

WOMEN ENTREPRENEURS: STARTING AND SCALING TECHNOLOGY BUSINESSES IN THE UNITED STATES

女性企业家在美国 创立、发展科技企业之路

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Research Partners

The Georgetown Institute for Women, Peace and Security and the Mulan Foundation of the People's Republic of China have collaborated on comparative research on the state of women's entrepreneurship in China and the United States. The objective is to better understand the opportunities and barriers faced by women entrepreneurs in the technology industry in starting and scaling their businesses. The focus of this paper is on the technology industry, while drawing on broader evidence where appropriate. This paper highlights initial findings for the United States, and will be followed by a comparative research report that discusses results from a larger sample of surveys and interviews conducted in both the United States and China.

乔治城女性、和平与安全研究所与中国木兰汇公益基金会合作展开了美中两国女性创业情况的比较研究。此研究旨在更好地了解科技领域的女性企业家在创业和拓展业务方面所面临的机遇和挑战。本文重点关注科技领域，同时酌情援引其他领域的例证。本文重点介绍美方的初步研究结果，后续发布的比较研究报告将会介绍在美中两国进行大量调查和访谈后的结果。

The Georgetown Institute for Women, Peace and Security, housed within the Georgetown University Walsh School of Foreign Service, researches how promoting women's social and economic participation is linked to advancing sustainable peace and security. The Mulan Foundation, as initiated by Mulan Initiative, is the largest organization in China dedicated to supporting the growth and development of women's entrepreneurship. It was founded on the idea that women make businesses better and aims to enhance female businesses' commercial impact through collective learning, role models, and growth opportunities.

乔治城女性、和平与安全研究所是乔治城大学沃尔什外交学院的下设研究机构，致力于研究提高女性社会经济参与度与促进和平与安全之间的关系。木兰汇公益基金会由木兰汇发起成立，是中国规模最大的致力于支持女性创业就业的公益机构。基金会以“商业因女性而美好”为宗旨，希望通过集体学习、榜样引路、成长加速等途径提升女性对商业的影响力。

Introduction

Female entrepreneurship is on an upward trend in the United States. Between 2007 and 2018, the share of women-owned businesses across all sectors in the US increased from 29 to 40 percent.¹ Thousands of women are also becoming entrepreneurs: between 2017 and 2018, women in the US started an average of 1,821 businesses per day.² According to the 2018 State of Women-Owned Businesses Report, which provided projections based on data from the US Census Bureau's survey of business owners, 4 in 10 businesses are women-owned and nearly half of all businesses in the US are women-owned or jointly owned by men and women.³

However, women-owned businesses in the US tend to be smaller in size and receive less funding. These businesses account for 8 percent of total employment and 4 percent of total revenues.⁴ Data from Crunchbase, an open data set for the start-up community, showed that in 2018 technology start-ups with at least one female founder collectively received venture-capital funding of about \$39 billion, almost double the amount invested in 2017 (\$20 billion).⁵ However, this still stands in contrast to the \$188 billion invested in male-founded technology start-ups in 2018.



At the same time, underrepresentation of women start-up founders in the technology industry persists in the United States. Some key facts include:

- In the United States, only 3 percent of women consider their business to be in the technology sector, compared to 8 percent of men.⁶ In 2017, Crunchbase reported that only 17 percent of US-based technology start-ups had a female founder—a proportion that has remained stagnant since 2012.⁷
- Across the technology sector, a significantly smaller share of women occupy senior management or ownership positions. Among Silicon Valley's top 150 companies, for example, women account for only 11 percent of executives.⁸

The picture is not unique to the United States. The 2016/2017 Global Entrepreneurship Monitor report shows that, in 74 countries, fewer than 2 percent of women entrepreneurs are starting information and communications technology (ICT) businesses,⁹ compared to 11 percent of male entrepreneurs.¹⁰

Literature Review: Women in the Technology Sector and Women's Entrepreneurship in the United States

Women entrepreneurs across industries face challenges in the United States. While women in technology face a specific set of constraints, there is little data collected about the challenges female entrepreneurs face in starting and growing technology start-ups. Here, we look at the available evidence about the problems encountered by female entrepreneurs in technology and other sectors.

Lack of women in the technology industry remains a challenge. Women continue to be underrepresented in the sector as employees, in leadership, and as entrepreneurs. According to the most recent available data, women account for about a quarter of employees¹¹ and one-tenth of executives in Silicon Valley companies.¹² The female attrition rate is also higher in the technology industry than in science and engineering, as well as in non-STEM fields.¹³ There are many fewer female entrepreneurs in technology. It is estimated that there are 16 times as many male-founded start-ups as there are female-founded start-ups.¹⁴



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Studies suggest women entrepreneurs face larger barriers compared to their male counterparts, including financial constraints, lack of access to mentors and diverse networks, and broader gender bias, cultural stereotypes, and limiting social norms. These factors often operate together to constrain women's growth potential or deter women from pursuing entrepreneurial endeavors altogether.

Financial constraints

In the United States, women business owners have reported that conditions for accessing capital have improved over the previous decade. However, they still perceive themselves to be at a disadvantage compared to their male peers.¹⁵ Limited access to external financing and capital can inhibit women entrepreneurs' growth potential,¹⁶ as they may be forced to relocate to lower-cost areas with limited access to new markets and customers.¹⁷

Women tend to have fewer assets, in part because their lower earnings mean that they accumulate less personal wealth than men. Studies suggest most female entrepreneurs establish their businesses between ages 45 and 54.¹⁸

Women entrepreneurs receive a relatively small share of business-related loans. For example, a 2014 report estimated women receive just 16 percent of all conventional small-business loans, and only about 4 percent of the total dollar amount.¹⁹ In 2016, another study by Fundera, an online small-business loan aggregator, found that woman entrepreneurs receive smaller and fewer loans compared to men, at higher interest rates.²⁰ The study found that only one in four applicants were women, with an average gap of \$35,000 in loan amount requested. Women also paid, on average, five percentage points more in interest on short-term loans.²¹

Only a small share of venture-capital funding goes to women entrepreneurs. According to a 2016 study, male-only teams are four times more likely to receive venture funding than female-only teams,²² and, between 2011 and 2013, 97 percent of total venture-capital funding went to companies with a male

CEO.²³ During the same period, 86 percent of all venture-capital-funded businesses had no women in management positions.²⁴

More fundamental gender biases may also place women at a disadvantage in accessing capital. A study found that both professional investors and nonprofessional evaluators (men and women) preferred pitches by male entrepreneurs, particularly attractive men, even when the content of the pitch was very similar.²⁵

Women are less likely to seek external sources of financing because they are more risk averse and are less willing to cede control of their companies.²⁶ They establish businesses with, on average, half the capital of men and are more reliant on personal savings and credit card debt.²⁷ The barriers in accessing loans and venture funding can lead women entrepreneurs to rely more on alternative sources of financing, including peer-to-peer lending and crowdfunding.²⁸ Recent research shows that women entrepreneurs may be more successful on crowdfunding platforms such as Kickstarter, with teams of two women raising more than mixed or single male-led teams.²⁹

Lack of access to mentors and diverse networks

Mentors and role models provide critical support to entrepreneurs, helping to develop leadership skills, confidence, and networks.³⁰ A study found that the presence of “start-up helpers” (external sources of support with no ownership share in the company) significantly increased the likelihood of women seeking external sources of financing in the early stages of their business.³¹ Mentors can also introduce new entrepreneurs to broader networks, which are fundamental for accessing funding, information, and further business opportunities.³² There is evidence that women lack such support across industries, and especially in some specific aspects of the technology industry.

Research suggests women entrepreneurs have smaller social networks than men and often rely more on personal networks, such as spouses and friends, instead of professional relationships.³³ As a result, women may face limited opportunities to access new clients through professional networks and have limited access to entrepreneurial and managerial knowledge.³⁴ A number of organizations, such as the Women Presidents’ Organization and C200, have been created to overcome this problem and provide a platform to connect with other women entrepreneurs, to engage in mentorship, and to advance women’s leadership in business.

Incubators and accelerators can help expand and diversify women entrepreneurs’ networks while providing valuable educational opportunities.³⁵ However, studies show that women entrepreneurs do not participate in these activities as often as men. Anecdotal evidence suggests that there are fewer women managers in accelerators and that the one-size-fits-all model of accelerator programs fails to meet the specific needs of women entrepreneurs.³⁶ Biases in the recruitment and selection process may prevent women from accessing high-tech incubators and accelerators,³⁷ while program design and culture may also discourage them from participating.³⁸ For example, incubators and accelerators may require the entrepreneur to be based on-site for training for several months— which limits those who have family obligations from participating.

Social norms and institutional environment

It is well known that social norms around gender can create additional barriers that make it more difficult for women to establish and grow a business.³⁹ Studies have shown that entrepreneurship is typically associated with masculine characteristics, and this works against women entrepreneurs, who are seen as violating prescriptive stereotypes about feminine behavior.⁴⁰ Women’s businesses are viewed as less credible and attractive funding investments.⁴¹ Men are also more than twice as likely than women to believe they have the knowledge, skills, and experience to be an entrepreneur.⁴²

The United States is recognized as having a favorable business environment for women: according to the 2015 Female Entrepreneurship Index, the United States ranks first out of 77 countries in having an enabling environment to support high-potential female entrepreneurs, with a score of 82.9 out of 100.⁴³ However, there is still room for improvement, including the provision of subsidized childcare services and parental leave and changing broader social norms to support women as entrepreneurs.⁴⁴ The United States is the only industrialized country that does not offer paid maternity leave for mothers, and, according to the U.S. Bureau of Labor Statistics, only 12 percent of workers have paid family leave.⁴⁵ A study found that when there are fewer family-friendly labor policies, women are more likely to view entrepreneurship as a fallback strategy for balancing work and family demands, instead of seeing it as an opportunity.⁴⁶

Overall, there is ample literature exploring the barriers that hinder women entrepreneurs, but there is less on the industry-specific challenges women entrepreneurs in technology face. Although female entrepreneurs in technology experience similar challenges to women in other sectors in accessing finance, mentors, and networks and facing gender bias, there are several challenges that affect them more specifically, given the technology sector's traditionally male-dominated environment. For instance, fewer women in the field as entrepreneurs and investors contributes to the stereotype that entrepreneurship in technology is a male-only endeavor.⁴⁷ Women in technology also feel excluded from informal networking opportunities—such as golf weekends and late-night drinks⁴⁸—which reduces their ability to find mentors and build networks.

Methodology

The findings presented here draw on our first round of data collection from January to March 2019, which includes an online survey of 50 women entrepreneurs in technology and in-depth interviews with 10 women CEOs and founders of technology companies.

The survey was distributed through organizations that work with women entrepreneurs, such as, but not limited to, women's business councils and centers, investing funds and financing institutions, and accelerators. In the survey, we asked about challenges the women faced when starting and scaling their business, focusing on access to finance and mentors. Among the 50 women who responded to the survey:



SURVEY RESPONDENTS

- Almost half were above 46 years old;
- More than half had companies that had been in business for more than 5 years;
- Their companies ranged from generating annual net revenues of \$1,000 to more than \$10 million, and the majority of companies had annual net revenues of at least \$1 million; and
- They were from 16 different states.

The survey results will be reported in greater depth in the final report, where we plan to complete the data analysis for 100 respondents.

For the in-depth semi-structured interviews with 10 women CEOs and founders of tech companies, we engaged in purposive sampling and identified interviewees based on recommendations from partner organizations that work directly with women entrepreneurs. The purpose of the interviews was to capture a diverse range of opinions from a broad spectrum of women entrepreneurs in technology, from emerging start-ups to companies that have been in existence from more than ten years. For the interviews, we asked about social norms and the enabling environment for women entrepreneurs in technology, challenges they faced when starting and scaling their business, and access to mentors. The profile of our interviewees are as follows:



INTERVIEWEES

- They ranged from ages 31 to 60.
- Most had companies that were generating more than \$10 million in revenue and had been operating for more than 5 years.
- They had established companies in five different states, namely, California, Delaware, Georgia, North Carolina, and Texas.
- Further interviews are planned with 10 entrepreneurs with companies from different states, and stages of growth.

While neither exercise is statistically representative, the findings below highlight some recurring themes, many of which confirm the existing evidence.

Initial Survey and Interview Findings

1. Accessing capital is a key obstacle to starting and growing a business

筹集资金是企业初创及拓展阶段的关键阻碍

Findings from our initial survey and interviews confirm that accessing capital is a key obstacle faced by women entrepreneurs, both in the start-up and growth phases of their businesses. Among survey respondents, over 70 percent listed “applying for a loan” and “accessing capital from angel and seed investors” as one of the top three challenges.

Bank loans and debt financing

Many women described difficulties in qualifying for bank loans in the early stages of their business. Lack of collateral associated with a nascent technology company made it difficult to qualify for a loan. Cyndi Masters, CEO and founder of DBS Interactive, noted the “chicken and the egg” dilemma, as banks “are only interested in giving you money when you have money” and “growing a business takes capital.” Another woman explained that her start-up had no “inventory or other company assets to pledge” and therefore she had to “personally guarantee all loans with private assets.”

Christina Seelye, CEO and founder of Maximum Games, described how her company had to demonstrate profitability before they were able to secure a bank loan. This meant bootstrapping activities for the first three years of business. “A lot of it was because we were in software and technology,” Seelye said, “and we didn’t have the balance sheet of assets which banks consider as collateral.” Seelye argued that securing

debt financing is one of the “core barriers women in technology face as founders.”

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— CHRISTINA SEELYE, CEO and founder of Maximum Games

Alternative financing sources

Women also cited accessing capital from angel and seed investors as a common challenge. Over half of respondents (approximately 56 percent) used personal savings as their primary source of initial funding, while only 12 percent used seed or angel funds. Only 2 percent of women cited venture capital as their primary funding source.

Even when women had established successful businesses, seed and venture capital were uncommon sources of funding. For example, among 18 survey respondents whose businesses have existed for over ten years, loans, retained earnings, and savings were cited as the primary sources of current financing. This may be, in part, due to preferences. A number of women entrepreneurs said they were hesitant to pursue equity-financing opportunities, as they did not want to hand over control of their business to others. Christina Seelye observed that “men in tech tend to go directly to the venture capital market,” whereas “women tend to go the bootstrap route” until they can prove enough profitability to get a bank loan. The reasons for this may be varied. Phyllis Newhouse, founder and CEO of Xtreme Solutions, Inc., described her hesitation as “founderitis,” not wanting to give up ownership of her company to others. Claudia Mirza, CEO and cofounder of Akorbi, suggested, in her experience, women tend to be more protective of their assets, and thus more reluctant to trust external partners.

2. Access to mentors and networks can help overcome challenges in the post-start-up phase, especially in expanding customer markets and hiring talent

获得前人指点并搭建人脉关系有助于克服企业初创后期的诸多挑战,对客户市场拓展及人才招聘尤为有益

Women report various barriers in growing their business. In particular, accessing new markets and customers and hiring and retaining employees were cited as key challenges by survey respondents. Findings from our initial survey and interviews indicate that mentors and networks can help address these challenges.

Accessing new markets and customers

Difficulty accessing markets and customers was cited as the number one challenge by most survey respondents. This challenge may be related to women’s more limited networks: as one respondent noted, “starting fresh” and establishing a business “means a blank slate—and business is who you know.” Other women cited the “ever-changing IT environment” and difficulty in deciding which market segments to concentrate on as barriers to reaching new customers. Andrea Sreshta, CEO and cofounder of LuminAID, said that, as a global business, she struggled more with “qualifying what markets we should pursue, given we have limited time and resources to place bets.”

Women should approach finding a mentor as an organic process, where both the mentor and mentee can learn from each other.

— SHEILA LIRIO MARCELO,
Founder, Chairwoman and CEO of Care.com



Women who were successful in scaling their businesses said access to mentors and diverse networks was key. Phyllis Newhouse recounted how, after the first 18 months of rapid company growth, she came up against many unfamiliar “roadblocks”—including systems failures and new process technologies. Soon after, Newhouse was introduced to a more established female entrepreneur in her field who became her mentor. The mentorship, Newhouse says, helped Xtreme Solutions almost double its revenue in the following year. For any woman looking to grow her business, Newhouse recommends seeking out a “mentor at the next level—not one where you are, but one where you are trying to go.” Sheila Lirio Marcelo, Founder, Chairwoman and CEO of Care.com stressed that women should approach finding a mentor as an organic process, where both the mentor and mentee can learn from each other. This, Marcelo states, sets the foundation for a long-term and symbiotic relationship.

Only one-third of survey respondents said they had a mentor when starting their business, supporting evidence from existing literature about women’s limited access to mentors. Among women who did have a mentor when starting, they credited their mentors with helping them think through critical growth decisions, facilitating connections with new clients, and providing practical help on human resources or legal questions.

Difficulty hiring employees

Survey respondents also cited difficulty hiring and retaining skilled employees as an obstacle to growth. Although this is not a barrier unique to women entrepreneurs, it signals a challenge that looms large for the technology industry. Smaller start-ups can find it difficult to compete with larger technology companies. As one respondent noted, it is “always tough to attract talent without the top salaries in an industry.”

Retaining talent is also a challenge: one survey respondent recounted the frustrating process of hiring and training new employees, only to have them recruited by bigger companies. Furthermore, in niche industries like cybersecurity, young professionals prefer to work as freelance consultants, which offers higher hourly wages and greater flexibility.

3. Many women face self-doubt and biased perceptions of their abilities as entrepreneurs 女性企业家面临自我怀疑与社会偏见的双重挑战

Many women described low self-confidence, particularly in the start-up phase of their business. Survey respondents said they doubted their “ability to run a business,” and “constantly questioned” themselves or simply “did not think my company would interest investors at the time.” They also face gender bias, with funders questioning the credibility of their business models and having to convince both funders and customers that they “were worthy of investment and opportunity.”

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Women are typically “less comfortable exaggerating their capabilities.”

— KATHRYN PETRALIA, Cofounder of Kabbage

taking risks they aren't 100 percent sure they can manage"—something that men “do all the time.” Petralia said women are typically “less comfortable exaggerating their capabilities” and are less likely to “exude confidence in something where they don't have direct experience.”

External biases

Several women entrepreneurs said they have felt their abilities were underestimated or dismissed because of their gender, particularly when seeking access to finance. Sheila Marcelo says, “preconceived notions” exist on what entrepreneurs and their companies should look like – and this manifests as gender bias, whether conscious or unconscious. As one respondent noted, the biggest challenge she faces is “simply being overlooked or not taken seriously by some,” and, in such cases, choosing to send out her male cofounders in her place. Christina Seelye said she perceives a strong “luck bias” toward thriving female entrepreneurs. For example, when Seelye describes her company's impressive growth trajectory, investors attribute this to her “luck in being able to take advantage of the growth of the video game industry” rather than her own entrepreneurial skills and business savvy.

Women entrepreneurs also described a double standard in how their confidence or ambition may be perceived by others. As one survey respondent noted,

“I am always shocked at the audacity of some peer entrepreneurs (generally male) when describing their business successes, pitching products, or asking for funding or mentorship. I'm also shocked at how positively their confidence is received. I have not found that an overly positive presentation of myself or my company's capabilities is seen in a favorable light.”

Tana Greene, CEO of Greene Group, recounted how, in the early stages of her career, she was hesitant to be an outspoken leader, lest she be viewed as too pushy or bossy. Seelye described a similar double standard in how male versus female ambition is perceived. “With women who have a really aggressive [business] plan,” Seelye said, “[fundors] look at that as reckless, versus when a man has an aggressive plan, they'll look at it is as ambitious.”

Lack of confidence

Claudia Mirza has observed feelings of self-doubt among female entrepreneurs which can hinder them from taking financial risks—which, ultimately, are key for growing a business. While men may feel more freedom to strategize, experiment, take big risks and “play with money,” she said, women entrepreneurs are more concerned with diving into the core of the business operations to “roll up their sleeves” and get the work done. Kathryn Petralia, cofounder of Kabbage, similarly noted that women “are a little less comfortable



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Emerging Conclusions

As the number of women entrepreneurs increases within the technology sector, it is important to understand the challenges facing women founders in this rapidly growing industry.

Our emerging results from quantitative and qualitative data collection confirm the existing findings in the literature, underlining the importance of negative gender stereotypes and limited access to capital and networks in inhibiting women entrepreneurs' success.

Most survey respondents said increased credit would have the greatest impact in helping women entrepreneurs. As one noted, "Supporting female entrepreneurs with funds—whether that takes the form of grants, angel investors, or possibly loans" is key.

Women also cited access to networks and mentors as critical to women entrepreneurs' success and growth. Such networks and mentorships can exist formally, through groups like C200 or Women Presidents' Organization, but also informally. These networks of both male and female entrepreneurs can act as a "free board of advisors" that can help think through critical business decisions and overcome obstacles to growth.

Respondents also suggested the potential importance of accessing incubators, accelerators, and training opportunities to grow their business. One survey respondent said, "It would be helpful to have more no or low-cost accelerators (which would require creativity and innovation)—perhaps bartering, skill-set/knowledge-exchange to fund participation." Other women noted it would be helpful for



Most women face self-doubt and confidence in their ability as entrepreneurs. However, they find ways to build their confidence through becoming an expert in what they do, and trusting in their abilities and visions for their businesses.



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accelerators to target more established businesses to help with "the non-startup phase of companies," particularly related to growth challenges, like raising capital for scaling the business, or building the right team for market expansion.

Perhaps the most surprising finding was in spite of their successes, most women face self-doubt and confidence in their ability as entrepreneurs. However, they find ways to build their confidence through becoming an expert in what they do, and trusting in their abilities and visions for their businesses.

The next and final phase of this research will compare these insights with those learned from China, to better illuminate the challenges faced and to draw out lessons for stakeholders and policymakers.

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