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ORIGINAL ARTICLE

Embeddedness or Over-Embeddedness? Women Entrepreneurs' Networks and Their Influence on Business Performance

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Abstract

We analyse in what ways network embeddedness may influence the business performance of women entrepreneurs working in a socially constrained context. Data were collected through a survey sent to 292 women entrepreneurs engaged in handicraft businesses in Bangladesh. Results from multiple regression models show that, next to entrepreneurial orientation, financial capital and business experience, a small network is positively related, while medium-sized and large networks are negatively related, to performance. In-depth analysis reveals that a small bonding ties network is positively, while a medium-sized bonding ties network is negatively, and a large bonding ties network is not, statistically related to performance. Based on this, we assume that the networks of many women entrepreneurs may be over-embedded, because of too extensive connections with family and friends. Apparently, the over-embeddedness proposition of Uzzi (Am Sociol Rev 61:674–698, 1996) proves to be valid for women entrepreneurs operating under socially constrained circumstances in a developing country.

Keywords Network (over-)embeddedness · Business performance · Women entrepreneurs · Socially constrained context

Résumé

Nous analysons de quelle manière l'encastrement dans un réseau social peut influer sur les performances commerciales des femmes entrepreneures travaillant dans un contexte de contrainte sociale. Les données sont collectées dans le cadre d'une enquête envoyée à 292 femmes entrepreneures engagées dans l'artisanat au Bangladesh. Les résultats issus de modèles de régression multiple montrent que, outre l'orientation entrepreneuriale, le capital financier, et l'expérience professionnelle, disposer d'un petit réseau est positivement lié à la performance commerciale, alors

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que les réseaux de taille moyenne et grande sont négativement liés à la performance. Une analyse approfondie révèle qu'un réseau de liaisons de petite taille est positivement relié à la performance, alors qu'un réseau de liaisons de taille moyenne y est inversement relié, et qu'un grand réseau de liaisons n'est pas statistiquement lié à la performance. Sur cette base, nous supposons que les réseaux de nombreuses femmes entrepreneures pourraient être trop encastrés, en raison de liens trop étroits avec la famille et les amis. Il semblerait que la proposition de sur-encastrement d'Uzzi (Am Sociol Rev 61:674–698, 1996) s'avère valable pour les femmes entrepreneures travaillant en situation de contrainte sociale dans un pays en développement.

Introduction

The relationships that individuals build within their personal network, defined in the literature as network embeddedness, are crucial for resource assimilation (Inkpen and Tsang 2005). In fact, entrepreneurs hardly have all the resources and the capabilities needed to develop and establish their business (Granovetter 1995), such as human and financial capital, information and knowledge. To access them, entrepreneurs rely on building personal (social) networks, which in turn enable them to develop business activities (Granovetter 1985; Greve and Salaff 2003; Jack and Anderson 2002; Xie and Lv 2016). As such, network embeddedness influences the entrepreneurs' economic decisions (Granovetter 1985).

Studying the influence of network embeddedness, and especially structural embeddedness, i.e. the number of ties in the network (Gulati 1998; Granovetter 1992; Uzzi 1996), Uzzi (1996) states that the positive effect of embeddedness reaches a threshold (namely, a definite number of ties). Beyond this threshold, the set of ties may only offer redundant information that may constrain entrepreneurs' abilities to take entrepreneurial decisions (Uzzi 1996). These constraints can create negative effects on entrepreneurial outcomes, for example on economic performance (Uzzi 1996), financial sustainability (Mayoux 2001) and business performance.[1] In such a situation, embeddedness becomes over-embeddedness, as suggested by Uzzi (1996). Not only can the number of ties influence entrepreneurial outcomes but also the type of ties (Jack and Anderson 2002). Maas et al. (2014) stress the differentiation between bonding, bridging and linking ties as influencing performances: these ties in fact create both opportunities and constraints which also depend on the position of entrepreneurs in their environment (Aldrich and Zimmer 1986; Jack 2005). Distinguishing between the different types of ties that comprise a network is especially relevant in contexts where the entrepreneurs' position is culturally or socially constrained (Klyver and Foley 2012; Maas et al. 2014; Poon et al. 2012; Putzel 1997).

In developing countries,[2] where social conditions can be particularly hard, network embeddedness can have constraining effects on business activities and

[1] Here defined as the business success assessed by using financial- and/or non-financial performance indicators (Venkatraman and Ramanujam 1986).

[2] Generally identified as the low- and middle-income economies (World-Bank 2014).

performances (Mayoux 2001). This is especially the case for women entrepreneurs[3] (Mair and Marti 2009; Drinkwater 2009; Mayoux 2001). A social environment is defined as the social norms, values and customs that regulate all the aspects of everyday life (Glonti et al. 2016). In many developing countries, the social environment constrains the position of women in society (Amine and Staub 2009; De Vita et al. 2014; Roomi and Harrison 2010; Jamali 2009; Mozumdar et al. 2016). Women are confined to their homestead activities and are discouraged from engaging in networks outside the family (Mayoux 2001). When involved in business activities, they need to balance their time between business and domestic work (Mair and Marti 2009). This positions women in a 'socially constrained' context that ultimately impedes their possibility to exploit resources and business opportunities through network embeddedness, and thus a negative influence of social network on women's business performance can be expected (Mayoux 2001).

While generally the bright side of the influence of social network on business performance is advocated, the negative effects of that are neglected in the literature (Eklinder-Frick et al. 2011). Bringing social context into research could also shed light on the equivocal evidence of the effect of network embeddedness on entrepreneurial outcomes. Although numerous studies have researched the influence of network embeddedness especially on entrepreneurial outcomes, like business growth and performance, results so far are mixed: for some studies, the influence is positive (Granovetter 1985; Hoang and Antoncic 2003; Hoang and Yi 2015; Woolcock 1998; Slotte-Kock and Coviello 2010; Raz and Gloor 2007), for others it is negative (Gargiulo and Benassi 1999; Mayoux 2001; Portes 2000). Moreover, studies on network embeddedness in a developing countries context are limited and the results not unequivocal (Poggesi et al. 2015; Maas et al. 2014; Poon et al. 2012).

This study therefore addresses the following questions: (1) what impact does the size of the networks exert on the business performance of women entrepreneurs in a socially constrained context? (2) what impact does the type of ties exert on their business performance?

For this research, Bangladesh has been selected as the case study. In Bangladesh, the social environment in which women entrepreneurs operate represents a significant constraint on the formation of networks outside the family (Maas et al. 2014) and thereby on their businesses (Drinkwater 2009; Kabir and Huo 2011; Rabbani and Chowdhury 2013; Mozumdar et al. 2016). This study therefore explicitly contributes to the network (over-)embeddedness and performance literature by providing insights into the impact of network size and of the type of network ties on the business performance of women entrepreneurs working in socially constrained environments in a developing country.

[3] Here defined as the women who are the initiators, owners and managers of businesses run at least for 1 year (Moore and Buttner 1997).

Theory and Propositions

The Bright Side of Network Embeddedness

A network is defined as a set of interactive relationships (ties) that individuals have and can benefit from in pursuing their interests (Hampton et al. 2009). The personal network of entrepreneurs includes all the people with whom they have direct relationships, encompassing family, friends, business partners, bankers and so on (Dubini and Aldrich 2002). The structure of the network that the entrepreneurs create explains how they are embedded in the network and how the network embeddedness influences their performance (Granovetter 1985). Network size, defined as the number of ties, is the most usual measure of network embeddedness (Hoang and Yi 2015; Hsueh et al. 2010; Dollinger 1985). The benefits that entrepreneurs can achieve through network embeddedness are evident in the identification and exploitation of business opportunities: network relationships provide access to valuable resources, such as capital (e.g. money and materials), symbolic support (e.g. certification, approval and legitimacy) and new information (e.g. practical knowledge, advice and direction) (Aldrich and Zimmer 1986; Larson and Starr 1993). Thus, we assume a positive effect of network size on business performance.

Proposition 1 Network size shows a positive relationship with the business performance of Bangladeshi women entrepreneurs.

The Nuanced Side of Network Embeddedness

Beyond a certain size of the network, however, the set of ties may provide negative effects on performances, i.e., entrepreneurs become over-embedded in their network (Uzzi 1996). Over-embeddedness may occur when entrepreneurs rely heavily on their internal existing strong[4] ties (Uzzi 1996), i.e. the cost (of maintaining an extensive number of strong ties) may overcome the benefit (e.g. new knowledge and information) (Kreiser et al. 2013). Moreover, expectations and obligations built into strong ties constrain the creation of new external relationships (Uzzi 1997; Gargiulo and Benassi 1999), impeding the achievement of competitive advantages (Uzzi 1997).

The type of ties also matters. Ties are commonly divided into bonding, bridging (Davidsson and Honig 2003; Gittell and Vidal 1998; Lin 2008) and linking (Szreter and Woolcock 2004; Woolcock 2001; Hawkins and Maurer 2010). A bonding tie shapes the relationship between two homogenous individuals who share the same socio-demographic status or some common identity, such as religion and ethnicity (Szreter and Woolcock 2004; Maas et al. 2014). A bridging tie indicates the relationship between two individuals who have different shared

[4] A tie is strong if the relationship between two actors is durable, in that they have a frequent contact (at least twice a week), a high amount of emotional closeness and a long time of connection (Granovetter 1973).

identity but belong to the same hierarchical level, working in different groups (ibid). Finally, a linking tie denotes the relationship between two heterogeneous individuals who have different hierarchical powers and resources (Szreter and Woolcock 2004; Woolcock 2001; Hawkins and Maurer 2010).

In our study, women entrepreneurs' bonding ties are built with family, friends and relatives, bridging ties with other women entrepreneurs, and linking ties with government organizations, non-government organizations (NGOs), commercial banks and societal powerful bodies (e.g. an elected member of the local authority).

Bonding ties usually provide the emotional and moral support needed to start a business (Kuada 2009; Brüderl and Preisendörfer 1998). However, these ties may also provide emotional hindrance because of their obligations and liabilities (Gargiulo and Benassi 1999), inward-focused network orientation, and similar flows of ideas, advice and information (Bates 1994; Hite and Hesterly 2001; Renzulli et al. 2000), discouraging women who have just started their business (Maas et al. 2014). Furthermore, these ties may not be capable of providing enough of the financial resources which are required to develop businesses (Jack 2005). When entrepreneurs rely more on their ties with family for support, their probabilities of failure may increase (Arregle et al. 2015). Women seem to rely heavily on bonding ties (Rutashobya et al. 2009), while empirical research results from Ghana (Kuada 2009) even suggest that having no bonding ties may improve women entrepreneurs' performance.

Proposition 2 The number of bonding ties shows a negative relationship with the business performance of Bangladeshi women entrepreneurs.

Bridging ties may leverage new information flows and competitive capabilities (McEvily and Zaheer 1999) and help in generating innovative ideas (Burt 2000; Scholten et al. 2015). This generates an information advantage compared to entrepreneurs relying only on bonding ties (Scholten et al. 2015), which enables entrepreneurs identifying numerous business ideas (Gargiulo and Benassi 2000), reducing the probabilities of failure (Baum et al. 2000; Scholten et al. 2015) especially in developing countries (Maas et al. 2014). Studies have shown that in fact bridging ties positively influence the likelihood of survival of new businesses run by Jordanian women entrepreneurs (Al-Dajani and Marlow 2010).

Proposition 3 The number of bridging ties shows a positive relationship with the business performance of Bangladeshi women entrepreneurs.

Linking ties may provide entrepreneurs with access to valuable information (e.g. on training, sources of credits, business rules and regulations, trade fairs and foreign buyers, etc.) (Maas et al. 2014; Al-Dajani and Marlow 2010) which enables the identification of new business opportunities (Maas et al. 2014; Smith-Hunter and Leone 2010; Kuada 2009). For example, a study based in Ghana shows that women's linking ties with church leaders provide them with credit

information, facilitating their access to bank credits, and thus the chance of improving their business performance (Kuada 2009).

Proposition 4 The number of linking ties shows a positive relationship with the business performance of Bangladeshi women entrepreneurs.

Data and Methods

Research Setting, Sample and Data

We conducted the research in the Jamalpur and Mymensingh districts in Bangladesh, where the handicrafts sector is established. This sector represents a profitable business in Bangladesh and gives occupation to an extensive number of women entrepreneurs supported by several organizations.[5] A list of 789 women resulted, after cleaning the data for missing or overlapping information, in 300 women entrepreneurs as respondents to the survey.

Data have been collected from the survey[6] using a structured questionnaire elaborated with the collaboration of local experts from the organizations contacted. A pilot survey was executed as a test to finalize the survey questionnaire. A two-day extended training period provided the fellow interviewers with the theoretical background and methodology needed for the research. Data were collected from February to June 2015 through face-to-face one and a half-hour interviews.

Variables of the Model

Dependent Variable

Business performance is commonly measured in the literature either using *perceived* financial or non-financial measures, or *objective* financial performance measures (Rauch et al. 2009). As in Dess and Robinson (1984), Sarkar et al. (2001), Wall et al. (2004), we use perceived measures because of the absence of reliable objective financial data for the two regions analysed (Dess and Robinson 1984). Business performance is therefore measured as the sum of the scores of five perceptual items using a seven-point scale (1 = completely disagree, 7 = completely agree) (Hughes and Morgan 2007) (see Table 1).

[5] The organizations contacted were the government organizations: Bangladesh Small and Cottage Industries Corporation, Directorate of Women Affairs, Jatiya Mahila Sangstha; non-government organizations: World Vision and Bangladesh Rural Advancement Committee; commercial and specialised banks: National Bank and Grameen Bank; and other organizations: Bangladesh Women Chamber of Commerce and Industry, Trinamool Nari Unnayan Samity and Srijan Mohila Sangstha.

[6] The text of the survey is available upon request.

Table 1 Operationalization of variables

Variables	Operationalization	Scale	Cronbach α
Business performance	Sum of: *The total volume of my firm's production has increased; I was satisfied with the price that I got from my customers; Customers were satisfied with my products and services; My shop had better products on offer compared to other handicrafts shops; My shop had a higher profit compared to other handicrafts shops*	Likert 1–7 (Summated scale: 5–35)	.73[a]
Barriers in the social environment	*Hindrances due to family, norms, customs, traditions and religion*	Likert 1–7	–
Barriers in the business environment	Sum of: *Hindrance due to infrastructural instability (electricity and information technology); Hindrance due to political instability (strike, illegal tolls and briberies); Hindrance due to environmental threats (flood & heavy rains); Hindrance due to government rules and regulations (license, tax and vat)*	Likert 1–7 (Summated scale: 4–28)	.75[a]
Innovative and pro-active EO	Reported later (Table 2)	Likert 1–7	.94
Risk-taking EO	Reported later (Table 2)	Likert 1–7	.91
Education level	Highest level of education reported: (0 = no formal education; 1 = primary school; 2 = secondary school; 3 = higher secondary school; 4 = vocational and university education)		
Business training	Total number of hours of business-related training/year		
Financial capital	Current inventory + (value of facilities/year) (Value of facilities = shop + sewing machine + embroidery machine + furniture + computer + other fixed assets)		
Business experience	The number of years since women entrepreneurs started their business		
Network size	The total number of ties		
Number of bonding ties	The total number of bonding ties		
Number of bridging ties	The total number of bridging ties		
Number of linking ties	The total number of linking ties		

[a]Cronbach α of the items combined providing the summative scale, reflecting the multiple correlations of the elements

Independent Variables

Independent variables are classified into two, namely explanatory variables and control variables. Explanatory variables are identified based on our propositions while control variables are additional predictors.

Explanatory Variables

Network size is our primary explanatory variable. The network data of Bangladeshi women entrepreneurs have been gathered using the name generator method that allows for acquiring data on structural characteristics of the network (e.g. size and composition of ties) (Renzulli et al. 2000; Scholten et al. 2015; Batjargal 2007; Arregle et al. 2015). Women entrepreneurs were asked to name a maximum of seven people[7] with whom they exchange information when discussing matters of finance, market, raw materials and technology (Scholten et al. 2015). These mentioned relationships are labelled as ties. We have built three more explanatory variables, namely number of bonding, bridging and linking ties. To differentiate between the type of ties, the women were also asked to mention how they knew the persons they named (e.g. family member or from another business or from organizations) (see Table 1).

Control Variables

Financial capital is used as a control variable because this represents one of the main resources that businesses need (Cooper et al. 1994; Dollinger 2005). As entrepreneurs may face challenges at different phases of their business (Lee et al. 2001; Stam and Elfring 2008; Arregle et al. 2015), we control for business experience. We also control for education level and business training, since several authors have found that education level (Coleman 2007; Inmyxai and Takahashi 2010) and business training (Kantor 2005; Inmyxai and Takahashi 2010) may contribute positively to performance. Furthermore, entrepreneurial orientation is a contributor to performance (Rauch et al. 2009; Fuentes-Fuentes et al. 2015). Entrepreneurial orientation (EO) is the strategic capabilities and attitudes of entrepreneurs leading to entrepreneurial actions and decisions (Lumpkin and Dess 1996). EO consists of three dimensions: innovativeness, risk-taking and pro-activeness (Miller 1983). We therefore control for EO dimensions and adapt the EO scale of Verhees et al. (2012). The adapted EO scale includes 22 items of innovativeness, risk-taking and pro-activeness that are measured on a seven-point scale (1 = completely disagree, 7 = completely agree). In addition, social and business environments may influence the women's performance (Poggesi et al. 2015; De Vita et al. 2014; Welter and Smallbone 2011). Based on this, we introduce two variables which proxy barriers in the social environment and barriers in the business environment. The items used

[7] Respondents generally mention fewer than seven people when they are asked to name important people for their business (Scholten et al. 2015).

to measure barriers in the social and business environments are adapted from Rodríguez-Gutiérrez et al. (2015), and are measured using a seven-point scale (1 = completely disagree, 7 = completely agree) (see Table 1).

Data Analysis

Data analysis consists of two steps. The preparatory first step includes (1) a marker variable analysis to test the common method variance (CMV),[8] (2) an exploratory factor analysis to check the multidimensionality of the EO concept, (3) the reliability analysis directed by the Cronbach alpha (α) to verify the internal consistency of items of latent variables, and (4) the descriptive analysis of variables. The second step consists of multiple regression analysis.

Marker Variable Analysis

We partial out the CMV from the uncorrected correlations (denoted r_u) to arrive at the CMV corrected correlations (denoted r_a). Testing for the significance of the CMV corrected correlations (r_a) provides an estimate of the magnitude and significance of CMV in the data. Correlations that remain significant after having controlled for CMV are unlikely to be severely affected by method variance (Lindell and Whitney 2001). Marker variable analysis[9] verifies that CMV is not a problem in our data.

Exploratory Factor Analysis

This analysis recognises the EO dimensions of women entrepreneurs in the context analysed, as followed by Kraus et al. (2012). We run the principal component analysis with Varimax rotation and Kaiser's criterion of eigenvalues > 1. The analysis includes 22 items of innovativeness, risk-taking and pro-activeness. We have deleted three items of pro-activeness[10] and one item of risk-taking[11] as they cross-loaded in two components with a single loading higher than 0.40 and the difference between loadings lower than 0.10 (Costello 2009). Deleting four items, we redid the analysis. We again deleted one item of pro-activeness[12] for the same reason. When deleting one item, we redid the analysis with 17 items and ended up with a two-components solution for EO. The first component is labelled as Innovative and pro-active EO, because items of innovativeness and pro-activeness lead this component. We label

[8] Systematic error variance commonly arises due to use of the same method (Lindell and Whitney 2001), (in our case, the survey).

[9] The details are available if required.

[10] Items: *I plan ahead what I want to do*, *I always produce desirable products for clients*, and *I can easily predict the action of competitors and set my strategies accordingly*.

[11] Item: *I am good at managing financial risks*.

[12] Item: *I look for new connections to get access to raw materials, finance and new markets.*

Table 2 Exploratory factor analysis for items of entrepreneurial orientation (EO) dimensions

Items	EO dimensions	
	Innovative and pro-active EO (λ)	Risk-taking EO (λ)
I produce a variety of unique products	.81	
I use new techniques in production and marketing	.77	
I always look for new markets	.74	
I start production and marketing of new products faster than competitors	.73	
I always try out new products	.73	
I introduce new and uncommon products into the market	.73	
I always look for new ideas and techniques	.71	
I am able to predict future demands and the necessary changes of products	.68	
I usually initiate activities before other handicraft firms do	.65	
I always start new activities if I see an opportunity	.63	
I take financial risks for higher profit		.79
I invest extra time in products and services that yield a higher profit		.78
I always take risks if I see an opportunity		.75
I take financial risks by producing new products and to go to new markets		.74
I invest extra money in products and services that yield a higher profit		.69
I am always eager to find potential strategies for higher profit		.64
I use my own techniques to create new products		.61

Data-fit statistics: Bartlett's test: Chi square ($df = 136$) = 3825.58, significance level (p) < .0; Kaiser-Maeyer-Olkin test: .95; variance explained: 65.28%; factor loading (λ) < .52 is suppressed

the second component as Risk-taking EO because risk-taking items dominate it. Both dimensions are constructed on items loading higher than 0.60 (Table 2).

Multiple Regression Analysis

We ran a multiple regression analysis to test our propositions based on the final sample of 292 respondents, because of 4 missing values of financial capital and 4 outliers. To check the robustness of the model offered by this analysis, we also tested for heteroskedasticity (Breusch–Pagan test), normality (Kolmogorov–Smirnov test) and multicollinearity (condition index, and Variance Inflation Factor, VIF).

Results

The business performance score of Bangladeshi women entrepreneurs is on average reasonably high (Table 3): about 29 out of 35. The results show that women entrepreneurs in the Bangladeshi context build more ties with family and friends (bonding ties, 2.55) than with other entrepreneurial women (bridging ties, 1.71) and

Table 3 Descriptive statistics and correlations ($n = 292$)

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Business performance	29.12	3.15	1.00												
2. Financial capital ($)	5357.55	15,773.46	.28***	1.00											
3. Business experience	9.10	6.07	.11*	.13**	1.00										
4. Education level	2.19	1.08	.23***	.21***	−.05	1.00									
5. Business training	33.76	62.87	.06	−.01	−.22***	.25***	1.00								
6. Innovative and pro-active EO	5.88	1.02	.41***	.16***	−.03	.31***	.07	1.00							
7. Risk-taking EO	5.96	.99	.29***	.18***	.06	.09	−.02	−.03	1.00						
8. Barriers in the social environment	4.82	1.73	−.04	−.05	−.02	−.13**	.08	.01	.10*	1.00					
9. Barriers in the business environment	20.16	4.91	.10	.05	−06	−13**	−.04	−.01	.14**	.36***	1.00				
10. Network size	4.80	1.72	−.01	.07	.13**	.32***	.16***	.01	.12**	−.18***	−.19***	1.00			
11. Number of bonding ties	2.55	1.73	−.10*	.08	−.12**	.22***	.06	−.03	−.01	−.24***	−.28***	.47***	1.00		
12. Number of bridging ties	1.71	1.71	.06	−.09	.15**	.07	.05	−.03	.10*	.06	.12**	.46***	−.47***	1.00	
13. Number of linking ties	.54	.78	.09	.17***	.23***	.08	.12**	.16***	.06	.00	−.06	.16***	−.17***	−.13**	1.00

*, ** and ***Significant at the 10, 5 and 1% levels, respectively

Table 4 Multiple regression models on network size and types of network ties

Variables	Model 1 (network size)		Model 2 (types of network ties)	
	β	t value	β	t value
Financial capital	.13***	2.57	.15***	2.84
Business experience	.13**	2.42	.12**	2.19
Education level	.08	1.43	.08	1.46
Business training	.07	1.37	.08	1.41
Innovative and pro-active EO	.37***	7.07	.37***	7.05
Risk-taking EO	.28***	5.37	.27***	5.34
Barriers in the social environment	−.11**	−2.02	−.12**	−2.13
Barriers in the business environment	.09*	1.74	.08	1.35
Network size (total no. of ties)	−.11**	−1.97		
Number of bonding ties			−.16**	−2.44
Number of bridging ties			−.06	−.94
Number of linking ties			−.09	−1.58
Adjusted R^2	.30		.30	
F test	14.72***		12.38***	
VIF	1.36		1.70	
Condition index	18.06		19.72	
X^2 for Breusch–Pagan test	1.93		1.91	
ZRE for Kolmogorov–Smirnov test	.03		.03	
Number of respondents (n)	292		292	

Standardized coefficient

*, ** and ***Significant at the 10, 5 and 1% levels, respectively

financial organizations (linking ties, .54). Moreover, they invest a small amount of financial capital in their business, on average about US$5357 and they have on average 9 years of business experience, and receive on average about 34 h of business training per year. The level of education is on average low (secondary education). However, Bangladeshi women entrepreneurs are innovative, pro-active and often taking risks in entrepreneurial activities, as the average scores of Innovative and pro-active EO (5.88 out of 7) and Risk-taking EO (5.96 out of 7) show. Barriers in the business environment (20.16 out of 28) and barriers in the social environment (4.82 out of 7) still represent impediments to the development of their businesses.

Table 4 presents the results of two multiple regression models.[13] Model 1 finds that network size (independently of the type of ties) has a negative significant

[13] Robustness of models: the VIF is below the threshold VIF (10) and the condition index is within limits (30), indicating no serious multicollinearity. The standardized residuals indicated by ZRE indicates that residuals are normally distributed. Moreover, the X^2 value indicates constant variance of residuals because we cannot reject the proposition of constant variance at the 5% level of significance (Greene 2003). We can therefore consider our models to be robust.

Table 5 Size of network and bonding ties network

New explanatory variables	Operationalization
Small network	1 if total number of ties is 1 or 2, 0 otherwise
Medium sized network	1 if total number of ties is 3–6, 0 otherwise
Large network	1 if total number of ties is 7 and more, 0 otherwise
Small bonding ties network	1 if number of bonding ties is 1 or 2, 0 otherwise
Medium sized bonding ties network	1 if number of bonding ties is 3–6, 0 otherwise
Large bonding ties network	1 if number of bonding ties is 7 or more, 0 otherwise

relationship with business performance ($\beta = -.11$), which rejects our proposition 1. Financial capital, business experience, Innovative and pro-active EO, and Risk-taking EO positively influence the business performance, as do barriers in the business environment. However, barriers in the social environment negatively influence business performance. Education level and business training are not significant.

Model 2 analyses the influence of the number of different types of ties on business performance. The results show that the number of bonding ties has a negative significant relationship with business performance ($\beta = -.16$), which supports our proposition 2, while the number of bridging and linking ties is statistically not significant. The control variables, except barriers in the business environment, have similar and consistent results with Model 1.

In-Depth Analyses

The negative influence of network size (Model 1) and especially of the number of bonding ties (Model 2) reveals the dark side of social networks for business performance. When combined with Uzzi's (1996) statement on over-embeddedness, however, our results may still enlighten a bright side of networks in such a constrained situation. A zoom-in on size can indeed still inform on the conditions needed for the influence on performance to become positive, and we therefore explore the tipping point for the size of a network independently of its ties' composition and for a network with bonding ties. With this aim, we ran other multivariate models[14] introducing new explanatory (dummy) variables (Table 5) representing respectively small, medium and large networks (Models 3 and 4), and small, medium and large bonding ties networks (Models 5 and 6).

Model 3 indicates that a small network has a positive significant relationship with business performance ($\beta = .12$): relying on one or two ties (irrespective of the type of ties) seems beneficial for women entrepreneurs' performance.

Model 4 shows that both medium-sized ($\beta = -.19$) and large networks ($\beta = -.21$) have a negative relationship with business performance. A network consisting

[14] Same control variables of the previous models.

Table 6 Multiple regression models on the size of network

Variables	Model 3 (small network)		Model 4 (medium-sized/large networks)	
	β	t value	β	t value
Financial capital	.13**	2.47	.13**	2.51
Business experience	.13**	2.47	.13**	2.51
Education level	.06	1.05	.07	1.17
Business training	.07	1.29	.07	1.33
Innovative and pro-active EO	.38***	7.31	.38***	7.19
Risk-taking EO	.28***	5.42	.28***	5.44
Barriers in the social environment	−.10*	−1.86	−.10*	−1.91
Barriers in the business environment	.10*	1.88	.09*	1.71
Small network[a]	.12**	2.34		
Medium-sized network[a]			−.19**	−2.20
Large network[a]			−.21**	−2.40
Adjusted R^2	.30		.30	
F test	14.98***		13.51***	
VIF	1.27		3.30	
Condition index	15.37		18.26	
X^2 for Breusch–Pagan test	1.23		1.42	
ZRE for Kolmogorov–Smirnov test	.02		.02	
Number of respondents (n)	292		292	

Standardized coefficient

*, ** and ***Significant at the 10, 5 and 1% levels, respectively

[a]Dummy variable

of more than two ties (regardless of the type of ties) may be harmful for women's performance. Moreover, as the coefficients indicate, a large network may be more harmful to performance than a medium-sized network. All control variables in Models 3 and 4 are still consistent with the results of Model 1 (Table 6).

The same analyses are run to check whether a small (Model 5) or a medium-large (Model 6) *bonding* ties network have any effect on business performance. Results of Model 5 show that a small bonding ties network (i.e. one or two ties) has a positive significant relationship with business performance ($\beta = .13$), whilst the number of bridging and linking ties being not significant (Table 7).

Model 6 shows moreover that a medium-sized bonding ties network has a negative relationship with performance ($\beta = -.13$), while bridging and linking ties are confirmed as not significant for performance; the network of women entrepreneurs having more than two bonding ties seems to be a burden for their performance. However, the results on large bonding ties networks are statistically not significant which may be due to the low case count (8). The control variables for Models 5 and 6 are in line with Model 1, with the exception of the barriers in the business environment (not significant).

Table 7 Multiple regression models on the size of bonding ties network

Variables	Model 5 (small bonding ties network)		Model 6 (medium sized-/large bonding ties network)	
	β	t value	β	t value
Financial capital	.16***	2.92	.15***	2.87
Business experience	.12**	2.21	.12**	2.25
Education level	.08	1.35	.08	1.41
Business training	.07	1.37	.07	1.37
Innovative and pro-active EO[a]	.38***	7.12	.37***	7.11
Risk-taking EO[a]	.28***	5.36	.28***	5.34
Barriers in social environment	− .10*	− 1.86	− .11**	− 1.97
Barriers in business environment	.08	1.40	.08	1.35
Number of bridging ties	− .03	− .48	− .03	− .58
Number of linking ties	− .07	− 1.31	− .08	− 1.39
Small bonding ties network[b]	.13**	2.36		
Medium sized bonding ties network[b]			− .13**	− 2.32
Large bonding ties network[b]			− .08	− 1.44
Adjusted R^2	.30		.30	
F test	12.33***		11.32***	
VIF	1.34		1.35	
Condition index	17.50		18.12	
X^2 for Breusch–Pagan test	.51		.43	
ZRE for Kolmogorov–Smirnov test	.02		.02	
Number of respondents (N)	292		292	

Standardized coefficient

*, ** and ***Significant at the 10, 5 and 1% levels, respectively

[a]Entrepreneurial orientation

[b]Dummy variable

Discussion

The results of testing Uzzi's (1996) over-embeddedness proposition in the context of women entrepreneurs in Bangladesh suggest the corroboration of this proposition: beyond a definite number of ties, the network can be considered over-embedded. The negative influence of network size maybe due to the dominance of strong ties, and the positive influence of small networks on business performance represents the two sides of the embeddedness coin. The literature provides several reasons why the excessive presence (in number) of strong ties in a personal network may harm business performance (Uzzi 1996; Arregle et al. 2015). First, numerous strong ties may provide overlapping, conflicting and unnecessary information that may limit the ability of entrepreneurs to achieve potential business opportunities (Arregle et al. 2015; Uzzi 1997). Second, obligations and expectations built into the strong ties

may also constrain entrepreneurs' ability to build new external ties and to access innovative knowledge and information (Uzzi 1997). Third, the potential cost (time and money) of building and maintaining a large set of strong ties may outweigh the potential benefit (new knowledge and information) (Kreiser et al. 2013). A small network may be helpful in providing not only motivation but also instant financial support and experience-oriented and calculative advice (Maas et al. 2014). Embeddedness in a medium- or large-sized network may not enhance women's performance: as the number of ties increases, conflict of information also increases due to varying interest (Mayoux 2001). Some of the ties may offer redundant information and some others (mostly in-laws) may want to get benefit from the business (Kuada 2009). Moreover, women embedded in such networks may need to invest more time in maintaining their network, which may hamper their performance (Bliemel and Maine 2008).

By analysing the type and number of ties in the network, this research enables insight into which type of ties plays a role in business performance, suggesting that bonding ties may generate over-embeddedness, as bridging and linking ties are not significant. Having a large number of bonding ties in Bangladesh discourages the business development of women (Maas et al. 2014), being mainly an outcome of a traditional patriarchal mindset which portrays women as less productive in business and less mobile (Drinkwater 2009; Rabbani and Chowdhury 2013). Being mostly inward-focused, the ties with family and friends may offer similar flows of advice and information, and disregard the external diversified ideas, resources and knowledge (Bates 1994; Hite and Hesterly 2001; Renzulli et al. 2000) necessary for their performance (Jack 2005).

When women have a restricted number of ties with trusted family members or well-wishers (two in our context), less intrusion of emotional hindrance and more effective support to their business is expected (Arregle et al. 2015). Any additional member joining the network could bring emotional hindrances (Gargiulo and Benassi 1999) and conflicting information not helpful for business decisions (Arregle et al. 2015), together with some free-riders who may want to gain something from the business (Kuada 2009). One could assume that, in the case of a smaller number of bonding ties, women entrepreneurs have room to include other types of ties in their network. Theoretically, this inclusion could have a positive influence on business performance. However, our results show that the influence of bridging and linking ties is not significant in the Bangladeshi context. Hence, we assume that, in spite of the small number, bonding ties are able to control the freedom of women entrepreneurs to engage in bridging and linking ties.

Conclusions

We use a structural embeddedness perspective to analyse the impact that the personal network developed by women entrepreneurs in a constrained context has on their business performance. The results from multiple regression analyses show that: (1) the network negatively affects the performance, maybe due to over-embedded networks with a large number of ties with family and friends; (2) the number of

bonding ties have a negative influence on performance, while the number of bridging and linking ties are not significant; and (3) a small number of bonding ties positively affects performance.

The contribution of this study to the network (over-)embeddedness perspective is two-fold. First, it provides the insight that Uzzi's (1996) network over-embeddedness proposition is corroborated in the case of women entrepreneurs operating in socially constrained environments. Second, it shows that bonding ties dominate women's networks. There are two sides to this issue: the dark side (the number of bonding ties has a negative effect on business performance) and the bright side (up to a particular number of bonding ties has a positive effect on business performance). The tipping point between the dark and bright sides of bonding ties is specifically determined: bonding ties are helpful for women's business performance up to a certain point, beyond which they become over-embedded. To the best of our knowledge, this is the first attempt to define the optimal size of networks for a specific group of women entrepreneurs in a developing country.

The study provides suggestions for policy makers and practitioners. The evidence shows that women in the Bangladeshi handicrafts sector have limited bridging and linking ties and, even in the case of a small bonding network, the influence of bridging and linking ties on business performance is still not significant. The assumption is that family and friends hinder women from engaging in other ties in their day-to-day business practice, because, when being less subjected to social control, women may be more inclined to meet other women, for example, through training sessions for groups of women aimed at developing their business in a collaborative way. The success of women entrepreneurs in their business projects loosens the social control exercised by family and relatives (Maas et al. 2014). This training could be organized by socially reputed and trusted organizations such as NGOs and Governmental agencies.

Limitations and Further Research

Our study presents some methodological shortcomings, which suggest the need for further research. First, we explore only the handicraft industry in two selected districts in Bangladesh based on the evidence that women develop their enterprises more in this sector than in others. Future research should analyse the same dynamics in other industries (e.g. the agricultural sector). Second, a subjective measure is used when operationalizing the business performance due to difficulties in obtaining actual financial data in the context analysed. Hence, further research with objective measures, including actual financial performance data, is required to validate our results. Third, our data were collected using the same questionnaire administered to women entrepreneurs of the two districts and are self-reported. Fourth, this study uses cross-sectional data which may induce the problem of causality. Future research using longitudinal data would further reveal and verify the causal relationship between network embeddedness and business performance. Future research can also trigger our understanding of how women under constrained circumstances can make and keep their bonding network small. Moreover, as we have shown the

potential positive effect of social network on performance, the question could be raised about which compensatory factors positively influence the performance of women entrepreneurs in over-embedded situations.

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