

DOES GENDER MATTER'S ON THE DECISION MAKING FOR THE TYPE OF DEBT FINANCING OF THE MANUFACTURING SMEs IN BANGLADESH?



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ABSTRACT

Fostering the appropriate Small and Medium Enterprises (SME) financing is one of the most crucial ways of facilitating their success as well as the progress of a developing country. For that purpose, it is necessary to understand the financing behavior of the decision makers in the SMEs. Despite the indication of the importance of owner-manager gender in making debt financing decision, the literature is scant and inconclusive. Hence, this paper intends to investigate whether the gender of manager or owner is associated with more debt financing for fixed asset financing or for working capital financing. This paper analyses the World Bank Enterprise Survey data of 756 small and medium manufacturing firms of Bangladesh. In addition to using descriptive statistics, this study employs both parametric and nonparametric tests of hypotheses, including the Mann-Whitney U test. The findings suggest that female ownership, but not the management, is associated with more debt financing for working capital needs. However, no conclusive evidence of the role of gender on debt financing for fixed assets is found. The results support the theoretical evidence related to the interplay between gender and small firm capital and can arguably be explained as a result of females' better access to short term microfinance, and gender-based screening errors of the lenders. Extension of research is suggested to uncover the reasons behind more debt financing by female owners for working capital needs. The findings imply that the policy makers may optimize the financial system so that female owners' debt financing demand is conveniently met. In addition, lending organizations may attempt to target female-owned manufacturing SMEs of Bangladesh as their potential working capital loan customers. This paper is among the first studies in the developing, or at least in Bangladesh context to provide evidence on the association between gender of owner vs manager and the nature of debt financing of manufacturing SMEs.

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INTRODUCTION

The ownership versus managerial role of female decision makers can have an impact on the nature of debt financing of manufacturing Small and Medium Enterprises (SMEs). Studies have found that female-owned SMEs are more likely to seek debt financing from formal financial institutions, such as banks, compared to male-owned SMEs (Ayyagari et al., 2008). This may be due to the fact that female-owned SMEs tend to claim their better creditworthiness and are expected to be perceived as being less risky by financial institutions (Ayyagari et al., 2008).

Studies have found that, in general, female are more indebted in the informal sector than that by male counterpart (Reboul et al., 2021). Interestingly, they exhibit similar behavior while in the role of managerial decision making. In possessing such role, female decision makers in managerial positions within SMEs are more likely to seek debt financing from informal sources, such as family and friends, compared to male decision makers (Lin et al., 2022). This may be due to the fact that female managers may face more barriers in accessing formal financial institutions, such as discrimination (Etim

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& Iwu, 2019) and lack of business networking (Manello et al., 2020). Another study has also shown that the nature of debt financing can vary depending on the specific industry in which the SME operates and found that female-owned SMEs in the manufacturing industry were more likely to seek debt financing from formal financial institutions compared to female-owned SMEs in the service industry (Romano et al., 2001).

In such circumstances, the ownership versus managerial role of female decision makers can have an impact on the nature of debt financing of manufacturing SMEs. Female-owned SMEs tend to seek debt financing from formal financial institutions, while female decision makers in managerial positions tend to seek debt financing from informal sources. The specific industry in which the SME operates can also play a role in determining the nature of debt financing. Therefore, it's important for policymakers and financial institutions to be aware of these differences and to take appropriate measures to support the financing needs of female-led SMEs.

LITERATURE REVIEW

Small and Medium Enterprises (SMEs) are smaller in terms of their size, but as a whole, they constitute a critical sector for an economy. The contributions of the SME sector to the economy comes in the area of, but not limited to, innovation (Lin et al., 2022), growth (Robbins et al., 2000), employment (Al-Haddad et al., 2019), equitable and sustainable development (Jeppesen, 2005), income and resource distribution (Bagale et al., 2021), and improvement in the financial and political distribution (Amini, 2004). The role of employment, investment, and income distribution is even more effective in developing countries than industrialized countries, which indicates the vital role of small business in the process of sustainable development of developing countries (Amini, 2004).

According to the survey on SME sector in Bangladesh (Daniels & Group, 2003), SME contributed nearly 25 per cent of the GDP of Bangladesh. Together, the various categories of SMEs are reported to contribute between 80-85% of industrial employment and 23% of total civilian employment. Among different types of SMEs, the contribution of the manufacturing SMEs to the GDP was the highest.

The success of small and medium enterprises (SME) sector depends upon optimal accumulation and utilization of capital. The environment of SMEs is different from that of the large corporations. SMEs operate in a challenging business environment and financial obstacles are the most serious against SME growth (Ayyagari et al., 2008). Many steps are taken by the government and its agents to increase access to the debt finance for the SME sector. Bangladesh Bank, the central bank of Bangladesh adopts a preferential lending policy for the SME sector. Such policy includes permitting the scheduled banks to open SME service centers, and introducing a refinancing scheme. Both banks and non-bank financial institutions are increasing their credit to the SME sector. For example, according to the Financial Sector Review of 2009, specialized banks extended 48.1%, and private commercial banks extended the 18.1% of their loans to the SME sector until the end of September 2008. The increasing trend of working capital and fixed asset financing in Bangladesh indicates the increasing effort for SMEs access to finance, particularly debt finance.

The SME sector is likely to face more problems in getting the access to formal equity capital market. Debt financing is helpful, but SMEs may not always prefer it primarily due to the higher financial risks associated with it. The owner and managers of the SMEs are likely to consider the advantages and disadvantages before going for a risky debt financing. The debt financing behavior of the SME owners and managers, if known, would help the banks and financial institutions to confidently build appropriate loan product for them.

Debt financing is directly linked with the issue of capital structure, which has been of great interest in the finance literature since the seminal papers (Modigliani & Miller, 1958, 1963) were published. Several theories employ alternative approaches to the explanation of capital structure based on asymmetric information and the relationship between managers and the investors or creditors, for example, signaling theory (Ross, 1977), the pecking order theory (Myers, 1984; Myers & Majluf, 1984), and agency theory (Jensen & Meckling, 1976). Several other studies (Bennett & Donnelly, 1993; Bevan & Danbolt, 2000; Marsh, 1982; Titman & Wessels, 1988) also contributed to the understanding of capital structure. However, even after many empirical researches on the issue of capital structure, the factors to determine the optimal capital structure have a surprising lack of consensus (Delcours, 2007). Moreover, the ongoing development of capital structure theory mainly focuses on the large business sector (Abor & Biekpe, 2009).

Empirical evidences (Ramalho & da Silva, 2009) strongly support that the determinants of financial leverage of SMEs are different from that of large businesses. Hence, a significant scholarly effort is necessary for explaining the financing behavior of the SME sector. Looking at the SME finance literature, research on the SME capital structure could partially explain the SME financing behavior, keeping this topic still in its infancy (Bhaird & Lucey, 2010). The presence of contrary results and inconsistencies in the relationship between SME capital structure and its determinants prescribed by theories of finance has also been pronounced in prominent research (Nguyen & Ramachandran, 2006). They also mentioned that firm characteristics are at the center of these empirical studies, ignoring the effect of owner-manager's behavior.

Fan et al. (2012) find the cross-sectional determinants of leverage to differ across countries. In addition to that, (Beck et al., 2008) give specific evidence that SMEs in countries with poor institutions show different external financing behavior. These results imply the necessity of more country specific studies. Beck and Rahman (2006) compare the financial system of Bangladesh with other countries and find that the financial system of Bangladesh is different from most of other countries including developed countries, East Asian countries, and low-income Sub-Saharan African countries.

Until the year 2005, studies focusing on the small business capital structure include (Cassar & Holmes, 2003; Chittenden et al., 1996; Cressy & Olofsson, 1997; Fu et al., 2002; Hall et al., 2004; Jordan et al., 1998; Michaelas et al., 1999; Paulo Esperança et al., 2003; Sogorb-Mira, 2005). Abor and Biekpe (2009) characterizes these studies as concentrating mainly on developed economies with varied and inconclusive results. After 2005, to the best of our knowledge, following are the studies directly approaching to the topic of small business capital structure: (Abor, 2007; Abor

& Biekpe, 2009; Heyman et al., 2008; Ramalho & da Silva, 2009; López-Gracia & Sánchez-Andújar, 2007; Bhaird & Lucey, 2010; Nguyen & Ramachandran, 2006; Ou & Haynes, 2006; Wu et al., 2008). These studies are conducted mostly in developed countries and some in East Asia and Sub Saharan African countries. Specific study of the determinants of SME capital structure for the South East Asia region including Bangladesh is very rare, if any.

For larger businesses, (Cronqvist et al., 2009) suggest that analyses of CEOs' personalities and personal traits can convey important information about the financial policies of the firms they manage. Parsons and Titman (2008) mention managerial preference may impact financing choices. In small businesses, owner-manager related factors are more likely to influence the financial decisions since the ownership is not separated from the management. The examination of these owner-manager related factors influencing financing decision is yet to uncover for the small business sector in the developing context like Bangladesh. Among various owner-manager characteristics, scholars have emphasized on the question whether female is reluctant to seek external debt finance (Kon & Storey, 2003). However, the empirical studies (Carter & Rosa, 1998; Shaw et al., 2009) that have been conducted in some developed context found mixed results. Very rare, if any, scholarly studies are available from the context of Bangladesh and similar countries which focus on the role of owner-managers' gender on debt financing. Consequently, this study attempts to investigate whether the gender of the owner-manager influences the degree of debt financing of the SMEs. Additionally, the study also tries to reveal if the females' preference for debt finance changes with their role, as an owner versus as a manager.

The findings of the study contribute to the theory of SME finance by incorporating the gender specific debt financing behavior of the SMEs. It would help the policy makers to incorporate this behavior in making more effective policy for this sector. In addition, the bank and other organizations involved in the financing of the SME sector would be able utilize the knowledge for designing a better strategy for this market, which may facilitate financing for the SME sector.

MATERIALS AND METHODS

The firm level cross sectional data related to the owner-managers of Bangladeshi SME firms and their debt financing have been collected from The Bangladesh 2013 Enterprise Surveys Data Set prepared by the World Bank (Global Indicators Department, Enterprise Analysis Unit (World Bank, 2013). The survey data along with the sampling frame, implementation notes and questionnaire are available at www.enterprisesurveys.org. The survey was conducted by the World Bank using a stratified random sampling employing three levels of stratification based on industry, establishment size, and region. The survey data contained a total of 1923 Bangladeshi firms. This study focuses on small and medium manufacturing enterprises. Therefore, after excluding the non-manufacturing and larger firms (with 100 or more employees), a total of 756 firm level data has been used for the analysis of the study.

At first, the sample distribution, owner-manager profile, and the status of debt financing by the sample firms are analyzed using descriptive statistics. The debt financing both for fixed assets and for working capital purposes are investigated by the parametric hypothesis test using independent samples t-test. The test identifies whether the debt financing is significantly different when female play their role as a member of top management or as an owner. The normality of the distribution of debt financing is tested using the histogram as well as Kolmogorov-Smirnov Tests of Normality. When the distribution is not normal, nonparametric test, namely, the Mann Whitney U test is conducted to confirm the results.

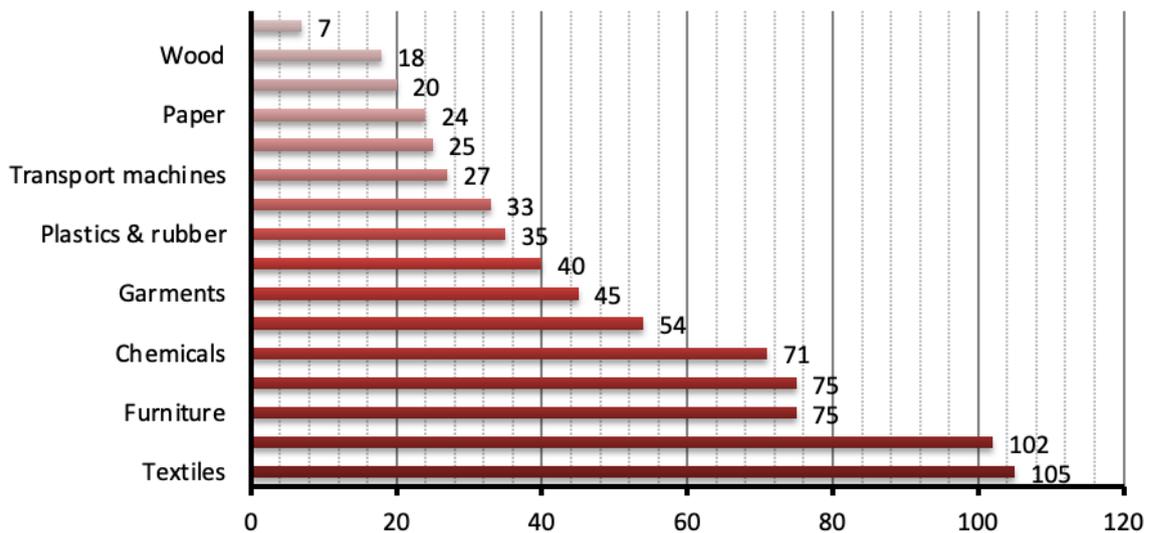


Figure 1. Distribution of the sample SMEs by sector

The sample firms are distributed across 16 sectors as shown in Figure 1. The highest number, 105 firms belong to the textile sector followed by 102 firms that belong to the food sector. Chemical, leather, and furniture sectors also contain a fairly high number of firms, 71, 75, and 75, respectively. Lowest number, only 7 firms belong to electronics sector. Overall, the business sectors covered by the sample are diverse and represent maximum possible sectors of manufacturing SMEs in the country.

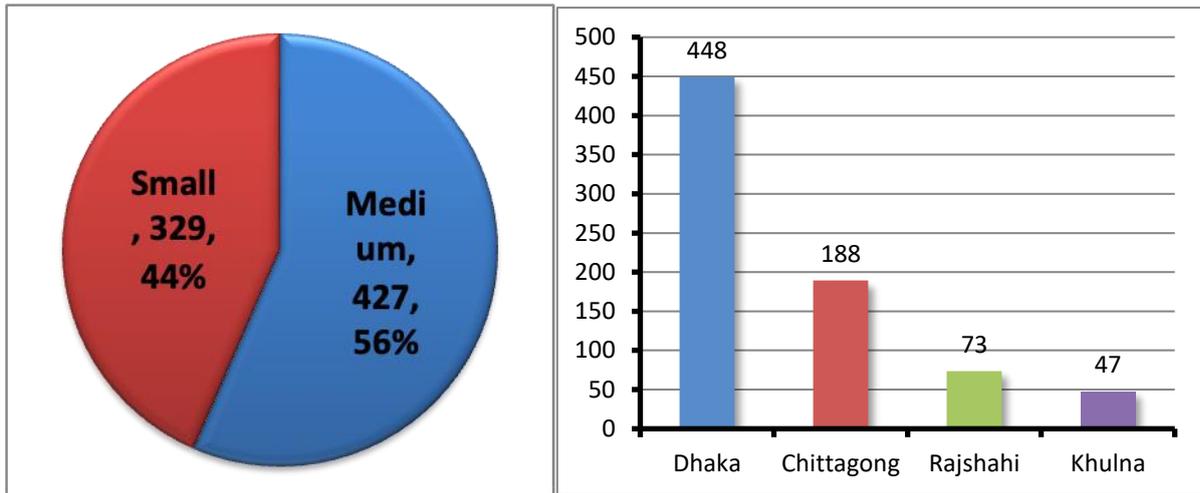


Figure 2. Distribution of the sample SMEs by size and location

As shown in Figure 2, the SME sample includes 329 small firms (with 5-19 employees) and 427 medium firms (with 20-99 employees). Therefore, the sample represents both small and medium size firms. The economic activities of Bangladesh are capital city-centered and most of the business firms are located in Dhaka region followed by Chittagong and the other regions. The sample also shows a similar distribution based on the firm’s location. Overall, the small and medium manufacturing firms in Bangladesh are well represented by the sample of the study.

RESULTS

Owner-Manager Profile

Normally, ownership of SMEs is highly concentrated compared to that of large corporations. In line with that, average ownership of the largest owner of the sample SMEs is 85.8% of the firm. However, average female ownership is not very high, only 3.7%. The distributions of ownership concentration and female ownership are shown in Table 1.

Table 1. Descriptive statistics of ownership characteristics of the sample SMEs

	N	Minim.	Maxim.	Mean	Std. Dev.
Ownership of the largest owner	753	0.0700	1.0000	0.8577	0.2596
Ownership of female owner(s)	756	0.0000	1.0000	0.0370	0.1502

Debt Financing

Figure 3 shows an overall picture of debt financing by Bangladeshi SMEs. At the time of the survey, 59.6% of the firms did not have any existing outstanding debt and 40.4% of the firms had outstanding debt. This observation suggests that many SMEs can be found at any point of time to use debt financing for their business. As the literature suggests, some SMEs use personal loan instead of a loan in the name of the business. After analyzing the survey responses it has been found that only about 11.3% of the SMEs in the sample were utilizing personal loan for their business purpose. Hence, at the time of the survey not many SMEs used the personal loan for business purpose.

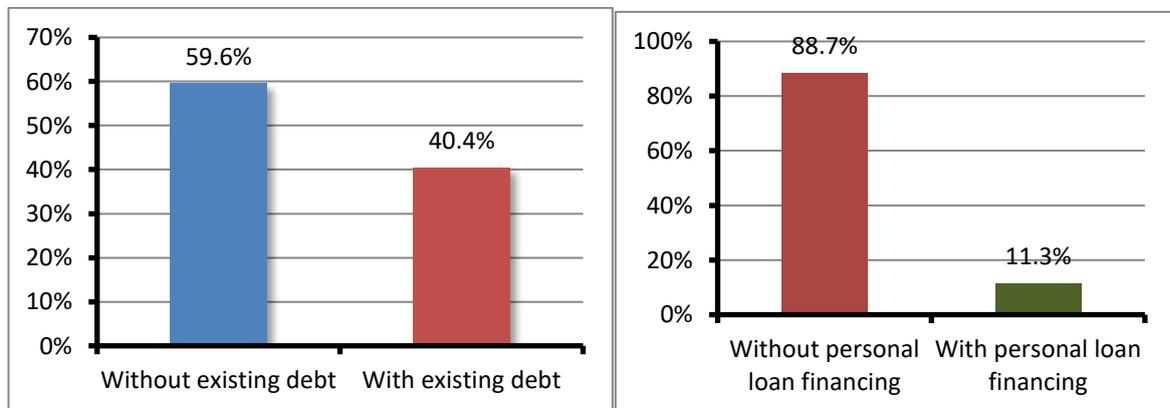


Figure 3. Debt financing status of the sample SMEs

The SMEs borrow mainly for two purposes, financing the working capital and financing the fixed assets. As shown in Table 2, the survey data indicate that, on an average, the SMEs financed 23.97% of their working capital requirements and 18.20% of their fixed assets by debt in a year.

Table 2. Descriptive statistics of debt financing of the sample SMEs

Debt financing	N	Minim.	Maxim.	Mean	Std. Dev.	Skewness	Kurtosis
Working capital	756	0.0000	1.0000	0.2397	0.3067	0.9290	-0.4700
Fixed assets	192	0.0000	1.0000	0.1820	0.3241	1.5700	1.0210

In both cases of working capital financing and fixed asset financing, many firms did not go for any debt financing and some went for full debt financing during the year (Figure 3). The distribution of the percentage debt financing is not normal as evidenced by the skewness – Kurtosis values in Table 2, by the histogram shown in Figure 4, and by the Kolmogorov-Smirnov Tests reported in Table 3.

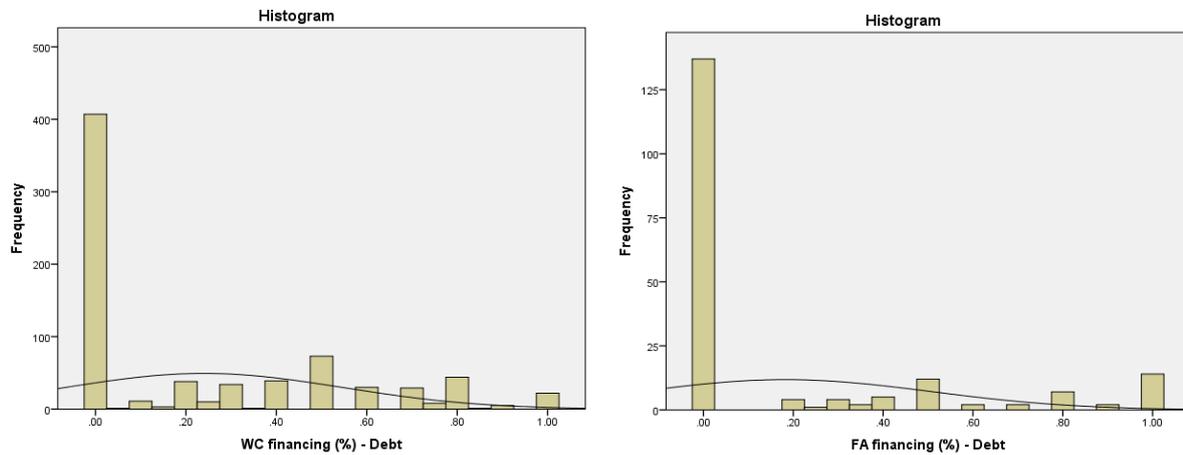


Figure 4. Distribution of debt financing of the sample SMEs

Due to such non-normal distribution of the observations, this study conducts a non-parametric tests in addition to the regular parametric tests for analyzing the debt financing decision by the female owners and managers.

Table 3. Normality test of debt financing of the sample SMEs

Debt financing	Kolmogorov-Smirnov Tests of Normality		
	Statistic	df	Sig.
Working capital	0.3211	756	0.0000
Fixed assets	0.4264	192	0.0000

Female Top Management and Debt Financing

Among the 192 firms who responded about the source of their fixed asset financing, 184 firms did not have any female in the top management. Only 8 of them had female members in the top management. On the other hand, out of 756 firms that provided their working capital financing data, 24 firms had female members in the top management and 732 firms did not have any female member in the top management.

We can observe the difference of debt financing between firms with and without female members in the top management in Table 4. The table shows the results of independent samples t-tests results for both fixed assets and working capital debt financing.

Table 4. Independent samples t-test – debt financing and female top management

Null hypothesis	Female top manager	Debt financing		t	p	Decision
		N	Mean S.D.			
There is no difference of debt financing for fixed assets between male and female top manager	Yes	8	0.0375 0.1061	-3.377	0.005	Reject the null hypothesis
	No	184	0.1883 0.329			
There is no difference of debt financing for working capital between male and female top manager	Yes	24	0.2583 0.2903	0.303	0.762	Failed to reject the null hypothesis
	No	732	0.2391 0.3074			

The results in Table 4 indicate that, on an average, firms with female top manager finance only 3.75% of their fixed assets and 25.83% of their working capital by borrowing. In contrast, on an average, firms without female top manager finance only 18.83% of their fixed assets and 23.91% of their working capital by equity. However, the results of the independent samples t-test is significant only for fixed asset debt financing. Since the distribution of the debt financing is not normal (see table 3), it is necessary to confirm the results with the nonparametric Mann Whitney U test reported in Table 5.

Table 5. Mann–Whitney U test – debt financing and female top management

Null hypothesis	Significance	Decision
The distribution of debt financing for fixed assets is the same across male and female top manager.	0.239	Failed to reject the null hypothesis
The distribution of debt financing for working capital is the same across male and female top manager.	0.505	Failed to reject the null hypothesis

The Mann Whitney U test does not confirm the significant difference between the debt financing by the firms with and without female top managers found in the independent samples t-tests. Therefore, it may be concluded that there is no significant and conclusive evidence that female member in the top management is associated with the preference of debt financing of small and medium manufacturing firms in Bangladesh.

Female Ownership and Debt Financing

The results of the independent sample t-test of the difference of mean debt financing by female owned firms and male owned firms are reported in Table 6. A total of 192 responses were available for fixed asset debt financing, out of which 19 firms had female ownership and 173 firms did not have any female ownership. Then again, out of 756 firms that responded about working capital financing, 71 firms had female owners and 685 did not have.

Table 6. Independent samples t-test – debt financing and female Ownership

Null hypothesis	Female ownership	N	Debt financing		t	p	Decision
			Mean	S.D.			
There is no difference of debt financing for fixed assets between business with no female ownership and business with female ownership	Yes	19	0.1711	0.3203	-0.16	0.88	Failed to reject the null hypothesis
	No	173	0.1832	0.3254			
There is no difference of debt financing for working capital between business with no female ownership and business with female ownership	Yes	71	0.2965	0.3171	1.64	0.10	Reject the null hypothesis
	No	685	0.2338	0.3052			

On an average, fixed asset debt financing is less, 17.11% of the female owned firms' financing, than 18.32%, for only male-owned firms. However, the difference is not significant based on the independent samples t-test, as reported in Table 6. However, as the same table shows, the working capital debt financing of the female owned firms (29.65%) is significantly higher than that (23.38%) of only male owned firms based on the independent samples t-test. Once again, due to the non-normal distribution of the debt financing (see Table 3), this result must be confirmed by the nonparametric independent samples Mann–Whitney U test. Table 7 reports the results of the nonparametric tests.

Table 7. Mann–Whitney U test – debt financing and female Ownership

Null hypothesis	Significance	Decision
The distribution of debt financing for fixed assets is the same across the business with no female ownership and business with female ownership.	0.84	Failed to reject the null hypothesis
The distribution of debt financing for working capital is the same across the business with no female ownership and business with female ownership.	0.04	Reject the null hypothesis

As shown in Table 7, the Mann–Whitney U test confirms that the difference of mean working capital debt financing between firms with female ownership and only male ownership is significant at the 5% level. Therefore, it can be concluded that female ownership is associated with more debt financing for working capital of the small and medium manufacturing firms in Bangladesh.

DISCUSSIONS

This paper studies the debt financing profile of the small and medium manufacturing firms in Bangladesh and the influence of female managers and owners on the debt financing for fixed assets and working capital. Using both parametric and nonparametric analysis of the firm level cross sectional data, this study finds that the working capital debt financing of small and medium manufacturing firms in Bangladesh is influenced by the gender of the owners. More specifically, female ownership of the SMEs is associated with more debt financing at least for working capital needs. However, no evidence is found to support that the gender of top management members influences any type of debt financing decision.

The findings of this study support the literature indicating the interplay between gender and small firm capital (Shaw et al., 2009). The association of female owners with higher working capital debt financing can be explained by women's relatively better access to debt sources like microfinance in Bangladesh. (Islam et al., 2015) provide consistent evidence that access to microfinance helps Bangladeshi females to borrow more for short term purposes and not for long-term business purposes. (Kon & Storey, 2003) theorizes that higher or lower borrowing discouragements depend on screening error of the banks, application costs and interest rate charges. Hence, further research is necessary to examine if these factors have any link with the gender of SME owners as well as purpose of the debt financing (fixed assets versus working capital). Further studies are also suggested to uncover the other reasons behind the preference of the female owners to go for a debt financing for working capital needs.

CONCLUSIONS

This paper is among the first studies in the developing context to provide evidence on the role of female owners in the debt financing decision. The policy makers and financing institutions should be able to incorporate these findings into their future support and financing decision for the SME sector. More specifically, policy makers may optimize the financial system so that female owners' debt financing demand is conveniently met. On the other hand, lending organizations may attempt to target female-owned manufacturing SMEs of Bangladesh as their potential working capital loan customers.

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