Gender Diversity in the Workforce and New Firms' Capacity to Innovate

Insights into Tech start-up teams

DESPOINA TSIougkou
Gender Diversity in the Workforce and New Firms’ Capacity to Innovate

Insights into Tech start-up teams

Despoina Tsiougkou

Master of Science Thesis INDEK 2017:145
KTH Industrial Engineering and Management
Industrial Management
SE-100 44 STOCKHOLM
Abstract

The present thesis examines the relationship between innovation and gender diversity in the workforce, through the lens of new firms in the Stockholm Tech start-up ecosystem. Taking a point of departure in a knowledge-based understanding of innovation and firm dynamics, the study explores the relationship between gender and innovation at the firm level. First, the theoretical framework is built on relevant literature and empirical research in a multidisciplinary fashion. Then, a qualitative inquiry is designed with the aim of contributing to the growing research corpus in the intersection of gender diversity and firm capacity to innovate. Employing a qualitative interviewing method, data was collected among founders and founding team members of entry-level tech start-ups in Stockholm. The objective was to document how founders and entrepreneurs, in general, approach gender diversity when building their start-up teams. The analysis reveals that gender diversity, albeit acknowledged as an input to innovative performance, is not prioritized over other human capital aspects, such as talent. This is in line with the bulk of literature that studies the diversity in knowledge base and firm performance, hence highlighting the cognitive aspects of innovation process. The thesis findings are of considerable benefit both for broadening the extant approach to innovation process and for understanding gender diversity dynamics in the workforce.

Key-words: Innovation, Gender Diversity, Start-up, Tech Industry, Stockholm.
Acknowledgements

First, I would like to thank my thesis supervisor, Associate Prof. Kristina Nyström, for her guidance and encouragement during this degree project.

I would also like to thank Anna Isoz, coordinator at KTH Innovation, who kindly suggested several start-up co-founders to interview for the purpose of data collection within my qualitative research. All interview participants are gratefully acknowledged for their contribution with valuable insight and reflections upon the topics of interest discussed.

Finally, I would like to express my most profound gratitude to my parents, siblings, close friends and dear D. for their restless support and motivation to create order out of chaos.

Despoina Tsiougkou

Stockholm, September 2017

“All animals are equal, but some animals are more equal than others.”

George Orwell, Animal Farm (1945)
### TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>II</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>III</td>
</tr>
<tr>
<td><strong>1 INTRODUCTION</strong></td>
<td>1</td>
</tr>
<tr>
<td>1.1 Background</td>
<td>1</td>
</tr>
<tr>
<td>1.2 Research Questions</td>
<td>2</td>
</tr>
<tr>
<td>1.3 Sustainability Implications</td>
<td>3</td>
</tr>
<tr>
<td>1.4 Outline of the Thesis</td>
<td>4</td>
</tr>
<tr>
<td><strong>2 THEORY AND EMPIRICAL RESEARCH</strong></td>
<td>5</td>
</tr>
<tr>
<td>2.1 An Approach to Innovation</td>
<td>5</td>
</tr>
<tr>
<td>2.2 Employment in New Firms</td>
<td>7</td>
</tr>
<tr>
<td>2.3 Nascent Gender Gaps in Business and Technology</td>
<td>8</td>
</tr>
<tr>
<td>2.4 Workforce Diversity through a Gender Lens</td>
<td>12</td>
</tr>
<tr>
<td>2.5 Diversity and Firm Innovative Performance</td>
<td>14</td>
</tr>
<tr>
<td>2.6 From the Business Case to an Innovation Case for Gender Diversity</td>
<td>16</td>
</tr>
<tr>
<td><strong>3 DATA AND RESEARCH METHOD</strong></td>
<td>19</td>
</tr>
<tr>
<td>3.1 Research Design</td>
<td>19</td>
</tr>
<tr>
<td>3.2 Qualitative Interviewing Method for Data Collection</td>
<td>21</td>
</tr>
<tr>
<td>3.3 Data Analysis</td>
<td>22</td>
</tr>
<tr>
<td>3.4 Validity, Reliability and Ethical Reflections</td>
<td>24</td>
</tr>
<tr>
<td><strong>4 EMPIRICAL ANALYSIS AND DISCUSSION</strong></td>
<td>26</td>
</tr>
<tr>
<td>4.1 Stockholm Tech Start-up Scene</td>
<td>26</td>
</tr>
<tr>
<td>4.2 Qualitative Content Analysis and Findings</td>
<td>28</td>
</tr>
<tr>
<td>4.2.1 Activities that affect innovative performance</td>
<td>28</td>
</tr>
</tbody>
</table>
Recruitment process and criteria 31
Gender diversity 34
Gender diversity ab initio or de futuro? 37

Discussion 38

CONCLUSION 42

REFERENCE LIST 45

APPENDICES 52

Appendix A. Interview Protocol 52
Appendix B. List of Interviewees and Background Information 55

LIST OF FIGURES
Figure 1. A schematic overview of the research findings.................................39

LIST OF TABLES
Table 1. Respondents and start-up team composition ........................................55
Table 2. Respondents and innovation in their start-up activity ..........................55
1 INTRODUCTION

“A major challenge for innovation system analysis is to avoid thinking in terms of mechanical models of causality and develop theory as well as analytical techniques that make it possible to study how different factors interact in a systemic context.”

Lundvall, B.-Å (2007: 22)

1.1 Background

A systemic approach to innovation has allowed economic research to map the actors involved in innovation processes (Lundvall, 2007). Whereas analyses pivot on private and public institutions, the individuals embedded in the institutions’ activities are not visible in the innovation discourse (Alsos et al, 2013). Research has typically focused on innovation outcome; yet, our understanding of innovation instances and participants is rather fragmented (Fagerberg, 2005). New firm creation is known to be conducive to innovation and industry dynamics (Geroski, 1995), which may explain why entrepreneur’s role has been traditionally center stage in the innovation literature (Schumpeter, 1942; Shane and Venkataraman, 2000).

High rates of innovation are an instrumental factor for corporate population restructuring and new job creation (Birch, 1989). As entrepreneurs reach for labor force to launch their ventures, they engage in further competition with incumbent firms as employers (Sørensen, 2004). In the context of innovation and knowledge-intensive industries, the competition naturally revolves around skilled labor. Firms draw technological competences from a dynamic knowledge base, built on diverse inputs taken from various areas of the broader technological and economic landscape (Colombelli et al., 2013). Information Technology industry is typically an innovation and knowledge-intensive sector that encompasses a broad spectrum of business activities. Considering that diversity facilitates knowledge search and recombination (Mohammadi et al., 2017), we expect diversity to be conducive to the business and innovation activities within tech industry. Diversity is multi-dimensional upon individuals’ different characteristics and it entails aspects like age, ethnicity, educational background and gender.

Entrepreneurship is arguably a gendered phenomenon (Minniti, 2009 cited in Alsos et al, 2013), similarly to gender being inherent to sociotechnical process (Wajcman, 2010). Following similar reasoning, it is plausible to conceptualize innovation as both a source and an outcome of gender relations (Alsos et al., 2013). A gender perspective on the systemic approach of innovation milieus does not entail the introduction of a novel “gender” element; to the contrary, it weights the contribution of an element already embedded in the innovation process (Danilda and Thorslund, 2011). By virtue
of a gendered perspective, we can analyze the lingering gender gap in innovation and knowledge-intensive industries, as this extends over business and innovation practices.

1.2 Research Questions
Gender-based disparities can emerge within various contexts and may even overlap, as is the case, for instance, in business and innovation processes. The purpose of this study is to explore gender diversity and innovation in the context of new business creation. Research in the intersection of gender diversity and firm-level innovation has primarily dealt with larger organizational environments, perhaps due to established innovation procedures and coordinated management practices. Shifting the focus from an established organizational setting to one under formation, the main research question is formed as follows:

- How does gender diversity in the workforce of a new venture influence firm’s capacity to innovate?

In addition, I delve deeper into new ventures workforce composition and scrutinize their recruitment tactics to gain further insight into the criteria that apply for start-up team formation. Consequently, the main research question is complemented with the question:

- How do founders in tech industry approach gender diversity, when building their start-up team?

The new ventures studied are at their formative stage and form part of the Stockholm tech start-up ecosystem. The Swedish context provides a suitable field for research, as gender mainstreaming is prominent and people discuss gender topics more willingly. In addition, it boasts one of the most prolific tech hubs globally. Nonetheless, there are certain limitations to be considered as of this choice of focal point, which are deployed in subsequent chapters.

To the best of the author’s knowledge, there are no previous studies investigating the relationship between gender diversity and innovation at this stage of firm growth. The research design assumes a qualitative approach that is deemed more appropriate for the way the author intents to answer the research questions. The concepts that are scrutinized are complex and manifest themselves in multiple dimensions. Individuals are expected to assign various functional aspects to innovation capacity, as well as to interpret gender diversity based on their experiences and background. Hence, by utilizing a qualitative approach for this thesis, a theoretical construct can take form and unveil the potential links between firm-level gender diversity and innovation. Those links will also provide a better understanding of how start-ups build their founding teams and employ skilled labor. As such, a qualitative interviewing method is followed to elucidate the topics of interest and determine the variables involved in the study of gender diversity impact on firm capacity to innovate.

The variables are theorized ex ante but take their final form after data collection; i.e. gender diversity, innovative capacity and recruitment criteria are operationalized at
the empirical analysis stage. This thesis offers both theory and evidence on gender and innovation, so long as the concepts are interpreted broadly. Research in the intersection of innovation and gender is both scarce and fragmented (Alsos et al., 2013). The theoretical framework that motivates this study is built foremost on gendered approaches to innovation within the relevant fields of business and entrepreneurship. A joint research on gender and innovation will widen the scope of innovation literature per se and give rise to new areas for research. The emergent conceptual framework, which is -in actual fact- a preliminary attempt to explore firm-level innovation through a gendered lens, constitutes this thesis contribution to a gendered understanding of diversity impact on firm capacity to innovate.

1.3 Sustainability Implications

Following a prevalent consensus that innovation contributes to sustainable growth and economic development, understanding the link between gender diversity in the workforce and firm-level innovation will further our knowledge of a multifaceted phenomenon. Sustainability considerations touch upon economic, social and environmental imperatives (United Nations Economic Commission for Europe [UNECE], 2017). Regarding innovation as a gendered phenomenon, viz. as both a source and an outcome of gender relations (Alsos et al., 2013), legitimizes a sustainable aspect of gender diversity. What is suggested is that sustainability alludes to social values that are also inherent in our conceptualization of a gender diverse workforce, as it implies equality in terms of employment opportunities for both genders. From a methodological viewpoint, it may be challenging to situate gender relations within an environmental perspective (Schulz, 1996; Weller et al., 1999, cited in Schultz et al., 2001). It has been argued that different types of interaction between individuals and their material interests determine different kinds of relationship to the environment (Agarwal, 1991; 1997, cited in ibid). Extending the argument in a gendered perspective, the manifold interactions among individuals involved in innovation processes could potentially untangle any environmental values innate within gender diverse innovation milieus. Hence, further research is needed to extrapolate any implications for the environment as a result of gender diverse workforce at firm level.

This thesis’ subject pertains to the realm of a broader gender discourse and is motivated by a view that integrating gender aspects in innovation research will lead to more sustainable policies. This extends over a widespread belief that tapping into female population’s skills can bolster economic growth, alleviate poverty, improve social welfare and secure sustainable development in a global context ¹ (Organization for Economic Co-operation and Development [OECD], 2008).

1.4 Outline of the Thesis

This thesis is structured in the following way. First, a theoretical framework is built on current knowledge on innovation and gender, where employment in new firms is also outlined. This section describes the theories used to approach the research questions under study. Literature on innovative performance and gender diversity is diligently scanned in order to report findings that are considered of particular relevance to the aims of this thesis. The review of relevant theories and empirical research unveil the research gap that this thesis aims to contribute to. Next section presents the scientific approach and methods that have been applied to collect, analyze and interpret data in this inquiry. The section concludes with considerations on reliability, validity and ethical issues arising from the research design. The following section provides an empirical analysis of collected data and presents the main research findings. The thesis is brought to an end with a discussion of the results, the limitations of this study, as well as mentions on future research possibilities emerging at the intersection of gender and innovation studies.
2 THEORY AND EMPIRICAL RESEARCH

This chapter provides an overview of current knowledge on firm-level innovation dynamics and gender diversity. Several theories and existing literature that further our understanding of these concepts, are brought together to approach the questions under research. The chapter concludes with the emergent research gap and this thesis objective to add to the existing body of knowledge.

An investigation into the effects of gender diversity on firm-level innovative performance lies at the intersection of two concepts that seem subtly correlated at first, viz., innovation and gender. An encompassing definition of innovation may not necessarily take a gender aspect into account; yet, we probably need to bring gender into discussion, if we want to account for firm-level innovative performance in its wider context.

There is a profound link between any firm’s capacity to innovate and its human assets. Although it is knowledge and competence that naturally add value to the human capital, it cannot be ignored that there are prominent aspects of identity, such as gender, that influence human interactions. For that matter, they might influence the very human interactions that take place at work. Assuming that, firm-level innovative performance can be further investigated from a gender lens.

2.1 An Approach to Innovation

Innovation has been at the forefront of economic growth research for decades. The effort to conceptualize its notion perseveres within an ever-changing socioeconomic context, so that innovation is presumably context-dependent. Hence its power to foster growth and development across a whole economic spectrum that extends from the national and sectoral levels to the single firm unit. Innovation is omnipresent throughout all following aspects: national innovation systems that fuel economic growth and bring prosperity to the economy (Lundvall, 1992; 2007); the dynamic view of industrial sectors and their agents that further technological development (Malerba, 2002); and firm growth, where empirical studies associate high rates of entrant firms to high rates of innovation and efficiency gains (Geroski, 1995).

In the Schumpeterian tradition, which lies at the core of innovation studies, a transformative role is foremost attributed to innovation; it can replace existing productive routines with new structures through an enduring “gale of creative destruction” as described by J. A. Schumpeter (1942). These transformations occur in both social and economic contexts. The Schumpeterian view also points to the prominent figure of the entrepreneur, as the agent to incite innovation. Within the emergent entrepreneurship literature, not only those enterprising individuals are in spotlight, but also the opportunities to create entrepreneurial profit for the innovators (Shane and Venkataraman, 2000). Opportunities for product and service innovation take various forms and exist in different markets; according to Drucker (1985, cited in
ibid) entrepreneurs in product market identify opportunities as follows: (1) creating new information with the invention of new technologies; (2) seizing upon the information asymmetries that cause market inefficiencies; and (3) keeping alert for the changes in the relative values of resources that result from changes in the political, regulatory or demographic context.

There are processes through which technological opportunities translate to innovative efforts and those illustrate how private agents allocate resources to create value. Organizational arrangements are significant at firm-level, for they define all procedures that allocate resources to innovative activities and establish that these resources are used efficiently in the development of new products or processes, thus improving existing routines (Dosi, 1988). Dosi (ibid) pinpoints innovative activities in problem-solving, in “technological trajectories” or prescribed patterns of innovation, in perceptions of technology as specific knowledge rather than information openly available, and in firms’ systematic research and development; as a result, firms have the advantage of building knowledge bases compared to individual innovators. As expected, the nature of organizational arrangements varies across firms and industries, the same way that innovation varies over time and space (Fagerberg, 2005 cited in Alsos et al. 2013).

Ultimately, it all comes down to the decision-making unit for innovation, which is apparently the firm (Klette and Kortum, 2004). In organizational theory, the behavior of the firm is rather perceived through a conceptualization of the firm per se as a complex entity that includes multiple individuals (Grant, 1996). Building on that, the knowledge-based view of the firm provides us with another conceptualization; that of the firm as a knowledge-integrating institution (ibid). Grant (ibid) stresses the favorable position of firms integrating the knowledge that different individuals bring, within their production process of goods and services. The integration mechanisms naturally pertain to the management practices that foster coordination among the specialist knowledge of different employees, assuming that specialization brings efficiency gains to the firm (ibid).

Considering a firm’s knowledge base, it goes hand in hand with the organization’s human capital resources, which constantly feed into this base. A firm’s capacity to produce and innovate cannot be isolated from its personnel. For that matter, the productive opportunity of a firm is highly dependent on the array of services that its resources can accomplish; firms get a unique character from the heterogeneity of those services (Penrose, 1995). Penrose further argues that “Not only can the personnel of a firm render a heterogeneous variety of unique services, but also the material resources of the firm can be used in different ways, which means that they can provide different kinds of service” (ibid: 75). Extending that argument to make a case for heterogeneity in firm workforce inextricably touches upon employment in new firms.
2.2 Employment in New Firms

Innovation certainly plays a transformative role into the economy, while new firms are crucial for “creatively destroying” existing structures, acting as both innovators and job creators. Small firms are vital part of the economy for they contribute to economic growth with their supply of goods and services (Kirchhoff, 1996). New firms potentially bring in qualitative changes to the production processes and as such, they are capable of dynamically interfering with product market or industry structures. High rates of innovation also incite a fundamental shift in how corporate population is structured and how jobs are created (Birch, 1989).

Entrepreneurs eventually resort to labor to launch their ventures, which also implies that they have to engage in a competition for specialist labor with the existing employers (Sørensen, 2004). As a result, innovators’ efforts to tap into entrepreneurial opportunities may strike labor constraints. Diverting resources from product market competition to skilled labor competition depends upon investments in recruitment, training and retention processes, which entrepreneurs would have to make under budget restrictions (ibid). There is something romantic about bootstrapping garage start-ups into success stories; there are visionary entrepreneurs that built a start-up team and started off their house basement. Newly started firms entail the risk of failure, yet employment in a small company feels more secure than within a larger one, at times (Birch, 1989). Interestingly enough, Birch’s (ibid) empirical analysis in the U.S., between 1970 and 1981, attributed to garage start-ups a likelihood to disappear that was only two and one-half times more than that of a Fortune 500² company.

The challenges that small firms have to address regarding their recruitment process are distinct from larger firms’ barriers to recruitment; small and new firms have lesser popularity and face greater pressure to abide by the institutional norms (Williamson et al., 2002). New firms cannot count upon their reputation or market share to appeal to prospective employees, who may not even be aware of their existence (Aldrich, 1999; Aldrich and Von Glinow, 1991, cited in ibid). Moreover, as innovative activities require skills, new innovative firms find themselves competing with larger industry players for services of skilled professionals (ibid). At that specialized segment of the labor market, the institutional standards and norms are more established (ibid), which demand from firms to comply with formal recruitment processes. However, new firms may have difficulty complying, due to lack of resources, for instance. Especially within industries in their formative years, innovating entrepreneurs may find themselves in a position where their legitimacy is being questioned (Aldrich and Fiol, 1994).

A formal recruitment process will typically ensure that the employee’s earnings correspond to its credentials and the market norms. Even so, organizational dynamics may have consequences on wage that will further affect employment opportunities

---

² The “Fortune 500 companies” are U.S. corporations ranked by their total earnings for each respective fiscal year. The list is annually compiled and published by Fortune magazine (http://fortune.com/fortune500/).
(Sørensen, 2007). For instance, as new ventures create vacancies, the ensuing job mobility may influence labor demand and wages (ibid). According to Sørensen’s argument, wage inequalities partly derive from the degree of heterogeneity during the matching process among employees and employers (ibid). Firm survival is also of concern for potential employees. In a context where most start-ups have a brief life-cycle, joining a new venture is a risky decision, but from the viewpoint of labor market entrants, there might be more eagerness to assume that risk (Nyström and Elvung, 2014). Allowing for a less heterogeneous group of employees, namely those who view start-ups as an entry point to the labor market, can ascribe a lesser wage penalty to new firms as employers (ibid).

Industry dynamics are shaped by industry’s level of technology and stage in life-cycle (Agarwal and Audretsch, 2001). The Information Technology industry has evolved through the years into a broad sector that embodies multiple technology markets and that is, correspondingly, populated by multiple firms; the “tech” umbrella covers large established corporations and smaller firms, including ones with exceptionally high growth rates. No official definition can explicitly account for what is now perceived as “tech”, but assuming a growth stage in the life-cycle, possibly towards maturity, firm size is of less relevance for survival, as small firms are capable of positioning themselves in strategic niches within the industry (ibid).

Survival rates are equally related to firms’ capacity to build a dynamic knowledge base, from where they can draw technological competences (Colombelli et al., 2013). In that context, new knowledge derives from the compilation and arrangement of diverse knowledge inputs, taken from various areas within the technological and economic landscape (ibid). In this approach, innovative firms that wish to survive should commit to a knowledge search process that is characterized by diversity and coherence, but not by cognitive distance (ibid). According to evidence from Brüderl and Preisendörfer (2000, cited in Lautenschläger, 2015), both start-up size and the founders’ human capital are positively connected to rapid growth, while implementing an innovative business strategy accounts for most part of that growth. Their reasoning implies that new innovative firms are more likely to grow rapidly (ibid).

2.3 Nascent Gender Gaps in Business and Technology

It becomes apparent in research corpus that heterogeneity needs to be further explored as context dynamically evolves within and across firms and industries. The terms under which heterogeneity is then perceived, depend upon the context given. In Sørensen (2007), when organizational heterogeneity is discussed in a horizontal dimension, it depicts diversity in terms of the types of business activity. Different sectors utilize specific technology and, thus, demand for different specializations. As suggested from Hannan’s work (1988, cited in ibid), differentiation in organizations’ types makes it more probable for employers’ needs to match with employees’ skills, in a way that the latter are not randomly assigned to sectors. Heterogeneity in vertical dimension, on the other hand, assumes all organizations demand for similar skills, so
that diversity occurs among employees’ different productivity levels (ibid). That framework conceptualizes heterogeneity to discuss organizational diversity in relation to the enduring wage inequalities among employees and across sectors.

Inequalities are widespread in the broader socio-economic context; we also tend to perceive them through these two dimensions, i.e. as horizontal and vertical inequalities. Horizontal inequalities, accounting for discrepancies among groups, further contain gender inequalities (Stewart, 2016). Following how wage is unevenly distributed among employees of different gender, for instance, points to a source of gender inequality. The gender pay gap has traditionally been approached from a gender perspective; prevalent explanations focus on gender differences in qualifications and in treatment (Blau and Kahn, 2007). Different qualifications among men and women most probably result from different years of education or working experience, while different treatment suggests, by all appearances, discrimination in labor market. The bigger picture, though, should also integrate an economic perspective in the analysis; drawing on the trends of wage inequalities in total, the wage-setting patterns and the shifts in labor demand would illustrate a more plausible and inclusive explanation of the gender pay gap (ibid).

On the whole, gender gaps can emerge in various fields across the socio-economic spectrum. Employment is a fundamental aspect of human lives and any inequalities that emerge from human interaction within that spectrum inherently bear that dimension. It is critical for research to contextualize gender gaps in their full scope, as with the aforementioned gender pay gap. Gender equality in labor market does not unify men and women’s nature, roles or needs, but rather highlight the equal value of those different aspects among genders (International Labor Office [ILO], 2007). Assuming that equality lies in the opportunities rather than the outcome (Roemer, 1998, cited in Steward, 2016), socio-economic development efforts should principally aim for balance among men and women’s opportunities. Similar circumstances may provide equal opportunities, but fair treatment will ensure that the individuals can benefit equally from these opportunities. According to ILO (2007: 92) “Gender equity means fairness of treatment for women and men, according to their respective needs and interests”.

Along these lines, gender diversity in a firm can be defined as the equitable representation between male and female gender among its workforce. Gender is a salient characteristic of individual identity and its study pertains to an array of disciplines that incorporate individuals’ behavior into their scope. In group interactions and decision making, gender diversity among individuals can potentially raise the heterogeneity in values, beliefs and attitudes, so that individuals judge their conjoint capabilities based on critical thinking (Garnero et al. 2014).

In economics, as well as in business and entrepreneurship literature, gender differences have been studied to a great extent and research findings often make a case for gender diversity. For instance, the current business case for gender diversity calls for gender balance in firm leadership. Organizational research had already scrutinized gender stereotypes in large organizational settings since the seminal work
of R.M. Kanter (1993), first published in 1977. Kanter portrays a corporate setting where men and women are assigned to sex-segregating tasks that encompass an idealized image of their skills (ibid). As a result, women staff organizations on a large scale, but hardly ever climb up the hierarchy ladder (ibid). That phenomenon has been later popularized under the metaphor of a glass ceiling, meaning the invisible barrier that hinders women’s career attainment.

Nowadays increasing female participation in education and labor market, has led to more women being appointed to managerial positions. Business literature has subsequently stretched its gender perspective to explore management characteristics and organizational behavior. Yet again, it becomes apparent how manifold phenomena demand multi-faceted approaches; more women in management positions do not count in favor of a converging gender gap if women had to adapt to male norms, for that would not be gender equal (Alversson and Billing, 1992). In addition, organizational creation has typically been studied through a masculine lens, which makes the gendered nature of new business ventures less visible (Bird and Brush, 2002).

In science and technology, another ingenious metaphor has been broadly used to illustrate how female students and professionals exit the field at various stages throughout their education and career. This fragmented trajectory is commonly pictured as a pipeline that leaks out women. The intuition behind both metaphors mentioned (glass ceiling and leaky pipeline) is that women face some barriers that keep them from reaching their potential; for that matter, this untapped talent also keeps businesses and society away from established growth and development goals. Feminist approaches of technology advocate a mutual shaping of gender and technology, in a way that technical change has an impact on gender power relations that needs to become relevant in policymaking (Wajcman, 2010). In the light of outspoken metaphors, could gender discrepancies in both business and technology proclaim a gender gap in innovation, to wit, an untapped potential to innovate?

The gender gap in start-up activities portrays how there are significantly less female than male entrepreneurs, even in labor markets with even representation among genders (Markussen and Røed, 2017). Entrepreneur’s profile and characteristics are typically center stage in entrepreneurship literature, but research has gradually incorporated that gender dimension. The analysis has gone beyond the basis of studying differences or similarities among female and male characteristics, as taken from both observed and unobserved factors, such as education, profession or family status, and attitude towards risk or competition, respectively. Markussen and Røed (ibid) discuss the influence of gender-specific networks and peers to explain the gender gap in entrepreneurship. On the basis of such influences, present low rates of female entrepreneurs can be partly attributed to modest rates of other female entrepreneurs among their peers to whom they could look up to; an increase in current female entrepreneurship will incite more women to venture their business ideas in the future. Seron’s et al. (2016) research in the persistence of sex segregation within engineering profession, a male-dominated field, also point to peer effects and the professional socialization process in terms of explaining low female participation in
the field. Further research suggests that women who obtain similar characteristics as men (in distributional terms) are still demonstrating less entrepreneurial or intrapreneurial activities (Adachi and Hisada, 2017). Adachi and Hisada (ibid) conclude that workplace conditions are more instrumental than family-related policies in gender gap mitigation.

Upon regarding entrepreneurship through a gender lens, the research departs from studying the differences between individuals and allows us to explore how gender lies in processes, meanings and experiences (Carter and Shaw, 2006; Ahl and Nelson, 2010, cited in Alsos et al., 2013). Applying that same lens to innovation would entail a research focus on individuals as actors, which has not been given (ibid). We know that innovation occurs in processes, in organizations, in research institutions (as spin-offs) and in innovation systems, but we ignore innovator’s role (ibid). Unlike entrepreneurs’ clear mandate to upset current structures with their endeavors, innovators are not entrusted with any determinate tasks. Research has approached innovation, for the most part, through its outcome and we fall short of understanding why and how it occurs (Fagerberg, 2005). Beyond doubt, it’s an organizational phenomenon, yet we should keep in mind that firms’ ability to innovate depend highly on their openness, i.e. the interaction with their environment (ibid). This also brings to mind the emergent concept of “open innovation” and the discussion about future prospects for innovating firms (Chesbrough, 2017). We may even draw a parallel between Fagerberg’s (2015: 14) “a firm does not innovate in isolation” and Chesbrough’s (2017) vision for large-scale, collaborative and robust innovation processes that will facilitate innovation in both products and services.

Firm products and services fall into industries and, as already mentioned in the beginning of this sub-section, there is a predominant set of skills and specializations that apply to each industry. It is quite possible that industry “culture” influences the entrepreneurial process and, subsequently, the newly started firms per se (Bird and Brush, 2002). Technology-driven firms manifest an exigent, highly competitive nature and clearly set growth objectives, all of which are representative of a masculine dimension that is presumably the norm of new firm creation and survival in the industry (ibid). The insight from Bird and Brush’s (ibid) gendered perspective on new venture creation is that entrepreneurs and firm processes manifest attributes that span from masculine to feminine, but the latter is typically neglected. The authors conceptualize gender maturity as the “conscious integration, acceptance, appreciation, and enactment of qualities of both genders” (ibid: 56) and make the case that gender mature entrepreneurs will create gender-balanced organizations.

As the intersection of gender and innovation has been slightly researched, the existing framework is rather built on gender research within the kindred fields of business and entrepreneurship. In consideration of innovation’s inter-disciplinary nature and gender’s multi-faceted approach, building on research insights from relevant fields is in no way of lesser importance. Alsos et al. (2013) identify the particular challenge of research in gender and innovation, in the fact that any gender impact is not obvious; one has to delve deeper into innovation processes, organization and systems. Accounting for the notion of diversity as an instrumental characteristic among firm
workforce, it is interesting to explore its impact on firm-level innovation, which could further suggest an innovation case for dismantling gender inequality.

2.4 Workforce Diversity through a Gender Lens

There is ample reason to argue that diversity matters in a business context; from workforce to product and networking strategies, diversity provides advantages in many ways. While it appears to be rather intuitive, there is plenty of scientific evidence to support the intuition for diversity gains. In science and technology, system diversity can facilitate the development of precautionary, resilient and sustainable applications, but also promote innovation, moderate lock-in and embrace inclusiveness (Stirling, 2007). An interdisciplinary analysis of diversity has validated similar benefits for systems under distinct contexts, as long as the system features three essential elements: variety; balance and disparity; and it should possess all three at the same time (ibid).

In new firm creation, entrepreneurs allowing for diversity of behaviors and information, and adopting a more relaxed attitude toward conformity, can foster innovation (Martinez and Aldrich, 2011). Yet, in economics there are also circumstances when embracing diversity to promote innovation may inhibit other aspects of performance; for instance, more diversity in an investment portfolio implies less risk (Geroski, 1989 cited in Stirling, 2007). In that sense, diversity accounts for moderating the contribution of individual elements (ibid). It follows on that any diversity strategies should be approached with consideration for the trade-off between their costs and benefits.

Gender is a component of diversity, therefore suggesting that innovation gains can also arise from gender diversity is plausible. The challenge lies in quantifying these benefits and comparing them with potential costs. A management insight on building high performance teams suggests that matching functional competence with employees’ personality and work preferences is crucial in nourishing trust among colleagues at early stage (Bassett-Jones, 2005). When individuals share similar attitudes and preferences towards work context, they can transfuse homogeneity into team’s approach as a whole, which can make into a blind spot for the firm; a team selection that is blind to gender will naturally bring balance and diversity to the team (ibid). Therefore, bringing new members to the team, besides new venture founders themselves, is likely to be based on competence and team compatibility criteria.

Sociological research untangles team formation discussing various mechanisms; among these, homophily explains how teams are composed based on similarities of members’ characteristics. Gender as a social identity that is externally associated with individuals, hence a characteristic ascribed to them, has been widely studied as a homophily driver (Ruef et al., 2003). Ruef et al. (ibid) argues that U.S. entrepreneurs tend to avoid including strangers on their founding teams composition, which may eventually result in less functional diversity; potential costs from excluding strangers could translate into excluding new perspectives and ideas from the organizational
founding process. Depending on the emerging business, it is also possible that the benefits from founding new teams based on strong interpersonal ties can counterbalance the above-mentioned costs. Aldrich (1989, cited in ibid) suggests that networks supporting female entrepreneurs as a response to male dominance in entrepreneurial activities could possibly enhance homophily.

The workforce of new, small, albeit innovative firms is also subject to funding constraints, which can account for the prevalence of temporary employment positions in fast-growing firms (Lautenschläger, 2015). Research findings from Garnero et al. (2014) indicate that productivity gains from gender diversity depend on the technological and knowledge intensity of firms; gender diversity raise firm productivity within high-tech/knowledge-intensive sectors (ibid). In the same research, Garnero et al. (ibid) found no significant evidence to tie in firm size with diversity effects. Smaller firms dispose limited resources and, thus, build more flexible organizational structures that shift responsibility to employees (Gupta and Cawthon, 1996). This environment enacts collaboration and knowledge-based authority among small/medium-sized firms’ employees, which are then more likely to be responsible for production innovation and problem solving (ibid). In that sense, it would be interesting to explore gender diversity effects and innovation processes within small firms, as those enter a high-tech and knowledge intensive sector.

The lack of cohesion among findings, though, stresses the importance of empirical research to isolate the gender dimension of diversity effects on a firm’s innovative performance. Innovation processes are interactive as they embody the exchange of perspectives and communication among employees that come from different levels of the organization and bear different qualities from various backgrounds (Østergaard et al., 2011). Diversity among employees’ backgrounds creates an open space that accommodates pluralism and allows new ideas to flow, thus, refining this interaction. Innovative performance engages a considerable amount of creativity in aggregating the multiplicity of ideas. Østergaard et al. (ibid) argue that considering solely the technological dimension of knowledge in terms of diversity and focusing on small groups within larger organizational settings can disregard the benefits of a diverse composition of skills and knowledge that encompass factors like gender, age and education. They estimate, subsequently, four econometric models that incorporate human capital diversity and quantify the link between diversity and innovation from a broader perception of knowledge through firms’ intangible assets. Their empirical findings suggest a positive link between gender diversity and a firm’s likelihood to innovate.

It is important to distinguish between the different dimensions that group interactions transpire throughout organizational processes. The interaction style that improves innovative performance is usually creativity-intense, and besides, may differentiate from the interaction style that strengthens firms’ effectiveness (ibid). Radical innovations’ contribution to firm revenue is positively correlated with diversity in ethnic and educational backgrounds at aggregate firm-level (Mohammadi et al., 2017). More specifically, while disciplinary (educational) background diversity breeds both
radical and incremental innovation, ethnic diversity has a fundamental impact on the former (ibid).

Extant literature provides strong evidence supporting the innovation-related advantages of diversity, both in disciplinary and demographic aspects of human capital; nonetheless, diversity is a nexus of components, one of them being gender. Identifying who is involved in innovation processes—hence, considering individual identity—and then documenting interactions from their personal perspective will further our understanding of the diversity effects. Such documentation requires narrowing down the scope of analysis to a single industry; as already pointed, industries with high technological and knowledge intensity are in focus to elicit a valuable insight into diversity, gender and innovation.

Another noteworthy distinction is the one between firm productivity and innovative performance, as they overlap but do not necessarily coincide. Innovation is one among the major organizational processes (Saunila, 2017), thus measuring the result of business activities with an innovation focus is only part of measuring the overall firm performance. Firm productivity is commonly tied to quantifiable metrics of business processes, which statistically ascribe robustness to the measurements. Innovative performance typically refers to research and development (R&D) as it offers “clear measurable indicators of performance, e.g. success of R&D projects, patents, publications, bonuses related to inventions” (Turner, 2009: 124). Directing research efforts on quantifying innovation outcomes entails the risk of overlooking triggers of innovation. It can, thus, be argued that a qualitative approach on innovation processes—which are intrinsic in overall business processes, could provide us with a more holistic view of innovation performance.

### 2.5 Diversity and Firm Innovative Performance

Discussing gender and innovation in a business context while looking past firm performance, it would be a credulous attempt to delve into innovation processes. Firm-level innovative performance is embedded in employees’ competence, in their allocation within the organization and in group interaction. In like manner, gender is innate in individuals’ identity.

Turner (ibid) explores the business case for gender diversity by isolating the effects of gender on innovative performance. The researcher processes R&D data and estimates an econometric model that predicts an enhancement of individual and team innovative performance as the result of an increase in gender diversity at firm level. The context of this research regards international companies that have a clear innovation strategy, according to which they assess individual and collective R&D performance in a quite homogenous fashion. The key points from Turner’s case are, first, the need for a protocol among firms to establish a common assessment method for diversity implications on innovative performance, and second, the moderating effects of domain bias. That is to say, women are over-represented in several firm activities and projects that do not act as major contributors to the firm’s innovation process (ibid).
As professions can be gender-typed, i.e. assumed as typically male or female, on the basis of gender representation among labor force and the attributes that determine successful job performance (Welle and Heilman, 2005), we would expect, for instance, women to be over-represented in human resource management processes and less present in technology and innovation activities, a typically male-dominated field (Seron et al., 2016). Yet, Kanter’s (1976) insight on hierarchical structures pinpoints the erroneous focus on “sex differences” to explain the variance in behavior among genders; an examination of individuals’ distribution across large organizations’ structural positions would provide a better explanation for deviation in gender behavior.

Parotta et al. (2014) also quantify firm innovation on the basis of patenting behavior. Their econometric model scrutinizes employer-employee data, like Østergaard et al. (2011), as they estimate workforce diversity effects in terms of cultural background, education and demographic characteristics. The empirical analysis give significant results that only account for cultural background diversity impact on firm’s patenting activity, but not education or demographic characteristics, including gender. Generally, the authors underscore the significance of analyzing inclusive datasets, as they paint a clear picture of labor force composition at the firm level. Besides that, endogeneity issues need to be addressed when quantifying the diversity impact on innovation, as the effects may be inflated from existing diversity-aware strategies implemented by firms.

Exploiting information on patents as proxy for innovation will certainly reveal a firm’s propensity to innovate, yet it might not be relevant for new and small firms. Söllner’s (2010) firm-level study in the impact of a heterogeneous human capital on firm’s propensity to innovate corroborate their positive relation, nonetheless the results apply to product innovation activities in manufacturing industries. That context is distant from the new firm creation lens that this thesis applies to innovation activities. Protogerou et al. (2017) investigate innovative performance through young firms’ lens and suggest that any prior exposure of founders to R&D is, indeed, a decisive factor for firm’s propensity to innovate. Besides, findings from Lautenschläger (2015) confirm that new innovative firms employ individuals with former experience from research institutions to a great extent. In addition, academic spin-offs typically employ scientists and alumni from research institutions, at least in the formative years of their venture.

Other factors that determine new firms innovative performance arise from firm’s market environment, portrayed as a nexus of internal and external factors (Protogerou et al. 2017). The authors identify the determinants in workforce human capital, as composed from team’s educational background and functional diversity, but also in firm’s capacity to acquire knowledge from external sources, such as technology collaborations and networking with universities or other affiliated institutions (ibid). An interesting point from Protogerou et al. (ibid) that connects to this thesis’ scope of interest, is a gender effect among workforce composition; their analysis indicate that a gender diverse composition of the founding team is prone to innovate but less likely to engage in radical innovation activities, as opposed to an all-male founding team.
However, the authors are careful with the interpretation of that result and take into consideration the multifaceted innovative performance that can occur in both high-tech and low-tech industries, as both where included in their research sample (ibid).

A firm’s capacity to innovate is mapped by its routines and processes, which encompass several individual and collective aspects: to wit, external knowledge, structures, regeneration, leadership, employee activity, work well-being and know-how (Saunila, 2017). Saunila (ibid) suggests that these factors should be reflected upon innovation performance measurements, which usually adopt a systematic approach and focus on inputs, process, outputs or outcomes. A more holistic approach to innovation performance would also include the firm’s ability to innovate, hence, include the triggers of innovation and capture the complexity of their sources (ibid). Again, innovation performance indicators are a management tool that firms with established organizational structures are more likely to implement in their processes. Innovation management literature embodies a range of performance measurement schemes in theory, but lacks the practitioner’s perspective (Dewangan and Godse, 2014). For firms to address effectively the challenges with their innovation performance measurement systems, a comprehensive approach will help optimize their innovation efforts (ibid). As expected, a holistic view accommodates the cause-effect dipole of innovation, grasps all dimensions and processes within the system, address stakeholders’ goals and can be easily implemented within firms (ibid).

New firms may be challenged by a scarcity of resources or the lack of structured management practices; still, they can benefit from their compact team structure and develop tailor-made solutions for their needs in innovation performance metrics, following all guiding aspects of the holistic approach.

2.6 From the Business Case to an Innovation Case for Gender Diversity

All things considered, the nexus between diversity in workforce and firm’s innovation is featured in literature from various perspectives. Gender as an aspect of diversity has been rather neglected from research efforts, as innovation studies scrutinize products, processes or organizations, but not people embedded in them (Alsos et al., 2013). Nevertheless, our knowledge about the impact of gender diversity on innovative performance is proliferating as more empirical studies investigate heterogeneity in organizational context.

Since organizations are typically multilevel, analysis moves toward specific organizational levels. The business case for gender diversity is built around equal gender representation in top management level. Empirical research confirms that heterogeneity within top management teams is important for achieving strategic goals in terms of innovation and performance, and besides, personality and power are significant heterogeneity proxies for cognitive diversity (Pitcher and Smith, 2001). Harrison and Klein (2007) argue for a better conceptualization of diversity in order to make accurate inferences about its effects. Considering each factor that differentiates the members composing a work-team, they postulate three types of diversity, i.e.
separation, variety, disparity (ibid). Gender diversity is possible to conceptualize as all three types, given the context; under any context, though, gender is usually perceived either as a salient characteristic or as a symbol for a certain status / task preferences within a unit (ibid). For example, in a context where power is unevenly distributed among men and women in a work-team, gender diversity has asymmetric effects and is perceived as disparity (ibid).

Horwitz and Horwitz (2007) conducted a meta-analysis of the diversity effects on work-team outcomes where they group gender along with other innate and directly observable member characteristics into what they call “bio-demographic diversity” and, subsequently, distinguish from “task-related diversity”. Their findings do not sustain any legible impact on team performance for bio-demographic diversity, as opposed to the task-related diversity’s significant effects. Based on that, the authors advocate task-related heterogeneity as an effective management strategy, over building teams based on demographic attributes alone (ibid). What is interesting with Horwitz and Horwitz meta-analysis is how they discern diversity between these two types; it is plausible that demographic and individual (task-related) characteristics overlap, considering, for instance, research claims about gender’s (demographic) impact on individual’s choice of education (task-related).

Concluding the chapter, the main findings standing out of the sum of empirical studies reviewed, add up to an innovation case for gender diversity. Extending the business case for equal treatment and diversity among employees at organizational level, an economic case for gender equality highlights the macro-level benefits from addressing discrepancies in the broader labor market (Danilda and Thorslund, 2011). An innovation case for gender diversity utilizes a gender perspective to reinforce innovation milieus and grow their innovative capacity (ibid).

Although literature in the intersection of gender diversity and business innovation is scarce and mostly pivots on large organizational contexts, the body of knowledge is expanding as both research and policymaking become more gender-aware. Empirical findings concur with diversity impact on business innovation, but further research will consolidate evidence on the isolated effects of gender diversity and provide more comprehensive measurements for innovative performance. Expanding joint research on gender and innovation will also broaden innovation literature scope and offer new insights on which areas are important for future research (Alsos et al., 2013). Current research suggests that gender practices intertwine with innovation process and studies the complexities of innovation under the lens of gendered constructs, i.e. masculinities and femininities (Pecis, 2016).

Research cannot just be confined to a fine-tuning of knowledge gathered from an array of disciplines, perspectives and research methods; research efforts are supposed to add to extant knowledge. Gender gap in innovation is increasingly discussed and the need for gender-aware policies becomes critical. The present thesis examines the relation between gender diversity and innovative performance using young tech start-ups as the focal point of research. To the best of the author’s knowledge, there are no previous studies investigating the relationship between gender diversity and
innovation at the level of this business stage. The research method of choice is another novelty of this study and is expounded in more detail in the chapter that follows.
3 DATA AND RESEARCH METHOD

This chapter presents the emergent design for this research.

3.1 Research Design

The purpose of this thesis is to research the following questions: (i) how gender diversity in the workforce influences the innovative capacity of a firm, and (ii) how founders build their start-up team with respect to gender diversity. The research questions per se have an exploratory nature that directs the research towards a mixed methods approach, where collecting sequentially both quantitative and qualitative data would provide a thorough understanding of the problem (Creswell, 2014). This comes in line with the pragmatic worldview that is assumed throughout the present study. The research objective is to explore any relation between gender diversity and innovation in the context of new business creation, by studying the practical implications of these concepts in new ventures and the actions of the individuals involved.

In research design, pragmatism allows mixed methods researcher to choose freely from an array of methods, techniques and procedures those that best fit the purpose of her study (ibid). Creswell also refers to Rossman and Wilson (1985) to highlight how pragmatic worldview shifts focus from methods to the research problem and how the researcher uses all approaches available to derive knowledge (ibid). The point of departure for this study is evidence on females being underrepresented in innovation-related business activities, as demonstrate statistical data and published testimonials of industry workers, namely technology industry labor force (UNESCO Institute for Statistics, 2017; European Commission, 2016; Beede et al., 2011). That point also serves as the intuition behind the research questions and, accordingly, dictates the research design to be implemented.

Upon initial review, gender diversity and innovative performance at firm level occur as the main variables under study. It would seem as a common ground to define perfect gender diversity as male employees comprising half of the workforce and female the other half. Provided that is the case, constructing a statistical index based on female (or male) participation in total firm manpower would serve as an adequate measure of firm-level gender diversity. At this point, the author chooses not to engage in the broader gender discourse, as it would entail discussing gender from the various perspectives it is approached by different disciplines. Instead, the author opts for an understanding of gender through the social and cultural constructions that assign a range of characteristics to men and women.

Given that gender diversity is simple to be statistically measured, the challenges arise from measuring employees’ innovative achievements, most notably from quantitatively assessing the impact of gender balanced labor on innovative performance. Turner (2009) discusses limitations within a quantitative analysis of the impact of gender balance on innovative performance, in terms of utilizing several performance indicators and a set of explanatory variables that allow for multiple
relevant factors, namely marital status, number of children, HR practices, industry characteristics, etc.

Gender is one component of diversity and isolating its particular effect on innovative performance is a relatively new research topic. The present study intends to explore the dynamics of a gender diverse labor force in firm-level innovative performance. According to Creswell (2014), a qualitative approach may facilitate our understanding of a concept or phenomenon where there is inadequate amount of research or ambiguity over the suitable research variables. That being the case, along with the confined time frame for this thesis, the researcher made the choice to put emphasis on qualitative methods for data collection, analysis and interpretation, as it would be more beneficial for the purpose of her study.

Qualitative research relies on the individual meaning and views of participants with regard to a social or human problem (ibid). Denzin and Lincoln (2000, cited in Seale et al., 2004: 5) argue that although both qualitative and quantitative researchers allow for individuals’ perspective through their distinct methods, the former claim to better approach participants and elicit their views by means of observation and in-depth interviewing. Interviews, as seen from a dynamic perspective, constitute occasions for constructing meaning (Holstein and Gubrium, 1995). Therefore, interview participants are less likely to be viewed as passive conduits for data to be gathered; rather they assume a role of active meaning-makers and thus engage in the production of knowledge (ibid).

When we refer to firms as being “innovative”, we tend to overlook the fact that innovation originates from the human interactions that take place at firm level. In that sense, individuals, or teams working in a firm, contribute to an overall innovative performance through their innovation-related activities and achievements. The same reasoning applies for firms being characterized as “inclusive”; it is the diversity among the firm’s workforce that reflects its disposition towards inclusion. For that matter, this thesis explores the dynamics and complexities of gender diversity and innovation from the perspective of the human assets that businesses have at their disposal. To be more specific, interviews with people involved in new firms within technology industry are conducted, to gather data for this research. Tech industry is considered a highly innovative sector, yet it is where the problem was spotted.

Gender gap in technology industry extends from academia, research and development, to leadership. This study put a spotlight on tech start-ups in the hope that inquiring stakeholders from small business units would illuminate the linkage between gender diversity and innovation. To the extent of the author’s awareness, this topic has not been examined within a similar context nor has similar method been applied in the past. On that account, this study’s purpose is also to add to the existing body of knowledge on the business case for gender diversity and to incentivize entrepreneurs to consider gender balance when building their business from scratch.
3.2 Qualitative Interviewing Method for Data Collection

As stated in the previous section, a qualitative interviewing method is applied to collect data through discussion with the participants. In a qualitative approach, the inquirer collects open-ended, emerging data with the intention of developing themes from them (Creswell, 2014). As to this thesis, the primary data is collected through semi-structured interviews. This format permits the inquirer to pose open-ended questions and follow-up with further inquiries and probes to clarify and interpret where necessary. An Interview Protocol has been composed to guide the interviewer through the questions to be asked (see Appendix A.2). The main themes to be discussed are innovation activities, recruitment processes and future strategies, gender diversity and balance. Qualitative interviewing serves foremost the purpose of deriving interpretations from respondent talk, as opposed to facts or laws (Gubrium and Holstein, 2001). From this perspective, respondents’ information will be used to explore the underlying connection between start-up team composition and firm-level innovative performance.

A choice is made to interview both male and female entrepreneurs and team members in new firms, in accordance with the thesis’ neutral stand on the working ideas, in particular, on gender issues. This viewpoint will be further discussed in a subsequent subsection on validity, reliability and ethical reflections. The fact remains that time limitations and a low response rate to the inquirer’s reach-out for participants did not allow for equal representation—in terms of participants’ number—from both genders discussed.

Interview respondents are occupied in various Stockholm-based tech start-ups, with the majority of them being among the co-founders. All of them hold leadership positions within the company, although management levels are not formally applied at this stage of growth by most of these firms. In more detail, start-ups involved in the study are in the early, formative years of their business (less than 3 years) and pertain to either pre-seed or seed capital financing stages. They define their business activity as innovative and within tech industry (see Appendix B, Table 2). In total, the data has been collected during 6 interview sessions, each lasting on average 45 minutes. The sample contains 5 females and 2 males. Out of discretion and to protect their identities, each respondent assumes a pseudonym in the form of “Respondent#”, where “#” takes a number from 1 to 7. Respondents 6 and 7 are among the co-founders of the same start-up and were both present during the interview. While most of the interviewees would consent in having their real identities used for the purpose of this thesis, some would rather express their ideas under anonymity, hence the researcher’s pseudonyms scheme (see Appendix B, Table 1).

The interviews took place face-to-face and in locations pointed by each respondent, those being either their working spaces or another public place, such as a coffee shop. The overall style of the discussion was informal, so that the interviewer could gradually walk interviewees through the main topics of interest. As follows from the interview protocol (see Appendix A) the discussion flow was to begin from a set of broader questions regarding innovation and recruitment processes and culminate in gender diversity as a strategic choice. As expected from theory on qualitative
interviewing (see Gubrium and Holstein, 2001: 83-102), the interviewees shift perspectives during discussion in relation to their social positions and personal experiences; for instance, one of the respondents, a female engineer in her 40s that quit her corporate job to co-found a start-up, got involved in the discussion drawing on her experiences as a former corporate employee, then as an entrepreneur, even as a mother of two young boys. Another female respondent drew –among others- on her experiences growing up in a patriarchal social and cultural setting. These perspectives, albeit contextual, emerge during talk and interaction between discussants and determine the flow of the interview (ibid).

To the researcher’s best effort, interviews were kept within research context, prompting respondents to communicate their reflections, i.e. their interpretations of the themes discussed, and thus, co-create meaning along the interview process. It is the researcher’s belief that most participants’ high level of engagement during discussion has made it possible to collect trustworthy data. Other techniques applied to collect the primary data, include non-verbal communication and keeping record of each interview session, using a smartphone device, to ensure the interviewer’s focus remain unhindered throughout the process.

### 3.3 Data Analysis

Following data collection, recordings of the interviews were transcribed into text for each interview session, including some interviewer’s notes about her first impressions. Considering that sessions were voice recorded, any non-verbal communication that took place during the interviews rests upon the interviewer’s interpretation. Respondents not being at ease passing judgment or commenting on some of the working ideas might have moved or slightly changed their posture, which is hard to grasp ex-post. However, the interviewer includes on her notes some descriptive information regarding pauses prior to answering or respondent’s jokes, as these features are indicative of how discussion transpired (Flick, 2014). The very nature of face-to-face talk allows for context and speaking style of utterances to enhance the conceptualization of the interview findings, as those emerge from speakers co-creating meaning (ibid).

To examine respondents’ information, the assumption that there is no right way to analyze qualitative interview data, is made by the researcher (ibid). This assumption is a double-edged sword; it gives the researcher a certain degree of freedom to explore any correlation between gender diversity and innovative performance, yet it conceivably confines the validity of inferences over a plausible causal relation between them. Maxwell acknowledges the challenge in deriving causal inferences using qualitative methods, referring to it as being “one of the more ambitious research goals in the social sciences” (2004, cited in Gläser and Laudel, 2013, paragraph 9).

Based on Gläser and Laudel (ibid) framework, the point of departure for this analysis was to identify the variables to be studied. Upon regarding innovative capacity as a nexus of activities and processes that add value, it can be described by variables
embodying the following two dimensions; to wit, the content of an activity or process and the scope (i.e. determining or improving innovative performance). Each dimension can assume values in verbal context and not in quantities (ibid). The same reasoning applies for recruitment criteria as a variable, in addition to a temporal dimension that specifies the period in which the values of the other two dimensions are found. Gender diversity is a variable that could be quantified as the ratio of women to men in the team. Since the study takes in an inclusive gender perspective on diversity, the variable should account for both fair gender representation but also equal treatment between genders; therefore, team composition is analyzed beyond its quantifiable aspect to include the quality of team interactions.

The analysis aims to conceptualize rather than quantify innovative performance, before any potential impact of gender diversity can be examined. Considering that, the analysis should result in an inclusive portrayal of the themes emerging from interviews. To aggregate interview data into a compact number of themes (Creswell, 2014) and to seek and identify patterns that occur (Thompson, 1999), a qualitative content analysis is implemented. To “distill the essence” of interview-generated data (Flick, 2014: 304) few parts of the transcribed text are disregarded on the grounds that they do not add to the interpretation of participants’ descriptions.

Extracting information from a text and analyzing it separately is intrinsic in qualitative content analysis (Gläser and Laudel, 2013). Although the method is considerably inductive, the analysis embarks upon constructing theme-related categories ex-ante, on the basis of prior knowledge, including theory. Then, these deductively constructed categories foster the analysis of information extracts. Openness is a key to qualitative methods and as such, the analysis is kept close to Gläser and Laudel’ s (2013 [2010, 2004]) approach, hence remaining flexible towards emerging themes; i.e. the initial set of categories is subject to change, in terms of numbers or structure, if empirical material suggests so. This is consistent with the inductive nature of qualitative analysis.

The thematic categories constructed for data analysis were founded on the premise of the above-mentioned variables. They specifically refer to the activities that affect innovative performance, the recruitment processes followed and the conceptualization of gender diversity. There are multiple dimensions in the categories to this effect; namely, a material dimension that accumulate “values” from the interview excerpts, a time dimension, and a causal dimension to include any mentions of causation among the reported data (ibid). Moreover, there are indicators that facilitate a match between interviewees’ statements and the analysis category they fall into, which take the form of key words or phrases. For instance, statements that correspond to the category “activities that affect innovative performance” will typically include the word “innovation” and describe an activity that the interviewee interprets as a trigger for innovation within their firm. The categories are further deployed in the following chapter, where empirical analysis is presented.

Qualitative content analysis has been favored over other forms of data coding, to avoid ending up with an overwhelming number of codes and indexed texts. Yet, there
are also challenges with “forcing data to fit preconceived hypotheses” (Flick, 2014: 306). To the author’s best intention to avoid issues relevant to preconceptions about research findings, a self-reflecting process unfolds throughout the discussion of the findings, and hence pre-existing thoughts, beliefs and assumptions are disclosed to the reader (Creswell and Miller, 2000).

3.4 Validity, Reliability and Ethical Reflections

As discussed at the end of the previous subsection, researcher reflexivity aspires to disclose any personal beliefs, values or biases that may affect the validity of this research (ibid). This self-reflecting process is included in the section where the findings are discussed, with an eye to critically adding to interpretations of the empirical material. The inquirer’s personal reflections on the research questions were not revealed to the respondents, for the sake of engaging with them in a discussion that could flow around the working themes. Nevertheless, there were cases where introducing the thesis subject to the respondents before asking questions, has created a predisposition to connect initial themes discussed (i.e. innovation and recruitment process) to gender, even when the latter has not yet been introduced to the conversation.

Demonstrating validity in qualitative studies entails presenting credible findings (ibid). Schwandt’s (1997, cited in Creswell and Miller, 2000) definition of validity accounts for how accurately the reasoning follows participant’s realities of the social phenomena studied. The present thesis discusses the link between the concepts of innovative performance and gender diversity, in a context where new business formation occurs. Probing the recruitment processes, we become aware of what criteria entrepreneurs look into when building their teams. Recruitment criteria can then serve as control factors upon assessing the effect of gender diversity on firms’ capacity to innovative. This bolsters the internal validity of the theoretical construct.

In addition, the theoretical framework and literature review foster the understanding of this context. The rationale for the qualitative research design is thoroughly explained to ensure credibility. Openness to emergent themes and reflexivity about theoretical perspective, values and conduct are ubiquitous throughout the analysis. The interview-generated data are represented accurately, from their collection to their interpretation. Along the same line, data analysis is documented in the section about empirical analysis that follows this chapter.

On the whole, it is possible for the reader to follow the research design and potentially replicate the procedures. This is to underpin the reliability of the study. All interviews have been conducted according to the interview protocol (see Appendix A) and the same questions have been posed to all participants. The recording of the sessions facilitate the analysis, in that the inquirer can re-listen to interview excerpts and clarify any uncertainties. The inquirer has espoused an active approach to interviewing that implies all speakers involved are inevitably engaged in creating meaning and that interview responses are the result of interpretive practice (Holstein
and Gubrium, 1995). This is a critical assumption to keep in mind when replicating the study.

It is plausible that a selection bias skews our research findings, due to the firms included in the research. All start-ups represented in this study are less than 3 years old (formative stage) and form part of Stockholm Tech Start-up ecosystem. The participants’ sample, as it emerged, embodies both male and female founders and team members. The ratio is not 50:50 as desired and as initially aimed. Time limitations and low response rate to our interviews reach-out did not allow for equal representation. Let it be noted that there were both male and female potential participants who did not respond to the research call. The interviewees’ pool included suggestions by KTH Innovation (current or previous affiliations) and individuals that the inquirer approached after her research for Stockholm-based tech start-ups and their founding teams; it is possible that proper randomization has not been achieved.

Last but not least, addressing ethical concerns has also been core to the research design and the corpus of this study. Gender diversity is a sensitive topic for discussion that most people directly associate to the gender equality discourse and gender mainstreaming in general. Starting with the design of the research, from data collection to data analysis, the inquirer has put effort in demonstrating a tacit code of conduct and has assumed a neutral stance. Qualitative interviewing took place face-to-face, so that both the physical presence and the gender of the inquirer may have prejudiced the participants. Gender-of-interviewer effects imply that respondents give different answers to male and female inquirers and it refers at times to both male and female respondents (Kane and Macaulay, 1993). Huddy et al. (1997) found these effects to be slightly more discernible upon controversial political questions concerning the feminist movement, in relation to questions on gender equality. In this study, the role of the interviewer has been to carefully listen to the respondents’ experiences and to encourage their personal reflection upon the gender and innovation practices that occur in their work, at both individual and collective levels. To acknowledge that the interviewer’s role is inherent to the qualitative interviewing process is also to admit to having variables like gender influencing the product of the research (Atkinson and Delamont, 2010).

This research’s pragmatic standpoint ascribes a systematic approach to the inquiry, rather than an explanation of social practices (Clive et al., 2004). The empirical material primarily consists of interpretations of the participants’ descriptions. As a result, any inferences derived are the product of researcher’s qualitative analysis on the empirical data. The author draws her conclusions from the analysis for the most part, and refers to other sources in order to support her claims or suggestions. Other ethical considerations include the interviewee’s permission to record the talk sessions (granted prior to the recording), based on their trust upon the interviewer to use recording materials purely for the purpose of this research.
4 EMPIRICAL ANALYSIS AND DISCUSSION

This chapter portrays Stockholm tech start-up landscape, as all interviewees form part of it through their start-up activities. Following that, the findings are reported, as those derive from an empirical analysis of primary data collected via the qualitative interviewing research method. The chapter ends with a discussion of these findings.

4.1 Stockholm Tech Start-up Scene

Sweden is among world’s most innovative countries (World Intellectual Property Organization (WIPO), 2017). Regarding Swedish tech industry, the spotlight is on its capital Stockholm, which has been featured in multiple digital publications as a prominent global tech hub. Quite often is also being referred to as a “unicorn factory” (Financial Times, 2015) due to its vibrant tech/start-up ecosystem that encapsulates new firms, investors, institutions and other actors. It is a substantial part of the broader Nordic Tech ecosystem that is valued at a €7.2 billion total funding; Stockholm-based start-up Spotify alone makes for €1.7 billion of that sum (Nordic Tech List, 2017). In fact, if the digital music service company goes public valued at $13 billion, as expected, it will be Europe’s highest valued tech company (Dagens Industri, 2017).

In 2016, there were 71,825 newly started companies in Sweden, besides which, 32 per cent were started by women with business activities clustering around sectors like Other service companies and personal services, Education, Care and welfare (Swedish Agency for Growth Policy Analysis, 2017). Among total female entrepreneurs, over 35 per cent belong to the age groups up to 30 years old and 34 per cent started their business in Stockholm County (ibid). In the same year, Stockholm’s tech/start-up scene attracted $1.4 billion in investments (The Nordic Web, 2017).

The whole Stockholm start-up community is built around entrepreneurs; investors aside, there is a network of government agencies, universities and research institutes, co-working spaces, events and initiatives to support tech start-ups. The European Digital City Index (EDCi) – an indicator of regional support to digital entrepreneurs – ranks Stockholm second for scale-ups and third for start-ups (EDCi, 2017). Notwithstanding a bounty of information on funding, registered companies and support channels, the gender gap in tech industry cannot be precisely quantified. As the industry employs professionals from various educational backgrounds, ranging from engineering to business degrees, that would demand a systematic record keeping of all individuals involved, not just “faceless” new firms. For that matter, most press references on new start-ups typically bring the venture capitalists or the founder(s) into the spotlight, but rarely the whole start-up team.

Considering the proximity between innovative start-ups, universities and research institutions, statistics on engineering education for male and female population could give a preliminary depiction of the gender gap. New firms could be spin-offs from research labs or they could be scouting for talents among university graduates and
researchers (Lautenschläger, 2015; Protogerou et al. 2017). According to Statistics Sweden (2016), 32 per cent of the degrees at the undergraduate and graduate levels in Technology and Manufacturing field (2014/15) were awarded to women, while the corresponding percentage for Social Science, Law, Business and Administration field amounted to 62 per cent. This can partly explain why female representation in tech industry is rather low; it matches with an equally low female representation among students of the relevant disciplines. From the same source, the percentage of women among total number of individuals occupied as programmers and system developers amounted to 21 per cent in 2014.

Several networks\(^3\) and initiatives mobilize stakeholders and raise awareness of the opportunities available for female professionals in tech industry, thus building a platform where female entrepreneurs can meet experienced professionals from larger tech organizations and exchange ideas. Swedish policymaking is following, in general, a gender mainstreaming strategy, which implies adopting a gender perspective in all areas. In education and employment, this strategy translates into equal opportunities and conditions for both men and women (ibid).

All things considered, a fruitful ground for discussion can emerge from the Swedish context, in terms of including a gender perspective on innovation analysis. Danilda and Thorslund (2011) sustain in VINNOVA\(^4\)’s report on “Innovation and Gender” that innovation milieus can improve their innovative capacity by allowing for a gender perspective in the system. This does not actually involve the introduction of any new “gendered” element, but rather weight the contribution of an existing one through its effects on system performance (ibid). The entire report pivots on how businesses tap into a competitive edge by taking in a gender perspective into their innovation processes. This can potentially apply to more disciplines and sectors, besides the typically innovative industries of technology and manufacturing, so that other work areas, where female representation is higher, can produce more innovation (ibid).

In the face of all favorable conditions in the Swedish context, gender remains invisible in some aspects; it is the author’s sentiment that individuals ignore or rather not discuss gender in a business environment. Within the realm of this study, most interview participants argued that they do not pay attention to other individuals’ gender, meaning that they value their personality instead. Gender is widely considered a sensitive issue to discuss and openly formulate an opinion, perhaps due to a relative ease with which, public makes generalizations or puts labels under statements. Acknowledging this limitation, the interview protocol (see Appendix A) was constructed with a neutral stance on gender diversity, in the sense that it would not include any normative insinuations. Instead, the interviewees were encouraged to express their meanings of the concepts under study and reflect upon them.

---

\(^3\) See Women In Tech, http://witsthlm.strikingly.com/

\(^4\) VINNOVA is the Swedish governmental agency for innovation systems.


4.2 Qualitative Content Analysis and Findings

“Qualitative research is empirical research where data are not in the form of numbers”
- Punch, 1998: 4

The use of variables is more common within quantitative research; nonetheless, the benefit with concepts studied in a qualitative fashion is that they can be described by variables that contain multiple dimensions, quantifiable or not (Gläser and Laudel, 2013). In this study, qualitative data were collected through interviews to analyze if gender diversity has an effect on firm innovative performance. Reviewing the existent innovation literature in relation to organizations, it becomes apparent that a firm’s capacity to innovate is manifested through its routines and processes. Drawing on that, the interview questions are developed to thematically span firm’s activities and start-up team composition. Although the main themes were innovation activities; recruitment processes and future strategies; gender diversity and balance; the categories for the analysis took their final form after data collection. The variables identified for study at firm-level were namely: innovative capacity, recruitment criteria, and gender diversity. Lastly, the thematic categories constructed for data analysis were founded on the premise of these variables.

Let it be noted that as the interview questions were open-ended, the answers were first interpreted by the discussants during the actual interview process, and then yet again, during the transcription of interview recordings. To extract information and analyze interviewees’ statements under thematic categories, an interpretive reading of the data was deemed as most suitable. To some extent, this was complemented by a reflexive reading, considering the researcher’s inextricable role in data generation and interpretation process (Mason, 2000). Alongside reading the data, the researcher highlights and categorizes the expressions and statements that describe how contexts and patterns are created according to respondents’ interpretations. This further elucidates how categories and variables take form, as the analysis moves forward.

4.2.1 Activities that affect innovative performance

All respondents were first asked how they perceived innovation within the realm of their start-up business activities. As expected, they all pinpoint innovation at the core of their product, but also lying in their business model, strategy and vision. Start-ups contrive to attain growth objectives faster and in a more efficient way, given resource constraints. Theory suggests that small and large firms have different growth patterns (Geroski, 1995). As opposed to large incumbent firms with traditional strategies, that need more time, more people involved and longer decision-making processes to advance innovative projects, start-ups reap the benefits of being more flexible and experiment with different strategies or tactics. One of the respondents refers to such tactics as “time and resource hacks” (Respondent 1).

5 Respondents’ start-up activities and product or service innovation are listed in Appendix B, Table 2.
In general terms, all interviewees converge upon an interpretation of innovation as inclusive as Kanter’s definition, viz. “the creation and exploitation of new ideas” (1988: 170). Successfully launching new ideas is key to firm-level innovation, hence new firms’ efforts to keep their innovative activities close to the market. Respondents also refer to both the disruptive nature of innovation and the restructuring of existing frames. Utilizing existing technology may not be disruptive innovation per se, but organizing existing knowledge in a new manner can disrupt the industry (Respondent 3). Geroski (1995) asserts entry’s prominent role in transforming industry structures. Moreover, restructuring a system from its base to make improvements is intrinsic in innovation process, even if these are slight improvements in system performance (Respondent 4). According to Respondent’s 5 interpretation “innovation is really engineering; you build on your first great idea and create something more refined”.

Team Dynamics

When asked upon the activities that determine their innovative performance, respondents untangle those internal processes from those external. Team dynamics are deemed as critical for firm’s capacity to innovate. Respondents highlight the importance of having an innovative mindset and ideas flowing within the team. Respondent 1 views team’s innovative capability as “a sum of skills and talents in the company”, while Respondent 5 describes a typical team brainstorm, where both good and bad ideas are heard and challenged; eventually, they might follow through with the “wrong” idea brought to new “right” dimensions. Building an organizational culture from the very beginning, according to Respondent 1, is “one of the great things of being part of a start-up; no matter how rapidly we have grown so far, our values and symbols remain those we started with”. Respondent 5 gives an example of how friction and interactions within the team “forced” them to create a process for team communication; she believes that “building trust is an essential part of innovation”. For Respondent 1, team’s trust towards their leadership (the start-up founder and CEO) is something they can benchmark towards other start-up teams. “The goals that he sets as a visionary, you really trust in those being the right thing to do for the firm” (Respondent 1).

Respondents 4, 6 and 7 mention how team’s size facilitates their communication, even if technology allows team members to work remotely; “Everyone knows what others are working with. We are in coordination and constant communication” (Respondent 4). Respondents 6 and 7 are working on their product using laboratory facilities in their university. Although scheduling their working hours simultaneously for all team members is hard, they try to have some co-working sessions, as they have noticed how helpful it is for them to be working on their different tasks next to each other. “On those days (when all work in the lab) we are very efficient, even if we develop different parts. If you get stuck on something, you can ask someone from the team; maybe you solve it together and then move on to your separate tasks again.” (Respondent 6). Respondent 1 also mentions some team communication routines, in
the form of daily morning “stand-ups,” or closing-the-week meetings on Fridays, which foster team culture and collaboration. Having clear guidelines for the tasks to be completed is certainly seen as something necessary for the team collaboration; Respondent 4 describes how team duties are separated into two parts spanning the research-oriented side of the product and its production-ready side, which is closer to customers’ experience.

Besides trust and seamless communication within the team, learning is also vital to their capacity to innovate. While Respondent 5 values the entry of a new team member as knowledge input, creating new dynamics and contributing to the innovative process, Respondent 2 puts more emphasis in educating the core team, as their knowledge is deposited in the firm’s knowledge base. “Every team member is valuable. New people bring new knowledge, new ideas, but I would say that it is more important educating those people who are already there” (Respondent 2). Respondents 6 and 7 admit that coming from the same educational background (their product is based on a degree project collaboration for their bachelor studies) entails a risk for the product development; “We are really focused on the technology part, so maybe we are a bit set in our ways, paying less attention to design or marketing parts” (Respondent 6).

**External Networks**

Regarding the activities that pertain to their external environment, all respondents point out the value of networks. Respondent 1 goes into how they built a network of networks beyond their customer targets, including industry experts and stakeholders, in order to find their product-market fit. Their core market is not Sweden, although the firm is Stockholm-based. They tapped product’s scalability to engage in internationalization and the product could grow organically in other markets (Respondent 1). She adds: “We have been pinpointing actions here and there, to try and see where we should bring more focus, with our few resources at hand.” This concurs with Carr et al. (2010) findings on young firms’ advantage from internationalization in terms of adaptability; however, having an edge over larger firms may still be subject to resource constraints for start-ups.

Respondent 3 believes that innovative performance is a compound of discussions with people from both technology and market sides. Respondent 2 mentions how important is networking with other entrepreneurs to collect information even beyond your product’s scope; “not staying only in your field” is not just a matter of being up to date, but also a key to potential collaboration opportunities (Respondent 2). Apropos Respondent’s 4 product, which is research-intensive, attending relevant conferences on the technology that they use is as important for networking with competitors. He adds: “It is a never-ending process of learning; if you end it, you are over”. For

---

6 Refers to morning meetings (physical or online) where each team member set her goals for the day to come.
Prospects for Innovative Performance

With respect to respondents’ view on how they can improve their firm’s innovative performance, they definitely deem as critical developing the technical part of their offering on an ongoing basis. Respondent 1 jests that “As soon as the company thinks that the product is final, there is something wrong with the company!” Challenging existing ways of doing things and being open about discussing his ideas, has stepped up the pace for their project, according to Respondent 7. He pinpoints 3 main actions to improve their capacity to innovate; “Be open, talk to people and get talent” (Respondent 7). Respondent 2 denotes her long-term innovative vision for the future and Respondent 3 expresses her eagerness to implement an Innovation Portfolio strategy, as soon as their resources allow for it. Ultimately, Respondent 4 reflects on what makes a successful start-up and compares that to their firm: “Historically, successful start-ups have a small scope, meaning that they focus on one thing that they do better than others. We have taken the risk of doing multiple things, which might fragment our team, since our human resources are not sufficient for these multiple tasks. Our approach is to be innovative in all aspects and prioritize only under the circumstances, provided that we gain visibility from that”.

4.2.2 Recruitment process and criteria

Next, respondents were asked about the recruitment process that they follow. As their ventures are still at their formative stage, none of the firms has formal recruitment procedures or established HR policies. The core start-up team usually consists of the founders and a few other members, who joined subsequently but are genuinely involved. To complement their activities, they usually bring specialists to the team (e.g. coders, PR specialists, finance officers, etc.) or employ external professionals as freelancers. Offering temporary employment is quite the norm, in order to alleviate the work load. As theory suggests, temporary job positions are immanent in fast-growing firms (Lautenschläger, 2015).

Two out of the six start-ups in this study use regular internship schemes, as a way to cope with the amount of work, but also to scout for talent and potential hires. Respondent 1 describes the steps from setting the specifications for each position, to posting vacancies in a recruitment agency’s website and then promoting the announcement through various online channels. She adds: “Usually we get quite a good response and I guess people see the kind of environment that we are; everybody in my team now is working through their passion: they gain mentorship and learning from this; they get to grow here”. Likewise, Respondent 4 explains how their collaboration with a research laboratory gives them access to an academic network
from where they choose interns. From the same extended network, they have recently begun an external collaboration with a Finance Officer and plan to bring onboard more business-oriented professionals. For Respondent 2, networking is also how they gain access to skills and talent; “People came to us and expressed their interest to work with us. We all work for free, so everything is based on our enthusiasm”. She adds how people also approached them during a university career fair, while they were exhibiting their prototype. Respondents 3, 6 and 7 develop their technology in collaboration with a pre-incubator; hence, they tap into more resources and a broad network of specialized contacts.

Entrepreneurship and network literature postulates that most entrepreneurial teams are socially homogeneous at the technology and organizational creation stage of the venture (Martinez and Aldrich, 2011). Homogeneity, in this context, implies a team formation strategy that uses strong ties, i.e. relationships with high emotional commitment and contact frequency (ibid). Entrepreneurs tend to seek trusted alters during the organizational founding process (Ruef et al., 2003). Homophily may hinder the survival of newly-formed organizations, provided that such strong ties within founding teams hamper their capacity to respond to unexpected or drastic changes in their environment (ibid). Theory suggests that diverse teams are expected to bring better organizational outcomes (Martinez and Aldrich, 2011). Martinez and Aldrich (ibid) also argue that recruiting diverse employees can bring to the firm more information from external sources, including market information, as well as complementary skills.

Respondents corroborate the postulations above; having a smooth team flow makes collaboration easier and more fruitful. Respondent 4 emphasize that “Potential candidates should fit our team culture; it is not just a matter of talent”. He adds that it all comes down to being aware of the start-up risks, not only the benefits; “There is the chance of failure, so you have to work intense and fast”. Respondent 2 narrates how they had to end the collaboration with a former team member: “To be an entrepreneur, it means to be flexible. You have to be prepared that what you thought of in the beginning will look totally different in the end. [That person] just could not deal with that dynamic environment”. She further illustrates their effort to create a team environment that makes it convenient for everyone to work together; hence, they value personal qualities as much as skills (Respondent 2). Respondent 1 firmly argues for getting talented people willing to work towards the same goal as the whole company. She concludes her answer: “Getting good talent is the most important thing for a company!”

Restrictions on ideal recruitment strategy

All start-up companies related to this study have an affiliation with some institutional actor within the Stockholm tech ecosystem. This institutional support is of utmost importance at this stage of their entrepreneurial effort. In general terms, we expect start-ups to face some financial constraints; raising capital requires convincing investors to share the high risks of a new venture (Martinez and Aldrich, 2011).
Respondents pinpoint a major recruitment constraint in terms of inadequate funding. Respondent 1 mentions how established companies have an edge over start-ups in terms of their resources, as they have been profitable for years. Respondent 4 juxtaposes the advantage of starting up as a spin-off from a research laboratory, with respect to having an office space and being able to collaborate with external specialists. He adds: “The financial part is the main drawback in start-up recruitment, but you can offer equity to bring people in your team, once you manage to be successful” (Respondent 4). After an example, he resumes: “It all comes down to funding; and in start-up terms things flow fast” (ibid). Respondent 3 seems to also have grasped the time restrictions related to recruitment; pondering upon the low female representation rate among coders’ profession, she states: “Coming to that we don’t have much money and that we need to get stuff done fast, it is hard to be picky”.

**Recruitment prospects**

Naturally, all respondents express their will to hire employees, as this would signify that their firm is growing. “We are longing to recruit. We want to build the company; to build a team” (Respondent 5). Her team has a very outspoken scope for their upcoming recruitments that pivots on younger professionals that will complement their competence (ibid). Leung et al. (2006, cited in Martinez and Aldrich, 2011) discuss how entrepreneurs foster cohesion, similar values and ideas among employees while at early stage and with minimum resources at hand, but as they enter growth phases, they prioritize tapping into complementary competences.

Respondent 5 sums up their recruitment philosophy in hiring: “younger people, developers and social media natives”. She bears in mind, though, that this study touches upon gender diversity and also mentions how the majority of developers are male professionals, while female populate marketing, sales, social media and relations business segments; “We are a poor start-up and competence is the most important; so we have to go on with competence.”, she adds in a sympathetic tone.

In the prospect of an impending investment, Respondent 4 expresses his team’s need for specialists in key business positions, along with technical support and besides their interns’ batches. He believes that they would need to invest a great amount of money to fill these key business positions with experienced professionals (Respondent 4). Respondent 1 is certain as to whom they would hire upon their next investment round; “We want our interns to take the paid positions, that’s a natural thing”. Lastly, Respondent 3 explains how she has been searching for networking opportunities to meet with female coders, in the interest of firm’s recruitment prospects. “If you think about innovation, having a homogenous group of people can drag the team into a similar way of thinking; then, there will be someone leading the way and none will question” (Respondent 3). For that reason, she has been after good female coders but she claims to be very hard to find, as those few skilled female professionals will probably settle on a more safe employment option with other companies that are able to afford their typical salary.
4.2.3 Gender diversity

Following the discussion on their recruitment tactics and prospects, respondents were asked how they perceived gender diversity in an organizational context. Some of them had already mentioned gender diversity while discussing recruitment; the inquirer cannot discern whether it was their genuine train of thought or their knowledge about the topic of the thesis that inclined them towards mentioning it. In no case should this potential bias be ignored, as well as other types of effects incited by the inquirer’s gender and physical presence.

Maintaining a “polite conversation” on gender topics is likely to influence the discussion between respondents and the interviewer (Kane and Macaulay, 1993). In general terms, respondents perceive gender diversity in the workplace as a nexus of two factors; a fairly split ratio of female to male workers and an equal treatment among peers. Respondent 5 draws on her experience from previous employment in corporate settings and interprets gender diversity as the overall attitude towards women in professional contexts. She remarks that among peers, women are treated in a different manner, sometimes even disgracefully. She brings up several examples throughout the discourse, but one statement is particularly staggering: “I have never really seen myself as not being given opportunities; I think opportunities are just not there for me, so I can’t really miss them!” (Respondent 5)

Consequently, Respondent 5 makes the case that gender diversity is about allowing women to innovate; to bring a creative edge in a rather prestigious setting that all-male teams usually build around innovation, as she perceives it. Respondent 3 associates gender diversity with equality and express the opinion that reality still looks different for both genders, even in modern welfare states like Sweden. She reads equality in business context as equal halves between male and female employees and she adds: “Once we are in that state, there should be also equality in the way we treat each other and how the work is done”. In a similar mindset, Respondent 4 translates gender diversity into the equal halves ratio and further claims that diversity allows for an exchange of ideas that different gender perspectives generate. Respondent 2 agrees that diversity fosters new perspectives and mentions how in Sweden, in particular, she does not feel any pressure about her gender, coming from another country with a rather patriarchal background.

Respondent 1 draws a parallel between business environment and society; “A company is a society, in a way” she claims. She carries on with a metaphor for interactions that take place in a business environment, comparing them to the nodes and the links of a network; as individuals interact with each other, they bring value to the network, and at the same time they absorb value from it. She sums up her argument: “I think what you do per se, your position, your tasks and the initiatives you take, all these influence your interactions; not your gender”. Then, referring back to recruitment processes, she reflects upon larger companies gendered hiring tactics and juxtaposes smaller firm tactics: “We are more focused on the actual essence. If a big company has more resources in their HR department, then they can afford to spend more time looking for a good tech female”.

34
Other respondents have also shared similar thoughts on the insistence of finding talent in given time frame. Respondent 3 acknowledges, however, that this could be a pitfall on the firm’s growth path, for a diverse working environment benefits the product, not only the team per se. She is the only female in the founding team, along with 4 more male co-founders. Their start-up also employs several coders on a temporary basis to develop their product. As she explains, the team has open discussions about bringing diversity, where she clearly states how unattractive a male-dominated working environment is for women (Respondent 3). As the only female co-founder in her team as well, Respondent 5 also discuss openly gender balance issues with her co-workers, although she admits to often being strong on her feminist opinions (Respondent 5). Contrariwise, Respondent 2 -as another sole female co-founder, feels more valuable being the one to bring a different perspective.

Each start-up team’s composition in terms of gender representation is pictured in Table 1 in Appendix B. All firms have at least one female in a co-founding or leadership position, with sole outlier Respondent’s 4 team; it consists of all male co-founders, but has one female intern in the current total workforce. As Respondent 4 notes -in what the interviewer considers an apologetic tone- they just did not match with any other female interns. He further portrays how technical education is populated by male students in vast majority, so that there are not enough female students/professionals in the talent pool (Respondent 4). Whereas he argues that a female input in their product would probably point out some elements that they are too fixed in their routines to notice, there has not been any team discussion about bringing gender diversity; “We do not discuss gender diversity in our team, because it feels like it is not up to us to change that” (ibid).

Respondent 5 claim to have met with the not-really-my-problem argument among her male peers at times. Her opinion is that it is a collective problem of our society, that both genders are responsible and even concedes having herself “prejudices” against women professionals: “I do the same thing; when you have 99% of developer job applicants being men, you assume that the next developer will be a man; that’s how it works” (Respondent 5).

Respondents 7 attributes a fun aspect to gender diversity in terms of team collaboration and refers to some potential customers’ reaction, when they interview them for the purpose of their product development; as he mentions: “They are surprised that we are both male and female working on a robotic product, because they probably think all engineers are male today, which is not true”. But, then, Respondent 6 comments: “I guess there is some truth to that. There are a few women studying in the field” (she refers to Mechatronics).

Following their interpretations for gender diversity in professional context at large, and probes to ascertain if this is an occasional topic in their team discussions, respondents are asked about their stance on team composition and whether they have noticed any impact on their performance resulting from it. As expected, everyone has positive feelings within their team. Getting involved in a start-up venture entails hard
work and engagement, which would be unbearable without a supportive and collaborative team.

Respondent 1 has a leadership position in the firm and being the only female with such responsibility, she reflects upon the team composition: “I have been saying so much how skills and talent matter, but it is also about the energy. It is probably also important to take in more female energy”. She refers to female energy as not necessarily any woman’s attribute, because she claims not to have herself a typical female energy. In management literature, qualities that are traditionally linked to females shape contemporary managerial work and behavior (Fondas, 1997). Respondent 1 holds fast to her idea of good team dynamics as a result of diversity in terms of male-female energy, while instinctively assumes there is also an impact on innovative performance; yet, she finds it hard to pinpoint the exact effect.

In Respondent’s 4 start-up team, which is predominantly populated by male professionals and interns, it is difficult to assess any effect of gender diversity. He says: “We obviously lack diversity in our ideas as regards the product, but I cannot really quantify that. Only if we have more females joining our team I could see any potential difference in our work or innovative performance”. He firmly expresses a belief that employing more women will bring a different input in the team and affect their interactions, in a positive fashion (Respondent 4). He even recalls “pitching” their product to female clients and getting feedback from them on details regarding design or user interface, which he mentioned as a surprisingly useful input (ibid).

Respondents 2 and 5 feel very fortunate around their male co-founders and both mention how comfortable they feel being the only female in the founding team. Respondent 2 apposes her feeling of comfort next to the fact that tech is not typically a “feminine” field. Respondent 5 emphasizes the trust that bonds the team; “I know I am not going to be excluded for doing something in a wrong way”. Then, she describes how her being a female CTO positively surprised one venture capitalist the firm had a meeting with.

As regards the impact of team composition on firm’s innovative performance, Respondent 5 argues that all-male working environments carry a certain prestige that can drastically change upon a female presence. A profusion of ideas is preferred to scarcity, but gender perspective goes beyond quantities and brings a qualitative angle to the team work outcomes (Respondent 5). Based on her experience she argues for a multiplicity of perspectives and suggests that instead of trying to think or act like a woman, managers can actually hire more women; “I takes much longer for someone to invent a perspective that they do not have”, she jests.

Respondent 3 reflects upon team composition and cross-functional collaboration but cannot determine the impact of diversity “without a result in hand”. She can only speculate about being more innovative in principle, provided a greater gender diversity. While reflecting upon her role as a female within the team, she mentions her mixed feelings regarding certain “softer” business aspects that women are typically associated with; she gives an example: “making sure that everyone is on board and stays motivated” (Respondent 3).
Respondents 6 and 7 both opine that the composition of their team occurred quite naturally and that they do not put much thought into people’s gender. Their team is relatively new and their product is still being developed in terms of technology, hence Respondent 7 claims that any thoughts of diversity belong to a future scenario where they need to employ more people. For the moment, they bring all innovative efforts together over building their product using optimum technology, which requires high competence.

4.2.4 Gender diversity ab initio or de futuro?
Ultimately, respondents were asked whether they would integrate gender diversity in their start-up team from the beginning or they would opt for a later growth stage to balance team’s composition. Bird and Brush (2002) conceptualize gender-balanced organizations as a compound of traditional (masculine) and personal (feminine) qualities that are integrated into new ventures and their organizing processes; all qualities apply to both men and women employees. Whereas they refer to new firm creation, entrepreneur’s role as a gender-mature leader is prominent (ibid). The norm of new firm creation and survival is the masculine, which entails elements such as future time orientation and faster pace; interactions grounded in goals and reason; competitiveness and centralized power among others (ibid).

That norm becomes quite apparent in respondents’ interpretations. Supposing that firm survival is the desired prospect for the following years of their business, respondents express a clear objective for growth. Respondent 1 argues: “If you think that the most important factor in your company is having gender diversity, that’s not how you grow. You grow by people doing what they do best”. That is to say, focusing on growth implies prioritizing talent. Hence, she considers that a more reasonable option is to adopt a gender-aware recruitment procedure at a next stage of firm growth, while having more resources and established HR procedures. On the other hand, she notices how her team has been naturally formed as gender diverse (5 female to 6 male) and that possibly also counts to firm growth so far. When you boil it down, setting the core values of the firm from the very beginning is what matters and gender diversity should come naturally (Respondent 1).

Respondent 6 conveys her thoughts about gendered recruitment strategies, saying: “It should be competence that matters and not gender; I do not want to wonder if I got hired because of my gender, to even up the statistics”. According to her, team composition is determined by competence-based criteria, provided an inclusive talent pool where both genders get to exhibit their competence. At the early stage of venture creation, it is about the connection you have with the rest of the team and the knowledge you bring (Respondent 6).

Respondents 2 and 4 agree on competence as the salient join-the-team criterion, since building a start-up team comes naturally with people that you share the same vision, regardless their gender. Respondent 2 further argues how females excel in certain job tasks, for instance customer service and support, which makes it difficult to strive for
gender balance. She opposes the idea of an equal halves representation in workforce, which she perceives as a form of discrimination against men, suggesting that covering vacancies should not be based on gender, but on personal qualities (Respondent 2).

Respondents 3 and 5 are in favor of embedding gender diversity in the team early in the process of building a start-up; even with slightly uneven representation ratio. This certainly pertains to both genders; an all-female team obviously lack gender diversity. Respondent 3 refers to male-dominated working environments, which she finds unattractive for female professionals, meaning that firms not looking gender diverse, they risk losing potential talent. “I think it is easy to get caught up by picking talents and skills” she warns, and then suggests that the few female tech talents will refrain from entering a lopsided working milieu (Respondent 3). She illustrates the argument giving her personal experience upon interning at an international corporation; the organization has an overriding male majority in top management and steering board, but the gender imbalance is even more apparent in tech and development divisions (ibid). Her concluding thoughts are positive about modern generations integrating a gender perspective in business creation and fostering diversity; notwithstanding, she considers large companies’ efforts to implement gender quotas post hoc to be futile, considering how hard it must for women to walk into workplaces where male gender has been traditionally predominant (ibid).

In the words of Respondent 5, business establishments bringing gender balance just in figures might be actually “sugar-coating on a very biased idea”; hence current challenges in corporate boards include attracting female talent. Her insight on business creation is to opt for an idea that encapsulates gender diversity; similar people focusing on similar directions will probably take wrong decisions (Respondent 5). She mentions: “I cannot imagine that I would have found the best idea with only women co-founders” (ibid). Starting up a business with diversity in perspectives will germinate the right decisions (ibid).

4.3 Discussion
Despite differences in opinions or practices, the themes that arise from the interviews are common. The qualitative interviewing method was chosen with the aim to inquire into new innovative start-up team composition and potentially assert a link between gender diversity and innovative performance. Our thesis was theoretically and methodologically constructed for the purpose of validating gender diversity as an explanatory variable for firm capacity to innovate. Controlling for recruitment criteria will increase the validity of assessing the gender diversity impact.

Whereas all ventures included in the study are at early stage, they cannot afford to implement neither formal innovation management practices nor elaborate, time-consuming HR procedures. Instead, they nurture innovation through their ability to be nimble and industrious, and attract talent by fostering a culture that enables learning and growth. Our findings suggest that recruitment pivots on candidates’ skills and talent, as well as their personality-fit within the team; the product and its technology
development, firm’s vision, team dynamics and the external networks of partners, investors and customers, all inform the firms’ capacity to innovate. Gender diversity encompasses both a quantifiable dimension, i.e. the female to male ratio, and a qualitative one, reflecting the nature of interactions among co-workers.

An overview of their responses reveals that gender diversity is not a priority in new venture creation. All respondents speculate gender diversity has a positive impact on innovativeness, which they ascribe to the multiplicity of perspectives and ideas. In the absence of set goals and metrics of innovative performance, any assessment of impact is difficult. Gender diversity is acknowledged among respondents as a legitimate element of workforce composition, yet each and every one prioritize competence with a view to firm growth and suspend a gendered recruitment procedure for the future. Some respondents claim to filter out gender aspect from their interactions, which the inquirer interprets as suggestive of “polite conversation” on a rather sensitive topic.

Current affairs put a spotlight on a valuable start-up, its workplace diversity and a company culture that potentially drives away female talent. An increasing number of established corporations, in contrast, announce and implement gender-aware
recruitment policies. These contradictory paradigms incite a discourse of the optimal
time to address gender diversity in the workforce; upon building a start-up team from
scratch or at a future growth stage? Our interviews’ findings sustain the precedence in
new venture creation for skilled human capital over gender considerations; the
majority of respondents could not view gender diversity as an imperative when
building a start-up team, nor a strategy for growth. Hence, gender diversity is rather
regarded as an issue to address once firm growth is secured.

Respondents consider innovation lying at the core of their product and vision, so that
they almost exclusively focus on either firm growth or developing their technology, at
this stage. For that matter, tech start-ups supposedly regard gender as a future
criterion in their recruitment processes. It appears challenging to isolate the gender
aspect from overall candidates’ skills, without first having theorized gender in relation
to innovation processes. Innovation literature lacks a unified framework to analyze
gender and innovation, thus the analysis draws on various gendered approaches
propounded in entrepreneurship and management corpus of literature. However, a
research design based on case studies and randomized control trials could possibly
yield a significant assessment of the gender diversity impact on firm-level
innovativeness. This is further discussed in our conclusion.

Reviewing gendered theories in the intersection of entrepreneurship and management
literature potentially raises the question if diversity translates into bringing more
female professionals per se, or bringing in more female qualities upon innovation
management and organizational creation (Pecis, 2016; Bird and Brush, 2002; Fondas,
1997). A gendered perspective in new venture creation exploits both feminine and
masculine qualities manifested by the entrepreneur and, subsequently, internalized in
the organizational processes (Bird and Brush, 2002). This potentially results to
gender-balanced organizations that embrace both gender characteristics as regards the
prominent organizational aspects of: (i) use of resources; (ii) structuring; (iii)
controlling; (iv) integration through systems, policies and culture (ibid).

A gendered perspective in innovation weighs the complexities of gendered constructs,
as those take the form of masculinities or femininities (Pecis, 2016). Pecis proposes
that gender practices inform innovation practices; the individuals that take part in the
innovation process may act upon different gendered frameworks (ibid). Our interview
insights from innovation practitioners of both genders confirm this proposition.
Furthermore, a research participant reads gender diversity as enabling women to
innovate and suggest that signifies conceding power to women (Respondent 5).

Discussing gender in a business context touches upon a sensitive topic that carries the
weight of power structure in organizations and extant discriminating behaviors.
Kanter (1993) refers to “token” employees as a minority group in the workplace that
experience extra pressure to perform to the fullest and satisfy their peers’ expectations,
as those transpire from gender (or race) stereotypes. In a workplace with few women
in number, compared to men, those become “stand-ins for all women” (ibid). One of
the interview respondents instances her experience at a start-up related event, where
she took center stage for being the only woman in her start-up founding team
(Respondent 2). When asked upon her feelings in relation to the fact, she responded: “It felt really good, but I was surprised; I don’t put much attention to my gender as to my personal achievements” (ibid).

Interview respondents’ real identities have been disguised but their account of the facts disclose the nature of interactions among individuals embedded in the innovation process. There is an obvious correlation between the gender gap in tech industry and the low female participation in technology and science disciplines. Going beyond this association, a qualitative analysis can unveil elements within the realm of business norms and values that further our understanding of gender diversity and innovation. It is argued that balancing gender ratios in the workforce will not account for all complexities that emerge from integrating gender in business processes (Yoder, 1991). For that reason, this thesis has taken into consideration the interpretations that individuals make and has further incorporated them in the framework for analyzing gender diversity impact on firm innovativeness.
5 CONCLUSION

“Tech industry is focused on knowledge and competence; you measure outcomes so you know what works and what doesn’t. That’s how you go towards what is working. And it goes so fast, you cannot really look what gender people are; you just look at competence and result”

- Respondent 5, CTO and start-up co-founder

This study sought a link between gender diversity in the workforce and firm-level innovative performance. The inquiry was motivated by a keen interest in delving deeper into a lingering gender gap in tech industry. The researcher was particularly interested in analyzing new firms’ workforce composition within an emergent framework in the intersection of gender and innovation studies. The theories brought together inform a conceptual framework for considering firms’ capacity to innovate through a gendered lens. Prior studies in gender and innovation extend over a broad spectrum of theoretical foundations and methods (Alsos et al., 2013). More specifically, a growing literature in workforce diversity and innovation corroborates the benefits of heterogeneity among employees for aggregate-level firm innovative capacity (Mohammadi et al., 2017; Gamero et al., 2014; Parotta et al., 2014; Østergaard et al., 2011; Söllner, 2010) but does not isolate the gender aspect (Turner, 2009). Gender diversity is brought into the discussion as regards women integration in organization process and top management (Kanter, 1993). Contextualizing gender diversity in terms of innovation process goes beyond that; it allows innovation milieus to grow their innovative capacity (Danilda and Thorslund, 2011). Harrison and Klein (2007) underline that making accurate inferences about diversity impact depend on how well is diversity conceptualized. Hence, analyzing the gender aspect of diversity entail understanding how socially constructed gendered characteristics are integrated in innovation, business and management processes (Pecis, 2016; Bird and Brush, 2002; Fondas, 1997)

The research was designed using a qualitative method in order to elucidate the concepts of workforce gender diversity and firm capacity to innovate, with the help of innovation practitioners per se. Individuals affiliated with tech start-up companies at early stage were targeted, with a view to avoid having business formalities overlaying the gender interactions that transpire within new innovative firms. Primary data were collected applying a qualitative interviewing method and were, subsequently, analyzed within a context built on secondary data gathered from online resources. The empirical analysis presented seeks to interpret the meanings that interview participants ascribe to the concepts under study, guided by an interdisciplinary framework.

Based on the empirical findings, gender diversity in the workforce can be subject to individual interpretations; nonetheless, it is apparent that there are two dimensions that inform gender diversity among employees, viz. one that quantifies female to male representation, and one further that qualitatively assesses the interactions between
both genders. Despite seen as an important element of team composition, gender diversity is not a priority in new firms’ activities, especially with regard to recruitment criteria; a latent sense of urgency and the imperative for growth, sight founders’ focus towards skills and talent. Compatibility among co-workers is also a decisive factor for new ventures’ team composition. Start-up firms’ capacity to innovate is pinpointed in founding team efforts to develop their product and technology, to strategically deploy their vision for the future, and to refine team dynamics and their external networks. A gendered input to innovation translates into a diversity in perspectives, which is intuitively expected to contribute to firm innovative capabilities; yet, in the absence of a gender-aware team formation strategy, the study cannot assess the interactions that emerge from gender diverse settings, nor subsequently, their impact on innovativeness. What is proposed, instead, is a map of the links between gender diversity, innovative performance and recruitment criteria, which can be relevant upon creating gender-aware new ventures and start-up team formation, as well as upon developing methods to assess gender diversity impact on firm innovation capacity. Drawing inspiration from the discourse on the future of open innovation (Chesbrough, 2017), this thesis can argue that gender collaboration and diversity among participants in innovation process will widen innovation’s scope beyond technology to business models.

Limitations and Future Research

Research findings are limited in scope, as they explore gender diversity in the workforce of tech start-ups at their formative stage. The results cannot be generalized to larger firms and possibly not even to following growth-stages. Tech industry is male-dominated in the sense that labor pool is primarily consisted of male professionals. There is a lingering gender gap despite educational institutions gender-aware policies to attract female students. Even so, tech industry employs professionals from other disciplines, which is nonetheless more apparent in larger firm settings, compared to start-up companies. Furthermore, there is a possible selection bias in the study sample, as well as gender-of-interviewer effects and the lure to maintain a polite discussion during interviews that obstruct the accuracy of our interpretations.

Gender topics are often sensitive to discuss as men might feel being accused and women might feel stigmatized. In writing this thesis the main challenge that occurred upon exploring gender was to “neutralize” the approach; the research design refrains both from feminist and gender-blind interpretations of innovation. For that matter, the author argues for integrating gender in our understanding of innovation process as it naturally proceeds from scrutinizing the profile of individuals embedded in them. The same reasoning would be applied to men being underrepresented within female-dominated innovative sectors should this be the case. Yet, the empirical data and the overall research design do not reflect that case.

The material in this thesis is exploratory and suggestive of future research needed in the intersection of gender and innovation, in general. The findings are preliminary for validating the benefits of a gender diverse workforce on firm-level innovative performance and highlight the importance of constructing theory-based assessment
criteria to measure diversity-effects. The author believes that future research scope should extend to firms at various growth stages and sizes, in order to establish a common framework for assessing gender diversity impact. Future studies could potentially reflect a randomized trial approach to evaluate gender-aware practices in business and innovation, in the fashion of case studies among similar firms receiving or controlling for “gender treatment”. The agile nature of new ventures facilitates the “experimentation” with gender diversity tactics, but it implies assuming the risk of possibly hindered growth. Exploring gender diversity among the workforce of established firms could both mitigate such risks and permit funneling resources into gender-aware innovation practices. Let it be noted that as gender diversity in a firm’s workforce encompasses both quantitative and qualitative aspects, gender-aware business and innovation practices not only balance numbers but also make certain that interactions among employees are in line with organization’s values.
Reference List


**Websites:**

European Digital City Index (EDCi), [https://digitalcityindex.eu/](https://digitalcityindex.eu/)


Statistics Sweden (SCB), [https://www.scb.se/](https://www.scb.se/)


Swedish Governmental Agency for Innovation Systems (VINNOVA), [https://www.vinnova.se/](https://www.vinnova.se/)

The Nordic Web, [https://thenordicweb.com/](https://thenordicweb.com/)

United Nations Economic Commission for Europe (UNECE), [https://www.unece.org](https://www.unece.org)

Appendices

Appendix A. Interview Protocol

A.1 Overview of the interviews

The aim of these interviews is to determine if gender diversity is important for the innovative performance at firm-level. The respondents that I am addressing are founders/team members of startups in tech industry, in Stockholm region.

The working ideas of this research are gender diversity in the workforce and innovative performance at firm-level, and more specifically their relationship. The main research question is how gender diversity in the workforce can influence the innovative capacity of a firm. A complementary research question seeks to answer how founders build their start-up teams, in terms of recruitment criteria. My aim is to gain insight into the possible (positive or negative) impact of a gender balanced workforce on the firm’s innovative performance. Whereas innovation is positively associated to growth, understanding the factors that drive innovation at firm-level will also advance our understanding of firm growth. As such, sub-questions that lead to the main research question include:

- Which elements compound a firm’s innovative performance?
- Which criteria are important in start-up team formation?
- What is gender diversity?
- How does gender diversity affect start-up teams?
- Could gender diversity form a criterion during start-up team formation?

The theoretical framework of this research is to be analyzed, prior to the literature review part of the thesis.

This protocol was designed to get an overview of how to perform the interviews.

A.2 Data Collection

The person conducting the interviews is Despoina Tsiougkou, a KTH student in Economics of Innovation and Growth master program. The purpose of this research is to collect data from interviews for my master thesis. Before doing fieldwork, gender diversity and innovation at firm-level are studied and open-ended questions were formulated to start a conversation with the interviewees. Participants for the interviews were selected based on their involvement with startups in Tech Industry and they belong to both male and female gender. All participants hold leadership roles and/or belong in the start-up founding team. Whereas their identity is known to the interviewer, they will be referred to as “respondent#” (# being a distinct number, according to the sample size) in the data analysis.
Opening the interview, the participants are informed about the interviewer’s identity and background, as well as the research under study. The interview will be record on a mobile device (smartphone), in order for the interviewer to take notes when necessary during the discussion. The recordings will help use efficiently the information during the analysis. The responses will be processed anonymously. Discretion and confidentiality are guaranteed.

Warm-up questions follow the interviewer’s opening statement, namely questions regarding the respondent’s background and job responsibilities.

Main questions to be asked are:

1. How do you perceive innovation in your firm’s context? What would describe your approach towards innovation?
2. Could you describe the activities that you think that affect the innovative performance of your firm?
3. How would you improve this innovative performance? Do you follow any strategies?
4. Tell me about the recruitment process that you follow.
   - Did you have any restrictions (or barriers) that drove you away from your “ideal recruitment strategy”?
   - What would this ideal recruitment strategy include?
5. How do you perceive gender diversity in a business context? Does your firm address this?
6. Could you tell me how balanced, in terms of gender, is the workforce in your firm?
7. How do you feel about the composition of your working team?
8. Has this composition had an impact on you and/or the innovative performance of your firm? And how?
9. Would you consider having a balanced workforce as a strategy to implement at a later stage in your firm’s growth or rather a choice made when building the team?

These are the main questions to be discussed. The interviewer will ask for follow-up and probing questions in between, to explore the topics and collect more information from the respondent, while interpreting questions will help clarify the responses given.

Examples of follow-up and probing questions are:

- Could you tell me more about that specific part?
- Why do you feel this is important?
- How would you connect this with what you said about …?
- How did you make this choice?
- How would you define that?

Examples of interpreting questions are:

- So what you are saying is that …?
- If I understand correctly …?
- So these elements are connected?

Closing the interview, the respondents are asked for permission to follow-up with further clarifications if needed. The interviewer informs them that she is at their disposal, should they need any information regarding the interviews or her thesis, and shares her contact details.
Appendix B. List of Interviewees and Background Information

<table>
<thead>
<tr>
<th>#</th>
<th>Pseudonym</th>
<th>Company</th>
<th>Position</th>
<th>Team Composition (Female/Male)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Respondent1</td>
<td>A</td>
<td>Head of Growth &amp; Communications</td>
<td>5 / 6(^7)</td>
</tr>
<tr>
<td>2</td>
<td>Respondent2</td>
<td>B</td>
<td>Co-Founder / Head of Business Administration</td>
<td>5 / 6(^7)</td>
</tr>
<tr>
<td>3</td>
<td>Respondent3</td>
<td>C</td>
<td>Co-Founder / COO</td>
<td>1 / 4</td>
</tr>
<tr>
<td>4</td>
<td>Respondent4</td>
<td>D</td>
<td>Co-Founder</td>
<td>0 / 7(^8)</td>
</tr>
<tr>
<td>5</td>
<td>Respondent5</td>
<td>E</td>
<td>Co-Founder / CTO</td>
<td>1 / 3</td>
</tr>
<tr>
<td>6</td>
<td>Respondent6</td>
<td>F</td>
<td>Co-Founder</td>
<td>1 / 3</td>
</tr>
<tr>
<td>7</td>
<td>Respondent7</td>
<td>F</td>
<td>Co-Founder</td>
<td>1 / 3</td>
</tr>
</tbody>
</table>

Table 1. Respondents and start-up team composition

<table>
<thead>
<tr>
<th>Respondent#</th>
<th>Start-up Activity / Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Social media platform / Unified online identity</td>
</tr>
<tr>
<td>2</td>
<td>Hardware-as-a-service solution / Assembling hardware at low cost</td>
</tr>
<tr>
<td>3</td>
<td>Mobile technology for music experience / Crowd-artist interaction</td>
</tr>
<tr>
<td>4</td>
<td>Open-source online platform / spin-off from a research lab</td>
</tr>
<tr>
<td>5</td>
<td>Digital platform / Sustainability goals in a gamified format</td>
</tr>
<tr>
<td>6 &amp; 7</td>
<td>Mechanical engineering / An autonomous ball collector for golf ranges</td>
</tr>
</tbody>
</table>

Table 2. Respondents and innovation in their start-up activity

\(^7\) The firm also employs interns or external collaborators on a temporary basis, so these numbers are subject to change.

\(^8\) The founding team consists of 7 male persons, but the firm temporarily employs more people on a students’ internship scheme. The current period interns include one female and seven male master’s students.