the scarcity of suitable networks for female career advancement, it becomes evident that challenging gender stereotypes and biases is crucial. Efforts should be directed towards spreading awareness and providing education on stereotypical beliefs that downplay female attributes, as this significantly impacts their opportunities to build networks.

Stereotyped beliefs about gendered attributes characterize females as sympathetic, helpful and caring whereas men are characterized with attributes such as decisive, influential and agentic (Heilman, 2001). The author stresses how attributes such as being agentic are portrayed as essential within top management levels, whereas female leaders are seen as less agentic. When gender stereotypes and bias is permeating the evaluation in organizational settings such as viewing female leaders as less agentic, a natural consequence is to neglect successful

attributions by females, where female competence does not equal the same career advancement as an equal performing male colleague (Heilman, 2001). Scholars mean that despite similar performance between men and women who both are qualified for advancement, research suggests that female work is perceived as inferior (Ellemers et al., 2004; Eagly et al., 1992; Heilman, 2001; Taylor et al., 1978). With respect to such knowledge, one can better understand how gender stereotypes and bias creates incongruousness between perceived leadership and the perception of female attributes (Carli & Eagly, 2001; Eagly & Karau, 2002; Heilman & Parks-Stamm, 2007; Heilman, 2001). This incongruousness contributes to further exclusion of females in the sphere of informal networks and their opportunities for career advancement since female competence is neglected. Such exclusion assists the development of formal networks for women, where external network opportunities are offered. Thus, it remains important to raise awareness about the role gendered organizations play in perpetuating gender bias within network structures, in order to ensure equal opportunities for career advancement across genders.

By drawing attention to gender stereotypes and biased evaluations, one can gain a better understanding of how organizational practices can either contribute to unfavorable structures or create an environment that fosters opportunities for networking and career advancement (Heilman, 2001). Moreover, it is essential to promote the inclusion of women in informal networks and raise awareness among decision-makers about the repercussions of excluding women from informal decision-making and recruitment processes. However, breaking gender-stereotypic prescriptions in organizational settings may result in dissatisfaction and sanctions for women who are recognized as competent yet violating normative prescriptions about their attributes (Ahuja, 2002; Heilman, 2001; Heilman & Okimoto, 2007; Lyness and Thompson, 2000; Villesèche and Josserand, 2017). By recognizing the importance of this critical perspective, it is crucial for organizations to address both the need to challenge gender stereotypes and the potential negative consequences faced by women who defy traditional gender norms. This awareness promotes a more transparent and equitable evaluation process, which prevents preconceived notions and distorted information about female attributes from influencing the judgment process and permeating informal networks.

3. Method

The following chapter outlines the empirical methodology of this thesis. Initially the research process will be presented followed by research method, research strategy, data collection, research quality where ethical consideration and methodological limitations are integrated throughout the empirical method.

3.1 Research method

To explore how female leaders perceive the value of formal networks when climbing the career ladder within a male dominated culture, a qualitative research method was deemed relevant to understand the respondents interpretation of formal networks and its impacts. A qualitative research method was chosen when exploring the standpoint of key informants, where the perspective, experience and meaning of our informants was investigated to understand the conditions (Hammarberg et al., 2016). The research method of our thesis operates through systematic collection, description and interpretation of contextualized data which allows for a comprehensive and nuanced exploration of formal networks and its impacts.

3.2 Constructivism

With respect to the subjectiveness of the perspective, experience and meaning of the informants being explored, a constructivism ontology permeates the study. The scholars in constructivism suggest the human to have unique experiences and perceptions of the world, where knowledge is constructed by the individual to meet certain pressures and situations (Becker, 1982; Peck & Mummery, 2018). The essence of such arguments questions earlier beliefs where knowledge is viewed as predetermined in different contexts which cannot be deconstructed by the individuals (Bell et al., 2022). A constructivism ontology was deemed necessary since the perception of how female leaders in the technical field perceive the value of formal networks when climbing the career ladder, may differ due to unique experiences of the individual. With respect to the constructivist perspective, the informants' perspectives can differ from each other without being wrong or false. Moreover, interpretivist epistemology was selected to further permeate the study to achieve consistency and cohesion, which were factors deemed important when evaluating the qualitative research of this thesis (Hammarberg et al., 2016; Holloway & Todres, 2003). This approach allows for a deep exploration of the perceived value of formal

networks among female leaders in the technology industry, capturing the rich and diverse range of experiences and meanings attributed to these networks.

3.3 Research approach

As previously concluded in the thesis, network theory and organizational culture are two broadly researched fields, yet the convergence of organizational culture and its impacts on how formal networks affect the career ladder for female leaders in technical roles is uncharted. To gain further insights on how formal networks affect the career ladder, the study is of exploratory nature and an abductive approach is consequently chosen to create a more comprehensive understanding (Thomas, 2006). The abductive approach allowed us to move between theory and data to modify or develop new theory, where the approach entailed a progression from factual observations towards the formulation of an explanatory hypothesis (Awuzie & McDermott, 2017). Such a movement between theory and data allowed us to capture the perception of female leaders in technical roles on how formal networks affect the career ladder, where data patterns were recognized in relation to the theoretical framework of the thesis while also continuing exploring relevant theoretical aspects in greater depth.

Common criticism within the field of the abductive approach is the lack of generalisability, and accusations of missing scholarly rigor (Gioia, 2012). Yet, studies of exploratory nature are of importance since it challenges existing perceptions and concepts (Gioia, 2012), which contributes to new theory development in the field of organizational culture and formal networks.

With respect to the convergence of organizational culture and its impacts on how formal networks affect the career ladder for female leaders in technical roles is uncharted, an exploratory research approach was acknowledged to be suitable (Bell et al., 2022; Saunders et al., 2019). The process of exploratory research is used when answering questions like “how”, which is echoed in the research question of this thesis, where in-depth perceptions and experiences were captured from the chosen informants (Bell et al., 2022). Stebbins (2001) argues that the process of exploratory research is preferable when a present problem is studied from another angle, yet with a purpose to provide a more comprehensive understanding of the phenomen. By adopting the exploratory approach, a new light can be shed on the present problem, offering new insights and contributing to the body of knowledge in order to inform future research and practical initiatives related to women’s formal networks.

3.4 Research strategy

Since undertaking an exploratory study, semi-structured research interviews will be included as they provide the flexibility needed to explore complex and nuanced topics (Saunders et al., 2012) such as how formal networks affect the career ladder for female leaders in the tech industry. The qualitative interview is a tool to depict a complex social world from a participant's perspective (Yin, 2010) which aligns with the aim of this study, to explore the perceived value of formal networks among female leaders in the technology industry, specifically examining the impact of formal networks on the female career ladder.

Semi-structured interviews were chosen since it offers the opportunity to explore the meanings of words or ideas used by respondents, thereby enhancing the significance and depth of the gathered data (Saunders et al., 2012). However, data collected through semi-structured interviews comes with quality issues such as a lack of standardization which affects the reliability in the study (Saunders et al., 2012), which refers to the level of consistency in our research method (Bell, Bryman & Harley, 2019). Due to the flexibility needed to explore the complex topic and to get a deeper understanding of the respondents' experiences and perspectives, semi-structured interviews were chosen despite the lack of standardization. To increase the standardization an interview-guide was followed which will be elaborated on further under the section of data collection.

3.5 Data Collection

3.5.5 Choice of sample

The sampling method was purposeful in order to find respondents who could provide data that could fulfill the aim of the thesis. Purposive sampling includes a selection with judgment of what will best enable an answer to the aim and objectives of the study (Saunders et al., 2012). The criteria for selecting respondents were females in the tech industry who held a senior position, was active or had been active in a women's network during their career progression. Moreover, criteria required the respondents to have similar academic background in the technical field. Linkedin was used to find respondents who could fulfill such criteria, where profiles were contacted due to their professional roles, academic background and connections to female networks.

Saunders et al (2012) argue for how the way in which you approach a potential participant for the first time is crucial in establishing credibility. Providing a clear account of your requirements will enable potential participants to understand the expectations placed upon them. According to Sunders et al (2012), clear assurances of anonymity should be provided when reaching out to potential participants to alleviate concerns regarding confidentiality. To be specific, in order to establish credibility, minimize cautious attitudes, and address concerns about confidentiality, the initial contact involved sending an introductory letter. This letter outlined the proposed research, highlighted the importance of confidentiality, and provided details such as the time frame and the plan to conduct the interview online via video.

The number of participants in qualitative research is not predetermined by set guidelines, but rather determined by the specific focus of the study (Ravitch & Carl, 2020). In this study the size of the sample was determined based on the information gathered from the interviews and after 10 interviews a certain saturation of findings was reached, patterns in the respondents answers could be found and conclusions could be drawn. Out of consideration for all the 10 respondents who in this study are anonymous neither their companies nor their positions within those companies will be presented. This is because certain job titles, in combination with experiences of women's networks, could potentially identify specific individuals.

3.5.6 Interview guide and operationalization

The purpose when developing the interview questions was to ensure a comprehensive understanding of formal networks and their value for the female career ladder. To achieve this, the interview guide was thematically organized around theoretical concepts identified as important in the literature review and theory section which contributed to a structured analysis of the collected data.

The interview guide contained open-ended questions that allowed interviewees to form their own understanding of what was being asked. In the context of semi-structured interviews, Bryman, Bell and Harley (2022) highlights the importance of giving respondents the freedom to interpret and perceive what is important and genuine to them which was taken into account when constructing the interview guide with open questions. However, even if the format of the questions were open-ended, the questions were carefully formulated to ensure that the interviewee was aware of the specific topic being addressed.

Interviews were held during April 2023, with both authors present and lasted from 45 minutes to 60 minutes. Digital video interviews were chosen to provide flexibility in both time and geographic location. Even though video interviews allow the researchers to see facial expressions similar to physical face-to-face interactions, it was kept in mind that the body language cannot be observed and non-verbal signals could be lost (Bell, Bryman & Harley, 2019). Before the interview started, a brief presentation was given and an outline of the purpose followed by the question of the interview being recorded with the purpose of transcribing the interview. All respondents agreed to be recorded in order to be transcribed which permitted a repeated examination of the respondents answers and allowed a more thorough examination (Bell, Bryman & Harley, 2022). To avoid any concerns regarding the accuracy of translation, the interviews conducted in Swedish were coded and transcribed in the original language (Casell, 2015). To ensure that the interpretation of the empirical findings presented was accurate, the quotes were carefully translated to English by both authors.

3.5.7 Data analysis method

After transcribing the interviews, a thematic text analysis was carried out to identify different themes and codes and how they were connected in the respondents' answers to have as a basis when the results were to be compiled. Williams and Moser (2019) consider coding as a crucial element in qualitative studies since it supports the researchers to identify and organize data that enable data analysis to fulfill the purpose of the research. This was an important part in the methodological process. The codes in this context were words or brief phrases that symbolized a summative, essence-capturing or prominent attribute. During the coding process, it is important to consider the potential risk of losing context when extracting words and brief sentences from their original context (Bell, Bryman & Harley, 2022). The reassembling process inevitably involves discretionary choices, such as what is retrieved from the data, which involves the researcher’s own judgment. This makes the emerging analysis vulnerable to unknown biases (Yin, 2010). To minimize the risk of biases, constant comparisons and alternative explanations were made by both authors.

To establish an analytical path, codes were generated from themes in the transcribed data. Codes refer to the smallest units of analysis that capture data relevant to the research purpose, while themes are the larger patterns of meaning from these codes (Clarke & Braun, 2017). A code in this study was for example “Access to job opportunities” while an example of a theme

which served as a larger pattern of meaning was “Formal networks” (see *appendix 2*). This approach forms the basis of the systemic procedure that was used to identify meaningful insights from the data that could fulfill the aim of the thesis. The main aim of the approach was not to summarize the data into separate themes, but to identify and interpret the essential features of the data that are relevant to the research question. This approach was adopted to establish a strong foundation for drawing analyzes and conclusions.

3.6 Research quality

3.6.1 External validity

When choosing to conduct a qualitative study, we acknowledged the limited generalizability from our sample of 10 respondents to a wider population, which is a common field of criticism within qualitative studies (Findley et al., 2021; Leung, 2015). Thus, the purpose of this thesis is not to provide study findings from our sample to a wider population. Instead, the study aims to conduct an in-depth analysis of how female leaders perceive the value of formal networks when climbing the career ladder within a male dominated culture. Despite using a small data sample, we can still generate rigorous qualitative findings within our specific context of successful female leaders in the technical field (Young & Casey, 2018). Moreover, the goal of good science should neither equal big data as big precision nor incorporate external validity as an afterthought, rather the ultimate goal should incorporate a systematic process where external validity permeates each research output (Findley et al., 2021).

3.6.2 Construct Validity

To achieve construct validity in this study, we followed a process of simultaneously validating our measurement tool and the theory we aimed to assess (Strauss & Smith, 2009). In order to prevent inconclusive results and ensure an appropriate sample selection, we clarified the conditions regarding sample size and the criteria used for selecting our respondents. The data was collected through semi-structured interviews conducted by adhering to predefined requirements (Young & Casey, 2018). These requirements specified that our selected respondents should be females with an equivalent academic education, actively involved in a formal network, and possessing aspirations to advance their careers or attain senior positions in the tech industry. The interviews were conducted using a combination of face-to-face and remote sessions via Teams.

4. Empirical findings

The following chapter outlines the empirical data that we have compiled from the transcribed material, based on the themes of our theoretical framework. The first section will conclude empirical data in the context of networks and its subcategories informal, formal, and adverse perceptions of women's formal networks. Next section will conclude empirical data in the context of organizational culture and its subcategories gendered organizations and stereotypes. The responses of the informants will be consistently presented, often in the form of direct quotes, to emphasize the foundation upon which our interpretation is constructed. RP stands for respondent person.

4.1 Networks and its effects on female career advancement

4.1.1 Informal networks

The vast majority of the respondents in this study describe how they are excluded from informal networks, either due to their gender or lack of shared interests. As described by several respondents, men seem to have more access to informal networks in the male dominated environment, such as through common interests or activities like video games, padel or golf, which allows them to build relationships that can affect their career. One respondent recognized how she got left out of conversations that her male peers assumed were not relevant to her, which made her an outsider in the workplace.

There is a pattern of the experienced benefits of informal networks in the collected data. The findings emphasize how informal networks contribute to making contacts at the company who can become sponsors for one's own development. Further, maintaining contact with one's network can lead to more opportunities. However, some respondents also mention a vicious spiral related to the benefits of informal networking where women can be left out. It is highlighted that since there are generally more men in higher positions and that we naturally resort to and network with people similar to ourselves, it becomes a vicious spiral where men help men. Although it may not be fully conscious. The benefits of contacts generated by informal networks are reflected in the responses of several of the respondents.

“But it is like men know men who know men. In some way, they form their own network that you are not a part of. There may be men who work in other higher positions as well, contacts that can be good to have”. - RP 9

"You turn to the one you recognize. Going out to eat with someone you know, etc. That's how you build networks, it's clear that you can benefit from it in different ways. Besides, when you share something together with someone, and maybe not when you sit by the computer, you build your network. I absolutely believe that is something that is very important to learn from and build early on". - RP 2

An important gendered aspect of informal networks is reflected in the response of one woman who shared her experience of gender bias in an internal context related to her work as a developer. The findings suggest that men have an advantage in this context and that they may be more likely to receive responses to their queries than women.

"Men don't understand how easy they have it in internal contexts. For example, there is a chat function where you can ask questions if you are stuck in something as a developer and where I have sent in a lot of questions but have not received an answer, but when I have sent in with a male alias, I have received answers back". - RP 4

Another respondent described how men have an easier time communicating with one another in a more informal, relaxed way, which can be advantageous in certain situations.

"There is an advantage for the men in my group because they socialize in a more informal manner. For example, if there is a question, it is easier between male colleagues to just throw a question away because they know each other in a more relaxed way. If you compare it to me, having to write a formal email and explain." - RP 2

Women in this study struggle to access these informal networks. After expressing feelings of social isolation from her previous job, one respondent was advised by her boss to invite herself to social events as a way to address the issue. However, she notes that while this is possible to do to some extent, it can become tiring over time. Some respondents highlight beliefs that the benefits of networking are equally great for both men and women, but that it might come more naturally to men.

4.1.2 Formal networks

Networking informally in business settings might not come as naturally for women as it does for men. However, one response emphasizes that the formal network can offer a structured environment for women to meet and interact, alleviating some of the pressure associated with initiating these connections:

"I think the greatest value of the networks is that you get to meet others, get role models. It takes a bit of the edge from having to reach out to someone and get in touch, start talking to someone in the same room when you're eating or drinking something. It makes it a little less dramatic than having to pick up the phone. It somehow becomes easier when you have something in common together. In a formal network, you have it automatically, you know that we are here because we want to meet and learn from each other. " - RP 4

Half of the respondents described how they experienced isolation and loneliness in their positions in companies dominated by men, and therefore chose to join the formal networks for women to connect with other women who share similar experiences and feelings. One respondent highlights the difficulty of opening up to male colleagues and the importance of finding female colleagues who can provide validation and understanding. The responses in the collected data emphasize psychosocial benefits when engaging in formal networks, such as psychological and emotional support, validation, and a sense of belonging and community, as a significant benefit of formal women's networks. The respondents emphasize the value of women's networks in providing a safe, supportive, and empowering space. A place to be secure enough to share experiences, ask technical questions without fear of judgment, and escape negative experiences such as being dismissed, sexualized, or ignored. The responses indicate a positive impact of women's networks on individuals' sense of belonging and self-confidence. They underscore the significance of women's networks in retaining women within the industry. This sentiment is echoed in the following responses:

"The biggest value of the network for me is security and comfort, that I got somewhere where I felt safe, safe enough to dare to tell what I've been through, safe enough to dare to ask technical questions without being dismissed as an idiot, sexualized or just ignored. It has been the absolute most valuable thing for me, without it I wouldn't have reached where I am in my career, I wouldn't have made it." - RP 3

"For me, it was cool to see that there were others like me in times when I felt lost or out of place. If other women can do this, so can I. " - RP 5

Even if several of the respondents highlighted hopes of psychosocial value as a main reason to join formal networks for women, the instrumental value received by joining is reflected in the responses of the majority of the respondents. The participants in this study placed significant emphasis on instrumental advantages as well. Some respondents highlighted the access to contacts for job openings and training opportunities, while another participant mentioned the exchange of ideas and the opportunity to challenge one's thinking, which could potentially contribute to career advancement. One woman argues that the networks she has been active in

has laid the foundation for her entire career and another woman underlines how the network can open up opportunities to advance one's career across different organizations:

"The network has laid the foundation for my entire career. Within all the choices I've made. Like everything that has really made me where I am today has a determining factor in me being so committed to the networks. When I've been at a crossroad and wondered which way to go, the greatest impact always comes from the networks." - RP 7

"You can get there and end up next to the CEO of a tech company, and then you start talking and making contact. But you can also get good tips from more senior women in the industry on how to proceed or who share their contacts in other companies, and I think that's great, that you can get an opening. When you have a formal network like ours, many different companies gather there, which allows you to make contacts, get tips and openings in working life." - RP 8

The findings in this study show how the psychosocial and instrumental benefits are interconnected. For example, feeling a sense of security within a network can help women feel more confident in asking technical questions as noted by a few respondents, leading to improved instrumental outcomes. One respondent describes how she could question herself if she was enough, a feeling the network alleviated. She argues how women are better at validating one another. Another woman explains that she had a distorted image of herself and felt incompetent. By joining the formal network, she had the opportunity to learn more about her own abilities and expertise, which in turn helped her to gain a more accurate perception of her skills and feel more confident which affected her career. The findings highlight the importance of actively participating in the networks and that the benefits do not necessarily come automatically from joining.

The data collected in this study did not reveal any tendencies of women creating barriers for other women, rather the opposite, that senior women want to help other women. This is reflected in several of the responses. One woman noted how she gained so much from the network as a junior woman and now wants to give back to the new generation of women in the technology sector. Another woman highlighted how she wants to show women entering the male dominated industry that they also can make it, and stresses how it is important since women usually experience the male dominated culture already during their education at university. A third respondent said that helping other women in the network gave her happiness:

“I felt that I could learn and help others. It gave me so much happiness that I felt I could contribute and teach others. It meant so much after previously being in a slumber where I was put down and where my competence was questioned” - RP 3

Respondents in this study were found to highlight mentorships and role models in the context of networks. Further how it can provide forms of both career and psychosocial support. As one respondent mentioned the importance of her mentor who pushed her hard to learn things but was also a purely mental coach. The responses in the collected data emphasize the value of having a female role model in a senior position who can show you the possibilities of that achievement. The findings highlight the significance of role models and mentors, particularly for women who may have doubts about their abilities or sense of belonging.

“The mentor I have had has been gold! She has helped me with everything possible and has been there at every crossroad. I really believe that you have to connect with your mentor, and I did that to 110%. She could support me in everything. That's what you want in a manager too, that you can just be yourself and get support in that." - RP 7

"We're not a bunch of girls who sit in a basement and complain about men. We kind of just want to network. We can raise role models sometimes, which I think is very important. My mentor is my role model. She is as cool as can be. If you have a female role model in a senior position, you can see that I can get there." - RP 10

One respondent expresses how she is more comfortable with a female mentor regarding certain topics or contexts.

"In some contexts, I have felt that I might not be comfortable in that topic of conversation with a man. In the network we've talked a lot about whether you can have a male mentor as well, but at the same time I think you bond more with the same gender.” - RP 3

The lack of female role models was reflected in the response of several of the respondents, emphasizing the need for more women in senior positions. The respondents call for increased representation of women in leadership positions to provide guidance and inspiration to the next generation of female professionals.

"I have started a process of starting a mentoring program for women internally in the company within our network. Men might be more inclined to help a younger man in his career because it looks less strange than if he helps a younger girl because it can then be misinterpreted. And girls are then less likely to receive support from a senior

(since the majority of seniors are men). That's why mentoring programs are so important. We need more women on the top. It permeates the entire organization. It is very important that you have role models who can show you that it is possible and how you can get there." - RP 7

The findings underscore the significant value of formal networks for women in the male dominated tech industry, providing both psychosocial and instrumental benefits such as support, empowerment, career opportunities, and a sense of community. The findings of the study also emphasize the significance of female role models in senior positions that the women's network can provide.

4.1.3 Adverse perceptions of women's formal networks

Although women's formal networks aim to empower and encourage women, such networks can create gendered niches and maintain the marginalization of women. The majority of our respondents recognizes such marginalization, where the participation in a women's formal network has led to a range of beneficial effects but also to exclusion and devaluation. One woman, who started a women formal network during her technical education experienced adverse perceptions from her male students, she says:

"I actually had to fight throughout my entire time at school for our women's formal network, because the guys hated it. They did everything they could to break us or me down." - RP 7

Moreover, she further explained how her male students ganged up on her and questioned her knowledge, saying that she only got good grades because she was a girl, where the teacher could smell the perfume on her exam. The respondent argued that her engagement in the women's formal network triggered these reactions among her male students. She says:

"They were really mean and said things like 'you shouldn't think that this network means anything' and that girls won't succeed in tech anyway. Eventually, the guys in my class ran as representatives for our network, with the intention of taking over and then shutting everything down." - RP 7

Other respondents express a certain fear of discussing the subject of women's formal networks with male colleagues, because of a general lack of knowledge, as stated by several of the respondents:

"I don't talk to a man about women's formal networks, it is so easy to be misunderstood." - RP 1

“Basic knowledge is missing in the field of gender equality in this industry, it's like we don't speak the same language, they don't understand why there is a need for a women's network, because they don't release there is a gender equality issue from the beginning.” - RP 9

"Guys are probably a bit childish and jealous, like 'what are the girls really doing when they are alone? having pillow fights or something'. I think they feel excluded but don't understand the purpose of all of this. They don't listen, you know." - RP 10

It is evident that the responses in the collected data recognizes adverse perceptions about women’s formal network. Where respondents emphasize how males tend to view these networks as less legitimate than other professional networks. As some of the respondents says:

“There have been comments from guys wondering if we just sit and drink champagne and gossip about guys when we meet, but I always say that we definitely drink champagne, but there's no time to gossip and that's not where the focus is. The focus is on moving forward towards a more diversified future in this industry, where it's extremely important to have a female perspective in tech as we develop and digitize things which should suit both genders.” - RP 8

“The male colleagues at my job have asked me why men aren' invited', but when we do invite them to events, they don't even show up. Men feel like it's not their thing and that it's only for women and when I email everyone in the company about invitations to the network, I can get emails back from some men saying why am I getting this, I'm a man.” - RP 7

"Some guys might see women's networks as a threat, that the girls are taking their spots and job opportunities” - RP 3

With respect to the empirical data about adverse perceptions about women's networks, one understands the importance to further stress the consequences of gender stereotypes and how such bias tends to pearmete the judgment process of women's networks, which gives room for preconceived ideas and distorted information about females to dominate the judgment process in professional settings.

4.2 Organizational culture

4.2.1 Gendered organizations and its relation to networks

When searching for factors deemed appropriate to climb the career ladder, all 10 respondents identified networks as one of the most important elements for professional success. A diverse

organizational culture where further regarded as the key strength behind favorable network opportunities and inclusiveness for both genders. One respondent posited that a comprehensive understanding of networks and their significance for the advancement of women in their careers can be achieved by considering contextual dependencies, such as organizational culture. During the interview, she further drew a parallel to the construction of a home to emphasize the importance of organizational culture in leveraging networks effectively, she said:

"I mean the stability and successful structure of a home needs to preserve key structural components, such as the bearing wall to prevent the entire house from collapsing. If we start to pull structural components such as the organizational culture away when you want to create an encouraging environment for female network opportunities, then your work will collapse". - RP 8

This argument presented that organizations aiming to extract value from networks for both genders must consider the influence of organizational culture, is replicated among other respondents as well, who recognized factors such as whether the organization is predominantly male-dominated or diverse to affect network opportunities. Our respondents demonstrate an awareness of how their male colleagues tend to create stronger connections with individuals of the same gender as a result of a male dominant culture. They say:

"To be honest with you, it sometimes seems impossible to become a part of their informal network. I work in an executive team with mostly male peers who engage in private socialization, and they rarely show any interest in including me". - RP 9

"It is hard to become part of the informal network. Every male has attended each other's weddings, they play golf together, go to the sauna, and so on. Therefore, it is difficult to be accepted into the group as a woman". - RP 7

8 out 10 respondents argue for homosocial behavior and exclusion from informal networks to constrain their career advancement, where one of the respondents acknowledged how internal promotion opportunities occur in the informal spheres of their executive team which are male dominated. She works as the only female manager in an executive team, where little interest is shown by her peers to incorporate her in private activities. Moreover, she argues that it doesn't bother her to not be invited, yet such exclusion yields consequences on internal recruitment. She says:

"Also if you look at the internal recruitment, a female candidate within the company may have a stronger educational profile, while men may have poorer education and experience on paper, and still they get more career opportunities than women do internally". - RP 9

Considering the collected data on the topic, it becomes clear that understanding the intersectionality of organizational culture, gender, and network dynamics is crucial to gain a more nuanced understanding of networks and the environment in which they operate.

4.2.2 Gender stereotypes and its relation to networks

The vast majority of our respondents recognized gender stereotypes and bias to constrain network opportunities that are deemed appropriate for female career advancement. 7 out of 10 respondents argue that gender stereotypes about female attributes can result in denial and devaluations of their credibility and performance. During job interviews, one woman experienced a devaluation of her credibility and performance. Recruiters displayed gender bias by asking irrelevant questions about her personal life instead of focusing on technical aspects. To gain professional recognition, she had to develop an app, which ultimately led to being acknowledged and evaluated based on her technical abilities. She says:

"Everyone talked about the great need for developers, but in all the interviews people asked me if I was single, my favorite color, and not a single question about my degree, my knowledge, programming languages, or technical experience. Instead, they said that many male customers came to the offices and wondered how I would behave. I never got a chance, and when I asked why, they said that female developers are not good and they cost too much". - RP 3

"As a result of this, since I didn't get a job despite my education, I decided to prove that I can actually develop, so I created my own app, and I thought maybe it will be the next big thing, but it was mostly because I felt that I would never otherwise have a chance to show what I can do, so I had to take matters into my own hands. And sure enough, when I launched it and had my first customer, the interviews started pouring in on LinkedIn. My degree and other technical experiences were not enough, my competence was questioned, and I had to present a complete product". - RP 3

With respect to such information, one understands that stereotyped beliefs play a more evident role for network opportunities and female career advancement than formerly assumed. Research suggests negative stereotyping not only to devalue female performance, but to break gender-stereotypic prescriptions in organizational settings that may result in dissatisfaction and sanction for women who are recognized as competent yet violating normative prescriptions

about their attributes. Such sanction for violating normative prescriptions about being communicative and nurturing is reflected in the response of a respondent who says:

"I have had repeated conflicts with a man on the team, where he has, among other things, yelled at me and been rude. When conflicts occurred between me and him, I felt that my manager treated us differently, with different expectations on how men and women should act. The manager said that I should just calm down because he was jealous of my role, he was stressed and that's why he yelled at me, I was told that I needed to communicate better, I needed to be friendlier, and I should apologize because I was the one being annoying according to the manager". - RP 9

"After standing up for myself, I slowly started to become isolated from internal events that I had previously been invited to. When I raised this exclusion with the management team, they said that it was up to me to be more open and friendly. It got worse as time went by and when we were supposed to appoint a new team leader, I was rejected despite having longer experience and contributing more growth to the company. I even have data on the organizational growth and my work. I don't know what to say but I felt that we were being evaluated differently". - RP 9

The experience can be drawn back to the theoretical framework of gender stereotypes and sanctions when violating normative prescriptions about female attributes. One could argue for such sanctions to be manifested in the disapproval of competence when women transcends male peers in tasks that are appropriated as male-tasks, where females move with ease into middle management levels but are later faced with barriers at senior levels. When discussing the matter of gender stereotypes and its relation to network opportunities and career advancement, there was a conviction among all 10 respondents that gender stereotypes existed within the organization. However, only 7 out of 10 respondents argued that gender stereotypes had negative effects on network opportunities and career advancement. Three of the respondents recognized gender stereotypes to be apparent but not with negative effects on network opportunities and career advancement, instead the opposite effects were identified, where typical female attributes were portrayed as valuable for senior management roles. One respondent says:

"I often feel that it is an advantage to be a woman in this industry. I believe that it is easier for me to get other managerial roles just because of my gender. I mean this industry is mostly dominated by men, and I feel like most management teams understand the value of a female leader, it gives the organizations more diversity." - RP 8

Such positive effects of being a female in the tech industry was recognized from the collected data of another respondent as well, where the respondents recognize gender stereotypes about

female and male attributes to be apparent in the organization, yet with positive results for female network opportunities and career advancement. She says:

"Previously, there has been a bit of a macho culture where certain stereotypes have emerged, some sexist jokes that may have flown under the radar, subtle things like that. The men in our company think it's good to have a commitment to gender equality, but as a woman, I'm the one who conducts the training sessions, but where most of the positive feedback comes from the men in the company, especially from managers. I have always found it easier to hang out with guys than with girls. So for me, it hasn't been a problem to be a woman, rather the opposite. Majority of the connections I made has been with males " - RP 6

One could argue for the answer to recognise gender stereotypes, where gender equality is aspired in the organizations among male colleagues, yet it's up to the females to conduct the educational material if one desires to keep the fight alive. Another respondent who also recognized gender stereotypes in the organization, yet without negative effects on network opportunities and career advancement, still wondered how organizations who aspire for gender equality would achieve such matters if females did not engage in the matter?

Despite the positive experiences when it comes to gender stereotypes, it's still a phenomenon that requires further knowledge since criteria tend to be indistinct and vague when evaluating performance of senior management levels, which gives room for preconceived ideas and distorted information about female attributes to dominate the judgment process.

4. Discussion

The following chapter outlines a discussion of the empirical findings on the perceived value of formal networks when climbing the career ladder, and how the contextual factor of organizational culture influences this impact.

4.1 Networks and its effects on female career advancement

4.1.2 Informal networks

The vast majority of the respondents in this study describe how they are excluded from informal networks, either due to their gender or lack of shared interests. As highlighted in the literature, traditional male domination of certain environments often leaves women left out of informal communications among men (O'Neil et al., 2011). This aligns with the findings of the study where the respondents describe how men seem to have more access to informal networks in the male dominated environment, such as through common interests or activities, which allows them to build relationships that can affect their career. The experienced benefits of informal networks in the collected data of how one's network can lead to more opportunities to get ahead which aligns with Cooper Jackson's (2001) insights. Such as how informal networks contribute to making contacts at the company who can become sponsors for one's own development.

The findings suggest that men may have an easier time making connections in internal contexts, such as through a chat function. It implies that gender bias may exist in informal networks, and that women may face challenges in accessing certain networks or receiving the same level of support and visibility as men. This point also aligns with Cooper Jackson's (2001) observation that informal networks can lead to increased influence and status. How men tend to network with others they perceive as highly similar to themselves (Villesèche & Josserand, 2017) relates to the homosocial behavior, where males tend to be more prominent to create connections with colleagues of the same gender (Ibarra, 1992). The tendency for men to socialize more with other men in informal settings is described by respondents and relates to how O'neil et al (2011) argues for how men often feel more comfortable engaging in conversation and working with other men who have been socialized in a similar manner by society and share a common language. The findings indicate that men have an easier time communicating with one another in a more informal, relaxed way, which can be advantageous in certain situations which aligns

with Cooper Jackson's (2001) and McDonald's (2011) notion that informal networks offer valuable resources, including information and influence.

One respondent underlines that in higher positions, there are generally more men, and as both the respondents and previous literature highlight, individuals tend to naturally gravitate towards and network with people who are similar to themselves (Villesèche & Josserand, 2017; Ibarra, 1992). This tendency creates a self-perpetuating cycle where men help other men, even if this bias is not entirely conscious.

Overall, a gender-based disparity in informal networks is found in the collected data, where men have easier access to informal networks. The findings in the collected data aligns with previous literature on the subject and shows that the women in the tech industry interviewed in this study experience exclusion from informal networks, which can result in missed opportunities for career advancement. Our findings suggest that gender bias exists in informal networks, where men tend to network with others they perceive as highly similar to themselves even if it might be unconscious, which relates to homosocial behavior. In the male dominated tech industry where there is an over representation of men in leading positions this could result in a vicious cycle where men help men and women get left out. An interesting insight is reflected in the findings is that the benefits of networking are believed to be equally great for both men and women, but that it might come more naturally to men, which can relate to Dawson et al (2011) who highlights how men's informal networks tend to involve more professionally oriented ties and with more acquaintances, whereas women report more ties with friends and people they know well. This means that women need to do it more consciously to get the same benefits of networking as men. These insights on informal networks suggest both an explanation and a need for formal networks in the tech industry which can contribute to the development of formal networks for women.

4.1.2 Formal networks

Villesèche and Josserand (2017) suggests how women are more likely than men to engage in formal networks in order to overcome the constraints of informal networking. However, the respondents in this study may experience constraints of informal networking but the experience of being excluded from informal networks does not explicitly appear to be the main driver to join a formal network for women but the consequences of being excluded appears to be related

to why the respondents chose to join these formal networks. Literature indicates that women have closer circles with strong ties (Dawson et al,. 2011) and Granovetter (1983) argues for the strength of weak ties and their importance for providing access to new information, resources, and opportunities that are not available within our close-knit social circles. Since networking informally in business settings might not come as naturally for women as men, the findings highlight how the formal network can provide a structured environment for women to meet and interact, which can take some of the pressure off of initiating these connections.

The findings emphasize the value of women's networks in providing a safe, supportive, and empowering space. A place to be secure enough to share experiences, ask technical questions without fear of judgment, and escape negative experiences such as being dismissed, sexualized, or ignored. The responses show a positive impact of women's networks on an individual's sense of belonging and self-confidence and highlights the importance of women's networks in retaining women within the industry. It is apparent that the responses in the collected data emphasize psychosocial benefits when engaging in formal networks , such as psychological and emotional support, as a significant benefit of formal women's networks. This is consistent with the findings of Singh et al. (2006) and Donnellon and Langowitz (2009), which highlight the important role of women's networks in providing psychological and emotional support to women and helping them endure challenges in the workplace. Even if several of the respondents highlighted hopes of psychosocial value as a main reason to join formal networks for women, the instrumental value received by joining is reflected in the responses of the majority of the respondents as well. Singh et al. (2006) found that participants in women-only networks considered psychological and emotional support as a key benefit. However, the participants in this study placed a significant emphasis on instrumental advantages as well, including access to contacts for job openings and training opportunities, training opportunities, exchanging ideas and challenging one's thinking, which could lead to career advancement. The interpretation is that instrumental and psychosocial benefits of being in a formal network for women is highlighted equally by the respondents. The findings show how a network can lay a foundation for a career and open up to advance one's career across different organizations.

Donnellon and Langowitz (2009) states that the combination of emotional support, career advice, and knowledge sharing provided within the network could lead to instrumental value, which suggests that the psychosocial and instrumental benefits can compound each other. The findings in this study aligns with this statement and demonstrate how these psychosocial and

instrumental benefits are interconnected. For example, feeling a sense of security within a network can help women feel more confident in asking technical questions, leading to improved instrumental outcomes. The findings demonstrate how self-doubt can be alleviated by the network where women are better at validating one another. The opportunity to learn more about one's own abilities and expertise, can help women to gain a more accurate perception of their skills and feel more confident which can affect their career. The findings show how psychosocial and instrumental benefits are interconnected and can compound each other, ultimately positively impacting women's careers. An insight from the findings indicate that active participation is crucial to obtain the benefits of formal networks. Simply joining a network is not necessarily sufficient, individuals should actively engage and contribute to maximize the value they receive. Networking requires effort and social interaction to expand one's network and to optimize the benefits offered by formal networks.

Sing et al (2006) argues that when formal networks are present, senior women in management are more likely to exhibit supportive behavior towards junior women in their organization compared to situations where only informal networking is available. This relates to how formal networks can alleviate the tension in which women in higher positions tend to preserve those positions by creating distance between themselves and other women (Villesèche & Josserand, 2017). The data collected in this study did not reveal any tendencies of women creating barriers for other women, rather the opposite, that senior women want to help other women. The women interviewed in this study who operate in a male dominated environment acted more as allies and the female networks appear to empower women collectively. However, it is difficult to say whether it has to do with the formal networks themselves and what it would have looked like without the networks.

The findings in this study aligns with the notion of Gibson et al. (2014) that networks and mentors are closely related concepts, and some interactions in an organizational context can be classified as both mentoring and networking. Respondents in this study were found to highlight mentorships and role models in the context of networks. Mentoring has been characterized as providing multiple forms of career and psychosocial support (Kram, 1983; Noe, 1988), as the findings show the importance of a mentor who pushed the mentee hard to learn things but was also a purely mental coach. The findings highlight the significance of role models and mentors, particularly for women who may have doubts about their abilities or sense of belonging.

One respondent stated that her mentor was there for her at every crossroad which relates directly to Ahuja (2002), who notes that when women are making crucial decisions about their professional paths, having role models can play a significant role in guiding them towards a particular direction. Some researchers suggest that individuals are more comfortable interacting with people who are similar to themselves, and that gender similarity is a key factor in the success of mentoring relationships (Dreher & Ash, 1990; Larwood & Blackmore, 1978). This can be reflected in the findings that show how women can be more comfortable with other women regarding certain topics or contexts.

The findings of the study confirm the shortage of female role models and mentors in organizations, especially in the information technology profession (Ahuja, 2002). The respondents call for increased representation of women in leadership positions to provide guidance and inspiration to the next generation of female professionals. As Ahuja (2002) states and as noted in the findings, female role models can serve as evidence of a successful career, but since there are few women in upper management positions in the IT industry, guidance and support for women with less experience is limited.

The conception of women in higher positions tending to preserve those positions by creating distance between themselves and other women could not be reflected and as Chin (2011) states, awareness should instead be brought to stereotypes that are subject to gender bias, where the problem is a gendered culture that mirrors stereotypes and bias against female leaders. Rather than working against each other the female networks empower women collectively, giving them the confidence to push for organizational changes and take action which is in line with Bierema (2005).

4.1.3 Adverse perceptions of women's formal networks

Harrison et al (2020) argues that although women's formal networks aim to empower and encourage women, such networks may create gendered niches and maintain the marginalization of women. Most of the respondents in our study acknowledged the phenomenon of marginalization resulting from participation in a women's formal network. While such participation has brought about a variety of positive outcomes, it has also led to exclusion and devaluation. For instance, one of the respondents, who established a women's formal network during her technical education, reported negative reactions from her male peers, who ganged up on her and questioned her knowledge. The respondent argued that such

reactions were triggered by her engagement in the women's formal network, where the male peers claimed her involvement in such network to hold no significance, and that females are unlikely to attain success in the field of technology despite formal networks. Kanter (1977) argues that women's formal networks sustain the marginalization by subtly suggesting that women require compensatory education to overcome their shortcomings before they can compete with men, and one could argue for such knowledge to be echoed in the mentioned experience of the respondent, where the male peers experienced the network as illegitimate.

Several respondents in the study expressed a sense of unease and reluctance when engaging in conversations about women's formal networks with their male colleagues. This apprehension stems from a widespread lack of knowledge and understanding among the male demographic regarding the concept and purpose of such networks. Such lack of understanding is captured by scholars as well, where O'Neil et al. (2011) claims that although previous research has offered insights into the formation and structures of networks, there has been limited research conducted on the significance attributed to women's networks and their influence on the progress of women's careers. With respect to such knowledge, it's essential to continue the research of women's formal networks and for the resources they could potentially offer (Villesèche & Josserand, 2017), to tackle the segregation on hierarchical positions within the labor market, where females who aspire for executive roles, do not reach the same career advancement as males. When trying to find answers to female underrepresentation in executive roles, evidence points to a shortage of networks that are deemed appropriate for such career advancement, where Villesèche and Josserand (2017) highlights how women formal networks suggest a demand for the resources they could potentially offer.

4.2 Organizational culture

4.2.1 Gendered organizations and its relation to networks

When searching for factors deemed appropriate to climb the career ladder, numerous scholars have identified networks as one of the most important elements for professional success (De Janasz et al., 2003; De Janasz & Forret., 2008; Seibert et al., 2001), which is recognized among all 10 respondents from our empirical data. Favorable network constellations require different components, where a diverse culture in the environment which it operates is considered to be the primary strength of networks (Lann, 1996). The diversity within the environment of a network can foster creativity and contribute to future success by enhancing the unique

experiences and knowledge channels of each member (Lann, 1996). Our respondents recognized such interplay between a diverse culture and network opportunities to matter, if an organization wants to uphold networks that are useful for both genders.

To conceptualize, one respondent argued that we can better comprehend the complex nature of networks and its value for the female career ladder if we understand its contextual dependencies such as the organizational culture. The respondent used a parallel to when building a home, if you want your home to be stable and successfully structured, you cannot start to pull out structural components such as the bearing wall, because the house will collapse. Regarding this parallel, the respondent argues that organizations seeking to derive value from networks for both genders must take organizational culture into account. Consideration should be given to whether an organization is male-dominated or diversified, as well as the statistical distribution of executive positions between men and women.

Bajdo and Dickson (2002) argue that such male-oriented cultures can serve as barriers to women' participation in networks as well as their career advancement, where male dominated cultures create a weaker environment to develop networks that are beneficial for both genders. Such knowledge is based on observing individuals' homosocial behavior in organizations, where males tend to be more prominent to create connections with colleagues of the same gender as well as creating weaker connections with the opposite gender (Ibarra, 1992), which may limit opportunities for females to create valuable relationships, as well as their participation in networks. Our respondents demonstrate an awareness of how homosocial behavior has consequences on the network opportunities available in the organization, where they claim it to seem impossible to become a part of the network, as the executive team consists solely of men who socialize privately and show no interest in including a woman in their network.

Considering earlier research on the topic, it becomes clear that understanding the intersectionality of organizational culture, gender, and network dynamics is crucial to gain a more nuanced understanding of networks and the environment in which they operate. Especially with respect to the result of Nielsen and Huse's (2010) study, where professional decision making and promotion opportunities were observed to occur in the sphere of informal networks when observing the dynamics of executives. Moreover, there is a conviction among 8 out 10 respondents that homosocial behavior has contraining effects on network opportunities

and female career advancement, especially when the management teams tend to be of homogeneous character, since they find a lack of interest from the opposite gender to promote female presence in the informal sphere.

4.2.2 Gender stereotypes and its relation to networks

An agreed explanation among scholars for the shortage of networks that are deemed appropriate for female career advancement is gender stereotypes and bias (Carli & Eagly, 2001; Heilman & Parks-Stamm, 2007), where's stereotypes subjective to gender bias can result in denial and devaluations of female credibility and performance (Heilman, 2001). Such stereotypes subjective to gender bias was recognized among the vast majority of our respondents, where 7 out of 10 respondents argued that gender stereotypes about female attributes can result in denial and devaluations of their credibility and performance. One respondent encountered devaluation of her credibility and performance during job interviews, where recruiters displayed gender bias by posing irrelevant questions about her personal life rather than technical ones. To gain professional recognition, she had to develop an app, which ultimately led to being acknowledged and evaluated based on her technical abilities.

Scholars argue that when gender stereotypes and bias is permeating the evaluation in organizational settings such as viewing female leaders as less agentic, a natural consequence is to neglect successful attributions by females, where female competence does not equal the same career advancement as an equal performing male colleague (Heilman, 2001), and one could argue for such neglection of competence to be evident in the findings. Moreover, research suggests negative stereotyping not only to devalue female performance, but to break gender-stereotypic prescriptions in organizational settings may result in dissatisfaction and sanction for women who are recognized as competent yet violating biased assumptions about their attributes. A respondent recognized such sanction for violating stereotypes subjective to gender bias about being communicative and nurturing, which created further barriers for her presence in the informal sphere, as her colleagues started to exclude her from internal events to which she had previously been invited to. One could argue for such exclusion to have constraining effects on the career ladder, since research suggests professional decision-making and informal recruitment to occur in such informal settings (Nielsen & Huse, 2010).

Seven out of ten respondents acknowledged that gender stereotypes had negative consequences on network opportunities and career advancement. However, three of the respondents observed

the existence of gender stereotypes but did not identify negative effects on network opportunities and career advancement. Rather, they noted a reverse effect, where traditional female attributes were deemed valuable for senior management positions. Although these respondents reported positive experiences with regard to gender stereotypes, this phenomenon requires further investigation. Research suggests negative stereotypes not only to undermine female performance but also to manifest itself in the sphere of informal networks, where female presence is limited due to preconceived ideas and distorted information about female attributes, which may create further barriers to climb the career ladder.

5. Conclusion

The following chapter will outline the significant contributions of the study, acknowledge limitations encountered, and provide recommendations for future research.

5.1 Theoretical contributions

This thesis aimed to explore the value of formal networks for female leaders in the technology industry. Since previous literature argues that organizational culture plays a significant role in shaping the development and effectiveness of networks, the influence of a male-dominated culture was considered to gain a more comprehensive understanding of the value of formal networks for the female career ladder. The study demonstrates a gender disparity within informal networks, where men have easier access and enjoy career advantages. This gender bias leads to women being excluded and missing out on valuable opportunities within the tech industry. The study highlights the importance of women actively networking to achieve similar benefits and emphasizes the significance of early network building and participation in formal networks to support women's career advancement. The research shows that women should consider joining formal networks as a means to overcome the constraints of informal networking.

The main findings underscore the psychosocial and instrumental benefits of formal networks, including emotional support, career opportunities, and knowledge sharing. These structured environments provide women with opportunities to meet, interact, and receive support from others in their field. The findings emphasize that psychosocial and instrumental benefits are interlinked and can reinforce each other, ultimately benefiting women's professional growth.

Additionally, the study suggests that active participation is crucial for women who want to find value in formal networks. Merely joining a network is insufficient, individuals should actively engage and contribute to increase the value they receive. Networking requires effort and social interaction to expand one's connections and optimize the benefits offered by formal networks.

Moreover, the findings indicate that senior women in formal networks exhibit supportive behavior towards junior women, challenging the notion of women creating barriers for each

other. Overall, formal networks empower women collectively and contribute to their career advancement while fostering organizational change.

However, it is important to recognize that women's formal networks can inadvertently contribute to the marginalization of women by creating gendered niches and facing negative reactions from male peers. This highlights the lack of understanding among male colleagues regarding the purpose and significance of these networks. The study highlights the importance of understanding the intersection of organizational culture, gender, and network dynamics to foster a diverse culture within networks that enhances female presence and knowledge sharing.

5.2 Research limitations

To uphold a thesis with scholarly rigor and transparency, we aim to address noticeable limitations. This is a qualitative study, where an exploratory approach was used. It is important to recognize that each respondent holds a subjective perception, which limits the opportunity to generalize the results beyond the sample being studied. However, the aim of this study is not to achieve generalization, it is rather to present the nuanced perception of the value of formal networks when climbing the career ladder among a specific group of successful female leaders in the technical field. It is important to note that a larger sample size than the current 10 respondents would increase the reliability of the research findings. Additionally, the semi-structured interviews rely on open-ended questions to give the respondents an opportunity to elaborate on their experiences, which allows for changeable variables to affect the study's results, such as bias or preconceived ideas. Yet, these voices provide the flexibility needed to explore the complex and nuanced topic of formal networks and its impacts on the career ladder.

5.3 Future research

In conclusion, our aim is to propose relevant avenues for future research based on our theoretical contributions on formal networks and its impacts on the female career ladder. We have discovered that a lack of appropriate informal networks may contribute to the underrepresentation of women in executive positions, with homosocial behavior limiting female presence in these networks. Future research should consider the contextual factor of organizational culture, acknowledging the influence of male-dominated cultures, homosocial behavior, and gender biases on the inclusivity of informal networks. This recognition is

essential for obtaining a more profound understanding of the importance and relevance of formal networks.

The findings underscore the psychosocial and instrumental benefits of formal networks and emphasize how these benefits are interlinked and can reinforce each other, ultimately benefiting women's professional growth. By examining specific mechanisms and these interconnections in more detail, researchers could gain a deeper understanding of how these benefits reinforce each other and generate positive outcomes for women's career advancement. This study further highlights the lack of understanding among male colleagues regarding the purpose and significance of formal networks for women. Future research can explore the attitudes and perceptions towards women's networks from the male perspective, investigating potential barriers, misconceptions, and strategies to foster greater understanding and support for these networks.

Overall, future research can build upon the findings in this study to deepen the understanding of the value of formal networks for female leaders in a male dominated culture and explore ways to enhance networking experiences, promote gender equality, and foster inclusive cultures within organizations.

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Appendices

Appendix 1. Interview guide

Interview guide
Introduction
Can you tell us about your background, where do you work today and how did you get there?
Organizational culture
Tell us about what the gender distribution looks like at your workplace. How do you experience the organizational culture? How would you describe the role of organizational culture in shaping network opportunities and influencing career advancement? In your opinion, what are some examples in which male-dominated cultures within organizations can hinder women's participation in networks and their progress in their careers? In your experience or observation, what are the potential long-term consequences of excluding women from informal networks in terms of their career growth and representation in leadership positions? Have you felt that there was a need to change the culture to increase the proportion of women at management levels? From your experience or knowledge, how do gender stereotypes affect informal networks and the opportunities they offer for women's career advancement? Do you feel that you have the same network and career opportunities as a man? Do you feel that you and your male colleagues are treated in the same way by other colleagues/managers/customers? How would you describe what a person needs to be to fit into your workplace? Have you ever had to adapt to fit into your workplace? Have you encountered any challenges in your career so far? (in relation to gender)
Networks

Informal networks What is it like to network in the tech industry as a woman? Do you feel that you have access to the networks that exist? The network they are members of Can you explain why you have chosen to join? Can you describe how you have benefited from xx? Has participating in a women's network opened up new career paths for you?
In your opinion, how does the culture of your organization impact women's participation in external women-only networks? Do you think the organization encourages or discourages participation in these networks? What are some potential risks or downsides to participating in external women-only networks? How can these risks be mitigated? In what ways does the organizational culture support or hinder the development and effectiveness of formal networks for women? How do you think the organizational culture could be improved to better support formal networks for women?
Mentorship and role models
Tell me if you have or have had someone who you could describe as a mentor or a role model? Via the network or at the company? How do you feel your mentor or role model has influenced your career? Do you think it would have made a difference if you had had a male/female mentor?

Appendix 2. Coding scheme

Themes	Sub-themes	Codes
Organizational culture	Gendered organizations in relation to networks	An identified need for diversity and inclusion initiatives Male dominated industry Homosocial Behavior, male allies and advocacy Stereotypes subjective to gender bias
	Gender stereotypes in relation to networks	

		Perception of women as less assertive Limited female presence in the formal sphere of networks
Networks - effects on female career advancement	Informal networks	Access to job opportunities Role of social relationships in informal networks Factors that influence the formation of informal networks Psychosocial benefits Instrumental benefits
	Formal networks	Factors that influence the formation of formal networks Role models and mentorships
	Adverse perceptions of women's formal networks	Perception of women's networks as exclusionary Perception of women's networks as unnecessary or unimportant