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Gender, Social Networks, and Microenterprise: Differences in Network Effects on Business Performance

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This article aims to find if female micro-entrepreneurs have different social networks that affect their business performance compared to males. This article uses the longitudinal Panel Study of Entrepreneurial Dynamic (PSED) II data set (2005–2011) in the U.S. The key finding is that even in cases where female micro-entrepreneurs gained the same number of weak ties and resources from their networks as their male counterparts, their weak ties and gained resources did not help them to improve their business performance, unlike their male counterparts. Implications for Microenterprise Development Programs and future studies are informed.

Key words: Women, gender, microenterprise, social capital, social networks, business performance

Introduction

A gendered deficit in social networks is typically blamed for the lesser success rate of women-owned micro-enterprises, and correcting this network deficit has become the instrument of choice of many Micro-enterprise Development Programs (MDPs) when they seek to improve this success rate. MDPS have a special relevance for women in business. Many of these programs were first inspired by the special challenges in the business environment faced by women (and others), such as a lack of access to traditional business networks and capital; a lack of encouragement for entrepreneurship at home, school, and society; discriminatory attitudes toward women from business partners; and disproportionate responsibility for family and housework (Jennings & Brush, 2013). Many women are led to micro-enterprise to escape gender inequality in the larger labor market and for greater time-flexibility (Dumas, 1999), making the work of MDPs all the more important.

MDPs increasingly (and explicitly) reflect awareness of gender-specific obstacles in network creation and development. They often focus on helping women to improve networks, to create new ones, and to magnify networking benefits (Kim, 2012). For instance, in 2006, 55 Women's Business Centers (WBCs) organized peer-support groups and provided women with referrals to specialized business professionals in a variety of fields, such as accounting, law, and sales consulting (Langowitz, Sharpe, & Godwyn, 2006). More recently, the Center for Women in Business and U.S. Chamber of Commerce Foundation (2014, pp. 5–7) argued that we need to "provide network opportunities specifically for women" based on "plenty of evidence" that women are often kept out of "formal and informal networks," adding that gender-segregated network opportunities are a prime reason why women's businesses are less likely to be in high-growth fields of businesses such as science, technology, and business services.

The arguments above rest on an assumption of large and pervasive gendered differences in networks and network effects. However, the evidence for this assumption is far shakier than one might think. To date, there have been only partial

and contradictory answers to many key questions. Elements of research design and implementation can be challenged. Generalizability from "normal" enterprise to micro-enterprise has often been just assumed. Some studies only sampled or only studied women, making comparisons impossible. Most work only looks at gendered differences in networks *or* effects of networks on performance, not both. No work to date on gendered differences in network effects distinguished micro-enterprises from other businesses. Some work lumps all network details together. Other works look only at one network factor in isolation. Factors such as network structure (on one hand) versus resources gained through networks (on the other hand) should be distinguished, yet tend to be blurred together. Furthermore, most research on these issues uses cross-sectional data, which makes it impossible to understand the dynamics of gendered impact of social networks on business performance as businesses grow.

This paper addresses these challenges. First, this study assesses whether female micro-entrepreneurs indeed have different social networks, documenting the details of such networks specifically focusing on micro-enterprises. Second, it studies whether the relationship between networks and business performance is gendered. Third, it distinguishes between network structure and network-gained resources and their distinct effects. Finally, this study uses longitudinal data from a sufficiently long-time period.

Data come from the longitudinal Panel Study of Entrepreneurial Dynamic (PSED) II dataset (2005–2011) in the U.S. The key finding is that even in cases where female micro-entrepreneurs gained the same number of weak ties and same number of resources from their networks (as did male counterparts), these gains did not help them to improve their business performance (unlike male counterparts). The findings imply the need for sharp departures from current practices and emphases for many MDPs. There are also implications for how we study gender-network-performance relationships.

The Special Role of Micro-enterprise Development Programs

Micro-enterprises are usually defined as small businesses that hire fewer than five employees, including the owner (Schreiner, 2003). MDPs help these businesses by providing loans, training, technical support, and access to social networks (Jha & Depoo, 2017). They were introduced in the late 1980s in the U.S. as an alternative strategy for increasing financial independence among the poor (Jurik, 2005). The reason that MDPs now receive much attention by policy makers and media (both in the U.S. and in other developing countries) lies in aspects of their unique approach. First, unlike other welfare programs focusing only on resource delivery (such as TANF and SNAP), MDPs focus on strengthening the poor's business networks, entrepreneurial skills, access to loans, marketing strategies, etc. Not only do they, as the saying goes, teach the poor to fish rather than just giving them a fish, they also seek to improve diverse capabilities, rather than just (to mix metaphors) put all the fish in one basket. They even try to create jobs for disadvantaged populations outside of their existing job market (Jurik, 2005).

With many jobs for undereducated populations challenged by globalization, job training strategies need to be flexible in this way. MDPs usually target disadvantaged populations, who encounter special challenges in the job market, recognizing that just "any" job with low wages and benefits will not promise a real escape, in particular for those with added burdens of gender discrimination, criminal records, problematic immigration status, etc. Next, MDPs are seen as creating economic stability and sustainability in the community (Dumas, 2010), particularly in the provision of local micro-enterprises within the community (creating local jobs, improving relationships, supporting local culture, improving financial flow within the community, increasing tax revenue, and fueling entrepreneurial spirit) (Peredo & Chrisman, 2006). This is why MDPs have been supported as a Community Economic Development strategy (CED) in the U.S. (Anglin, 2010).

Existing Research on Networking, Business Performance, and Gender

Gender Difference in Business Performance

Empirical findings on the existence of gender differences in business performance are mixed, and differences in sampling, measurement, and methodology make it hard to draw firm conclusions. A large number of studies find that female entrepreneurs underperform relative to male entrepreneurs even after controlling for many factors and demographic differences, underperforming in terms of business scale (Alsos, Ljunggren, & Pettersen, 2003; Du Rietz & Henrekson, 2000; Fairlie & Robb, 2009), survival (Lowrey, 2010; Robb, 2002; Watson, 2003), growth (Alsos et al., 2003; Cooper, Gimeno-Gascon, & Woo, 1994), sales (Ali & Shabir, 2017; Fairlie & Robb, 2009; Gottschalk & Niefert, 2012; Loscocco, Monnat, Moore, & Lauber, 2009; Sabarwal & Terrell, 2008; Shaw, Marlow, Lam, & Carter, 2009), profit (Bosma, Van Praag, Thurik, & De Wit, 2004; Fairlie & Robb, 2009), or productivity (Aterido, Hallward-Driemeier, & Pagés, 2011; Sabarwal & Terrell, 2008). Some argue that some findings of gender differences only exist due to omitted controls for factors such as scale, industry type, initial investment, or organizational structures (Amoroso & Link, 2017; Artz, 2017; Diaz Garcia & Jimenez Moren, 2010; Robb & Watson, 2012; Rodríguez-Gulías, Fernández-López, & Rodeiro-Pazos, 2018; Watson, 2007a).

Another line of research investigates the structural reasons behind differences in business performance. For example, female entrepreneurs are more likely to start up their business in low profit and unskilled service and retail sectors due to gender segregated education, labor market segmentation, and domestic responsibilities (Gottschalk & Niefert, 2012; Lee & Marvel, 2013; Marlow & Dy, 2017). Women are discouraged from studying science and engineering, which can put manufacturing and technology-oriented sectors out of reach (Servon, & Visser, 2011).

Next, female entrepreneurs are more likely to locate their business within the home in order to carry out domestic work and child caring. Part-time entrepreneurship allows women to have flexibility to combine their home and work commitments with their lack of time for formal work (Klapper & Parker, 2011).

This part-time work has direct costs, but also indirect costs when women's businesses are then perceived as simply an extension of domestic work. This negative connotation has real ramifications in the business sector, such as access to business loans (Ehlers & Main, 2013; Marlow, 2002). All of this discourages women from starting businesses in the first place, because they perceive more barriers to entrepreneurial activity than men (Santos, Roomi, & Liñán, 2016).

Another possible factor is the taint of the "pink-collar" job—a job associated with femaleness, which women were traditionally slotted into, rather than more "male" jobs. These jobs were not just distinct but "lower," with little control or power over others. This traditional subordination in the segregated job market gives women disadvantages when they make the transition to business, limiting them directly and indirectly through damaged reputation, their access to networks, education, capital, and experience (Henry, Foss, & Ahl, 2016; Strohmeyer, Tonoyan, & Jennings, 2017). The stereotype of entrepreneurs is that of white, middle-class males, compared to which female entrepreneurs suffer (Berglund & Tillmar, 2015; Marlow & McAdam, 2013). Even when not true, women's businesses are dismissed as smaller, weaker, slower growing, and amateurish, likely to be of the part-time lifestyle type (Marlow & Dy, 2017); in short, they are not taken seriously. All of the above can have real psychological costs in addition to direct costs, with Sweida and Reichard (2013) arguing these stereotypes negatively affect women's intention and self-efficacy, thereby limiting their entrepreneurial achievement (Sperber & Linder, 2018; Sweida & Reichard, 2013). And, of course, these stereotypes can harm businesses directly. In short, biases and stereotypes of the "bad" businesses of women can become self-fulfilling prophecies.

Female entrepreneurs could also have different values, with greater prioritization of, say, having a positive impact on society; or having greater autonomy; or preferring slow, safe and steady growth over a quick profit (De Bruin, Brush, & Welter, 2007; Càlas, Smircich, & Bourne, 2007; Fairlie & Robb, 2009). Some argue this calls for different achievement metrics for some businesses (Coleman, 2016; Henry et al., 2016), "gendering entrepreneurship" to reflect alternate valuations, purposes, or styles, rather than marginalizing female entrepreneurs by

using a stereotypically "male" standard (Ahl, 2006; Atkinson, Netana, & Pickernell, 2017).

Gender Differences in Social Networks

A social network is defined as the system of individuals' organized relationships with others (Donckels & Lambrecht, 1995; Ibarra, 1993). When the entrepreneurs' contacts provide some benefits that serve their entrepreneurial goals, these social contacts become their social capital and thus generate increased economic benefits (Lin, 2005). Are women and men different in terms of social networks? The most popular answer is that female entrepreneurs have less useful networks compared to male counterparts.

Findings align with two main theoretical approaches in social network theory (SNT): (a) the structure approach; and (b) the resource approach**.** The former explores the roles of network structures that convert individual interpersonal relationships into economic payoffs (Brüderl & Preisendörfer, 1998). In SNT, network structure means patterned and repeated interactions among individual actors (Burkhardt & Brass, 1990). In peculiar, structure entails nodes (individual actors) and the ties (relationships or interactions) that link them (Neergaard, Shaw, & Carter, 2013). Granovetter's weak tie theory identifies the strength of a tie as a tool for the actor to access to embedded resources in the network. As Granovetter put it, the strength of a tie is determined by "the amount of time, emotional intensity, intimacy (mutual confiding) and reciprocal services which characterize the tie" (Granovetter, 1973, p. 1361). Ties between people are typically labeled strong or weak (Santos et al., 2016). Strong ties are created by trust and a considerable amount of time and emotional investment. Strong ties often include family, relatives, and close friends.

Weak ties are superficial, involving less frequent and less emotional investments for both parties. These include many work-related acquaintances and business partners. At the same time, weak ties are not necessarily lesser; they are distinctly useful in their own right and have their own style of contribution. "Weak tie theory" argues that such ties provide members with unique information and resources, helping members to

reach outside of their own social cliques, creating bridges for otherwise disconnected groups (Granovetter, 2005). A related network metric, still part of network structure, is network size, defined as the number of direct links between a focal actor and other actors (Hoang & Antončič, 2003). This captures the amount and diversity of resources the entrepreneurs can access (Semrau & Werner, 2014).

Some research found that women's social networks are less likely to have "weak ties" than men's social networks. In particular, women's job or business networks are smaller and include higher proportions of kin, families, and female neighbors. In contrast, men's networks include more professional acquaintances and consultants affiliated with formal associations (Crowell, 2004; Fang & Huang, 2017; Greve & Salaff, 2003; Groysberg, 2010; Hampton, Cooper, & Mcgowan, 2009; Klyver & Terjesen, 2007; McDonald, 2011; Rankin, 2001; Renzulli, Aldrich, & Moody, 2000; Robinson & Stubberud, 2011). Women's child care and housekeeping responsibilities imposed by gender segregated structures tend to limit women's social network around family and kin (Loscocco et al., 2009; Munch & McPherson, 1997). Since women are less likely to or able to commit to network building due to such domestic commitments, women are in turn viewed as less available or less desirable as network partners. Networking is also limited by women's lower level of previous work experience (Hewlett, 2014).

On the other hand, the resource approach to SNT highlights not weak ties or network size but instead resources embedded within the networks, resources that generate advantages for focal actors (Gedajlovic, Honig, Moore, Payne, & Wright, 2013; Seibert, Kraimer, & Liden, 2001). Network resources include information, financial capital, making introductions, advice, training, emotional support, physical resources, and so on (Reynolds & Curtin, 2008). Resource metrics include the number of accessible resources, the "best" resource in the network, the variety of resources in the network, and the socio-economic status of network members (Bozovic, 2007; Lin, 1999). Since resources embedded in networks are determined by individual social position, not generated by individual choices, benefits from social networks are quite likely to be unequal (Bourdieu, 1986; Lin, 2005; Molyneux, 2002). This approach highlights the

possibility that weak ties of women do not deliver the same economic returns as those of men. Since women tend to be located in more peripheral organizations, such as those associated with domestic and community affairs rather than businesses or jobs, their weak ties generate fewer resources for their businesses (Beggs, 1997; Davidsson & Honig, 2003; McGowan, Cooper, Durkin, & O'Kane, 2015). Klyver and Grant (2013) and Hurlbert, Haines, and Beggs (2000) also found that women were less likely to report entrepreneurial resource providers or role models in their social networks compared to men.

Social Networks and Business Performance

Two main hypotheses of SNT related to performance are: (a) the network founding hypothesis; and (b) the network success hypothesis. The former contends that both strong and weak ties benefit business founding (Brüderl & Preisendörfer, 1998; Davidsson & Honig, 2003; Kiss, 2016). Since nascent entrepreneurs lack ideas, financing, and other resources, any network resources help. However, the network success hypothesis argues that, in the growth and survival stages of business, weak ties are most likely to provide inexperienced entrepreneurs with links to valuable information and resources (Brüderl & Preisendörfer, 1998; Burt, 1998; Butler & Hansen, 1991; Casson, 2007; Granovetter, 1973, 1983; Woolcock, 2001).

A number of studies have found social networks to have a strong and positive impact on performance, through access to a variety of scarce or intangible resources such as credibility, competence, information, advice, support for the idea, and reputational effects (Abou-Moghli & Al-kasasbeh, 2012; Baum, Calabrese, & Silverman, 2000; Bosma et al., 2004; Brown, Mawson, & Rowe, 2018; Davidsson & Honig, 2003; Kuépié, Tenikue, & Walther, 2016; Santarelli & Tran, 2013; Semrau & Werner, 2014; Stam, Arzlanian, & Elfring, 2014; Watson, 2007b). Limited research distinguished strong from weak ties, finding that weak ties significantly increase business performance (Hernández-Carrión, Camarero-Izquierdo, & Gutiérrez-Cillán, 2017; Jensen & Schott, 2015; Santarelli & Tran, 2013; Stam et al., 2014; Watson, 2007a).

In contrast to the network success hypothesis, Davidsson and Honig (2003) and Brüderl and Preisendörfer (1998) found

that strong ties also have positive influence on sale growth and survival. Arregle et al. (2015) also agree that strong ties are positive for new venture growth but argue that when strong ties are dominant within an entrepreneur's network, the negative effects will actually override the benefits.

Some work contends that network size contributes to improving business performance in different ways. Larger network size increases: (a) the accessibility of resources (Semrau & Werner, 2014); (b) the possibility of obtaining further weak ties (Khayesi, George, & Antonakis, 2014); and (c) the opportunity to finding a key person who could be supportive, provide resources (Khayesi et al., 2014; Uzzi, 1999), or additional contacts (Semrau & Werner, 2014).

Interestingly, some empirical research (Aldrich & Reese, 1993; Johannisson, 1996; Littunen, 2000; Tata & Prasad, 2008) found no significant positive effect of network size, structure, activities, or resources on business performance. In fact, Bates (1994) finds that heavy use of social networks is more likely to result in less profitable and failure-prone businesses. Brüderl and Preisendörfer (1998) proposed two reasons for these inconsistent findings. The first reason is measurement. They argued that instead of measuring network structures or accessible resources, research should measure actual utilization or support from networks, because entrepreneurs can improve success only if they actually use their social networks for their businesses. The second reason is that entrepreneurs are likely to compensate for lack of financial and human capital by utilizing social networks, so that networks and their usage are endogenous to current business health. They suggested controlling for other critical variables, such as human capital and financial capital, to get around these problems.

Role of Entrepreneurs' Gender on Social Networks and Business Performance

There is a dearth of research investigating the holistic relationship among entrepreneurs' gender, social networks, and business performance. Tata and Prasad (2008) propose a theoretical framework for this. They hypothesized that women get benefits from network strength whereas men get benefits from

network diversity and size (the mechanism depends on collaborative exchanges). Even this framework risks overlooking resources embedded in social networks. If women's social networks do not contain sufficient resources connected to business opportunities, women's higher engagement in collaborative exchange will not increase business success. In addition, this framework does not go further to explain how men and women's social network structure influences the different stages of business performance (start-up, growth, and survival). For example, entrepreneurs' strong ties could be beneficial for business start-ups but still not for business growth or longer-term survival.

Renzulli et al. (2000) found that female entrepreneurs were disadvantaged in start-ups due to a high proportion of kin in their networks. There is some tension with the finding of Chowdhury & Amin (2011), which found that the more strong ties that female micro-entrepreneurs had, the more likely they were to intend to start up a business. However, this work did not measure weak ties. The value of strong ties for female entrepreneurs' business start-up was also echoed in Yetim's (2008) study, showing that migrant women with strong ethnic networks utilized the strength of strong ties for their businesses more than non-migrant women. This important work did not examine business performance, however, and also set aside weak ties.

Limitations and Implications of Existing Research

Summing up, note first that most research examines either the impacts of network structure or resources on business performance. However, *both* "the configuration" and "the content" of a network need to be examined in order to understand the impact of social networks on business performance (Seibert et al., 2001). Therefore, this study examines both social network structure and resources. Second, this study measures gained network resources in order to examine the actual utilization of social networks, because unutilized social networks could not affect business performance (Brüderl & Preisendörfer, 1998). Third, most research does not account for business scale, despite the likelihood of conditional effects, with micro-enterprise being more vulnerable to a lack of network support than larger businesses. This study only samples micro-entrepreneurs

because business scale could affect entrepreneurs' social networks and their business performance. In addition, since 90% of women-owned businesses are micro-enterprises, this study attempts to find implications for female micro-entrepreneurs. Fourth, most research on this issue uses cross-sectional data and not time series data. Since the effect of social networks on performance would likely be different as businesses grow, longitudinal data analysis can reveal the dynamic impact of social networks on business performance. Therefore, this study uses longitudinal data in order to investigate the impact of entrepreneurs' gender and social networks on different stages of business performance as businesses grow. Finally, this study controls for major human and financial capital as well as business location and industry, which have been verified as influential factors on business performance from previous studies.

Hypotheses

Given the above discussion, this present study predicts the following for business success.

Female micro-entrepreneurs will have…

Hypothesis 1a: … lower *growth of profitability* than male entrepreneurs;

Hypothesis 1b: … lower rates of *business survival* than male entrepreneurs;

Hypothesis 1c: … lower *start-up rates* than male entrepreneurs.

(Note: As will be detailed later, the PSED data used here include only those still at least actively considering enterprise, so to the extent that women preemptively give up on the market, this hypothesis cannot be cleanly tested. The overall startup rate requires an estimate of those that succeed out of those who plausibly enter the market. "Latent" or potential micro-enterprises are not part of the PSED denominator. Indeed, the high startup rate within PSED shows that many potential failures have already been censored: 98% of the nascent entrepreneurs successfully started

up their businesses within the six-year period of the study. Only the start-up rate given currently active consideration can be evaluated. This is a problem in general with how start-up rates are sometimes measured in this type of work. I set this hypothesis aside here, and focus on the conditional effects given the minimal degree of activity required to be included in the PSED data.)

Next, the discussion of network structure and resources implies the following:

Female micro-entrepreneurs will have…
Hypothesis 2a: … *fewer weak ties* in their networks than male entrepreneurs;
Hypothesis 2b: … *smaller network size* than male entrepreneurs;
Hypothesis 2c: … *fewer resources* in their networks than male entrepreneurs.

Given social network theory, and consistent with most existing empirical findings, *micro-enterprise performance* will be positively associated with…

Hypothesis 3a: … *having weak ties*;
Hypothesis 3b: … *larger networks*;
Hypothesis 3c: … *greater network resources*.

And finally, bringing in moderated effects, *female micro-entrepreneurs* will have a…

Hypothesis 4: … *weaker relationship between networks and performance* than male entrepreneurs.

Research Design

Data and Sampling

This study uses the Panel Study of Entrepreneurial Dynamic II data set (PSED), a longitudinal national database which

provides information on the characteristics and activities of individuals involved in the process of starting or managing a sample of businesses between 2005 and 2011 (Reynolds & Curtin, 2011). Random digit dialing was used to contact 31,845 individuals, within 48 states from September 2005 to February 2006. Individuals who met four criteria in a screener interview were invited to the study: (1) they consider themselves involved in the firm creation process; (2) they have engaged in some start-up activity in the past 12 months; (3) they expect to own all or part of the new firm; and (4) the initiative has not progressed to the point that may be considered an operating business (Curtin, 2012). This yielded 1,214 nascent entrepreneurs for the next step, a 60-minute phone interview (Wave A) (Reynolds & Curtin, 2011). Wave A interviews were conducted from September 2005 to March 2006 and the follow-up interviews (Waves B, C, D, E, F) were conducted once a year from October to March in every year between 2006 and 2011 (Curtin, 2012). The response rates of the follow-up interviews conditional on participation in the previous wave were 80% (Wave B, n = 972), 77% (Wave C, n = 746), 71% (Wave D, n = 527), 83% (Wave E, n = 435), and 86% (Wave F, n = 375). Here I focus on the sub-sample of micro-entrepreneurs, defined as entrepreneurs who want to hire or already had hired fewer than five employees for their businesses in Wave A (N = 979, 80% of the total sample). Network variables come from this wave. Performance variables come from the full set of waves.

At each wave/year, yearly business profitability is defined as monthly revenue exceeding monthly expenses for the new business for more than six of the past twelve months, and yearly survival is the firm not stopping its operation in that year. I next create summary dichotomized measures for the entire six-year history. Profitability is 1 if there was at least one year of profitability. Survival is 1 if there was at least one year of survival. Missing values of profitability (307 out of 979) were imputed with the multiple imputation procedure in SAS 9.1 program.

Social network variables are next, measured at Wave A. The PSED used egocentric network data, which provides information on the nature of the local social networks surrounding an actor. Social networks were measured by asking information on other owners (up to 10), key non-owners (up to six), and helpers (up to three). Owners include those expecting to own part of

the new business; key non-owners include active participants in start-ups who are responsible for a distinctive contribution to the founding of the new business but not expecting to own part of the new business; and helpers include those not expecting to own part of the business and not responsible for distinctive contribution, but who provided support, advice, or guidance on a regular basis to the respondents (Reynolds & Curtin, 2008).

Network size is the cumulative number of all active social networks that were instrumental for the business (the owners, key non-owners, and helpers). In the micro-enterprise subset, the actual range for this variable was from 1 to 101. Natural logarithms were applied to handle skewness.

These ties must be divided into strong and weak. A spouse, partner sharing a household, or relative was categorized as a strong tie. Others are trickier to categorize. The difference between "friend or acquaintance having not worked with" and "friend or acquaintance from work" was identified. It is reasonable to assume that the work related to relationship tends to be more superficial and involve much less emotional investment for both parties (Santos et al., 2016). Therefore, a relationship with a friend or acquaintance from work or a stranger before joining the (new) business team was categorized as a weak tie. On the other hand, a friend or acquaintance not worked with was categorized as a strong tie. Since weak ties are argued to be the most important, as discussed above, a better or "stronger" network (ironically) is one with at least one weak tie (this deals with the skewness of an alternate measure, using the exact number of weak ties).

Network resources gained from social networks are measured by the primary contribution of the person of respondents' network to their business. The PSED broke the resources gained from respondents' social network down as follows: financial (1); making introductions (2); providing advice (3); providing training (4); physical resources (5); business services (6); and personal services (7). A respondent could have more than one in a category and/or resources in different categories. I count the *total* number of gained network resources across all categories (actual range from 4 to 12, skewness: 0.78). Control variables were ethnicity, marital status, age, human capital factors, start-up capital, business location, and industry.

Descriptive Statistics

The sample (N = 979) contains more female (about 60%) and white (about 75%) respondents. Approximately 70% of the respondents had a high-school degree, and about half were married. The average age is 44 years old. About half reported that their parents had business experience (52%). Most had managerial (71%) and full-time work (78%) experience. Approximately 44% of the respondents already had business experience. Seventy-nine percent had their business in a service sector, and 70% lived in non-metropolitan areas. Mean start-up capital was $28,073.

Methods of Analysis

Logistic and OLS regression models are used, depending on the nature of the dependent variable in question, to examine the influence of micro-entrepreneur's gender on business performance (profitability and survival). Another set of models examine the relationship between gender and the social network variables (network size and strength, and gained network resources). In the third set of analyses, the micro-enterprise performance variables were regressed on the social network variables. In the fourth set of analyses, the separated logistic (business profitability) and OLS (business survival) regression models for the whole sample and for each gender group were used in order to assess the moderation model of gender between social networks and micro-enterprise performance.

Results

The first hypothesis examined the relationship between micro-entrepreneur's gender and business performance controlling for demographic variables (Table 1). Hypothesis 1b, regarding the relationship between micro-entrepreneur's gender and business survival, is supported. Female micro-entrepreneurs are less likely to survive compared to male counterparts, a moderate effect size that is statistically significant. In contrast to hypothesis 1a, the coefficient on female is negative but not statistically significant (dependent variable being business profitability).

Table 1. Unstandardized Coefficients and Odds Ratio from Regression Models of Gender on Micro-enterprise Performance

Variable	Business Profitability (0/1)		Business Survival (0/1)	
		Coeff.	O. R	Coeff.
Intercept	-2.58***		0.50*	
Female	-0.06	0.91	-0.18**	
Non White	0.46***	1.55	0.15	
No High-school degree	0.38**	1.46	0.28***	
Unmarried	0.06	0.96	0.18**	
Age (Continuous)	-0.01	1.00	0.00	
No Parents' bus Exp.	0.12	1.14	0.07	
No Manager Exp.	0.41***	1.55	0.06	
No Work Exp.	0.57***	1.75	0.25***	
No Business Exp.	0.32**	1.34	0.10	
No Service Industry	0.07	1.02	-0.03	
Non-Metropolitan area	0.08	1.05	-0.07	
Start-up capital (Continuous)	0.14***	1.16	0.10***	
Adj R-Sq	0.07			

*P<.1, **P<.05, ***P<.01
Likelihood ratio for the logistic regression (business profitability) is <.0001

Hypothesis 2, with respect to the relationship between gender and social networks, is not supported (Table 2). The odds ratio suggests women are less likely to have weak ties in their social networks compared to men, but not at a level of statistical significance.

Table 2. Unstandardized Coefficients and Odds Ratio from Regression Models of Gender on Social Networks

Variable	Size (#)	Strength (0/1)		Gained Resources (#)
	Coeff.	Coeff.	O. R	Coeff.
Intercept	0.40	2.37***		5.82***
Female	0.05	-0.09	0.90	0.15
Non White	-0.06	-0.14	0.86	0.21
No High-school degree	-0.03	-0.19	0.82	0.08
Unmarried	0.12	-0.19	0.82	0.96***
Age (Continuous)	-0.01**	0.01	1.01	-0.01**
No Parents' bus Exp.	0.03	0.25	1.29	0.23*
No Manager Exp.	-0.01	-0.19	0.82	0.07
No Work Exp.	-0.05	-0.20	0.81	-0.26*
No Business Exp.	0.05	-0.00	1.00	0.02
No Service Industry	0.10	-0.44*	0.64	-0.05
Non-Metropolitan area	-0.04	-0.20	0.82	0.10
Start-up capital (Continuous)	0.05***	0.00	1.04	0.17***
Adjusted R2	0.10			0.10

*P<.1, **P<.05, ***P<.01
Likelihood ratio for each logistic regression is <.0001

The third hypothesis addresses the relationship between social networks and micro-enterprise performance (see "full sample" in Tables 3A and 3B). Hypothesis 3c, with respect to the relationship between gained network resource and micro-enterprise performance, is supported. Specifically, gained network resource is positively and significantly associated with business profitability and survival. This means that the micro-entrepreneurs having more gained network resources are more likely to gain business profitability and survive. For hypotheses 3a and b, the network size and strength variables are not significantly associated with either business profitability or survival.

Table 3-A. Moderation Effects of Gender on the Relationship between Networks and Profitability (0/1)

Variable	Full Sample		Male Group		Female Group	
	Coeff	O.R.	Coeff	O.R.	Coeff	O.R
Intercept	-3.05***		-3.59***		-2.10**	
NW Size	-0.06	0.95	-0.05	0.96	-0.07	0.95
NW Strength	0.25	1.42	0.67**	2.25	-0.37	0.74
Gained NW Resource	0.08**	1.07	0.09*	1.09	0.05	1.03
Female	-0.07	0.91				
Non White	0.44**	1.55	0.61**	1.75	0.19	1.32
No High-school degree	0.37**	1.46	0.45**	1.60	0.16**	1.18
Unmarried	0.01	1.01	-0.00	0.89	-0.08**	0.95
Age (Continuous)	-0.01	1.00	-0.01	1.00	-0.01	1.00
No Parents' bus Exp.	0.12	1.14	0.24	1.26	-0.01	0.95
No Manager Exp.	0.40**	1.55	0.48**	1.67	0.30	1.45
No Work Exp.	0.59 **	1.75	0.23	1.25	0.51**	1.54
No Business Exp.	0.32**	1.34	0.71**	1.98	0.45*	1.55
No Service Industry	0.07*	1.02	0.12	1.07	-0.07**	0.95
Non-Metropolitan area	0.07	1.05	0.23***	1.25	-0.00	0.95
Start-up capital (Continuous)	0.13**	1.16	0.12**	1.13	0.14*	1.19

*P<.1, **P<.05, ***P<.01
Likelihood ratio for each logistic regression is <.0001

Table 3-B. Moderation Effects of Gender on the Relationship between Networks and Survival (0/1)

Variable	Full Sample	Male Group	Female Group
	Coeff	Coeff	Coeff
Intercept	0.50***	-0.02	1.16**
NW Size	-0.09	-0.07	-0.12
NW Strength	-0.05	-0.03	-0.10
Gained NW Resource	0.06**	0.08**	0.02
Female	-0.18**		
Non White	0.15	0.17	0.09
No High-school degree	0.28***	0.23**	0.33**
Unmarried	0.18**	0.12	0.26**
Age (Continuous)	0.00	0.01*	-0.01
No Parents' bus Exp.	0.10	0.18	-0.09
No Manager Exp.	0.06	0.08	0.02
No Work Exp.	0.10	0.02	0.21
No Business Exp.	0.25**	0.30**	0.27*
No Service Industry	-0.03	0.13	-0.37**
Non-Metropolitan area	-0.07	0.02	0.01
Start-up capital (Continuous)	0.10***	0.08**	0.14**
Adjusted R2	0.13	0.09	0.06

*P<.1, **P<.05, ***P<.01
Likelihood ratio for each logistic regression is <.0001

Finally, hypothesis 4 is supported. Tables 3A and B present the results of the moderation effect of gender on the relation between social networks and business performance. In Table 3A, in model 1, for the full sample, the gained network resource is significantly and positively associated with business profitability. For the male micro-entrepreneur group, gained network resource is still significantly and positively related to business profitability. In addition, for male micro-entrepreneurs, network strength becomes newly significant and positively associated with business profitability. That is, for male micro-entrepreneurs, having more gained network resources and weak ties positively and significantly increases the probability of achieving better business profitability. On the contrary, for female micro-entrepreneurs, the significance between gained network resource and business profitability disappeared.

In Table 3B, gained network resource is significantly and positively related to business survival in model 1, the full sample. For the male micro-entrepreneur group (model 2), this relationship still exists. However, for the female group (model 3), the direction of the relationship of gained network resource and business survival is changed and the significance of relationship disappeared. These significant differences between micro-entrepreneur's gender with respect to the relationships between social networks and business performances show that micro-entrepreneur's gender works as a moderator on the relationships between social networks and business performance. It implies that the causal relationship between social networks and micro-enterprise performance changes as a function of the moderator variable, gender.

Discussion and Conclusion

This research finds women owned micro-enterprises are less likely to survive compared to their male counterparts. No gender difference in network structure or in gained network resources is found. The main finding is that micro-entrepreneurs' gender works as a moderator between their social networks and business performance. To be specific, for male micro-entrepreneurs, having more gained network resources or weak ties significantly increases the probability of achieving better business profitability

or survival. In contrast, for female micro-entrepreneurs, weak ties or gained network resources do not increase profitability or survival. Since this research controlled for business type (e.g., service industry or not), this gender difference is not induced by the higher likelihood that women's businesses are service oriented. This finding implies that even in cases where female micro-entrepreneurs gained the same number of weak ties and resources from their networks as their male counterparts, their weak ties and gained resources did not help them to improve their business performance, unlike male counterparts.

Since there is little difference in terms of the quantity of social networks (i.e., the number of weak ties and gained network resource), this result implies that it could be that the problem is the differing quality of weak ties and gained network resources of female micro-entrepreneurs. Existing studies support the assumption of gender inequality in terms of quality. Studies show women tend to be located in smaller and more peripheral organizations, which are associated with domestic and community affairs, whereas men are more likely to be engaged in core associations having more information and resources for economic activities (McAdam, Harrison, & Leitch, 2018; Robinson & Stubberud, 2011). For example, both female and male micro-entrepreneurs could have the same "amount" of information for their businesses. However, males could acquire more unique and valuable business information compared to females due to their informant's high social status.

Another possible reason for the new findings here would be that women are not able to fully utilize their weak ties or network resources for their businesses compared to males due to their life conditions. Women's childcare and housekeeping responsibilities imposed by gender-segregated roles could prevent them from making efforts for activating them for their businesses (Loscocco et al., 2009). Un- or under-utilized weak ties or network resources may not be able to improve entrepreneurs' business performance (Brüderl & Preisendörfer, 1998). Women's networks could also have more redundant (less diverse) resources (see Burt, 1998; Klyver & Schenkel, 2013). Drawing on the finding that women's networks tend to be related to domestic and community affairs, we could suspect that female entrepreneurs could have more homogeneous and redundant

resources. Therefore, although women have the same number of weak ties and gained resources, they do not generate similar positive impacts.

In addition, this research finds that female micro-entrepreneurs are significantly less likely to survive compared to male counterparts. However, this finding needs to be carefully interpreted in the U.S. context. Given that the period of the PSED II Data (2005-2011) overlapped with the Great Recession (2007-2009), we might suspect the economic crisis more harshly hit women's network building opportunities and business performance than male counterparts. Perhaps under other conditions, the effects would have been less stark. In this vein, Cha (2014) found that women who returned to work from lay off experience greater earning losses than their male counterparts. Overall, the micro-enterprise market suffered an 18-percentage point crash in total investment in the recession (Shane, 2011). Thébaud and Sharkey (2016) found that women-owned businesses faced more difficulty in acquiring funding during these years compared to male counterparts. Women-owned businesses got a significantly larger penalty in the investment market during these years due to their lower credit scores than male counterparts. Since network building requires lots of time and resource investment and reflects an actor's social position, women's economic crisis in the job market and business might have deteriorated their network building opportunities and business survival during the recession. Therefore, further investigation on the relationship among microentrepreneurs' gender, social network, and business performance needs to be done in a different period.

The findings provide empirical evidence to support the necessity of social networking intervention for female participants of MDPs. First of all, MDPs need to provide gender-sensitive social networking intervention for female participants. MDPs need to understand the risk of building women-only networks. If women's networks have less return compared to men's, we need to focus on providing opportunities for women to build better quality of networks by connecting them to resources more typically in the network of men but outside many women's peer groups, like business experts, lawyers, bankers, financial institutes, and suppliers. MDPs could offer workshops that facilitate women's interactions with formal business organizations and

business experts, to get advice, loans, information, and customer contact. Second, MDPs need to strengthen their own networks with a diversity of community groups, such as business associations, non-profit organizations, financial institutions, welfare agencies, and governments. Since MDPs are unable to provide female participants with all resources related to business, the joint production of services at the community level would be desirable for satisfying participants' multiple needs (Provan & Milward, 2013).

This research also provides implications that U.S. MDPs and governments need to focus on long-term support in order to increase female micro-entrepreneurs' business survival rate. A number of recent studies find that gender discrimination in finance is still common, such that female entrepreneurs receive less capital, provide more equity, or receive investments with lower valuations relative to their male counterparts (Artz, 2017; Brush, Greene, Balachandra, & Davis, 2017; Eddleston, Ladge, Mitteness, & Balachandra, 2017; Kanze, Huang, Conley, & Higgins, 2018; Poczter & Shapsis, 2017; Sauer & Wiesemeyer, 2018). Gender norms and beliefs that women are not appropriate for business leadership additionally amplify women's barriers to access resources by infringing upon the decisions of the state and of the organizations which women ask for resources (Gordini & Rancati, 2017; Lindberg, 2014).

In addition, female micro-entrepreneurs face challenges in managing both family roles and work, which limit their commitment to their businesses (Monahan, Shah, & Mattare, 2011; Wang, 2018). Some research provides evidence that MDPs' and government's support for female entrepreneurs positively affects not only their business launching but also survival (Iakovleva, Solesvik, & Trifilova, 2013; Lockyer & George, 2012; Yoonyoung Cho, 2013). For example, MDPs and government agencies such as Small Business Development Centers and the Small Business Administration could offer business consulting services, skill training, workshops, and/or subsidies for childcare to existing women owned microenterprises. With access to capital a major concern, MDPs and federal or state governments could offer government grants, investor funding, and/or low interest loans to female micro-entrepreneurs. Federal and state governments could help women-owned microenterprises

acquire relative competitive advantages in the market by giving additions in procurement for governments and helping create opportunities to be showcased.

Implications

This paper also has implications for future research. First, we should develop better measurement tools for the quality of weak ties and network resources. This study could not investigate the gender differences in terms of quality of weak ties and gained network resources because the PSED data set provides only the quantity of them. In addition, this study cannot identify which resource is more valuable than others in terms of its impact on micro-enterprise performance, because the analysis aggregated the number of gained resources. Future research needs to measure, in peculiar: (1) the relative values of resources for businesses (e.g., information, finance, advice, emotional support, etc.); (2) what resources each weak tie induces; (3) the level of homogeneity of weak ties (resource redundancy); and (4) whether the focal actor actually utilized the weak ties and gained resources for her/his business. Such a study would, of course, be more costly to undertake.

Second, this study implies that more qualitative research needs to be done in order to figure out female micro-entrepreneurs' needs for social networks. What are the challenges for female micro-entrepreneurs in getting actual benefits from their networks for their businesses? What kinds of network resources do they want to access for their businesses?

Third, more research needs to investigate how the race and economic class of female micro-entrepreneurs influence their networks and businesses. Since a large portion of female participants of MDPs is minority or low-income women (Langowitz et al., 2006), figuring out how race and economic class intersect with gender, social networks, and business performance would be crucial.

Finally, we need to conduct comparisons between developed and developing countries in terms of the gendered effect of networks on micro-enterprise performance. Women-owned micro-enterprises have been fast growing and contribute significantly to the economy of developing countries. However, some

literature argues that female micro-entrepreneurs in developing countries have a lower probability for success compared to them in developed countries, because of more severe gender inequality and the underdeveloped business environment (Sequeira, Gibbs, & Juma, 2016). A recent global study found that while six developing countries are placed in the top ten countries in terms of the percentage of female business owners, only two developing countries (The Philippines and Thailand) were ranked as 8th and 10th in terms of women's business success and relatively good access to business resources (Mastercard, 2017). Reflecting this gap between developed and developing countries, we could suspect that different gender dynamics between developed and developing countries could affect the relationship between networks and business performance.

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