

# **Gender-based disparities in the business sector of developing countries.**

**Bopha Chhun**

**Bashair Altalhi**

**Mantas Rodzevicius**

**Abstract:** Mohammad Amin and Asif Islam in their Research Paper, "Are There More Female Managers in the Retail Sector?" found that there is a stronger female presence in small firms in developing countries. However, their research only provided a descriptive outcome and lacked in analysis. For our final project, we will analyze a different dataset, "Business Practices in Small Firms in Developing Countries Survey", by the World Bank. We will use several scholarly research papers, such as "The Challenges of Growing Small Businesses: Insight from Women Entrepreneurs", by Pat Richardson, Rhona Howarth, and Gerry Finnegan, to help support our analysis. We will use a combination of simple regression models and complicated regression models to understand why there is a higher presence of females in the service sector.

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## **I. Introduction**

The presence of women in the workforce has grown steadily through the years. However, gender inequality is still present in developing countries. Many societies have different cultural views that prevent women from playing a role and being a participant in the labor force. Mohammad Amin and Asif Islam in their Research Paper, "Are There More Female Managers in the Retail Sector?" introduced the conflict of women in the workforce. Through analyzing firm-level data of 87 developing countries, Amin and Islam found that the service sector is more favorable towards women compared with the manufacturing sector. Of female managers in the service sector, there is a higher presence of such in small firms and in small cities.

In our research project, we will dissect Amin and Islam's research, using a completely different data set. Not only will we confirm if the results of Amin and Islam's findings are plausible—is there a higher presence to females in the service sector—but we will take their research to a new level by extending to their findings. We will explore if the presence of female in the workforce can influence a firm's productivity, i.e. sales and profits. Since Amin and Islam have already concluded that there is a higher presence of females in small firms, we will be using a focused dataset on a survey sample of micro and small enterprises in seven developing countries. We will be using various models that we learned in class, including Linear Regression, Logit Models, and Lowess Models to explore this topic. A step-by-step approach will be taken to answer various questions linked to understanding the role female managers in the workplace. We will also be supporting our findings with research completed by Pat Richardson, Rhona Howarth, and Gerry Finnegan, in their research paper, "The Challenges of Growing Small Businesses:

Insight from Women Entrepreneurs”. Finnegan et al research investigates the possible reasons for gender disparities in developing countries. Because Amin and Islam’s article only produced a descriptive outcome of the data from the World Bank Enterprise Survey, and lacked in analysis of why there is gender-based disparity, we will turn to Finnegan’s research paper for answers. In order to understand why there is a higher presence of females in the service sector, we broke down our paper in 3 sections:

**Section 1:** What sectors have a higher female presence?

- In this section we will validate Amin and Islam’s result that there is a higher female presence in the service sector of small firms.

**Section 2:** Simple Regression: Could there be another explanation, other than female presence, that drives company’s profit?

- Before we can even begin to explore reasons for gender disparity, we want to make sure that our variables are endogenous and are sensible to use so that there is no bias in our findings. Certain questions that we will ask are: What other variables can play a role in company's profit? Does the size of a firm play a role in the presence of female managers?

**Section 3:** Complicated Regression: What are possible reasons for gender disparity in developing countries? We’ve created multiple models to help us understand and justify the reason for gender disparity:

- Work hours: Are women faced with a disadvantage from managerial opportunities because they work less hours?

- Are female-run businesses are more profitable than male-run businesses?
- How does education play a role in company's profit?
- How does business practices employed by women differ from those employed by men? Is there a correlation?
- We will look at financial planning and marketing practices employed by both male business owners and female business owners.

## **II. Data and Main Variables**

Amin and Islam uses the World Bank's Enterprise Surveys between 2007 and 2009, a data consisting of 87 developing countries. As the main explanatory variables, they looked at the proportion of female manager in the service sector and manufacturing sectors. Their sample for each country was stratified by firm size, industry sector, and location. The research only includes a simple logit regression to find the presence of top level of female managers using several different explanatory variables. The main focus of their paper is to see how the presence of female managers differs across sectors, yet they lacked in their explanation to explain why this is so.

We will be extending to Amin and Islam's paper and evaluate the plausibility of their conclusion. In our paper, we will be analyzing a more recent yet smaller dataset: the Business Practices in Small Firms in Developing Countries between 2008-2014. In contrast with the World Bank's Enterprise Survey, we will only be focusing on a smaller set of 7 countries that are dispersed across the world. These countries (2 South Asian, 3 African, 2 Latin American) are good representatives of the developing countries: Bangladesh, Kenya, Mexico, Sri Lanka, Ghana, Chile, and Nigeria. The survey that was

taken examines micro, small level enterprises using 26 questions related to business practices.

## Summary Statistics

Table 1 provides a summary of the variables we used from the Small Firms in Developing Country Survey. The survey that was taken varies across the countries, however, when evaluated as a whole, makes up a good representation for our analysis. The average profile for a business owner is 39 year old with approximately 10 years of education. It is likely that his father (instead of mother) owned their business prior. The sample was drawn from 4 sectors of the economy: manufacturing, trade, services, and crop and animal. Total monthly sales averaged at \$194,431 and monthly profits at \$46,897. Monthly profits have a standard deviation of 450542, and the reason for this is due to some firms making negative profits (our minimum was \$119350).

**Table 1:**

Summary Statistics				
Variable	Mean	SD	Min	Max
Female	0.5	0.49	0	1
Male	0.49	0.49	0	1
Trade	0.442	0.496	0	1
Services	0.318	0.465	0	1
Manuf	0.16	0.375	0	1
Crop and Animal	0.17	0.379	0	1
Owner's Age	39	10.87	3	90
Years of Edu	9.9	3.53	0	25
Inventories	336574	371467	0	40000000
Monthly Sales (USD)	194431	198926	0	19000000
Montly Profits (USD)	46897	450542	- 119350	45000000
Training Attend	0.33	0.47	0	1

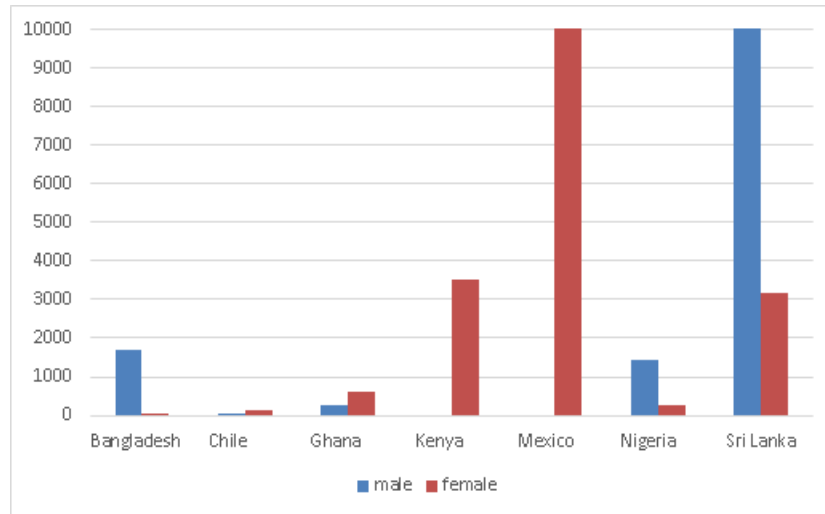
<b>Training Treatment</b>	0.349	0.476	0	1
<b>Father Owned Business</b>	0.43	0.495	0	1
<b>Mother Owned Business</b>	0.133	0.339	0	1
<b>Bangladesh</b>	0.038	0.19	0	1
<b>Chile</b>	0.0035	0.59	0	1
<b>Ghana</b>	0.019	0.13	0	1
<b>Kenya</b>	0.15	0.27	0	1
<b>Mexico</b>	0.23	0.42	0	1
<b>Nigeria</b>	0.1	0.2	0	1
<b>Sri Lanka</b>	0.44	0.49	0	1

The observation totals for Table 2 gives a breakdown of the total number of observations by country, gender, business sector.

Table 2: Observation Totals

<b>Country</b>	<b>Female</b>	<b>Male</b>	<b>Mean Age</b>	<b>Total</b>	<b>Manuf</b>	<b>Services</b>	<b>Trade</b>
Bangladesh	25	1699	42	1725	486	366	872
Chile	144	14	37	158	17	22	75
Ghana	611	260	40	871	79	109	147
Kenya	3537	0	35	7074	2	836	2682
Mexico	10275	0	45	10275	484	3371	6404
Nigeria	242	1419	31	4534	423	523	69
Sri Lanka	3179	14384	35	19942	4445	6163	5303





### III. Estimations

#### Section 1: What sectors have a higher female presence?

One of Amin and Islam's main argument from their research is that the likelihood of female managers is much greater in the retail sector than any other sector. We will use a logit regression model to compare our results with theirs. The Small Firms in Developing Countries Data that we used also covers 4 sectors: manufacturing sector, service sector, trade sector, and the crop and animal sector. Each sector has a diverse population consisting of male business owners and female business owners. We decided to use a logit regression for this analysis to see the likelihood of the dependent variable in relation to the independent variable. We used the “owner is male” variable as our dependent variable for the first logit regression, and we converted the “owner is male” variable to “owner is female” variable for our second logit regression. We used same independent variables for both logit regressions: “sector is manufacturing”, “sector is service”, “sector is trade”, and “sector is crop and animal”. We then compared side-by-

side both logit regressions using stargazer function in R software. The results are printed in Table 3.a.

**Table 3.a:**

**Dependent variable:**

Male - Owner is male

Female - Owner is female

**Independent variables:**

- manuf -Sector is manufacturing
- services -Sector is services
- trade - Sector is trade
- cropandanimal -Sector is crop and animal

Female likelihood in the different sectors

=====

Dependent variable:

		male owner	female owner
		(1)	(2)
		-----	
manuf		-0.657***	0.657***
(0.198)	(0.198)		
services		-0.436**	0.436**
(0.196)	(0.196)		
trade		0.213	-0.213
(0.455)	(0.455)		
cropandanimal		0.161	-0.161
(0.251)	(0.251)		
Constant		2.056***	-2.056***
(0.153)	(0.153)		

Observations	1,661	1,661
Log Likelihood	-679.326	-679.326
Akaike Inf. Crit.	1,368.652	1,368.652

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Table 3.a shows how likely female owned business are in the 4 different sectors. Logit regression does not show the exact percentage of likelihood. It shows which variables are more likely to occur in general. That means female business owners are more likely to work in the manufacturing sector and the service sector than male business owners. While the male business owners are more likely to work in the trade sector and in crop and animal sector than female business owners.

We used Logit model average marginal effects to estimate the percentage of the likelihood of female business owners working in different sectors. We estimated the mean of predicted values (female likelihood to work in different sectors) and multiplied that by the coefficients of the same values.

All variables stayed the same. We used “owner is male” as the dependent variable and “sector is manufacturing”, “sector is service”, “sector is trade”, “sector is crop and animal” as independent variables. We ran logit model average marginal effects for males and four females separately. Finally, we compared them in the table 3.B.

### **Table 3.B:**

#### **Dependent variable:**

- male - Owner is male

#### **Independent variables:**

- manuf -Sector is manufacturing

- services -Sector is services
- trade - Sector is trade
- cropandanimal -Sector is crop and animal

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Male business owner likelihood in percentages:

(Intercept)	manuf	services	trade	cropandanimal
0.25273711	-0.08075538	-0.05365960	0.02618176	0.01981185

Female business owner likelihood in percentages:

(Intercept)	manuf	services	trade	cropandanimal
-0.25273711	0.08075538	0.05365960	-0.02618176	-0.01981185

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Table 3.B shows the actual percentage of how likely female business owners are to work in different sectors. If we looked at the “manuf” column, we would see that the female business owners are more likely to work in the manufacturing sector by 8%. The “services” column shows that female business owners are more likely to work in the service sector by 5.4%. The “trade” column shows that male business owners are more likely to work in trade sector by 2.6%. The “cropandanimal” column shows that male business owners are more likely to work in the crop and animal sector by 2%. In summary, manufacturing sector and service sector represent the most presumably environment for female business by 8% and 5.4% respectively.

## **Section 2: What influences company’s profits?**

In developing countries, due to gender inequality, it is often difficult for woman to have a voice in the workforce. Thus, by extending to Amin and Islam’s research, we will explore a women's role in the workforce, by looking at whether her presence can have in influence on company's profits. To confirm that all of our variables make sense

and are endogenous, we will first explore to see if there are any significant relationships with other variables. Could there be other variables that drive company's profits?

We used linear regression to determine if the larger companies make the higher profits. We wanted to see three scenarios, one- monthly profits against the company size, two- monthly profits from the male business owners against the company size, and three- monthly profits from the female business owners against the company size. We selected monthly profits (set in USD) as our dependent variable. Our independent variables representing company size were: capital stock, number of paid workers, inventories, and monthly sales. The first scenario was checked by linear regression between dependent and independent variables. The second scenario was checked by linear regression with the dependent variable interacting with the male variable and the independent variables interacting with the male variable. The third scenario was checked by linear regression with the dependent variable interacting with the female variable and the independent variables interacting with the female variable. Finally, we created a comparison table of coefficients using stargazers function in R software. The result is displayed in Table 5.

**Table 5**

**Dependent variable:**

- monthlyprofit - Monthly profit

**Independent variables:**

- capitalstock - Capital stock
- paidworkers - Number of paid workers
- inventories - Value of inventories
- monthliesales - Sales in the last month

- male - Owner is male
- !male - Owner is female

Dependent variable:			
	monthlyprofit[all] (1)	monthlyprofit[male] (2)	monthlyprofit[female] (3)
capitalstock 0.002** (0.00001)	0.00001 (0.00002) (0.001)		0.00001
paidworkers 7,888.143*** (2,151.056)	102.329 (141.289)	95.721 (104.739)	-
inventories 0.082*** (0.015)	0.012*** (0.001)	0.015*** (0.001)	-
monthlysales 0.867*** (0.038)	0.173*** (0.002)	0.166*** (0.002)	
Constant 9,222.149	10,694.610*** (2,881.814)	9,715.150*** (2,470.378)	- (8,540.713)
Observations	20,569	15,280	5,204
R2	0.317	0.519	0.106
Adjusted R2	0.316	0.519	0.105
Residual Std. Error	408,192.300 (df = 15275)	300,936.800 (df = 15275)	603,733.900 (df = 5199)
F Statistic	2,382.040*** (df = 4; 20564)	4,118.148*** (df = 4; 15275)	153.427*** (df = 4; 5199)
Note: *p<0.1; **p<0.05; ***p<0.01			

Does company size influence profit levels? Is there a difference between female and male-run businesses? The regression above shows that each additional unit of capital stock increases profits by \$0.00001 on average for male and female-run businesses.

Male-run businesses increase profit by \$0.00001 and female-run businesses increase profit by \$0.002. Each additional unit of paid workers increases profits by \$102.329 on average for male and female-run businesses. Male-run businesses increase profits by \$95.721 and female-run businesses decrease profits by a surprising \$7,888.143. Each additional unit of inventory increases profits by \$0.012 on average for male and female-run businesses. Male-run businesses increase profits by \$0.015 and female-run businesses experience loss by \$0.082. Each additional unit of monthly sales increases profits by \$0.173 on average for male and female-run businesses. Male-run businesses increase profits by \$0.166 and female-run businesses increase profits by \$0.867.

In summary, general monthly profits (males and females as one) increase as company size increases. Male-run business profits increase as company size increases as well. On the other hand, female-run business profits in some cases decrease as company size increases.

### **Section 3: What are possible reasons for gender-based disparities?**

#### **Work hours**

In Finnegan's research, nearly all of the women surveyed in his study had children. The national household average shows that women are likely to have more than 2 children. If a woman is the caretaker of the family, then there is little time that she can spend at work. General common sense would tell you that the more you work the more you earn. If this is the case, then women in developing countries have a disadvantage. This could prevent women from being a part of the work force and from becoming managers. We ran a linear regression model to see if in fact more work hours translate

into more profits for male-run business? And do more work hours translate into more profits for female-run business?

We chose monthly profit as our dependent variable and the independent variables are as follows: The owner's hours variable interacted with the male variable and the owner's hours variable also interacted with the female variable. Summary of this regression is displayed in Table 6.

**Table 6:**

**Dependent variable:**

- monthlyprofit - Monthly profit

**Independent variables:**

- ownershours - Hours worked by the owner in the last week interacted with the male variable
- male - Owner is male
- ownershours - Hours worked by the owner in the last week interacted with the female variable
- !male-Owner is female

Call:

lm(formula = monthlyprofit ~ ownershours:male + ownershours:(!male))

Residuals:

Min	1Q	Median	3Q	Max
-182331	-37398	-21098	-6139	44975522

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	42770.5	6016.9	7.108	1.20e-12 ***
ownershours:male	240.6	109.5	2.197	0.028 *
ownershours:female	-508.1	121.0	-4.199	2.69e-05 ***

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Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1



Residual standard error: 408200 on 30709 degrees of freedom  
(13867 observations deleted due to missingness)  
Multiple R-squared: 0.002578, Adjusted R-squared: 0.002513  
F-statistic: 39.69 on 2 and 30709 DF, p-value:  $< 2.2e-16$

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Table 6 shows profit tendency to go up or down as the business owner work hours increases. Let's look at each estimate coefficients separately. The owner hours interacting with male shows that for each additional work hour the male business owner work in the week, there is on average a \$240.6 increase in profit. The owner hours interacting with female shows that for each additional work hour the female business owner work in the week, there is on average a \$508.1 decrease in profit.

In summary, we see that the more the male business owner works the more profit the company receives and the more the female business owner works the less profit the company receives. It does not mean that female business owners should decrease their work hours. From our results, since there is a decrease in profits, we can conclude that women does not work as much as men. As Finnegan's research as stated, this could be due to the fact that women work less hours due to children in the family.

### **Are female-run businesses more profitable than male-run businesses?**

Males dominate the business world in developing countries. The female-run business owners encounter a lot of political, religious, and cultural obstacles that make running businesses for the female owners much harder than it is for the male-run owners. There is a general notion that males are more skilled and run their business better than female-run business owners. Therefore, the companies of male-run business owner are more profitable than the female-run business owner companies. We wanted to check if this notion holds true.

We used the logit regression to check our hypothesis. We decided to run two logit regressions, one for the male-run business owners and one for the female-run business owners. Then we compare both logit regressions in a table created by the stargazer function. For the first logit regression, we chose the “owner is male” variable as our dependent variable and we chose the “monthly profit” as our independent variable. For the second logit regression, we chose the “owner is female” variable as our dependent variable and we chose the “monthly profit” as our independent variable. Results are displayed in table 7.

**Table 7**

**Dependent variables:**

male -Owner is male

!male-Owner is female

**Independent variables:**

monthlyprofit - Monthly profit

Male/Female business profitability likelihood

=====		
	Dependent variable:	
	-----	
	male	female
	(1)	(2)
-----		
monthlyprofit	0.00001*** (0.00000)	-0.00001*** (0.00000)
Constant	-0.130*** (0.014)	0.130*** (0.014)
-----		
Observations	31,267	31,267
Log Likelihood	-20,206.040	-20,206.040

Akaike Inf. Crit.	40,416.070	40,416.070
=====		
Note:	*p<0.1; **p<0.05; ***p<0.01	

Table 7 displays results from two simple logit regressions and tries to answer the question of whether female business owners are more profitable than male business owners. If we would look at the first coefficient of 0.00001 we could interpret that male business owners are more likely to have higher profits than female business owners. If we would look at the second coefficient of -0.00001 we could interpret that the female business owners are less likely to have higher profits than male business owners.

In summary, we found out that there is a statistically significant proof that female business owners are less likely to earn higher profits than the male business owners.

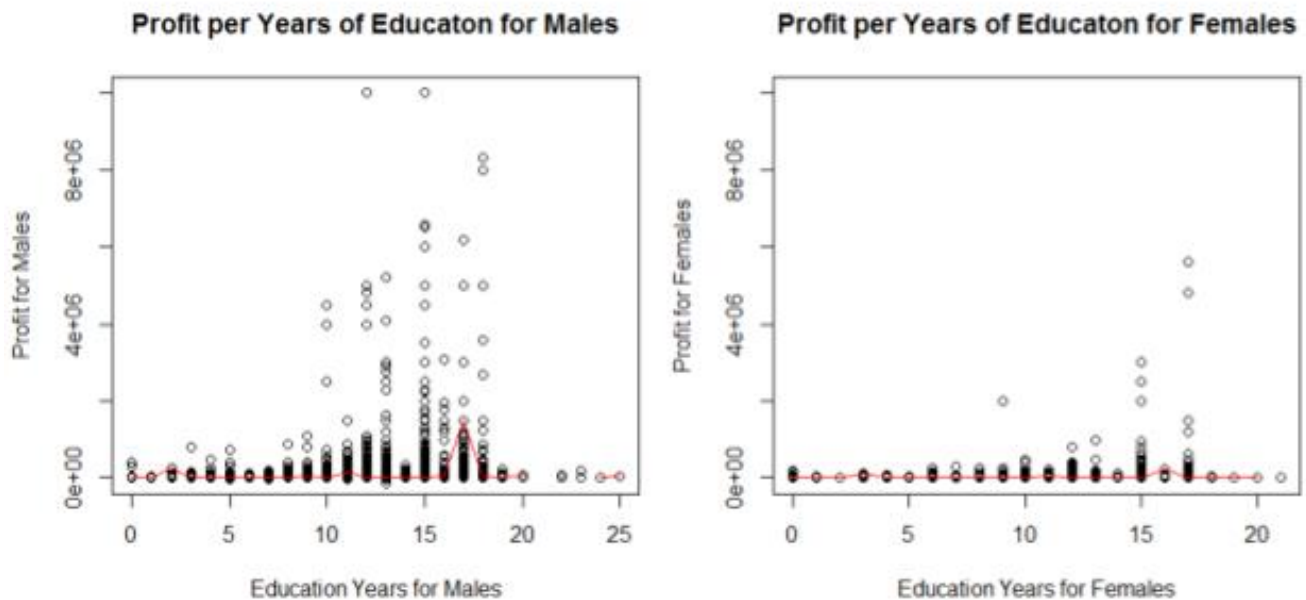
### **Profit and education level**

Women in developing countries lack formal education. As we know, education is a key aspect for the growth of any business to perform well. Education has massive benefits to firms’ owners in ways such as improving outcomes efficiency, professionalism in making decision, and enhance monthly profit. The lack of formal education can limit women from performing entrepreneurial duties (Finnegan, 33), which can prevent her from excelling in her managerial duties. We will run a regression to see how education plays in role in a firm profit levels.

We created two plots with the Lowess regression lines using R software to check our hypothesis. The dependent variable for plot one (profit per years of education for males) is monthly profit adjusted for males. The independent variable for plot one is education years adjusted for males. The dependent variable for plot two (profit per years

for education for females) is monthly profit adjusted for females. The independent variable for plot two is education years adjusted for females. We also have an assumption that secondary school lasts for twelve years, undergraduate school lasts for four years, and graduate school lasts between two and six years.

**Graph 1**



Graph 1 shows the comparison of profit per education for males and females. By comparing two plots, we can visually see that the male-run businesses have a higher number of high-profit companies. The female-run businesses have only a few. The Lowess curve shows the averaged value of the dependent variable for each independent variable. Take a look at the Lowess curve on plot one (profit per years of education for males). You can see that the curve is pretty flat the whole way and peaks at the 17<sup>th</sup> education year. That means that males with one year of graduate education on average tend to earn the most profit. Let's compare this to plot two (profit per years of education for females). You can see that the curve is pretty flat the entire way and has a slight peak

at the 16<sup>th</sup> year of education. This means that females with an undergraduate degree on average tend to earn the most profit. There is another notable observation. The male curve peaks at the 17<sup>th</sup> year and is much taller than the female curve peak at the 16<sup>th</sup> year. This means that on average the male-run business tends to be much more profitable than the female-run business. There is also a similarity in these graphs in that both the female and male curves peak at a similar education year, their 16<sup>th</sup>- 17<sup>th</sup> years respectively.

In summary, we can conclude that education does play an important role in the profitability of a company. The male-run businesses are more profitable than the female-run businesses. Also, the 16<sup>th</sup> and 17<sup>th</sup> years of education on average deliver the most profit to the companies. From this, we can see that there is a gender disparity in developing countries. Finnegan's research states that, "Gender has an impact upon women's enterprise activities in that, invariably, women often have fewer of their own resources and/or poorer access to resources than men; and they have less control over their own time, labour and mobility, and less access to formal education and skills training" (Finnegan, 28). The lack of resources for women can explain why our results show that male-run businesses are more profitable than female-run businesses.

### **Financial Planning**

Women in developing countries face many challenges when it comes to developing their businesses. Women in most societies are not given the support that they need to promote their entrepreneurship. They lack not only cultural and political support, but many lack the technical skills and ability to do basic financial planning. As we know, financial planning is crucial for firms of all sizes to increase their company's performance. There are many researches that have found that women entrepreneurs are the primary decision makers in their business. These women make all the business

decisions in a firm (Finnegan, 33). Furthermore, analysts who have illustrated undertaken researches of small businesses, have reported two conclusions: some believe that financial planning states a strong foundation for decision makers which benefits small firms' managers to take long-term judgment; others figure that critical planning has no possible payoff for small businesses and so has no impact on the financial achievements (Schwenk and Shrader,1993). Financial planning will insure strategic aims and purpose for a company. Given these facts from Finnegan's research shows that women managers are the primary decision makers, yet they lack the managerial skills, we ask the question: how will women's role, in terms of making important financial planning decisions, affect the productivity of company?

### **Model I**

Before we even begin to answer our question, we want to see if there is any correlation between financial planning for female and male business owners. To start off, we will be using a logit model to examine if there is any relationship with gender and financial planning. The significance of this model is to connect it to the following model and say if it has matching results.

#### **The dependent variable:**

- female/male owner. Which is endogenous and dummy variable it is coded as 0=female, 1=male.

#### **The independent variables :**

- reviewing the financial performance monthly(bp\_f1).
- having a target set for sales over the next year (bp\_f2).
- comparing their sales achieved to their target at least monthly(bp\_f3).

- having a budget of the likely costs their business will face over the next year (bp\_f4).
- preparing profit and loss statement (bp\_f5).
- preparing cashflow statement (bp\_f6).
- preparing balance sheet (bp\_f7).
- preparing income and expenditure statement (bp\_f8).

Table 8: female/male in Financial Planning

	Dependent variable:	
	Female (1)	male (2)
bp_f1	-1.0*** (0.04)	1.0*** (0.04)
bp_f2	-1.0*** (0.04)	1.0*** (0.04)
bp_f3	1.1*** (0.05)	-1.1*** (0.05)
bp_f4	0.9*** (0.05)	-0.9*** (0.05)
bp_f5	1.6*** (0.1)	-1.6*** (0.1)
bp_f6	-0.1 (0.1)	0.1 (0.1)
bp_f7	0.1 (0.1)	-0.1 (0.1)
bp_f8	-0.01 (0.05)	0.01 (0.05)
Constant	-0.2*** (0.02)	0.2*** (0.02)
Observations	26,336	26,336
Log Likelihood	-16,404.5	-16,404.5
Akaike Inf. Crit.	32,827.0	32,827.0
Note:	*p<0.1; **p<0.05; ***p<0.01	

Our results shows that male business owners more likely than female business owners to review the financial performance of their business and analyze where there are areas that needs improvement. These areas include: target sales over the next year, annual statement of cash flow, and annual income/expenditure sheet. On the other hand, female business owners are more likely their male counterpart to track sales achieved to their monthly target, budget future costs, review annual profit and loss statement, and prepare annual balance sheets. The estimation above states that male and female business owners are equally maintain care of the record keeping for financial planning.

## **Model II**

In this step, we model the relationship between financial planning and monthly profit by using multiple linear regression. We will also interact this model with both male and female with education to see if there is any relationship when male performs these activities vs. when female performs the same activity. This interaction will show how the employment and use of good financial planning can affect monthly profit.

### **The dependent variable:**

- monthly profit which is endogenous variable.

### **The independent variables:**

- reviewing the financial performance monthly(bp\_f1).
- having a target set for sales over the next year (bp\_f2).
- comparing their sales achieved to their target at least monthly(bp\_f3).
- having a budget of the likely costs their business will face over the next year (bp\_f4).
- preparing profit and loss statement (bp\_f5).



- preparing cashflow statement (bp\_f6).
- preparing balance sheet (bp\_f7).
- preparing income and expenditure statement (bp\_f8).
- education which is exogenous.

Table 9: Linear regression Financial Planning as motive for monthly profit male/female

	Dependent variable:	
	monthlyprofit	
	(1)	(2)
Female	-8,920.5* (4,759.4)	
male		9,926.3** (4,785.2)
bp_f1	-3,275.7 (5,241.3)	2,740.8 (9,656.1)
bp_f2	21,615.1*** (6,885.1)	3,220.6 (7,333.2)
bp_f3	-15,422.3* (8,481.5)	-1,051.5 (10,308.6)
bp_f4	51,366.9*** (8,748.0)	-1,471.3 (9,086.7)
bp_f5	95,626.4*** (11,409.4)	-2,365.7 (9,178.6)
bp_f6	6,688.1 (15,663.6)	4,546.1 (14,727.9)
bp_f7	121,116.7*** (18,315.2)	3,625.9 (15,008.1)
bp_f8	34,644.4*** (7,711.4)	2,318.6 (9,688.5)
ednyears	727.0 (587.0)	210.2 (576.0)
Female:bp_f1	7,606.8 (27,653.5)	
Female:bp_f2	-19,049.1	

	(20,586.7)	
Female:bp_f3	16,229.7 (30,182.9)	
Female:bp_f4	-50,280.1* (25,712.6)	
Female:bp_f5	-94,614.7*** (25,131.6)	
Female:bp_f6	-1,385.0 (42,451.6)	
Female:bp_f7	-115,169.9*** (44,280.1)	
Female:bp_f8	-32,506.5 (25,930.9)	
Female:bp_f1:ednyears	-188.9 (2,548.7)	
Female:bp_f2:ednyears	39.1 (1,886.9)	
Female:bp_f3:ednyears	-191.0 (2,719.1)	
Female:bp_f4:ednyears	-263.6 (2,310.4)	
Female:bp_f5:ednyears	-363.2 (2,214.8)	
Female:bp_f6:ednyears	-55.7 (3,549.0)	
Female:bp_f7:ednyears	-203.8 (3,597.2)	
Female:bp_f8:ednyears	3.2 (2,385.6)	
male:bp_f1	16,406.6 (21,655.6)	
male:bp_f2	-82,889.3*** (26,166.6)	
male:bp_f3	97,721.9*** (35,302.8)	
male:bp_f4	85,632.9** (34,464.1)	
male:bp_f5	191,551.0***	

		(41,848.9)
male:bp_f6		-151,948.3*** (47,549.3)
male:bp_f7		-281,126.2*** (75,660.4)
male:bp_f8		53,554.4** (27,010.9)
male:bp_f1:ednyears		-2,014.7 (1,723.6)
male:bp_f2:ednyears		9,288.8*** (2,221.8)
male:bp_f3:ednyears		-10,122.8*** (2,965.7)
male:bp_f4:ednyears		-3,160.9 (2,847.8)
male:bp_f5:ednyears		-7,894.6** (3,327.8)
male:bp_f6:ednyears		13,289.0*** (3,809.9)
male:bp_f7:ednyears		30,046.2*** (5,717.8)
male:bp_f8:ednyears		-1,902.6 (2,197.5)
Constant	9,369.8 (6,572.3)	4,811.4 (5,882.6)
-----		
Observations	23,654	23,654
R2	0.02	0.03
Adjusted R2	0.02	0.03
Residual Std. Error (df = 23627)	264,071.9	263,587.0
F Statistic (df = 26; 23627)	22.2***	25.6***
=====		
Note:	*p<0.1; **p<0.05; ***p<0.01	

Our results show that female owners have negative monthly profit which is - 8,920.5. Monthly profit has profitable amount with female interaction with checking the monthly financial achievement, as well as female interaction with compares their sales

performance to their aim at least monthly; although logit model presents above female less likely to discuss their monthly financial performance and more presumably to approach their sales achievements to their goal unless monthly. However, the female owner interaction with other financial activities such as having a budget of the possible costs of their business that is going to face over the next year, and having an annual profit and loss statement that female owners are more likely to do have negative values with monthly profit. Even though there is no empirical evidence that shows a positive relationship between females and financial planning, the fact that there is a decrease could mean that there are more female business owners with smaller businesses. Since smaller firms/businesses are likely to have less revenue than those that are larger.

To further support our thesis, the interaction made with male business owners have a positive monthly profit which is 9,926.3. Dissimilarly, when we interacted male business owners with: sales target for next year, preparing cash flow statements, and balance sheet; our results showed negative net profit. Regardless male owners are more correlated with the first two interaction, but less correlated with having an annual balance sheet. The positive monthly profits leaves us to conclude that it is possible that male business owners are more inclined to work at larger, highly profitable businesses.

The statistics interpretations of the model above illustrate statistics test is not statistically significant of the variables female interaction with financial planning. That failure to reject the null hypothesis that states there is no effects of female interaction with financial planning variables on financial performance. However, the statistic test is statistically significant for males. Even though there is no significance, the regression

supports our hypothesis in that female business owners are more likely to work in smaller firms.

Education is important component of the model. Education has massive benefits to firms' owners like improving outcomes efficiency, professionalism in making decision, and enhance monthly profit as we have mentioned above in the paper. The monthly profit and education coefficient has a positive value in both model. The multiple interaction of education, owners' gender, and financial activities. First, the monthly profit coefficient of the multiple interaction, female, years of education, sales target for following year as well as prepare income and expenditure statement demonstrate a positive monthly profit which is 39.1, 3.2 respectively but the p-value is not statistical significance for all varies multi-interaction of owners' gender, education, and financial planning activities. Which interprets a failure to reject the null hypothesis there is not a critical impact of multiple interaction on profit.

The purpose of the model I and II to have a close look on how gender plays a role in small firms. The results as stated above male owners have more profitable firms compare female owners. The highlighted question is supposed to target the reasons of wage gap between male and female. In Finnegan's research, he elaborates on his findings that male were significantly more educated than women. We are going to figure out what a significant motivation of profit in small firms. Also, if the gender still play a microcontroller role in small firms' profit. Marketing activities is the next step to see weather female owner have more profitable firms.

## **Marketing**

The availability of participating in successful marketing would carry benefits to the small firms. Creating effective marketing strategies that have been supporting the small firms to increase their sales and stay standing in the competitive. We are going to examine if marketing practices play a significant role in increasing the monthly sales in small firms.

### **Model I**

The regression model presents how many monthly sales that achieve with different marketing practices. Further, we have applied interaction to emphasize the relationship between varies variables. The monthly sale is an endogenous variable. It has been selected instead of monthly profit because marketing progress usually exploring consumer markets for its products to be purchase. Therefore, monthly sales are principal component to estimate marketing productivity.

#### **The Dependent variable:**

- Monthly sales

#### **The Independent variables:**

- Visited competitor's business to see prices (bp\_m1)
- Visited competitor's business to see products (bp\_m2)
- Asked existing customers what other products they should offer (bp\_m3)
- Talked with former customer to see why stopped buying (bp\_m4)
- Asked supplier what products selling well (bp\_m5)
- Used a special offer to attract customers (bp\_m6)
- Have done advertising in last 6 months (bp\_m7)
- Value of inventories

Table 10: linear regressions of Marketing as motive for monthly sales female owners

Dependent variable:	
Monthly sales	
Female	-135,089.10000*** (52,002.41000)
ageoffirm	10,241.69000*** (1,157.84800)
bp_m1	-129,564.00000*** (35,045.46000)
bp_m2	50,430.42000 (37,315.12000)
bp_m3	-84,526.93000*** (30,302.33000)
bp_m4	65,022.35000** (29,896.32000)
bp_m5	117,096.20000*** (30,841.04000)
bp_m6	51,285.90000 (33,982.22000)
bp_m7	276,071.70000*** (39,040.97000)
Female:ageoffirm	-9,620.35300*** (3,170.23700)
Female:bp_m1	159,087.50000** (79,725.62000)
Female:bp_m2	-95,858.56000 (83,755.56000)
Female:bp_m3	87,405.25000 (66,468.57000)
Female:bp_m4	-82,604.67000 (61,370.19000)
Female:bp_m5	-116,546.40000* (60,079.58000)
Female:bp_m6	-47,742.00000 (59,437.48000)
Female:bp_m7	-185,849.10000**

	(74,027.19000)
Female:bp_m1:inventories	1.529 (0.13206)
Female:bp_m2:inventories	7.142 (0.10766)
Female:bp_m3:inventories	-1.935 (0.12808)
Female:bp_m4:inventories	5.501 (0.07693)
Female:bp_m5:inventories	1.744* (0.09155)
Female:bp_m6:inventories	4.632 (0.07882)
Female:bp_m7:inventories	-1.069 (0.08839)
Constant	174,798.70000*** (23,563.40000)
-----	
Observations	20,354
R2	0.01519
Adjusted R2	0.01402
Residual Std. Error	1,514,381.00000 (df = 20329)
F Statistic	13.06240*** (df = 24; 20329)
=====	
Note:	*p<0.1; **p<0.05; ***p<0.01

## Result

The table 10 shows that increasing the small firms in our countries sample by one female can reduce the monthly sales approximately by-13,089. Also, female interaction with firm age has a negative value even though it is statistically significant. This could be due the obstacles that faces women face as being female owners. On the other hand, when female owners visit competitor's firms to see prices and request information from existing customers what other products they should offer, the monthly sales are 159,087 and 87,405 respectively. That conclude how the marketing's position can hike monthly



sales value. In addition, multiple interaction; female owner, marketing practicing, and inventories display mostly positive sales which mean an increase by one multiple interaction component contributes an accomplish monthly sales.

Table 11: linear regression of Marketing as motive for monthly sales male owners

Dependent variable:	
-----	
	monthly sales
-----	
male	169,654.00000*** (51,367.44000)
ageoffirm	924.86140 (2,913.56900)
bp_m1	40,142.76000 (69,650.40000)
bp_m2	-41,829.04000 (73,010.91000)
bp_m3	-11,870.68000 (57,771.48000)
bp_m4	-19,982.14000 (52,286.65000)
bp_m5	22,216.22000 (50,375.72000)
bp_m6	6,424.49900 (47,699.02000)
bp_m7	127,298.00000** (60,365.42000)
male:ageoffirm	7,706.01900** (3,130.99900)
male:bp_m1	-164,676.90000** (77,993.30000)
male:bp_m2	111,996.30000 (82,139.70000)
male:bp_m3	-94,982.81000 (65,298.17000)
male:bp_m4	-7,670.90600 (60,456.69000)
male:bp_m5	72,550.60000 (59,186.46000)
male:bp_m6	-35,492.74000 (58,778.16000)
male:bp_m7	55,411.53000

	(72,413.13000)
male:bp_m1:inventories	3.373 (0.02644)
male:bp_m2:inventories	-7.015** (0.02940)
male:bp_m3:inventories	8.241*** (0.01725)
male:bp_m4:inventories	1.8875*** (0.01653)
male:bp_m5:inventories	-2.866** (0.01310)
male:bp_m6:inventories	9.616*** (0.01443)
male:bp_m7:inventories	-4.013*** (0.01069)
Constant	34,652.11000 (45,757.85000)
-----	
Observations	20,354
R2	0.03889
Adjusted R2	0.03775
Residual Std. Error	1,496,047.00000 (df = 20329)
F Statistic	34.27181*** (df = 24; 20329)
=====	
Note:	*p<0.1; **p<0.05; ***p<0.01

Table 11 shows the male owners have more opportunity of achieve higher monthly sales than female. Further, if the firms age interaction the male owner, a one year increase in firm age is going to hike sales by 7,706.019 and it is statistical significance. Thus, firm's experience addresses a critical role in the amount of monthly sales.

Marketing practices like visiting competitor's business to see products, asking supplier what products selling well, and having done advertising in last six months; interaction male owner also have a positive value. Meanwhile, multiple interaction; male owner, marketing variables, and inventories states less effectiveness compare to the female owner.

## Conclusion

Using the Business Practices in Small Firms in Developing Countries Survey, we found that there is in fact a gender disparity in the workforce. Our results show that there is a positive relationship associated with women in the smaller firms. Our linear regression model ran in Section 1 confirms Amin and Islam's research that there is a higher presence of women in the service sector of small firms. In Section 2, we used a logit regression to measure the correlation between women in small vs. large firms, and found that women are more likely to work in smaller firms (due to the relationship we found in profit levels). Moreover, in Section 3 when we ran numerous complicated models using female as an interaction variable, we discovered that education, work hours, financial planning, as well as marketing, can affect a firm level profits. When we interacted our regression with female, the results showed that female owners correlated with lower profit levels. Overall, we can conclude that there is gender disparity in developing countries. Gender disparity for top managerial position is an issue that even western societies are still resolving today. Women face many obstacles and challenges when it comes to managerial opportunities due to cultural, political, and religious reasons. Programs and surveys, such as our Business Practices in Small Firms in Developing Survey, are helping address the problem by implementing programs to help women with entrepreneurial skills so that there is equal opportunity in the work place. All in all, despite all of the many obstacles standing in the way of women in developing countries, they continue to strive play an integral role in society.

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