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<https://doi.org/10.1007/s11628-022-00500-0>

**Overcoming bias against funding of female-led entrepreneurial initiatives:
The democratizing influence of online crowdlending platforms**

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Manuscript Submitted Accepted at *Service Business*

Special Issue on Female-Driven Social Entrepreneurship in Service Business

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The authors thank Boise State University, College of Business and Economics Summer Research Grant program for its generous support. They also wish to thank Professors Sang Lee and Alicia Mas-Tur for their guidance and feedback on earlier versions of this manuscript.

Overcoming bias against the funding of female-led entrepreneurial initiatives: The democratizing influence of online crowdlending platforms

Abstract

Crowdlending platforms are becoming an increasingly prominent alternative funding channel for marginalized entrepreneurs to traditional financing. We examine whether the gender bias generally seen in conventional funding channels extends to the funding of female-led ventures in online platforms and how this potential bias affects service businesses. Our analysis of the KIVA crowdlending platform suggests that while online crowdlending platforms exert a democratizing influence on the funding of female entrepreneurial ventures, female-led service businesses were less able to get financing, mainly for larger loan amounts and longer loan terms. Our findings have significant implications for female entrepreneurs working for marginalized/social causes.

Keywords women entrepreneurs – financing – gender bias – crowdlending – crowdfunding – service business

Overcoming bias against funding of female-led entrepreneurial initiatives: The democratizing influence of online crowdlending platforms

1 Introduction

Entrepreneurial ventures offer women opportunities for empowerment, social inclusion and economic security (Alkhaled and Berglund 2018; Datta and Gailey, 2012). Social entrepreneurship has been defined in various ways, but definitions generally combine entrepreneurship activities with social goals such as solving persistent social, economic and ecological problems (Canestrino et al. 2020; Gupta et al. 2020). Since female entrepreneurship contributes to women's empowerment and to changing the social order (Haugh and Talwar 2016), it can be argued that female entrepreneurship is social entrepreneurship.

Potential female entrepreneurs face many barriers to entry such as uneven distribution of assets, lack of education, and gender role expectations (Sullivan and Meek 2012). Research suggests that female-led entrepreneurial ventures perform as well as, if not better, than male-led entrepreneurial ventures (Cowling et al. 2020; Demartini 2018; Kalnins, and Williams 2014), particularly after controlling for variables such as demographic characteristics (i.e., age, education, race), working preferences (i.e., number of hours worked per week, home business or office business) and industry (i.e., high-tech, medium-tech and non-tech; Farhat and Naranchimeg 2018). Venture capitalists (VCs) and traditional investor channels fund female-led entrepreneurial initiatives at a lower rate than male-led ventures (D'Ambrosio and Gianfrate 2016; Brush et al. 2018; Becker-Blease and Sohl 2007; Tinkler et al. 2015). In 2020, female-led start-ups received just 2.3% of VC funding (Bittner and Lau 2021).

A recent World Bank report finds that access to financing remains one of the most critical constraints for women entrepreneurs (Corranza et al. 2018). The report notes that much of female-led entrepreneurial activity is dominated by services and service-heavy sectors like hospitality and retailing. Furthermore, due to constraints like small scale and intangible assets, service businesses find it hard to get funding from traditional channels like banks and VCs (Agrawal et al. 2010; de Rassenfosse and Fischer 2016), further compounding the problem of funding female-led service businesses. For example, female-led service businesses generally come with low collateral, low asset value and are

likely to be seen as more susceptible in terms of survival, and hence a riskier investment (Corranza et al. 2018). More research is needed to understand this phenomenon better.

Online crowdlending platforms facilitate small investments from pools of amateur investors. Crowdlending (sometimes called peer-to-peer [P2P] or peer-to-business [P2B] lending) enables investors to empower new businesses through financial support (Osborne 2020). Crowdlending platforms offer a much lower cost and a better user experience than traditional lending channels (Osborne 2020). In recent years, crowdlending has emerged as the leading form of crowdfunding in terms of both scope and scale (Ziegler and Shneor 2020). However, information asymmetry remains a fundamental problem in crowdlending platforms (Leboeuf and Schwienbacher 2018); lenders often lack the skills to accurately assess risks associated with potential borrowers (Ziegler and Shneor 2020).

In this study, we will examine the extent to which an entrepreneur's gender affects venture funding through crowdlending platforms. Specifically, we will examine whether the pattern of female-led entrepreneurial ventures being positively evaluated but underfunded (relative to male-led ventures) in traditional funding channels extends to crowdlending platforms. This topic has significant implications for the economic elevation of women through funding of female-led entrepreneurial ventures, especially service ventures, and warrants further research.

Since performance differs across service and non-service businesses (Reed and Storrud-Barnes 2009), we will also explore the influence of the type of business (i.e., service versus non-service) on the relationship between gender and funding in online crowdlending platforms. We also explore which loan factors are more likely to be successfully funded in such online platforms—factors such as the amount requested, loan duration, and the number of hashtags to promote the loan. Past research suggests that using more hashtags might be better (Ye et al. 2018); however, further research is needed to explore the effect of hashtags in crowdlending contexts. Overwhelming evidence suggests that cultural and social norms disadvantage women in their entrepreneurial activities (Carranza et al. 2018); therefore, in this study, we compare crowdlending for women entrepreneurs in countries with varying levels of gender equality.

The proposed study will offer multiple contributions. It will be among the few to examine gender bias in online crowdlending platforms against female entrepreneurs and female service business owners. This study will inform scholars, practitioners (e.g., platform developers), governmental agencies, and public policymakers about potential hidden biases on online crowdlending platforms. Our findings may encourage these stakeholders to incorporate remedies to existing practices, and to make them more equitable. Ultimately, we hope this research will give more opportunities to female entrepreneurs, especially to those working on marginalized/social causes that get overlooked in traditional funding channels.

2 Review of the literature and hypotheses development

2.1 Traditional funding channels and challenges for female-led service businesses

Arguably, traditional funding channels like banks, debt financing and VC have not been effective for service businesses in general and for female-led service businesses in particular. Due to their small scale, difficult-to-observe creativity, negligible tangible assets, and limited reputations, service businesses often find it hard to get funding from banks or venture capitalists (Agrawal et al. 2010; de Rassenfosse and Fischer 2016). From a risk reduction perspective, financial decisions by banks and venture capital firms are heavily influenced by a borrower's ability to provide collateral in return for financing. Traditional lenders place heavier weight on an entrepreneur's capacity to repay the loan when making lending decisions (Carey and Hrycay 2001).

Collateral plays a vital role in securing financing as it reduces the risk for the lender and aligns the borrowers' incentives to the lenders' (Mann 1997). However, due to the transactional nature of service businesses, they often have few or no tangible assets to offer as collateral (Rassenfosse and Fischer 2016). For product-oriented businesses, patents and intellectual property can serve as alternatives to the physical assets as collateral (Munari et al. 2011; Crawford 2003). For service businesses, especially those with a small scale (i.e., most of the service business sector), investment in research and development and subsequent patenting activity is much smaller than it is for manufacturing firms (Morikawa 2014; Bulger et al. 2016).

The situation is even worse for women service entrepreneurs trying to acquire funding through traditional funding channels. In general, female entrepreneurs are less likely to get funded than male entrepreneurs (Brush et al. 2018; Becker-Blease and Sohl 2007; Buttner and Rosen 1988). The "gender penalty" female entrepreneurs face in acquiring financial capital for their ventures is significant (Brooks et al. 2014). Even if female entrepreneurs successfully access funds, the sums raised are usually lower than for male entrepreneurs (Kanze et al. 2018). Researchers have also observed that the financial terms for the capital raised by female entrepreneurs are less favorable than for that raised by male entrepreneurs (Jennings and Brush 2013; Madill et al. 2006).

Existing research provides many possible reasons for the gender penalty female entrepreneurs face. Some have claimed that traditional investors exhibit bias against female entrepreneurs, implicitly deeming them lacking the qualities necessary to engage in successful early-stage venturing (Lee and Huang 2018). Others have argued that investors provide women with a smaller share of funds simply because female entrepreneurs seek, and require, less funding for their ventures in the first place (Brush et al. 2018). It has also been observed that the communication style of woman entrepreneurs and investors' perception of long-term growth and scalability plays a crucial role in investing decisions (Huang et al. 2021).

The funding bias may be partly due to the nature of female-led enterprises. Most female-led enterprises are services-oriented, which generally lack funding opportunities from traditional funding channels compared to traditional manufacturing, construction, and agriculture-related businesses (Reed and Storrud-Barnes 2009). While women entrepreneurs consistently open more businesses and have similar success and longevity of their businesses, these businesses are usually small service-oriented businesses that are transactional in nature and fall in the domain of education, healthcare, and other service industries (Weston 2018). Female-owned businesses comprised less than 10 percent of construction, mining and manufacturing, agriculture, forestry and fishing (Watson 2006). Female-owned service enterprises not only have lower access to debt or venture financing through traditional channels, but they also face higher interest rates on the financing than the majority of male-owned businesses (Rosa and Sylla 2018).

2.2 Crowdlending

Emerging financial technology solutions like crowdlending platforms complement existing financing channels by filling a market need underserved by traditional financial institutions.

Crowdlending streamlines the financing process and alleviates geographic constraints associated with traditional financing of entrepreneurial ventures (Ambrosio and Gianfrate 2016; Mollick 2013).

In recent years, crowdlending platforms have become an increasingly prominent avenue for funding entrepreneurial initiatives. Crowdlending platforms like KIVA (www.kiva.org) and MILAAP (www.milaap.org) have made significant inroads into providing capital to marginalized entrepreneurs. Created in 2005, KIVA was the first peer-to-peer crowdlending platform. Lenders can make an interest-free loan of \$25 or more to support an entrepreneur around the globe through the KIVA platform (Liu et al 2012). The organization aims to "*expand financial access to help underserved communities thrive....by crowdfunding loans and unlocking capital for the underserved, improving the quality and cost of financial services, and addressing the underlying barriers to financial access around the world*" (Kiva n.d.). Kiva has funded 3.9 million borrowers in 77 countries. Lenders can loan as little as \$25, and they do not receive interest. Some borrowers pay fees and low interest to field partners; field partners are non-profit organizations, microfinance institutions, schools, and social enterprises that provide services and administer loans. Kiva claims a repayment rate of 96 percent (Kiva n.d.).

Crowdlending has the potential to offer borrowers new channels to access credit, better terms or inclusion of groups that previously may have been marginalized and underserved by traditional credit service providers (Ziegler and Shneor 2020). However, little is known about the extent to which gender and other possible biases seen in traditional funding of entrepreneurial ventures permeate into funding practices on crowdlending platforms (Johnson et al. 2018).

Crowd-lending platforms like KIVA encourage philanthropic or prosocial lending as lenders do not earn interest. This eliminates profit-making motivations for lenders (i.e., charging interest, long-term capital growth), potentially encouraging the lenders to do social good by supporting underrepresented borrowers and/or causes closer to their hearts. While existing research has shown that female-led businesses are more likely to get funding on a peer-to-peer lending platform where

there is an expectation of higher return on capital invested (Chen et al. 2017), it is not known if similar results can be expected from philanthropically-driven crowdlending platforms as well.

Philanthropic or prosocial lending is different from the typical venture or debt funding as there is little expectation of return on capital. Prosocial lending happens when lenders evaluate prospective borrowers on traditional financial lending criteria and prosocial, charitable criteria (Allison et al. 2015). Lenders can base the lending decision on their capacity to lend, the type of businesses they want to lend to, and the alignment of their ideology with the businesses they want to lend to (Kiva n.d.).

Lenders engage in prosocial lending on crowdlending platforms for a variety of reasons. These motivations can include general altruism, altruism directed at specific groups, empathy, equality, reciprocity to the social safety net, social responsibility and social norms (Liu et al. 2012). Prosocial crowdlending platforms remove traditional barriers to getting funding for female service enterprises and shift the focus to other cause-driven lending motivations. First, crowdlending platforms democratize the lending ecosystem by allowing people from geographically distant regions and differing lending capacities to lend to borrowers from all sectors and regions. Second, by removing capital growth and long-term success expectations, these platforms reduce the importance of lending decision factors like collateral, higher returns, cash flow, and possible bias against female service enterprises' long-term success and scalability. Third, these platforms allow lenders to lend smaller sums and let the power of the crowd take care of the lending requirements of women entrepreneurs. Finally, a collaborative effort by the platform and the field partners may introduce more organization and structure to the business activities of small borrowers.

Apart from improving access to capital on the demand side, crowdlending platforms fill two important roles for the lender. First, the platforms democratize the financing mechanism by allowing even small lenders to support entrepreneurs they want to fund. Second, it allows lenders to invest in causes they want to support.

In summary, traditional funding disadvantages faced by female-led businesses in general and by female-led service businesses in particular are likely to be alleviated by crowdlending platforms. Hence, we propose:

H1: Female-led businesses have a higher probability of getting funded on crowdlending platforms (relative to male-led businesses).

H2: Service businesses have a lower probability of getting funded on crowdlending platforms (relative to non-service businesses).

Additionally, concerns faced by female-led service businesses relative to male-led service businesses are likely to be less salient on prosocial crowdlending platforms.

H3: Female-led service businesses have a higher probability of getting funded (relative to male-led service businesses) on crowdlending platforms.

Due to the philanthropically motivated nature of prosocial lending, we expect the lenders to decide to finance the female entrepreneurs faster. However, lenders are still expected to lack the necessary skills to appropriately assess risks associated with service businesses (Ziegler and Shneur 2020; Leboeuf and Schwienbacher 2018) due to their relatively smaller scale and intangible assets. Thus, lenders are likely to have difficulty in assessing the viability of service businesses and take longer to process their loan information. Hence, we propose:

H4: Female-led businesses take a shorter time to get funded on crowdlending platforms (relative to male-led businesses).

H5: Service businesses take a longer time to get funded on crowdlending platforms (relative to non-service businesses).

H6: Female-led service businesses take shorter to get funded (relative to male-led service businesses) on crowdlending platforms.

2.3 Gender equality

A recent World Bank report notes that cultural and social norms may disadvantage women in their entrepreneurial activities (Carranza et al. 2018). Culture affects entrepreneurship practices (Hayton et al. 2002), practices of female entrepreneurs (Klyver et al. 2013), social entrepreneurship practices (Canestrino et al. 2020), and the entrepreneurial orientation and intentions of female entrepreneurs (Anggadwita et al. 2021). Research suggests that cultural dimensions of long-term orientation, performance orientation, and individualism are positively correlated with entrepreneurship, while power distance and uncertainty avoidance are negatively correlated with entrepreneurship (Radziszewska 2014). Egalitarian gender roles or gender equality are positively correlated with social entrepreneurship activity (Canestrino et al. 2020) and women's entrepreneurship

activity (Klyver et al. 2013). However, the influence of a female entrepreneur's country, in terms of its gender-equality perception, on funding through online crowdlending platforms is little understood.

In prosocial crowdlending platforms, lenders are likely to feel that women entrepreneurs from high gender-equality countries have more options for funding. Women entrepreneurs from lower gender-equality countries have fewer options and greater needs. At the same time, cultural and social obstacles faced by women entrepreneurs in lower gender-equality countries add uncertainty to their loan applications and make it more difficult for lenders to assess their viability promptly. Therefore, we hypothesize:

H7: As gender equality decreases, female-led businesses have a higher probability of getting funded on crowdlending platforms.

H8: As gender equality decreases, female-led businesses take longer to get funded on crowdlending platforms.

2.3 Loan description, loan duration, loan amount, and hashtags

Crowdfunding can be considered a service ecosystem where the context frames innovation through value co-creation (Quero et al. 2017). Viewed through this perspective, the loan characteristics help frame the relationship between the various stakeholders, enabling them to co-create value.

Lenders consider several indicators to assess the creditworthiness of potential borrowers (Bachmann et al. 2011). However, a fundamental problem underlying crowdlending remains the asymmetrical availability of information, especially when determining risks when evaluating potential borrowers (Leboeuf and Schwienbacher 2018). The more information borrowers can provide about themselves and the reasons for their needs, the more accurately lenders can assess the loan application and reduce perceived risks. However, the more information that borrowers provide, the longer it will take the lenders to process the information, assess their risk, evaluate the application and fund the loan. Therefore, we propose:

H9: As the length of loan description increases,

- a) Businesses have a higher probability of getting funded on crowdlending platforms;
- b) Businesses take longer to get funded on crowdlending platforms.

Borrowers often use hashtags in loan descriptions to gain greater visibility and awareness for their applications (c.f. Ye et al. 2018). This research also notes that women use positive and emotional hashtags more and more frequently than men. However, employing too many hashtags can be distracting and risks appearing too commercial and inauthentic, which can run counter to the spirit of prosocial crowdlending platforms.

On crowdlending platforms, lenders may not expect long-term capital growth, but the risk of capital loss, failed investment, and opportunity cost will still be influential factors in lending decisions. In online micro-credit platform settings, it has been observed that smaller loans are more likely to be funded by investors compared to bigger loans (Kuwabara et al. 2017). Herding behavior on these platforms leads to shorter duration loans getting funded faster than longer-term loans (Lee and Lee 2012). In these settings, the interest rate charged on loans plays an influential role in a lender's decision-making process; loans that provide higher interest are more likely to get funded than low-interest loans (Feng et al. 2015).

Therefore, we hypothesize:

H10: (a) The longer the loan duration; (b) the higher the loan amount; and (c) the greater the use of hashtags, the lower the probability of funding on crowdlending platforms.

H11: (a) The longer the loan duration; (b) the higher the loan amount; and (c) the greater the use of hashtags, the longer it takes to get funded on crowdlending platforms.

3 Method

3.1 Data collection

We collected data from the online crowdlending platform using the KIVA application programming interface (API). All loan applications are randomly shown to prospective lenders on the KIVA platform for 30 days. Every prospective lender has the opportunity to fully or partially fund a borrower. Borrowers are charged interest fees to cover the cost of field partners and KIVA operations. The platform distributes money collected from lenders and sends it to field partners. Field partners disburse the money to intended borrowers and manage the loan for its duration.

We scraped the most recent seven years of data available through the API, amounting to 1 million records. Our dataset contains funded as well as non-funded entrepreneurial initiatives. Non-funded initiatives expire after 30 days and are no longer visible to prospective lenders. Some loans offered on the KIVA website are for personal uses such as for building a personal house or paying for education. Records for loans unrelated to direct entrepreneurial activity were deleted from our dataset. Country data and/or funding currency were not reported for some loan records; these records were also eliminated from the dataset. The data were cleaned for other missing information and irregularities, leaving us with a final set of 917,307 usable loan records (cases) from male and female entrepreneurs in 102 countries. This large and diverse dataset allows us to extract better insights for our research with high generalizability.

An abbreviated example of a loan record is provided in the Appendix. Variables used in this study, and their descriptions are provided in Table 1.

---Table 1 about here ---

Data on entrepreneurs from 102 countries provides us with a unique opportunity to examine how the crowdlending experiences of female borrowers vary from country to country. We supplemented the data obtained from KIVA with the United Nations Development Program (UNDP) gender-inequality index by matching borrowers' country of origin and the country's rank in the UNDP index. This index ranks countries on gender inequality, with a lower rank (1-50) of inequality indicating a high gender-equality country, a higher rank on inequality indicating a low gender-equality country (average gender-equality rank = 51-100, and a medium gender-equality country rank = 101-162).

3.2 Model Estimation

To test the effect of gender, type of business and gender equality on funding status and days to fund, we regressed both dependent variables on the gender of the borrower, business sector of the borrower (service/non-service), the interaction between gender and business sector, and gender

equality of the country from where the loan is originating. We controlled for the amount of loan requested, proposed loan duration, length of the loan description, the number of hashtags used to promote the loan, and the number of lenders. Equations (1) and (2) below outline the regression models used to test H1-H8:

$$1) \ Pr(\text{funding status})_i = (\text{borrower gender})_i + (\text{type of business})_i + (\text{gender} \times \text{type of business})_i + (\text{gender equality})_i + (\text{loan amount})_i + (\text{loan duration})_i + (\text{loan description length})_i + (\text{number of hashtags})_i + (\text{number of lenders})_i$$

$$2) \ (\text{days to fund})_i = (\text{borrower gender})_i + (\text{type of business})_i + (\text{gender} \times \text{type of business})_i + (\text{gender equality})_i + (\text{loan amount})_i + (\text{loan duration})_i + (\text{loan description length})_i + (\text{number of hashtags})_i + (\text{number of lenders})_i$$

Where i =borrower.

Further, to examine the effect of loan description and loan characteristics of female-led service businesses on funding status and days to fund, we focused on the sub-sample of women requesting loans for service-oriented businesses. For this sub-sample, we regressed both dependent variables on the amount of loan requested, proposed loan duration, length of the loan description, and the number of hashtags used to promote the loan, while controlling for gender equality of the country from where the loan is originating and the number of lenders. Equations (3) and (4) below outline the regression models used to test H9-H11:

$$3) \ Pr(\text{funding status})_i = (\text{loan amount})_i + (\text{loan duration})_i + (\text{loan description length})_i + (\text{number of hashtags})_i + (\text{gender equality})_i + (\text{number of lenders})_i$$

$$4) \ (\text{days to fund})_i = (\text{loan amount})_i + (\text{loan duration})_i + (\text{loan description length})_i + (\text{number of hashtags})_i + (\text{gender equality})_i + (\text{number of lenders})_i$$

Where i =borrower.

The results of these regressions and other related analyses are discussed in the next section.

4 Results

4.1 Descriptive statistics

We present descriptive statistics in Tables 2a and 2b. On average, these loans were funded in approximately 13 days. Nearly 77 percent of loans requested were from female entrepreneurs, and almost 63 percent of loans asked by entrepreneurs were in the service sector. The average loan

amount funded was approximately USD640, and the average loan duration was approximately 13 months.

---Tables 2a and 2b about here ---

Correlations between variables are presented in Table 2c. As is often the case with large sample sizes, all of the correlation coefficients are significant.

---Table 2c about here ---

4.2 Cross-tabulation analyses

We conducted frequency cross-tabulations to explore the relationship between gender, business (service/non-service), gender equality, and funding status. Results are presented in Tables 3a to 3d. Contrary to previous findings regarding traditional funding channels, our findings suggest that female entrepreneurs were *more likely* than male entrepreneurs to get funded through online crowdlending platforms. As shown in Table 3a, approximately 96 percent of female applicants received loans, while roughly 90 percent of male applicants received loans (Pearson chi-square = $1.5e+04^{***}$).

Similar results were found for service businesses. As shown in Table 3b, within services businesses, females were found to be more likely to get funded than male entrepreneurs; in our sample, approximately 96 percent of female-owned service businesses received loans while approximately 89 percent of male-owned service businesses received loans (Pearson chi-square = $1.1e+04^{***}$).

Cross-tabulations based on the business sector within female entrepreneurs are presented in Table 3c. Within entrepreneurial activities initiated by female entrepreneurs, non-service businesses were more likely to get funded compared to services businesses. In female-owned businesses, nearly 97 percent of non-service businesses were funded compared to just over 96 percent of service businesses (Pearson chi-square = 86.36^{***}). Service businesses run by female entrepreneurs were slightly less likely to get funded than non-service businesses run by female entrepreneurs.

The context in which the entrepreneur operates also impacted a lender's decision to lend to the borrower. Our results show (Table 3d) that lenders were more likely to fund entrepreneurs from low gender-equality countries (96.1 percent funded) compared to those from medium (92.8 percent funded) or high gender-equality countries (77.5 percent funded; Pearson chi-square = $1.1e+04^{***}$). When focusing on female entrepreneurs, we find that lenders were also more likely to fund female entrepreneurs from low gender-equality countries (97.3 percent funded) compared to those from medium (94.8 percent funded) or high gender-equality countries (81.3 percent funded; Pearson chi-square = $7.0e+03^{***}$; see Table 3e).

---Insert Tables 3a to 3e about here ---

4.3 Regression predicting funding status

To further investigate the effect of the business sector on the gender-funding relationship while controlling for other variables, we ran a two-way regression model described in equation (1). Results of this regression are presented in Table 4. These results show that female entrepreneurs were more likely to get funded compared to male entrepreneurs ($b = 1.212, p < .01$; Female is coded 1 and Male is coded 0); thus, Hypothesis 1 is supported. Service businesses were less likely to get funding compared to non-service businesses ($b = -0.285, p < .01$); Hypothesis 2 is supported. Figure 1 illustrates the interaction effect of business sector and entrepreneurs' gender on funding status; the difference in funding probability for services vs. non-services appears to be larger for male loan applicants than for female loan applicants. As can be seen in this figure, women-service businesses had a higher probability of getting funded than relative to male-led service businesses; Hypothesis 3 is supported.

Regression results presented in Table 4 also indicate that gender equality in the country where the proposed loan recipient lives had a significant effect on getting funded ($b = -0.203, p < .01$). In the crowdlending context, as gender equality decreases, the probability of getting funded increases; Hypothesis 7 is supported.

---Insert Table 4 about here ---

---Insert Figure 1 about here---

4.4 Regression predicting days to fund

A similar regression analysis based on equation (2) was conducted to examine the effect of an entrepreneur's gender on days to get funding. For this analysis, we excluded non-funded loans. Results of this regression analysis are shown in Table 5, with a graph illustrating the interaction effect presented in Figure 2. Consistent with the previous pattern of results on funding status, gender and business sector played significant roles in the number of days it takes a loan to get funded. Female entrepreneurs got funding in fewer days than male entrepreneurs ($b = -0.314, p < .01$); Hypothesis 4 is supported. Service businesses took more time to get funding compared to non-service business ($b = 0.161, p < .01$); Hypothesis 5 is supported. Figure 2 illustrates the interaction effect of the business sector and entrepreneurs' gender on days to get funded ($b = -0.034, p < .01$). As can be seen in the figure, female-led service businesses took a shorter time to get funded (relative to male-led service businesses); Hypothesis 6 is supported.

---Insert Table 5 about here ---

---Insert Figure 2 about here ---

Regression results presented in Table 6 indicate that for female-led businesses, gender equality in the country where the proposed loan recipient lives had a significant effect on the probability of getting funded, with female entrepreneurs from low gender-equality countries funded at a higher rate than female entrepreneurs from high gender-equality countries ($b = 0.427, p < .01$). The numbers of days it takes to get the loan for female entrepreneurs from low gender-equality countries is also less compared to those from high gender equality countries ($b = -0.181, p < .01$). As gender equality decreases, the probability of getting loan increases and the number of days to get funding decreases; Hypothesis 7 and 8 are supported.

---Insert Table 6 about here ---

4.5 Regression analyses with sample restricted to female-led service businesses

To examine the effect of loan description and loan characteristics of *female-led service businesses* on funding status and days to fund, we focused on a sub-sample of women requesting loans for service-oriented businesses. For this sub-sample, we regressed both dependent variables on the amount of loan requested, proposed loan duration, length of the loan description, and the number of hashtags used to promote the loan, while controlling for gender equality of the country from where the loan is originating and the number of lenders.

As results in Table 7 indicate, as the length of the description increased, the probability of getting funded ($b=0.002$, $p<.01$) and the days to get funded ($b=0.001$, $p>.001$) both increased. Hypothesis H9a and 9b are supported.

Table 7 results also indicate that as the loan duration increased, the probability of getting funded decreased ($b=-0.128$, $p<.01$), but the days to get funded increased ($b=0.001$, $p>.001$). Hypothesis H10a and 11b are supported.

These results further indicate that as the loan amount increased, the probability of getting funded ($b= -0.002$, $p<0.01$) and the days to get funded ($b= -0.001$, $p > 0.001$) both decreased. Hypothesis 10b is supported, but Hypothesis 11b is not supported.

Finally, Table 7 results indicate that as the number of hashtags increased, the probability of getting funded decreased ($b=-.241$, $p<.01$), but the days to get funded increased ($b=.118$, $p>.001$). Hypothesis H10c and 11c are supported.

Taken together, Table 6 results suggest that female-led service businesses are more likely to get funding when they ask for smaller loans, provide lengthy descriptions, ask for loans of shorter duration, and use fewer hashtags. On the other hand, female-led service businesses are likely to get funded more quickly when they ask for smaller loans but provide shorter descriptions, ask for loans of longer duration, and use more hashtags.

5 Discussion and Conclusions

Female-led businesses and entrepreneurial ventures offer women opportunities for social empowerment and economic security (Alkhaled and Berglund 2018; Datta and Gailey, 2012; Haugh and Talwar 2016). However, female entrepreneurs face various barriers related to a lack of assets,

lack of education, gender roles, and social and cultural expectations (Corranza et al. 2018; Sullivan and Meek 2012). Due to these constraints, venture capitalists and traditional investor channels fund female-led entrepreneurial initiatives at a lower rate (e.g., Brush et al. 2018; Becker-Blease and Sohl 2007; Tinkler et al. 2015); and access to financing remains one of the most significant challenges for women entrepreneurs (Corranza et al. 2018).

Female-led entrepreneurial activities are dominated by services and service-intensive sectors (Corranza et al. 2018). Due to small scale and intangible assets, service businesses find it harder to get funding from traditional financing channels (Agrawal et al. 2010; de Rassenfosse and Fischer 2016). The compounding of these two factors creates a significant problem for funding female-led service businesses.

In recent years, online crowdlending platforms have emerged as a popular alternative to traditional lending channels (Osborne 2020). These crowdlending platforms enable groups of amateur investors to pool their resources and financially support businesses and causes of their choice (Osborne 2020; Ziegler and Shneor 2020). Our study is part of a small but growing body of literature that explores the importance of crowdlending platforms as an alternative mechanism for supporting underserved segments of entrepreneurs (e.g., women and minority-owned businesses) who traditional funding channels have historically overlooked.

The objective of this exploration was to investigate the extent to which gender bias against female-led businesses commonly seen in traditional funding channels extends itself to online crowdlending platforms. We also examined whether the bias against service businesses in general, particularly women-owned service businesses, persists in crowdlending platforms. In this context, we also examined the effect that the gender equality of the borrower's country of origin has on the funding status and days to fund on crowdlending platforms. Finally, we dove deeper into the sub-sample of women-owned service businesses. We examined how the loan description (its length and use of hashtags) and loan characteristics (i.e., loan amount, loan duration) affected the probability and time to get funded on crowdlending platforms. We tested our hypotheses using data from the KIVA crowdlending platform, which allows lenders to make small interest-free loans to entrepreneurs around the globe (Liu et al. 2012).

Recent research suggests that the gender of the borrower does not affect the chances of getting funding in peer-to-peer crowdlending platforms (Barasinska and Schafer 2019). Our analysis showed that in contrast to traditional funding channels and prior research findings, in online crowdlending platforms, women entrepreneurs have a better chance of getting funded faster than men. Lenders on prosocial crowdlending platforms may be more likely to recognize and be sensitive to the disadvantages faced by women entrepreneurs. Due to stronger philanthropic motivations, these lenders are more likely to be driven to remedy this inequality.

While we see an apparent gender effect, the results on service versus non-service businesses are more mixed. Consistent with previous research, we found a preference for funding non-service businesses over service businesses and for funding them faster. Women in service businesses are less likely to get funded than women in non-service businesses, and similar effects are seen for men. This suggests that the difficulty seen in evaluating service businesses persists in crowdlending platforms as well. Interestingly, women-run service businesses were funded more and funded faster than men-owned service businesses. Within the same business sector (i.e., services), the desire to support women's entrepreneurial ventures appeared to be strong.

In many countries, cultural and social norms disadvantage women in their entrepreneurial activities (Carranza et al. 2018). More egalitarian gender roles or gender equality supports women and social entrepreneurship (Canestrino et al. 2020; Klyver et al. 2013). Our results reflect a complicated picture of the effect of gender equality on funding in online crowdlending platforms. Our findings indicate that women borrowers from low gender-equality countries were more likely to get funded on crowdlending platforms, but it took them longer to get funded. Conversely, women from high gender-equality countries get funded less but faster.

This suggests that lenders on prosocial crowdlending platforms were more determined to support women entrepreneurs they perceived as having limited opportunities and disadvantaged circumstances. There may be a strong and more urgent feeling among the lenders that women entrepreneurs from low gender-equality backgrounds "need their support more" (c.f., Carranza et al. 2018). Women entrepreneurs hailing from more gender-equal countries might be seen as having better opportunities and additional avenues for funding available to them (c.f., Canestrino et al. 2020;

Klyver et al. 2013). Surprisingly, we find that it takes lenders longer to fund loans from women entrepreneurs from high gender equality countries, suggesting a potential ambivalence from the lenders, perhaps driven by an extended search to find particular causes or cases more in need of their support. Thus, there may be a propensity for lenders to use prosocial crowdlending platforms to serve as a mechanism for social activism/justice and to remedy biases experienced by what might be seen as historically disadvantaged or overlooked segments of borrowers.

Focusing specifically on female-led service businesses, we find that longer loan applications providing more details are likely to have more success, but it might take them longer to get funded. Similarly, female entrepreneurs asking for lower funding amounts, shorter lending terms, and displaying a smaller number of hashtags get funded more often. Loans with longer lending terms and more hashtags take longer to fund. In contrast to existing research (i.e., Lee and Lee 2012), and much to our surprise, female-led service businesses requesting larger loans got funded faster. One possible explanation might be that lenders perceived greater urgency in larger loan requests in terms of their existential impact. These results suggest that while the lenders still tend to be sensitive to risk related to loan amounts and terms; they weigh it against elements of democratization, social activism, and social justice in peer-to-peer lending.

Thus, when designing borrowing campaigns for female-led service entrepreneurial initiatives, it is advisable to use signals that will lower the risk perceptions of the lenders. Additionally, we suggest that women service entrepreneurs break down big projects into smaller manageable units to decrease loan amounts requested and request shorter loan terms. We recommend providing additional information in the loan description with limited use of hashtags. Campaigns for smaller projects may be easier to communicate using a smaller number of hashtags, which may reinforce the non-commercial appeal of peer-to-peer lending on such crowdlending platforms. By taking these small but practical steps, women service entrepreneurs can increase their probability of getting funded in crowdlending platforms and get supported in a shorter time.

As with any research, the current study has limitations. While the dataset is large and comprehensive, it only provides a high-level overview of the phenomenon. Additional research is needed to explore these issues more deeply. For example, future studies might examine the

motivations of crowdlenders to determine the extent to which social motivations influence them. Additional borrower factors such as the stage of product/service development or innovation introduced by the company could be considered (Ferrati and Muffatto 2021). Studies could also analyze the content of loan descriptions in more detail to see if certain narrative themes are more or less successful in getting funded. Similarly, future research could apply signaling theory to explore the relevance, fit, quality, and consistency of hashtag use and how they influence the lenders (Colombo 2021). The field is wide open for a rich exploration of the theory and practice of crowdlending for female-led service business initiatives.

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Table 1 Selected variables and descriptions

Variable	Measures
<i>Dependent variables</i>	
Funding status	Status of the loan (funded, non-funded).
Days to fund	How many days it took for a loan to get funded. It is the difference between the start date for the loan proposal and the finish date on which the loan got funded.
<i>Independent variables</i>	
Gender	Gender of the entrepreneur requesting the loan (Male = 0, Female = 1).
Sector	Sector to which the business belongs. It is identified on KIVA platform (non-service = 0, service = 1).
Description length	Number of words used in the narrative while requesting the loan.
Loan amount	Total loan amount requested by the borrower.
Loan duration	How many months it will take for borrower to pay back the loan.
Gender equality	Rank of the country of the borrower in the United Nations gender inequality index. In our results, a lower rank of inequality is recode to indicate a higher level of gender equality.
Number of lenders	Number of lenders for a loan. This value is available directly from KIVA platform.
Number of hashtags	Hashtags to signal what this loan is about (e.g., "#Womanbiz", "#social cause." We counted the number of tags associated with a loan.

Table 2a Descriptive statistics: means and standard deviations

Variable	Mean	Standard deviation	Minimum	Maximum
Days to fund	12.642	13.963	0	534
Description length	724.788	405.941	0	11714
Loan amount	640.41	823.749	25	100000
Loan duration	12.806	6.037	1	50
Gender equality	2.674	.493	1	3
Numbers of lenders	17.851	21.835	0	2964
Number of hashtags	1.224	1.872	0	86

Table 2b Descriptive statistics: frequencies and percentages

Variable	Frequency	Percent
Male	222701	23.72
Female	716334	76.28
Non-service	349301	37.2
Service	589734	62.8
Funded loan requests	48051	5.12
Not funded loan requests	890984	94.88
High gender equality	10665	1.14
Medium gender equality	285131	31.5
Low gender equality	643239	68.5

Table 2c Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Funding status	1									
(2) Days to fund	-0.001	1								
(3) Gender	0.129*	-0.159*	1							
(4) Sector	0.006*	-0.015*	0.178*	1						
(5) Description length	0.022*	0.000	-0.084*	-0.018*	1					
(6) Loan amount	-0.173*	0.200*	-0.141*	-0.005*	0.119*	1				
(7) Loan duration	-0.190*	0.212*	-0.148*	-0.191*	0.064*	0.359*	1			
(8) Gender equality	-0.095*	0.134*	-0.161*	-0.093*	0.224*	0.369*	0.206*	1		
(9) Number of lenders	0.027*	0.208*	-0.120*	-0.025*	0.112*	0.854*	0.317*	0.314*	1	
(10) Number of Hashtags	-0.115*	0.277*	-0.024*	-0.104*	-0.028*	0.267*	0.243*	0.079*	0.255*	1

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 3a Cross-tabulation of funding status by gender

Funding status	Gender		
	Male	Female	Total
Not Funded	22748	25303	48051
	11396	36655	48051
	47.34	52.66	100.00
	10.21	3.53	5.12
Funded	199953	691031	890984
	211305	679679	890984
	22.44	77.56	100.00
	89.79	96.47	94.88
Total	222701	716334	939035
	23.72	76.28	100.00
	100.00	100.00	100.00
Pearson chi2(1) = 1.5e+04***			
Kendall's tau-b = 0.1311***			
First row has <i>observed/ actual frequencies</i> ; second row has <i>expected frequencies</i> ; third row has <i>row percentages</i> , and fourth row has <i>column percentages</i> .			
*** $p < .01$, ** $p < .05$, * $p < .1$			

Table 3b Cross-tabulation of funding status by gender for service businesses

Funding status	Gender		
	Male	Female	Total
Not funded	11952	17667	29619
	5300	25319	29619
	40.35	59.65	100.00
	11.33	3.65	5.02
Funded	93564	466551	560115
	100216	459899	560115
	16.70	83.30	100.00
	88.67	96.35	94.98
Total	105516	484218	589734
	17.89	82.11	100.00
	100.00	100.00	100.00
Pearson chi2(1) = 1.1e+04***			
Kendall's tau-b = 0.1364**			
First row has <i>observed/ actual frequencies</i> ; second row has <i>expected frequencies</i> ; third row has <i>row percentages</i> , and fourth row has <i>column percentages</i> .			
*** $p < .01$, ** $p < .05$, * $p < .1$			

Table 3c Cross-tabulation of funding status by business sector (non-service vs service) for female entrepreneurs

Funding status	Business sector		
	Non-service	Services	Total
Not-funded	7636	17667	25303
	8199	17104	25303
	30.18	69.82	100.00
	3.29	3.65	3.53
Funded	224480	466551	691031
	224917	466114	691031
	32.48	67.52	100.00
	96.71	96.35	96.47
Total	232116	484218	702334
	32.40	67.60	100.00
	100.00	100.00	100.00
Pearson chi2(1) = 86.3352***			
Kendall's tau-b = -0.0092***			
First row has <i>observed/ actual frequencies</i> ; second row has <i>expected frequencies</i> ; third row has <i>row percentages</i> , and fourth row has <i>column percentages</i> .			
*** $p < .01$, ** $p < .05$, * $p < .1$			

Table 3d Cross-tabulation of funding status by gender equality of borrower's country

Funding status	Gender equality of borrower's country			
	High	Medium	Low	Total
Not funded	2402	20556	25083	48051
	545	14590	32914	48051
	5.00	42.80	52.20	100.00
	22.52	7.21	3.90	5.09
Funded	8263	264565	618156	890984
	10119	270540	619324	890984
	0.93	29.69	69.38	100.00
	77.48	92.79	96.10	94.88
Total	10665	285131	643239	939035
	1.14	30.36	68.50	100.00
	100.00	100.00	100.00	100.00
Pearson chi2(1) = 1.1e+04***				
Kendall's tau-b = 0.084***				
First row has <i>observed/ actual frequencies</i> ; second row has <i>expected frequencies</i> ; third row has <i>row percentages</i> , and fourth row has <i>column percentages</i> .				
*** $p < .01$, ** $p < .05$, * $p < .1$				

Table 3e Cross-tabulation of funding status by gender equality of country for female entrepreneurs

Funding status	Gender-equality of borrower's country			
	High	Medium	Low	Total
Not funded	1202	9940	14161	25303
	227.5	6684.9	18390.6	25303
	4.75	39.28	55.97	100.00
	18.66	5.25	2.72	3.53
Funded	5239	179312	506480	691031
	6213.5	182567.1	502250.4	691031
	0.76	25.95	73.29	100.00
	81.34	94.75	97.28	96.47
Total	6441	189252	520641	716334
	0.90	25.42	72.68	100.00
	100.00	100.00	100.00	100.00
Pearson $\chi^2(1) = 7.0e+03^{***}$				
Kendall's tau-b = 0.075 ^{***}				
First row has <i>observed/actual frequencies</i> ; second row has <i>expected frequencies</i> ; third row has <i>row percentages</i> , and fourth row has <i>column percentages</i> .				
*** $p < .01$, ** $p < .05$, * $p < .1$				

Table 4 Effect of entrepreneur's gender and business sector (service vs. non-service) on funding status

	Model 1	Model 2	Model 3 Full model
Independent variables	Controls only	Controls + main effects	Controls + main + interaction effects
Description length	.001*** (0)	.001*** (0)	.001*** (0)
Loan amount	-.003*** (0)	-.003*** (0)	-.003*** (0)
Loan duration	-.088*** (.001)	-.09*** (.001)	-.09*** (.001)
Gender equality	-.287*** (.012)	-.207*** (.012)	-.203*** (.012)
Number of lenders	.149*** (.001)	.148*** (.001)	.148*** (.001)
Number of hashtags	-.216*** (.003)	-.229*** (.003)	-.228*** (.003)
Gender		-1.143*** (.012)	1.212*** (.018)
Service		-.35*** (.012)	-.285*** (.018)
Gender X service			.118*** (.023)
Constant	2.909*** (.039)	2.452*** (.04)	2.432*** (.04)
Observations	939035	939035	939035
Pseudo R ²	.285	.309	.309
<i>Standard errors are in parentheses</i>			
*** $p < .01$, ** $p < .05$, * $p < .1$			
n = 986492			

Table 5 Effect of entrepreneur's gender and business sector (service vs. non-service) on days to fund

	Model 1	Model 2	Model 3 Full model
Independent variable	Controls	Controls + main effects	Control + main + interaction effects
Description length	-.001*** (.000)	-0.001*** (.000)	-.001*** (.000)
Loan amount	.001*** (.000)	.001*** (.000)	.001*** (.000)
Loan duration	.021*** (.001)	.021*** (.001)	.024*** (.001)
Gender equality	-.100*** (.001)	.143*** (.001)	.163*** (.001)
Number of lenders	.001*** (.000)	.002*** (.000)	.001*** (.000)
Number of hashtags	.068*** (.001)	.08*** (.001)	.067*** (.001)
Gender		-.332*** (.001)	-.314*** (.001)
Service		.125*** (.001)	.161*** (.001)
Gender X service			-.034*** (.001)
Constant	1.363*** (.002)	2.746*** (.002)	2.888*** (.002)
Observations	894813	894813	894813
Pseudo R ²	.074	.095	.099
<i>Standard errors are in parentheses</i>			
*** $p < .01$, ** $p < .05$, * $p < .1$			
n = 986492			

Table 6 Regression analysis: Predicting funding status (1) and days to fund (2) for female-led businesses

	(1)	(2)
	Funding_Status	Days_to_Fund
Gender equality	.427***	-.181***
	(.016)	(.001)
Description length	.001***	0***
	(0)	(0)
Loan amount	-.002***	0***
	(0)	(0)
Lender term	-.086***	.02***
	(.001)	(0)
Number of lenders	.129***	.003***
	(.001)	(0)
Number of hastags	-.203***	.113***
	(.004)	(0)
Constant	2.537***	2.604***
	(.052)	(.002)
Observations	716334	694860
Pseudo R ²	.238	.081
<i>Standard errors are in parentheses</i>		
*** $p < .01$, ** $p < .05$, * $p < .1$		

Table 7 Regression analysis: Predicting funding status (1) and days to fund (2) for female-led service businesses

	(1)	(2)
	Y = Funding status	Y = Days to fund
Description length	.002***	.001***
	(.001)	(.000)
Loan amount	-.002***	-.001***
	(.001)	(.000)
Loan duration	-.128***	.028***
	(.001)	(.001)
Gender equality	-.289***	.168***
	(.02)	(.001)
Number of lenders	.129***	.003***
	(.001)	(.001)
Number of hashtags	-.241***	.118***
	(.004)	(.001)
Constant	3.049***	2.546***
	(.064)	(.003)
Observations	484218	468957
Pseudo R ²	.277	.096
<i>Standard errors are in parentheses</i>		
*** $p < .01$, ** $p < .05$, * $p < .1$		
n = 503017		

Figure 1 Effect of entrepreneur's gender and business sector (service vs. non-service) on funding status

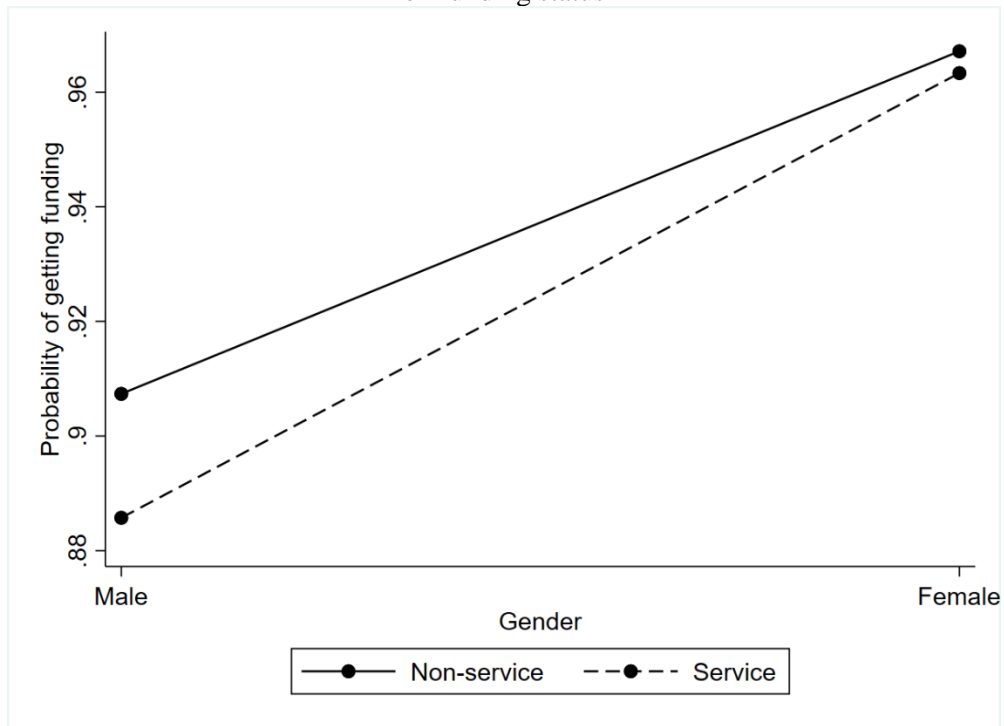
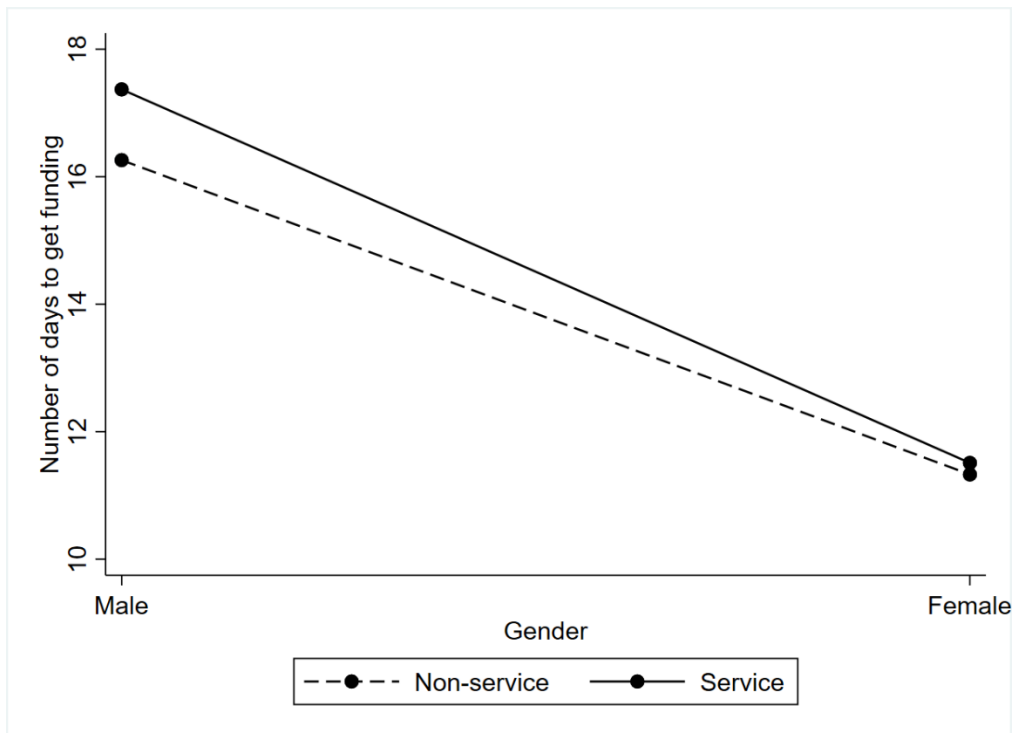



Figure 2 Effect of entrepreneur's gender and business sector (service vs. non-service) on days to fund



Appendix Sample loan profile of a female entrepreneur



Kalondah

4 days REMAINING \$4,000 to go
50% FUNDED


A loan of \$8,000 helps us buy additional equipment and products so we can take on more contracts and provide more jobs.

PITTSBURGH, PA, UNITED STATES CLEANING SERVICES

Help fund this loan

\$25

⚡ POWERED BY 74 LENDERS



Kalondah's story

Over the years, I've worked in several fields, including banking, underwriting, healthcare, and cosmetology. During most of that time, I was also a mother. I was searching for a field where I can make a living and spend time with my children. At the beginning of the pandemic, I lost consistent childcare and lost credibility with my employer because of it. This led me to start a commercial cleaning business where I have a flexible schedule and I can offer a great and much-needed service cleaning establishments open to the public.

This loan is special because it supports a Black female entrepreneur in expanding their business.

Help fund this loan

\$25 ▾

Lend now

⚡ POWERED BY 74 LENDERS

More about this loan

Business description

Royalty Ventures LLC is a commercial cleaning business. We perform services such as disinfecting surfaces, vacuuming, sweeping, and mopping floors. We also remove trash and perform special services, such as commercial building clean-outs, post-construction cleans, and disinfectant sprays. I currently service the City of Pittsburgh and surrounding neighborhoods. I decided to start this business in the summer of 2020. I made this decision so I can have more control of my work time, be of great help during the pandemic, provide jobs to others, work in a consistent market that is needed, provide for my family, and have something to leave for my children. Business has taken off and now, in an industry where I collect after doing the work, my biggest challenge is having the capital to handle the upfront cost of new jobs.

About Royalty Ventures LLC

Services

INDUSTRY

6 months - 1 year

YEARS IN OPERATION

What is the purpose of this loan?

I am applying for this loan to purchase equipment and supplies so I can take on more contracts and hire more employees. With this loan, my business can earn more revenue, employ more people, and be on the road to success.

Contributing lending teams

⚡ POWERED BY 17 TEAMS



PITTSBURGH



TOGETHER FOR WOMEN



GOOD BRICKS VENTURES



JUNETEENTH



(A+) ATHEISTS, AGNOSTICS, SKEPTICS, FREETHINKERS, SECULAR HUMANISTS AND THE NON-RELIGIOUS



EVERACTIVISM

[SEE ALL 17 LENDING TEAMS](#)

Help fund this loan

\$25 ▾

Lend now

⚡ POWERED BY 74 LENDERS

Loan details

Loan length	36 months
Repayment schedule	Monthly
Disbursed date	After fully funded on Kiva
Funding model	Fixed
Currency exchange loss	N/A
Is borrower paying interest?	No