

GENDER AND BUSINESS PERFORMANCE IN TURKEY:
EVIDENCE FROM WORLD BANK ENTERPRISE SURVEY

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Evidence from World Bank Enterprise Survey

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DECLARATION OF ORIGINALITY

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ABSTRACT

Gender and Business Performance in Turkey: Evidence from World Bank Enterprise Survey

In this paper, gender gaps in business performance between women and men shared, owned or led businesses in Turkey are analyzed, using the World Bank Enterprise Survey Data of 2019. We estimate the differences by Ordinary Least Squares regression. The main findings show that women shared and led firms perform better in sales revenue and profits while women owners have significantly worse sales revenue outcomes. In addition, firms led by women tend to grow significantly less than men-led firms. As an indicator of efficiency, value added is used and among our findings we see that while women shared firms are more efficient, there are no gender differences for managers and owners. Part of the reason why women shared firms perform better is that, women sharers concentrate on sectors that are bigger in sales revenue and more efficient. Further, we find women shared firms to be more likely to apply for loans, and no gender differences for managers and owners.

ÖZET

Türkiye’de Cinsiyet ve İşletme Performansı: Dünya Bankası İşletme Anketinden Deliller

Bu çalışmada, Türkiye’de kadın veya erkek ortaklığı bulunan, yönetilen ya da sahip olunan firmaların cinsiyete bağlı iş performansları arasındaki farklar, 2019 Dünya Bankası İşletme Anketi Verileri kullanılarak analiz edilmiştir. Farklılıklar, Ortalama En Küçük Kareler regresyonu ile tahmin edilmiştir. Ana bulgular, kadın ortaklığı bulunan ve kadın tarafından yönetilen işletmelerin satış geliri ve kar açısından daha iyi performans sergilediğini, ancak kadın sahiplerin satış geliri sonuçlarının daha düşük olduğunu göstermektedir. Ayrıca, kadınlar tarafından yönetilen işletmelerin erkekler tarafından yönetilen işletmelere göre önemli ölçüde daha az büyüme gösterdiğini görüyoruz. Verimlilik göstergesi olarak katma değer kullanılmakta ve bulgularımız arasında kadınların paylaştığı işletmelerin daha verimli olduğunu, ancak yöneticiler ve sahipler için cinsiyet farklarının olmadığını görmekteyiz. Kadın ortaklığı bulunan işletmelerin daha iyi performans sergileme nedenlerinden biri, kadın paydaşların satış geliri açısından daha büyük ve daha verimli olan sektörlerde odaklanmalarıdır. Ayrıca, kadın ortaklığı bulunan işletmelerin kredi başvurusunda bulunma olasılığının daha yüksek olduğunu ve yöneticiler ve sahipler için cinsiyet farklarının olmadığını bulmaktayız.

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CHAPTER 1

INTRODUCTION

Research on women's participation in entrepreneurship and managerial positions has gained significant attention in the recent years within the literature. It has been argued that especially women entrepreneurs are under performing and the participation of women in entrepreneurship is too low relative to their men counterparts. In Turkey, share of women business owners were lower than 10% in 2012 (Okten, 2015). This implies that, in the case that women do in fact under perform and do not participate, countries are not leveraging their capital to the fullest, which in turn creates inefficiencies. Hence, understanding the underlying reasons behind the gender gaps in business performance, if any, is of great importance. To support women business owners and managers in order to allow them reach their full potential; and in return allow the economy to use its capacity efficiently, the topic of women business ownership and management should be further studied. Furthermore, entrepreneurship and participation of women in business as employers is essential for the development of countries and economies.

One of the reasons why gender gaps in business performance, and the causes of it, gained attention is because of the different approaches and the different results of the research studying this topic, even though studies on this subject are still limited to this day. While studies such as Du Rietz and Henrekson, 2000 and Kalleberg and Leicht, 1991 find no evidence of a gender gap in business performance, studies of Coleman, 2007 and Islam, Gaddis, Palacios-Lopez, and Amin, 2018 show evidence for women under performance. Most studies relate the gap to the lack of human and financial capital of women business owners. As Bardasi, Sabarwal, and Terrell, 2011 summarizes in their paper, there are two main approaches on the reasoning of this subject; constraint-driven gap and preference-driven gap. While constraint-driven gap suggests there are gender based constraints to enter and operate in businesses as owners, restricting women's performance; preference-driven gap argues the

differences in motivation and behaviour between men and women are the real reason behind the gaps (Bardasi et al., 2011).

Moreover, the gender gap in managers' performance has started to become prevalent in management and business literature. With the increased participation of women in labor force past three decades, the amount of women managerial and executive positions has also increased, piquing the interest of researchers in differences in business performance.

However, as Brush, 1992 states, literature focusing on women business owners is very limited. Most of the earlier research done on entrepreneurship focuses on men-owned businesses. Likewise, studies exploring the performance of women top managers and executives are insufficient. Especially in Turkey, analyses on women owners or managers' performance is rather scarce. In addition, most research focus on only the owners, even though the involvement of the owner in the decision process and the managerial power is not sufficiently known. The aim of this paper is to test the women business owner and managers' under-performance hypothesis in Turkey. To the best of available knowledge, this paper provides the first and most comprehensive analysis of gender gaps in business performance in Turkey, using firm-level data representative of Turkey's private sector. While most research focuses only on either the owner or the manager, this paper analyzes both, while identifying whether the women owner is the sole owner of the firm or not. There are 4 main performance indicators, sales revenue, profit, value added (productivity) and sales and employment growth. Following, possible explanations, which are concentration in specific sector and access to financial resources are examined as well.

Results briefly indicate that, firms with women among the owners have better performance in general, while women managers and women owners perform as good as their men counterparts, rejecting the women under-performance hypothesis. Additionally, firms led by women grow significantly less in sales than firms led by men. Furthermore, contrasting with the literature, sector women tend to concentrate

at are not smaller. Firms that are women shared have higher odds of applying for a loan, while for women managers and owners, there is no evidence of a difference.

This paper is structured as follows: Chapter 2 presents the findings of existing studies, Chapter 3 explains the data structure and the characteristics of firms included in the data, Chapter 4 details the methodology and Chapter 5 discusses the results. Lastly, Chapter 5 concludes.



CHAPTER 2

LITERATURE REVIEW

Existing research on business performance depending on the owner or the manager of an enterprise show various results¹. While findings from several studies show a pattern of woman under-performance Brush (1992) and Coleman (2007), some studies find no evidence of a gender gap Du Rietz and Henrekson (2000) and Kalleberg and Leicht (1991). However, as Brush (1992) shows in her review of empirical papers on the subject, earlier research done with large datasets from the U.S. points out to women performing worse.

Additionally, even though the topic is much more prevalent and studied nowadays, existing research of the topic, especially in Turkey, is rather scarce. Hornaday and Churchill, 1987 have stated in their article that from 227 published research focused on entrepreneurship in 1987, only 13% of them were about woman entrepreneurs. Even though gender inequalities, woman entrepreneurship and policies regarding equal rights of woman entrepreneurs and workers have shown improvements, the topic of whether women business owners and managers show different performance relative to their male counterparts has yet to reach a wider range of research in Turkey. It is also important to mention that some of the research on this topic use data from late 1900s and early 2000s, which can make the results less relatable in 2020s as not only women now are more prevalent in management positions and as entrepreneurs but also might be less likely to be discriminated against relative to late 1900s.

Islam, Gaddis, Palacios-Lopez, and Amin (2018) used an extensive data set based on World Bank ES, collected between 2009 and 2016, to do an analysis of differences in productivity of women and men led businesses. They use a cross-sectional data from more than 120 countries which are mostly emerging and developing, consisting of more than 40,000 firms. The results show that women-led firms are smaller and overly concentrated in some sectors, such as the service sector.

¹See Appendix A for a detailed description of existing studies

In addition, they show that, relative to men-led businesses, women-led businesses are less productive by around 10%, where productivity is defined as sales per worker.

Using World Bank ES from 2005, Bardasi, Sabarwal, and Terrell (2011) compared the performance of women and men owned businesses in three developing regions which are Sub-Saharan Africa, Eastern Europe and Central Asia and Latin America and the data set includes more than 20,000 firms. The findings of the study show that, in terms of sales volume, women owned businesses are smaller with the results for other performance indicators varying. For Latin America, there exists differences in firm growth but not for Sub-Saharan Africa and Europa and Central Asia. In terms of productivity, there is no significant difference in Sub Saharan Africa.

One of the earlier research done on the subject, Kalleberg and Leicht (1991) show no evidence of woman under-performance in small businesses, using data from the U.S. between 1985 - 1987. Their findings show that earning growth of woman headed businesses are similar and they are as much likely as to survive as those of owned by men.

Fairlie and Robb (2009) show contrasting results to the ones mentioned above. The data used in this study, the 1992 CBO, is a micro level data and was conducted by the U.S. Census Bureau and consists almost 40,000 firms. It is stated in the study that annual sales of women owned businesses are almost 80% lower, have less profits and are more likely to shut down.

Using 1998 Survey of Small Business Finances, Coleman (2007) show that in the U.S. women owned firms are smaller with respect to sales and number of employees. However, further research showed that women owned businesses are in fact more profitable than their men counterparts. Similarly, women owned businesses show a higher annual growth rate than of those owned by men in terms of sales. In addition to that, it is also noted that they find no significant differences when female and male owned firms are compared in terms of ability to have a positive growth rate.

To test the hypothesis regarding the under-performance of women business owners, Du Rietz and Henrekson (2000) used a sample from Centrala Företagsregistret data set which consisted more than 4,000 private firm in Sweden. The study results reject the hypothesis of women under-performance as there is no certain evidence of women owned businesses having being less profitable. While, according to the study, women owned businesses are smaller in sales and are underrepresented in some sectors; other performance indicators, which are profit, employment and number of orders, have no significant differences than their men owned counterparts.

Robb and Watson (2012) used micro level data from the Kauffman Firm Survey for between 2004 and 2008, to see whether woman owned businesses under perform as well. The sample included around 4,000 young firms from the U.S.. As their main performance indicator, they used return on assets and return on equity and the results showed no association between gender and performance.

Similar to Robb and Watson (2012), Zolin, Stuetzer, and Watson (2013) challenged the under-performance of women businesses hypothesis for young firms with return on assets being their main dependent variable. They used data from Comprehensive Australian Study of Entrepreneurial Emergence project which consisted around 180 firms. Consistent with the existing literature, their findings do not show significant differences indicating under-performance, woman owned young businesses are as successful as man owned businesses.

While most of the literature focuses on the existence of a woman owner when trying to account for gender differences in business performance, it can fail to account for the involvement of the owner in the decision making process. To show a more direct comparison, Artz (2017) use data limited to enterprises acquired and led by one person only, without any employees. The data used in this paper is taken from 2010 National Longitudinal Survey of Youth and consists around 240 enterprises. The results show no significant difference in terms of sales between woman and man entrepreneurs.

In addition, one can argue that the main decision maker is the top manager of the company, hence, gender of the manager can be a more important indicator of gender gap in business performance.

Using data collected from different articles published, Shrader, Blackburn, and Iles (1997) show that in large firms, less than 5% of top managers are women and firms with higher percentages of women in managerial positions have better firm performance.

Through a 19-year extensive study, Adler (2001) examined more than 200 firms in the Fortune 500 data and found that firms with more women managers performed better in several different performance indicators.

Existing research on business outcomes of women led or owned businesses in Turkey find differing results as well.

Cebeci and Essmat (2015) used 2013 World Bank ES data to analyze whether women-led businesses perform worse or smaller in sales and employee number. They found that contrary to general assumptions, women-led businesses are not in fact smaller but are more than 50% bigger in sales volume. However, they show that women-led businesses are smaller in employment size and there is no significant difference regarding to growth of firms in terms of number of employees.

Okten (2015), using the Turkish Household Labor Force Survey (HLFS) data from between the years 2004 and 2012, reports that businesses owned by women tend to be smaller in number of employees.

With a similar yet distinctive approach, Ararat and Yurtoglu (2021) collected data from Corporate Governance Forum of Turkey consisting of all the firms enlisted in Borsa Istanbul between the years 2011 and 2018 to understand the impact of woman directors and woman presence in boards on business performance. They find a weak correlation between the presence of a woman in the board of the firm and the performance. Nonetheless, the results indicate a stronger and positive relationship between profit levels and woman directors when said directors are independent.

CHAPTER 3

DATA

3.1 Data structure

The data used in this paper, The Enterprise Survey Data of Turkey (ES), is a sample survey data collected by World Bank Group, European Bank for Reconstruction and the European Investment Bank, was run between September 2018 and May 2019 and is the most recent Enterprise Survey for Turkey. The survey was done with the owner or manager of the establishments.

The data covers 1,663 enterprises in Turkey across different regions and industries and is based on three levels of stratification: region (NUTS-1 level²), industry, and the size of the establishment (based on the number of employees, small (5 to 19), medium (20 to 99), large (100 or more)). The ES is representative of the formal private sector in Turkey with the exception of agricultural sector and firms that are price regulated by the government.

Overall, the survey contains information about the general infrastructure of the establishments, the services they provide, their sales, financial situation, and some characteristics of the owners and managers. Furthermore, data consists of several performance related information of the firms, including firms' access to finance and their obstacles while performing their services.

The data allows to identify the gender of the top manager and the sole owner of the firms, as well as the information regarding whether there is a woman among the owners of the firm, in the case where there are several owners and not a sole ownership. Hence, throughout the rest of the paper, a woman managed firm is defined as one where the top manager is a woman, a woman shared firm is defined as one where there are multiple owners with at least one of them being a woman and lastly, a woman owned firm is defined as sole ownership with a woman being the owner. Out of the 1,663 firms, around 6% of the firms have a woman manager, 15% of them have one woman owner among the owners and 2% of them are fully owned by a woman.

²See Appendix B for a detailed description of NUTS-1 region specifications.

Table 1. Descriptive Statistics

Variables	Woman Shared		Man Shared		Woman Manager		Man Manager		Woman Owned		Man Owned	
	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)
Sales	243	4.175 (3.691)	1415	3.553 (21.49)	96	4.331 (5.02)	1567	3.605 (20.44)	29	1.771 (2.43)	1634	3.680 (20.05)
Profit	243	2.054 (4.08)	1415	-6.303 (319.80)	96	2.682 (4.18)	1567	-5.53 (303.89)	29	1.301 (2.32)	1634	-5.173 (297.60)
Value Added	116	3.001 (3.08)	613	2.261 (3.192)	47	3.274 (4.85)	686	2.325 (3.03)	15	1.206 (1.55)	718	2.410 (3.20)
Sales 3 Years Ago	199	3.577 (3.52)	1207	3.347 (21.53)	73	3.642 (5.41)	1337	3.371 (20.46)	21	1.403 (2.27)	1389	3.415 (20.11)
Sales Growth	199	-0.045 (0.81)	1207	0.206 (4.46)	73	-0.100 (0.35)	1337	0.184 (4.25)	21	0.058 (0.52)	1389	0.171 (4.17)
Number of Employees	238	128.98 (256.80)	1403	76.299 (227.88)	95	97.78 (125.76)	1551	83.47 (237.87)	29	14.79 (19.52)	1617	85.539 (234.75)
Employment Growth	214	0.105 (0.30)	1254	0.134 (0.49)	81	0.087 (0.31)	1390	0.132 (0.48)	20	0.205 (0.36)	1451	0.128 (0.47)
Age of Firm	245	23.29 (14.59)	1390	19.21 (14.16)	95	20.12 (15.11)	1543	19.78 (14.23)	29	19.34 (17.70)	1609	19.809 (14.22)

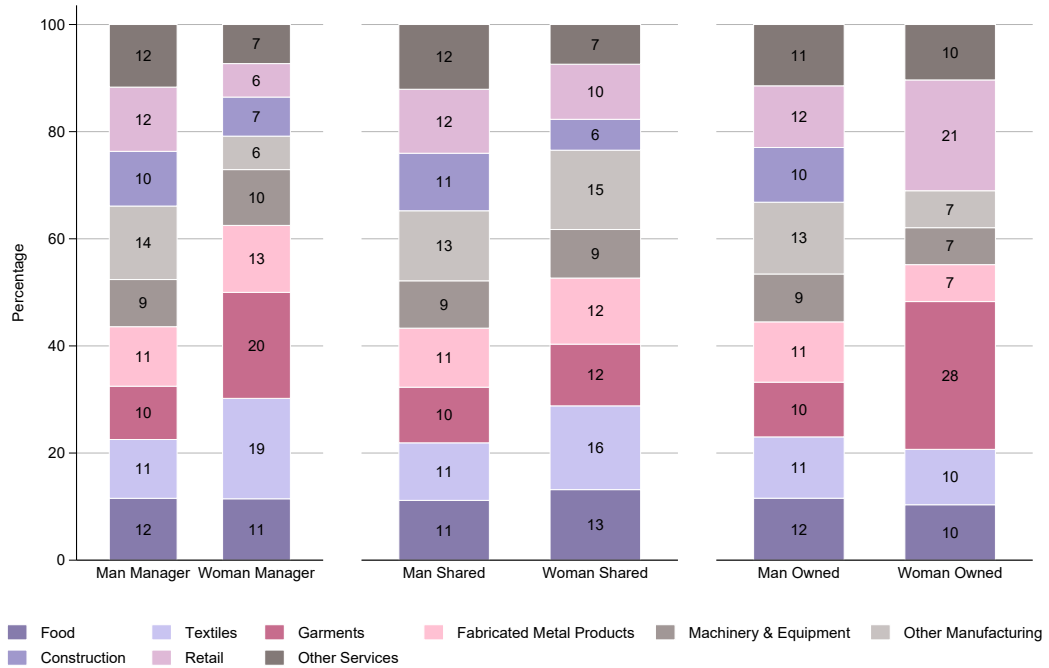


Figure 1. Sectors(%)

Table 1 gives descriptive statistics and means of business performance indicators of woman and man shared, led and owned businesses.

There are some constraints of the data; inefficient knowledge regarding the managerial power and the involvement of the leaders in the decision process or the owners and the gender of the owners when there is not a sole ownership. The question relating to the gender of the owner when there are multiple is analogous to "Is there a woman among the owners" with a yes or no answer. However, to account for this complication, as mentioned earlier, another dummy variable for when the sole owner is female is used.

In addition, the data does not contain information about the educational background or other comparable demographic characteristics, such as marital status of managers and owners and the number of establishments included in the sample is relatively small.

3.2 Variables

The main dependent variables are performance indicators for the firms; which are sales, profit, value added and firm growth with respect to sales and number of employees.

As in this paper the effect of gender on business outcomes will be analyzed, firm level data will be compared regarding the gender of the sole owner and top manager. Additionally, comparisons will be made for firms that are woman shared, meaning there are women among the owners. Therefore, the main independent variables will consists of three dummies which will take the value one when the firm has at least one woman owner, when it is led by a woman and when it is solely owned by a woman.

Firms that do not have information about the gender of the owners and managers or whether there exists a woman among the owners will not be included in the analysis.

3.3 Characteristic analysis of enterprises

In this section, main attributes of the enterprises such as the distribution in sectors and regions, sales and employment size, age of firm depending on the gender of the managers and owners will be analyzed. Figure 1 shows the distribution of women-led and owned businesses across sectors. It can be seen from the figure that whether women are managers, sole owners or have shares in the establishment, they show patterns of concentrating on particular sectors. 20% of women managers are in the garments sector, followed bu textiles. It is also striking that almost half of the firms that are only owned by a woman are either in the garments or in the textiles sector. For woman shared firms, textiles sector is again the one that women owners are concentrated on. When compared to men, it is evident how patterns are different. Men managers or owners are distributed among the sectors almost equally.

In addition, Figure 2 shows the distribution of women in management positions/ownership in different sectors compared to men. It clearly indicates that in

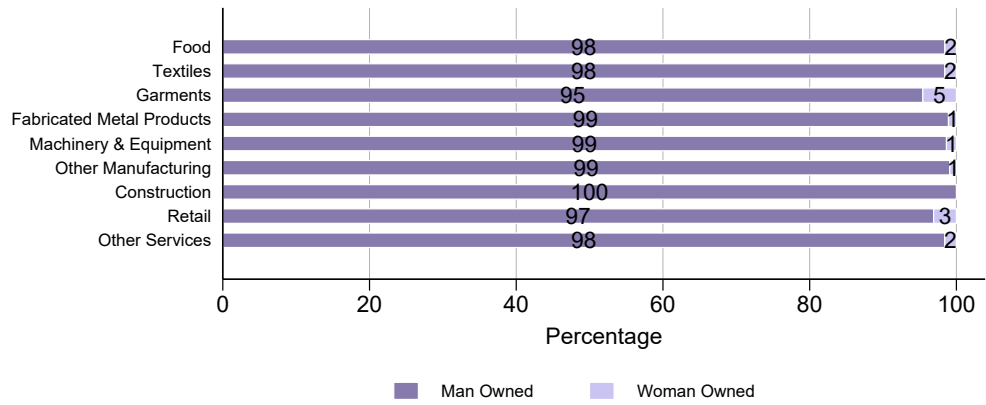
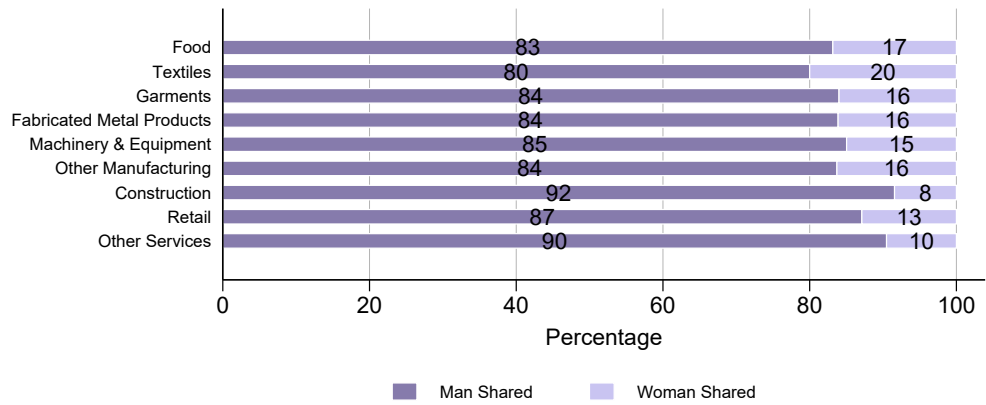
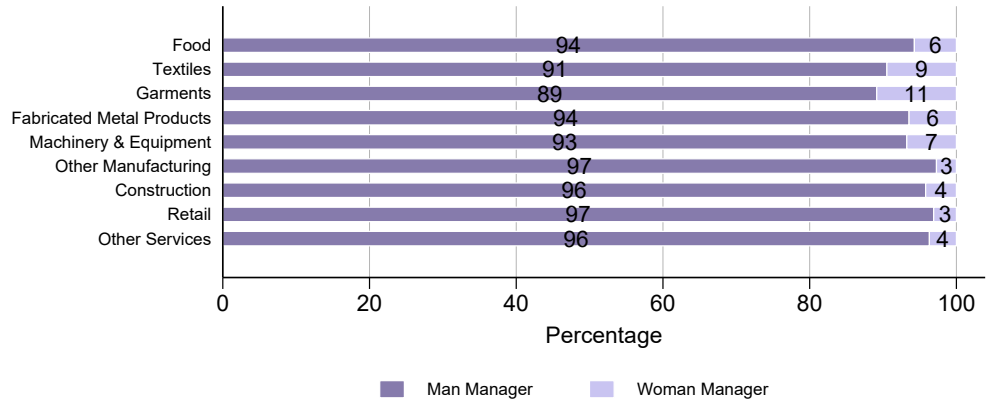


Figure 2. Gender distribution among sectors (%)

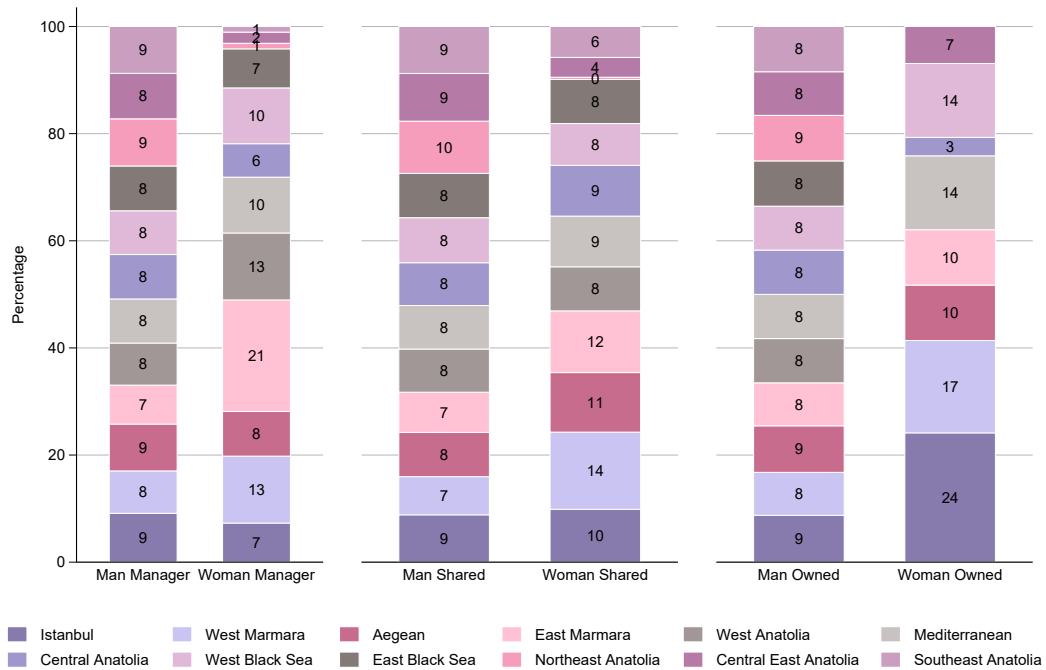


Figure 3. Regions

each position, women make up a very small portion. For garments sector, where women managers are concentrated, they make up 11% of all the managers. Woman shared businesses show more of an equal distribution among the sectors, with the highest level of participation is in again textiles sector. For woman owned businesses, the focus is the garments sector. However, sole woman ownership only makes 5% of the sector.

Next, we analyze how women leaders and owners spread across different regions. Figure 3 shows that more than 20% of woman managers tend to operate in East Marmara region, followed by Istanbul. Shared enterprises with a woman owners concentrate in general Marmara region within an almost even placement among Istanbul, West Marmara and East Marmara. Aegean region has a considerable percentage of woman shared businesses as well. For woman owned enterprises, the concentration in Marmara region is compelling. More than half of the woman owned businesses are in the Marmara region, with almost half of these being in Istanbul. Similar to sectors, distribution of man managers and owners among the regions is seemingly even. One striking difference between the genders is that, for each

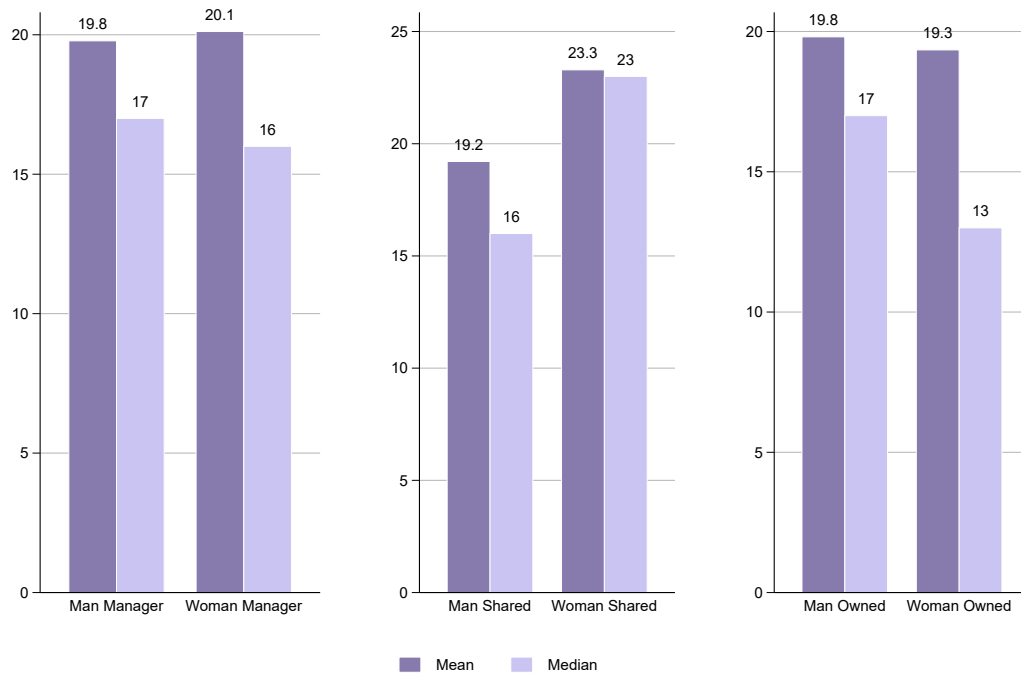


Figure 4. Average age of firm

category, around 10% of enterprises run by men concentrate on Northeast Anatolia, whereas for women it is 0-1%.

Figure 4 demonstrates how average age of the firms differ between genders. For woman led and owned businesses, mean age of firms do not differ greatly from their men counterparts. Woman-led businesses are 0.3 years older than men-led businesses, with the median being 1 year less. On the contrary woman owned businesses are 0.5 years younger. Woman-shared businesses, however, seem to be older in years than man-shared businesses with a 4 year gap.

In Figure 5, a comparison of men and women led and owned firms' sales growth is shown. Sales growth is defined as the increase in their sales from 3 years ago. The figure clearly depicts that firms that are led by women are experiencing on average 10% decreasing sales. Similarly, woman shared firms are getting smaller regarding their sales. whereas, man led and man shared businesses are expanding in terms of sales. On the contrary, firms that are owned by women have increased their sales from 3 years ago.

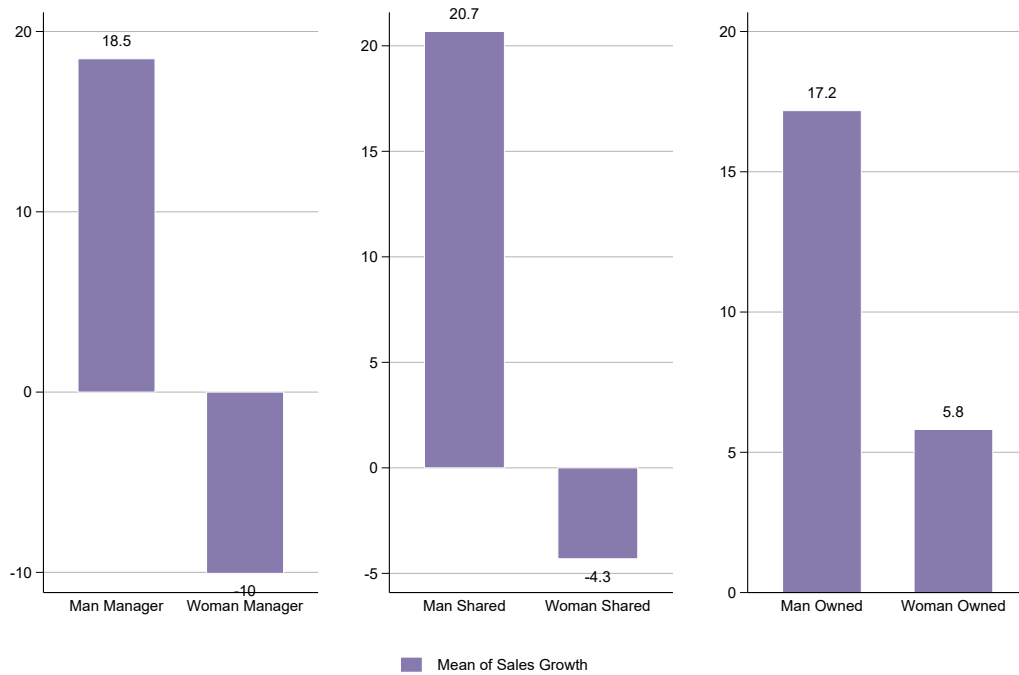


Figure 5. Sales growth

This analysis brings the question of whether firms that are wed and shared by women are bigger in size, hence the struggle to grow their sales amounts. To answer this question, we look at how sizes of firms, depending on their sales volume, change across genders in Figure 6. The size of firms depending on their sales volume is determined as follows: Small: Less than 5 million TL sales, Medium: between 5 million TL and 50 million TL sales, Large: more than 50 million TL sales. According to this categorization, we see that firms with woman managers and sharers are mostly medium or large sized firms, with an increased concentration on medium size. Women owners, on the other hand, have a lesser concentration in large sized firms. 38% of women owners have small sized firms, whereas it is 17% and 18% for woman managers and sharers, respectively. This result can answer the question of why women managers and sharers have firms that are experiencing decreasing sales while women owners are increasing their sales.

To see how sales volume of enterprises compare, Figure 7 is provided. It shows that for woman led and shared firms, the lowest level of sales is higher for women than men, and woman-owned firms have the lowest levels among woman led

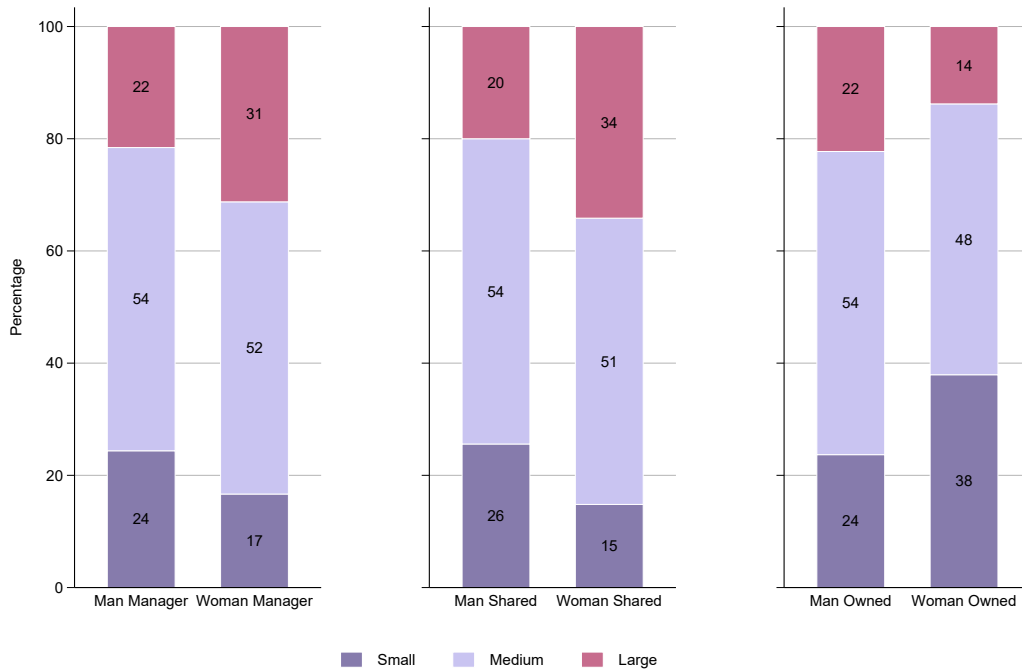


Figure 6. Firm size by sales

and owned businesses. Furthermore, the highest sales levels are higher for woman led and shared businesses, whereas for woman owned businesses it is much lower than man owned counterparts.

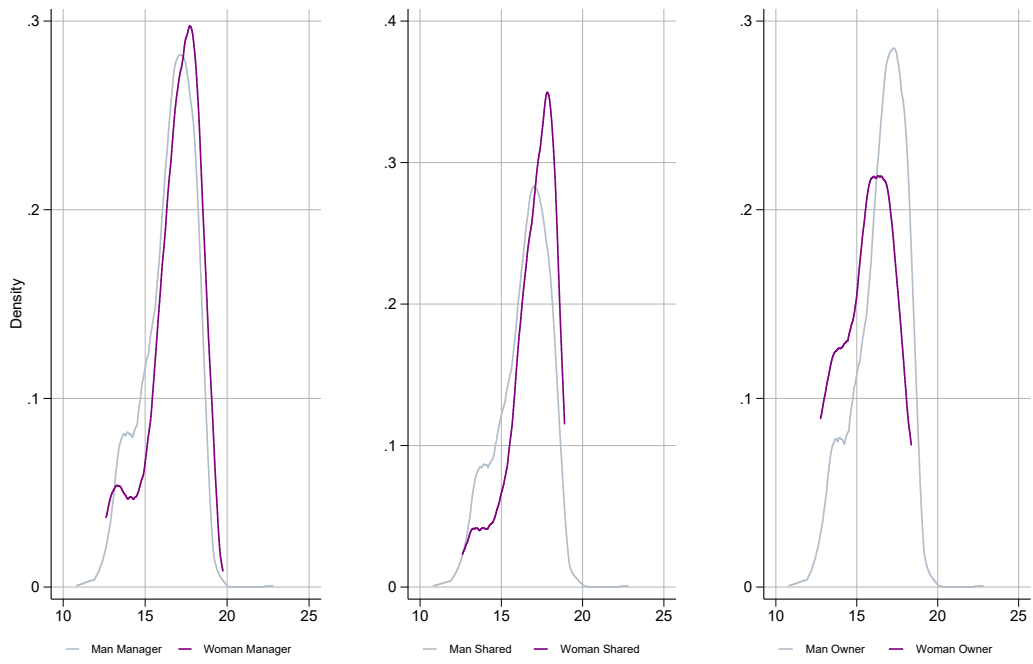


Figure 7. Log(sales)

CHAPTER 4

METHODOLOGY

This section describes the methodology used in this paper in order to analyze the existence of a gender gap in business performance.

4.1 Performance

The main models used in this paper are Ordinary Least Squares (OLS) and Multiple Linear Regression (MLR), where the explicit regression equations are as follows:

$$\ln Y_i = \alpha + \beta \text{Woman}_i + \epsilon_i \quad (4.1)$$

where $\ln Y_i$ is the log of the performance indicator of firm i and includes sales, profit and value added. There are three main performance indicators: 1) the sales variable is the annual sales revenue of the firms in the last fiscal year, 2) profit is calculated as Sales - Total Costs of firms, 3) value added is used as an indicator for efficiency and is defined as Sales - Cost of Raw Materials and Intermediate Goods, On the right hand side, variable *Woman* is a dummy variable which takes the value of one when the manager or the sole owner is Woman as well as when there is a women manager among the owners. Lastly, ϵ_i is the error term.

β is the main coefficient of interest and indicates how business performance changes when the firm is led or owned by a woman.

Following the main regression, control variables which are sector and region the firm is operating in, years of experience of top manager and the age of firm are added. The explicit regression is as follows:

$$\ln Y_{ijk} = \alpha_i + \beta(\text{Woman})_{ijk} + \delta X_{ijk} + \gamma I_{jk} + \phi R_k + \epsilon_{ijk} \quad (4.2)$$

where Y_{ijk} is the performance indicator of firm i , operating in sector j , and in region k .

Additionally, X is vector of firm characteristics, I is a vector of industry fixed effects and R is a vector of region fixed effects.

The controls for the regressions increase progressively:

For woman owners and sharers, after initially running the regression without any controls, only sector of the firm is added. Then, controls for sector, experience of the manager and the age of firm are added respectively.

For woman managers, after initially running the regression without any controls, experience of the manager is added to the regression to get a clearer understanding of the gender effect. Then, as the second step, age of firm is added separately, following with both of the controls being added. Lastly, all controls are added.

4.2 Growth

The difference between genders in growth of firms with regards to sales and number of employees, over a 3 year period, are analyzed as well. The growth of firms is quantified by calculating the average annual changes in sales and employment:

$$G = \frac{(L_t - L_{(t-3)})}{L_{(t-3)}} \quad (4.3)$$

where L_t is annual sales or number of full-time permanent workers, and $L_{(t-3)}$ is the amount from three years ago. To analyze the gender difference in growth, following regression is used:

$$G = \alpha + \beta(\text{Woman})_{ijk} + \delta X_{ijk} + \gamma I_{jk} + \phi R_k + \epsilon_{ijk} \quad (4.4)$$

where $Growth_{ijk}$ is sales or employment growth for firm i operating in sector j and in region k , X is a vector of firm characteristics, I is a vector of industry fixed effects and R is a vector of region fixed effects.

Following the same path as performance assessment where growth of firms is used as the dependent variable. Similarly to the previous regressions, control variables are added progressively.



CHAPTER 5

RESULTS AND DISCUSSION

This section displays and investigates the existence of a gender gap in business performance. To understand the effect of having a woman among the owners, a woman manager and a woman owner, Equations (1) and (2) in section 4.2 are run using OLS. Tables 2 and 3 give the regression results for performance indicators Ln(Sales), Ln(Profit) and Ln(Value Added), indicating the coefficients for 3 different dummies; woman shared, woman manager and woman owner.

Columns (1) of Table 2 show the result for when no control is added.

Gradually, in each column, a control variable is added to the regression, as mentioned earlier in Chapter 4.

Table 2. Regression Results for Ln(Sales) and Ln(Profit)

	Ln(Sales)					Ln(Profit)				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Women Shared	0.538* **	0.463* **	0.299* **	0.291**	0.257**	0.502* **	0.460**	0.239	0.236	0.222
SE	(0.098)	(0.099)	(0.090)	(0.089)	(0.091)	(0.141)	(0.143)	(0.131)	(0.130)	(0.134)
Observations	1658	1658	1658	1658	1658	1351	1351	1351	1351	1351
Sector Controls		YES	YES	YES	YES		YES	YES	YES	YES
Region controls			YES	YES	YES			YES	YES	YES
Experience				YES	YES				YES	YES
Age of Firm					YES					YES
Woman Manager	0.354*	0.409**	0.339*	0.375*	0.107	0.409	0.475*	0.408	0.450*	0.226
SE	(0.165)	(0.155)	(0.163)	(0.158)	(0.137)	(0.220)	(0.208)	(0.217)	(0.213)	(0.195)
Observations	1663	1663	1663	1663	1663	1354	1354	1354	1354	1354
Sector Controls					YES					YES
Region controls					YES					YES
Experience		YES		YES	YES		YES		YES	YES
Age of Firm			YES	YES	YES			YES	YES	YES
Sole Owner Is Female	-0.807**	-0.829**	-0.846**	-0.728**	-0.730**	-0.635	-0.667	-0.653	-0.537	-0.513
SE	(0.303)	(0.290)	(0.276)	(0.265)	(0.275)	(0.373)	(0.364)	(0.385)	(0.375)	(0.379)
Observations	1663	1663	1663	1663	1663	1354	1354	1354	1354	1354
Sector Controls		YES	YES	YES	YES		YES	YES	YES	YES
Region controls			YES	YES	YES			YES	YES	YES
Experience				YES	YES				YES	YES
Age of Firm					YES					YES

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

For firms with a woman among owners, without any controls the results (column 1) show that sales are 53% higher than their man counterparts. When sector controls are added, the coefficient of dummy variable decreases to 46%. Furthermore, as controls are added progressively (from column 2 to 5), the gap gets smaller, while maintaining its significance. Finally, when all controls (region, sector, experience of top manager and age of firm) are added, sales of woman shared businesses are estimated to be 25% higher than of those firms without a woman among the owners.

Similarly, for log of profit, the coefficients for the woman shared dummy is statistically significant, indicating profits are 50% higher for woman shared firms,

without any controls. Again, as controls are added gradually, the gap gets smaller, however losing its significance when sector of firm and then experience of the manager and the age of firm are added as controls.

One could argue that the top manager is the one responsible for decision making rather than the owner(s), hence, the gender of the manager can be more informative about the effect of gender on business performance. To understand the relation; following the first set of results, on the second row of Table 2, we see the estimations for women-led firms. As can be seen from the table, women led firms have significantly higher sales than men led firms. without any controls, women led firms have 35% higher sales revenue and the difference is even higher when controlled for the manager's experience. When all controls are added, however, the result loses its significance.

Additionally, for profit outcomes, we see that the results are only significant when experience and experience and age of firm together are added as controls, indicating more than 45% higher profits for women led firms.

Lastly, the last row of Table 2 gives estimated coefficients for woman owned firms, giving striking results. When the sole owner of a firm is a woman, sales are estimated to be 80% higher, increasing progressively for columns (2) and (3). Even though the gap gets smaller for columns (4) and (5), we still conclude that on average, women led firms have at least 70% more sales revenue than men led firms. For profits, however, there does not seem a significant difference between women and men led firms.

To further understand the unaccompanied effect of gender on business profits, we add log of sales revenue as an indicator of firm size and capture all size effect, leaving the dummy to reflect the remaining, sole gender effect. Therefore, $\ln(Sales)$ is added to the regression as a control variable. The results for the analysis are given in Table 3. The results give negative, yet insignificant coefficients for women shared and led firms; indicating that, controlling for firm size, they make as much profit as their man counterparts. Women owners, though, when controlled for the region and

firm size, make almost 25% more profits than men owners. This result signals women owners to be better business performers.

Table 3. Regression Results for Profit, Controlling for Firm Size

	Ln(Profit)				
	(1)	(2)	(3)	(4)	(5)
Woman Shared	-0.093 (0.080)	-0.024 (0.077)	-0.059 (0.077)	-0.051 (0.075)	-0.046 (0.078)
Ln(Sales)	1.112*** (0.017)	1.165*** (0.019)	1.132*** (0.020)	1.131*** (0.021)	1.138*** (0.022)
Observations	1351	1351	1351	1351	1351
Sector Controls		YES	YES	YES	YES
Region Controls			YES	YES	YES
Experience				YES	YES
Age of Firm					YES
Woman Manager	-0.075 (0.112)	-0.076 (0.112)	-0.068 (0.114)	-0.063 (0.113)	0.030 (0.106)
Ln(sales)	1.109*** (0.017)	1.109*** (0.019)	1.118*** (0.019)	1.116*** (0.020)	1.136*** (0.022)
Observations	1354	1354	1354	1354	1354
Sector Controls					YES
Region Controls					YES
Experience		YES		YES	YES
Age of Firm			YES	YES	YES
Sole Owner Is Woman	0.135 (0.119)	0.247* (0.119)	0.178 (0.122)	0.191 (0.121)	0.189 (0.119)
Ln(Sales)	1.109*** (0.017)	1.165*** (0.019)	1.131*** (0.020)	1.131*** (0.022)	1.137*** (0.022)
Observations	1354	1354	1354	1354	1354
Sector Controls		YES	YES	YES	YES
Region Controls			YES	YES	YES
Experience				YES	YES
Age of Firm					YES

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Next, the question of whether productivity of firms change depending on the gender of one of the owners, the top manager or the sole owner is asked, and value added as an indicator for productivity is used. Table 4 presents the regression results. Similar to the previous regressions, controls are added gradually through columns (2)-(5), while changing the order for woman manager regression to get a clearer understanding.

For woman shared businesses, the results are significant for the first regression with no controls (column 1) and when sector controls are added (column 2) and the coefficient of the dummy shows that woman shared businesses are

estimated to have 45% and 40% higher efficiency levels for with no controls and with sector controls, respectively. When more controls are added, the results are not significant, as can be seen from the table. There is no statistically significant difference in regards to efficiency between woman and man shared businesses, when controlled for sector, experience and age of firm. Additionally, no differences are found in value added levels for woman and man managers as well.

Table 4. Regression Results for Ln(Value Added)

	Ln(Value Added)				
	(1)	(2)	(3)	(4)	(5)
Woman Shared	0.449**	0.406**	0.197	0.205	0.109
SE	(0.149)	(0.152)	(0.134)	(0.136)	(0.140)
Observations	729	729	729	729	729
Sector Controls		YES	YES	YES	YES
Region Controls			YES	YES	YES
Experience				YES	YES
Age of Firm					YES
Woman Manager	0.242	0.343	0.279	0.315	0.093
SE	(0.248)	(0.245)	(0.254)	(0.252)	(0.231)
Observations	733	733	733	733	733
Sector Controls					YES
Region Controls					YES
Experience		YES		YES	YES
Age of Firm			YES	YES	YES
Sole Owner Is Woman	-0.598	-0.601	-0.675*	-0.529	-0.594
SE	(0.361)	(0.338)	(0.321)	(0.337)	(0.373)
Observations	733	733	733	733	733
Sector Controls		YES	YES	YES	YES
Region Controls			YES	YES	YES
Experience				YES	YES
Age of Firm					YES

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

When the sole owner is a woman, however, the firms are less efficient, with 67% lower levels of value added (column 3). The results, for any other regressions for sole owner dummy, are not statistically significant, showing women owned firms are as efficient as their men counterparts.

Again, to see the clear effect of gender and to eliminate the possibility of women working in already efficient and big firms, we add $Ln(Sales)$ to the regression

to control for the firm size. The results of the regressions are displayed in Table 5. Very similar to profits, we see that women shared and led firms are as much efficient as men shared or led firms. Nevertheless, when the sole owner is a woman and firm size is controlled for, the firms are significantly more efficient. When firm characteristics are also added as controls, we see that women owned firms are almost 13% more productive. When compared to Table 4, it can be understood that while women sharers are part of already more efficient firms, they do not have much of an effect on productivity, sole women owners in fact have a better performance than men owners.

Table 5. Regression Results for Value Added, Controlling for Firm Size

	Ln(Value Added)				
	(1)	(2)	(3)	(4)	(5)
Woman Shared	-0.059 (0.032)	-0.063 (0.032)	-0.054 (0.031)	-0.056 (0.032)	-0.060 (0.033)
Ln(Sales)	1.017*** (0.006)	1.014*** (0.006)	1.002*** (0.007)	1.002*** (0.007)	1.002*** (0.007)
Observations	729	729	729	729	729
Sector Controls		YES	YES	YES	YES
Region Controls			YES	YES	YES
Experience				YES	YES
Age of Firm					YES
Woman Manager	0.034 (0.027)	0.031 (0.028)	0.033 (0.028)	0.032 (0.029)	0.045 (0.032)
Ln(Sales)	1.015*** (0.006)	1.016*** (0.006)	1.016*** (0.006)	1.016*** (0.006)	1.001*** (0.008)
Observations	733	733	733	733	733
Sector Controls					YES
Region Controls					YES
Experience		YES		YES	YES
Age of Firm			YES	YES	YES
Sole Owner Is Woman	0.124** (0.039)	0.121** (0.040)	0.118** (0.042)	0.121** (0.044)	0.125** (0.046)
Ln(Sales)	1.016*** (0.006)	1.013*** (0.006)	1.002*** (0.007)	1.001*** (0.007)	1.002*** (0.008)
Observations	733	733	733	733	733
Sector Controls		YES	YES	YES	YES
Region Controls			YES	YES	YES
Experience				YES	YES
Age of Firm					YES

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Next, we ask whether women owned or led businesses have different growth rates in sales and employment relative to men owned or led businesses. As mentioned

earlier in Chapter 4, growth rate is calculated as the percentage change in sales revenue and number of employees in the last 3 years. The findings for these two measures of business performance are displayed in Table 6. The results indicate that, there is evidence for difference only for women led businesses, where women do significantly worse by 28% in sales growth rates. However, the coefficient loses its significance when we control for the experience of the manager and the age of firm.

Table 6. Regression Results for Growth Measures

	Sales Growth					Employment Growth				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Woman Shared	-0.250	-0.261	-0.243	-0.235	-0.215	-0.028	-0.024	-0.010	-0.011	-0.003
SE	(0.141)	(0.142)	(0.138)	(0.147)	(0.162)	(0.025)	(0.026)	(0.025)	(0.026)	(0.025)
Observations	1406	1406	1406	1406	1406	1468	1468	1468	1468	1468
Sector Controls		YES	YES	YES	YES		YES	YES	YES	YES
Region Controls			YES	YES	YES			YES	YES	YES
Experience				YES	YES				YES	YES
Age of Firm					YES					YES
Woman Manager	-0.285*	-0.264*	-0.286*	-0.227	-0.121	-0.045	-0.046	-0.038	-0.038	-0.006
SE	(0.124)	(0.120)	(0.134)	(0.117)	(0.152)	(0.036)	(0.037)	(0.036)	(0.037)	(0.038)
Observations	1410	1410	1410	1410	1410	1471	1471	1471	1471	1471
Sector Controls					YES					YES
Region Controls					YES					YES
Experience		YES		YES	YES		YES		YES	YES
Age of Firm			YES	YES	YES			YES	YES	YES
Sole Owner Is Woman	-0.114	0.011	0.015	0.098	0.139	0.076	0.057	0.094	0.096	0.104
SE	(0.158)	(0.152)	(0.192)	(0.223)	(0.262)	(0.081)	(0.085)	(0.082)	(0.080)	(0.082)
Observations	1410	1410	1410	1410	1410	1471	1471	1471	1471	1471
Sector Controls		YES	YES	YES	YES		YES	YES	YES	YES
Region Controls			YES	YES	YES			YES	YES	YES
Experience				YES	YES				YES	YES
Age of Firm					YES					YES

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

5.1 Possible explanations

In this section, different approaches and possible explanations regarding the existence as well as the non-existence of gender gaps in business performance are explored.

5.1.1 Concentration in certain sectors

The literature has often proposed that women owned firms tend to cluster in sectors that are smaller regarding sales and less productive (see Bardasi, Sabarwal, and Terrell, 2011). As results showed in previous section, women perform better in sales and there are differing results for productivity. Which brings the question of whether women choose to operate in sectors that are bigger in sales or more efficient in Turkey, in contrast to the literature. To answer this question, a regression with a dummy variable that takes the value of one when women concentrate in a sector, and takes the value 0 otherwise is run. To determine women dominated sectors, the distribution of woman shared, led and owned businesses among the sectors was examined. The "dominated" sectors are those more women chose to operate in, and not sectors that have more women operating in, as the number of women owned or led businesses are limited and never more than men owned or led businesses. Furthermore, for woman managers and owners, 'Garments' for woman sharers 'Textiles' are determined as the dominated sectors³.

Table 7 represents the regression results. The results indicate that women shared firms in men dominated sectors perform better in sales compared to firms in women dominated sector. Additionally, men shared firms in women dominated sector have significantly higher sales and profit, and are more efficient compared to women in other sectors. Furthermore, the higher performance of women shared firms results from the concentration of women in the textiles sector, which, as a sector, has higher sales revenue and efficiency relative to other sectors.

³To see the detailed methodology, see Appendix C.1.

Table 7. Regression Results with Woman Dominated Sector Control

	Ln(Sales)	Ln(Profit)	Ln(Value Added)
Woman Shared	0.307** (0.099)	0.238 (0.140)	0.205 (0.153)
Woman Dominant Sector	0.394*** (0.110)	0.513** (0.162)	0.439** (0.146)
Woman Shared*Woman Dominant Sector	0.015 (0.241)	-0.048 (0.435)	-0.014 (0.312)
Observations	1658	1160	729
Region Controls	YES	YES	YES
Woman Manager	0.027 (0.161)	-0.073 (0.202)	0.063 (0.271)
Woman Dominant Sector	0.027 (0.114)	-0.312 (0.182)	0.024 (0.139)
Woman Manager*Woman Dominant Sector	0.299 (0.320)	0.477 (0.537)	0.111 (0.458)
Observations	1663	1162	733
Region Controls	YES	YES	YES
Sole Owner Is Woman	-0.960** (0.323)	-1.032* (0.489)	-0.705 (0.386)
Woman Dominant Sector	0.074 (0.108)	-0.238 (0.173)	0.050 (0.134)
Sole Owner Is Woman*Woman Dominant Sector	0.350 (0.649)	0.447 (0.919)	0.087 (0.728)
Observations	1663	1162	733
Region Controls	YES	YES	YES

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

For women led firms, though, the results indicate no significant difference between sales size and value added levels in any case. Hence, women led firms do not support the concentration argument at all.

Additionally, the results show that women owned firms in men dominated sectors are much more smaller in sales size and profit than their men counterparts. Women owned firms in women dominated sectors, however, perform as good as women in other sectors. Additionally, there does not exist any significant difference in efficiency. The results for women owned firms reject the concentration hypothesis, as there is no significant difference when looked at the sectors.

5.1.2 Financial resources

Access to financial resources is one of the most crucial factors that determine the success and perpetuity of a business. Literature has stated that for women owned firms, financial accessibility and inclusion are worse than their male counterparts and it is one of the explanations for the women under-performance hypothesis (see Coleman (2007)). Hence, the existence of a difference regarding access to financial resources and credits can explain, at least partially, the differences in firm performance, growth and even maybe the sectors women tend to concentrate in as some sectors might need more investment. The data consists information about whether firms applied for a loan in the last fiscal years, the outcome of the application and reveals that the majority of firms that applied for a loan obtained it, with the majority of the ones that did not obtain it because they withdrew. Hence, to analyze access to finance, the probability of applying for a loan, a logit regression is run.⁴ The results are presented in Table 8. Column 1 shows the results without any controls, then as an indicator of firm size sales revenue from 3 years ago is added (column 2), and lastly, sector, region and age of firm are added as controls. The results show that firms that have a woman among owners are much more likely to apply for a loan, and the result is significant after controlling for firm size. However, when sector, region

⁴To see the detailed methodology, see Appendix C.2.

Table 8. Logit Regression Results for Access to Financial Resources

	(1)	(2)	(3)
Apply For New Loans (Logit, Applied=1)			
Woman Shared	0.437** (0.155)	0.478** (0.172)	0.309 (0.188)
Sales 3 Years Ago		-0.178 (0.183)	-0.470* (0.195)
Observations	1606	1361	1357
Sector Controls			YES
Region Controls			YES
Age of Firm			YES
Woman Manager	0.371 (0.232)	0.458 (0.266)	0.144 (0.297)
Sales 3 Years Ago		-0.171 (0.178)	-0.475* (0.193)
Observations	1610	1364	1360
Sector Controls			YES
Region Controls			YES
Age of Firm			YES
Sole Owner Is Woman	-0.452 (0.495)	-0.591 (0.627)	-0.764 (0.688)
Sales 3 Years Ago		-0.169 (0.179)	-0.489* (0.195)
Observations	1610	1364	1360
Sector Controls			YES
Region Controls			YES
Age of Firm			YES
Standard errors in parentheses			
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$			

and age controls are added, the coefficient loses its significance. For woman managers and sole owners, there is no significant difference in probability of applying for a loan from their man counterparts. As one might expect, throughout all the results, as sales from three years ago increases, the likelihood of applying for a loan decreases significantly.

As mentioned earlier, the managerial involvement of a woman sharer is unknown. If we only focus on firms that are solely led and owned by a woman, we see that they are as much likely as their men counterparts to apply for a loan. Furthermore, as almost every firm that applied for a loan obtained it, it can be concluded that women do not face any additional gender discrimination in access to finance. It also suggests that access to financial resources is not a main concern for gender gaps in business performance.

CHAPTER 6

CONCLUSIONS

This paper aims to analyze the effect of gender on business performance. The existing literature mainly focuses on "women owned" businesses, albeit the involvement of the owner in operation processes being unclear. Additionally, especially in Turkey, women tend to have shares in family businesses, without having any participation in business while being identified as one of the owners of the firm. Moreover, the literature has stated that women entrepreneurs under-perform, whether it being a result of concentrating in smaller businesses and sectors, lack of human capital and investments or struggle to access financial resources. Additionally, some argue that the differences in performance results from the behavioural differences, different approaches to business and the self selection in entrepreneurship. It is not possible with this data to control for behavioural or psychological differences, and to account for the reasoning behind self selection into entrepreneurship. The objective of this paper was to contribute to the literature by not only analyzing how firms perform when there is a woman among the owners, akin to the literature, but also how firms led by women and solely owned by women perform in Turkey. By doing so, getting a clear understanding regarding the differences in managerial and operational skills and performance, and the existence of a gender gap in business performance was intended.

The data used consists of 1,663 firms from different sectors and regions of Turkey and is collected by the World Bank. The gender of the sharer, owner and the manager was identified with direct answers from the respondent. As performance indicators annual sales revenue, profit, value added and growth rates are used and differences between genders in these outcomes are examined. As control variables; sector, region, age of firm and the experience of the top manager are used. Following that, possible explanations for the obtained results, which are concentration of women in specific sectors and the access to financial resources, are explored.

The first set of results that we drew showed that women led and shared firms, on average, have significantly higher sales level than men led and shared firms. For women sole owner, however, sales levels are significantly smaller than men owners. For profit levels, while the results are mainly insignificant, firms with a woman among owners have positive, significant results. Existence of a gender gap in productivity is also examined, and the results show that women managers and owners are as much productive as their counterparts, while firms with a woman owner among the owners have a higher productivity without any controls. While accounting for the firms size, using sales as an indicator of size, the results indicate that women have as much profit and are as much productive as their men counterparts.

As another performance indicator, growth in sales and employment size are also explored, with results showing mainly no gender gap in growth rates, only for women managers have lower sales growth rates.

We then explore possible explanations for the results obtained so far. The first explanation considered is whether women managers and sharers tend to concentrate in bigger sectors, and sole women owners in smaller sectors, which might explain the first set of results. While the sectors women managers and owners concentrate on are not significantly different, women sharers do in fact concentrate on a bigger and more efficient sector, which might partially explain the results. Another possible explanation examined is access to financial resources. The results show that while women shared firms tend to apply for loans more, there is no significant difference between women - men managers and women - men owners.

In sum, the results for gender gap in business performance indicators give mixed results. However, we can conclude that the women under-performance hypothesis is rejected in Turkey. While there remains many unknown aspects about the true nature of women entrepreneurship and management, and the reasoning behind the differences, with this paper, shedding a new light to the subject to further understand the position and performance of not only women who have shares of a business, as in the literature, but also managers and sole owners was aimed.

APPENDIX A

LITERATURE REVIEW SUMMARY

Authors	Country	Methodology	Performance Indicator	Major Findings
Islam et al. (2018)	128 countries	OLS, Oaxaca-Blinder Decomposition	Labor productivity (sales per worker)	Smaller and less productive.
Bardasi et al. (2011)	62 Countries	OLS, Logistic Regression	Sales revenue, Labor productivity (value added per worker), TFP	Smaller. In terms of firm efficiency and growth, the gaps are smaller.
Kalleberg and Leicht (1991)	United States	Logistic Regression	Gross earnings, odds of going out of business	Not more likely to go out of business, nor less successful.
Fairlie and Robb (2009)	United States	OLS, Logistic Regression	Sales revenue, profits, odds of going out of business	Less successful, more likely to go out of business.
Coleman (2007)	United States	Tobit, Logistic Regression	Profitability, growth	Smaller and are less profitable.
Du Rietz and Henrekson (2000)	Sweden	Logistic Regression	Sales, profitability, employment	Lower levels of sales but no difference in profitability and size.
Robb and Watson (2012)	United States	OLS, Cox-proportional hazard model	Closure rates, ROA	No difference in performance and not more likely to go out of business.
Zelin et al. (2013)	Australia	OLS	Closure rates, ROA	No difference in performance and not more likely to go out of business.
Artz (2017)	United States	OLS	Sales revenue	No difference in performance.
Shrader et al. (1997)	United States	Hierarchical regression	ROS, ROA, ROI, ROE	Better performance when percentage of women managers is higher.
Adler (2001)	Fortune-500 Firms		Profits as percent of revenues, assets, and stockholders' equity	Better performance when percentage of women managers is higher.
Cebeci and Essmat (2015)	Turkey	OLS	Sales revenue, employment	Bigger in sales, smaller in number of employees.
Okten (2015)	Turkey	Logit	Employment	Smaller in number of employees.
Ararat and Yurtoglu (2021)	Turkey	OLS	Tobin's q, profitability	No difference in performance, positive relationship when woman leaders are independent.

APPENDIX B
NUTS-1 REGIONS

Region No.	Region Name	Cities
1	Istanbul	Istanbul
2	West Marmara	Balıkesir, Tekirdağ
3	Aegean	Aydın, İzmir, Manisa
4	East Marmara	Bursa, Kocaeli
5	West Anatolia	Ankara, Konya
6	Mediterranean	Adana, Antalya, Hatay
7	Central Anatolia	Kayseri, Kırıkkale
8	West Black Sea	Kastamonu, Samsun Zonguldak
9	East Black Sea	Trabzon
A	Northeast Anatolia	Ağrı, Erzurum
B	Central East Anatolia	Malatya, Van
C	Southeast Anatolia	Gaziantep, Mardin, Şanlıurfa

APPENDIX C

POTENTIAL EXPLANATIONS REGRESSIONS

This section details the regressions mentioned in Section 5.1.

C.1

$$\ln Y_{ijk} = \alpha_i + \beta \text{Woman}_{ijk} + \theta \text{WD}_{jk} + \gamma \text{Woman}_{ijk} * \text{WD}_{jk} + \epsilon_{ijk} \quad (\text{C.1})$$

where $\ln Y_{ij}$ is the log of sales or value added for firm i in region j , woman is a dummy variable taking the value of 1 when the firm is woman shared, woman led or woman owned for each three regressions, WD_{jk} is the dummy variable that takes the value of 1 when the sector is woman dominated, meaning women concentrate on that sector for each type of woman presence (i.e. woman shared, woman led and woman owned), and $\text{Woman}_{ij} * \text{WD}_{jk}$ is the interaction term.

C.2

$$\Pr(\text{ApplyLoan}_{ij} = 1) = \sigma(\alpha_{ij} + \beta \text{Woman}_{ij} + \delta \text{Sales3YearsAgo}_{ij} + \epsilon_{ij}) \quad (\text{C.2})$$

where ApplyLoan_{ijk} takes the value of 1 if the firm applied for a loan in the last fiscal year, Woman is a dummy variable that takes the value of 1 when the firm is woman shared, led or owned, and $\text{Sales3YearsAgo}_{ijk}$ is the sales revenue of the firm from 3 years ago.

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