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MICHAEL J.  
PISANI

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**EAFIT**<sup>®</sup>

# CONTEMPORARY FEMALE ENTREPRENEURSHIP IN NICARAGUA<sup>1</sup>

EMPRENDIMIENTO FEMENINO CONTEMPORÁNEO EN NICARAGUA<sup>2</sup>

MICHAEL J. PISANI<sup>3</sup>

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## ABSTRACT

Women are important entrepreneurial actors within the Nicaraguan economic ecosystem. Majority female-owned firms comprise 32.7% of all urban Nicaraguan formal enterprises; these ownership rates far exceed the regional (21.8%) or global averages (14.5%). Within Nicaragua, self-employment rates for women (43.3%) surpass that of men (28.3%). This article describes the contemporary Nicaraguan entrepreneurial landscape for female-owned enterprises using the 2016 Nicaraguan Enterprise Survey of 333 formal sector urban-based firms conducted by the World Bank. Principal multivariate results include the concentration of female top management with majority female-ownership, the role of the informal sector in spawning formal female enterprises, and size constraints of female-owned enterprises.

## KEY WORDS

Female Entrepreneurship, Nicaragua

## RESUMEN

Las mujeres son importantes actores empresariales dentro del ecosistema económico nicaragüense. La mayoría de las empresas propiedad de mujeres comprenden el 32,7% de todas las empresas formales urbanas de Nicaragua; estas tasas de propiedad exceden con creces los promedios regionales (21,8%) o globales (14,5%). Dentro de Nicaragua, las tasas de autoempleo de las mujeres (43,3%) superan a las de los hombres (28,3%). Este artículo describe el panorama empresarial nicaragüense contemporáneo para las empresas propiedad de mujeres utilizando la Encuesta de Empresas Nicaragüenses 2016 de 333 empresas urbanas del sector formal realizadas por el Banco Mundial. Los principales resultados multivariantes incluyen la concentración de la alta dirección femenina con la propiedad mayoritaria de mujeres, el papel del sector informal en el desarrollo de empresas femeninas formales y las limitaciones de tamaño de las empresas de mujeres.

## PALABRAS CLAVE

Emprendimiento femenino, Nicaragua

1 This article complies with standard academic ethical practices. The secondary data used (exempt from IRB review) was collected under the auspices of the World Bank Enterprise Survey group and is warehoused with the World Bank. Public account news sources were also utilized. No external funding was used in this research and there are no conflicts of interest (or competing interests) in the production of this research. This research is original and has not been submitted or published elsewhere.

2 Este artículo cumple con las prácticas éticas académicas estándar. Los datos secundarios utilizados (exentos de la revisión del IRB) se recopilaron bajo los auspicios del grupo de la Encuesta Empresarial del Banco Mundial y se almacenan en el Banco Mundial. También se utilizaron fuentes de noticias de cuentas públicas. No se utilizó financiamiento externo en esta investigación y no hay conflictos de interés (o intereses en conflicto) en la producción de esta investigación. Esta investigación es original y no ha sido enviada o publicada en otro lugar.

3 PhD, University of Texas - Pan-American [Now the University of Texas Rio Grande Valley]. Professor of International Business, Central Michigan University. E-mail: m.pisani@cmich.edu ORCID ID#: 0000-0001-7773-5951

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## INTRODUCTION

With less than a \$15 dollar investment, Jessica Flores began her Nicaraguan micro-business out of necessity to help pay for her college tuition (Rivas, 2017a, 2017b). In 2009, Ms. Flores was studying industrial engineering in Managua, Nicaragua and hit on the idea to introduce her own line of pet medicines. She grew up as a pet lover and knew how to deworm dogs. At first, she sold her pet deworming medicines (and deworming service) door to door and gradually built up a steady clientele. By the time she graduated from university, Ms. Flores expanded her business to include a full range of health services for pets, including grooming, surgery, and lab work—in essence Ms. Flores had created a pet clinic. The business grew and transitioned from an informal itinerant business operation to a fixed-location formal enterprise that in 2017 includes a second pet clinic, eight employees, and a growing product line including a recently developed dog shampoo. Ms. Flores is among a unique group of female entrepreneurs operating formal enterprises with employees, comprising 2.9% of all economically active women, in Nicaragua (INIDE, 2017), the topic of this article. To this end, location and context matters greatly within the framework of entrepreneurial research (Welter, 2010), and this is particularly so when gender is considered (Marlow & Martinez Dy, 2017).

Doing business in Nicaragua, the second poorest nation in the Western Hemisphere with a per capita income of \$1,940, is challenging (World Bank, 2017a). For ease of doing business, the World Bank ranks Nicaragua 127th worst out of all 190 countries surveyed and ranks Nicaragua 26th worst of 32 countries in Latin America (The World Bank, 2017b). For example, the World Bank estimates the initial regulatory costs of starting a formal business in Nicaragua is 68 percent of per capita GDP (World Bank, 2017a). The consequence of such onerous government oversight is a very large informal sector (Brenes & Cruz, 2016; Pisani & Pagán, 2004) where formality may be as much an exception, rather than the norm, particularly for small business concerns (Pisani, 2016).

Sanz and Lazzaroni (2008) note additional barriers to enterprise development in Nicaragua such as access to financing, closed social networks, low levels of education and administrative experience, and lack of an economic climate that facilitates and fosters entrepreneurship. For example, family business groups are common in Central America. They often dominate local markets while maintaining relatively closed social networks organized by familial affiliation (Frutos-Bencze, 2017). Yet, formal business enterprises do emerge and may grow and prosper, even in challenging economic environments like Nicaragua, such as Ms. Flores' pet clinics described above. And not all the business and economic news is bad for Nicaragua, current economic growth hovers around five percent with inflation contained at around three percent (Banco Central de Nicaragua, 2017).

In this country of more than six million people, Nicaraguan women have played important roles as leaders in society, the political arena, and business,

especially since the revolutionary period of the 1970s and beyond (Babb, 2001). In 2017, two-thirds of urban Nicaraguan women participated in the workforce with underemployment noted as a concern (INIDE, 2017). Currently, 43.3% of women are self-employed, a rate much higher than men (28.3%) (INIDE, 2017). This is, in part, a result of the large informal sector where a direct relationship exists between informality and self-employment which are both inversely related to per capita income (Xavier et al., 2012). As such, self-employment remains an important economic employment outlet and driver of the economy along with formal business ownership.

The general study of female entrepreneurship in emerging economies is underdeveloped; especially so in respect to Central America. This exploratory research seeks to shed light on female entrepreneurship in Nicaragua as a starting point by examining the characteristics of female entrepreneurship and the role female entrepreneurship plays in formal sector enterprise development and performance. The data source for this study comes from the World Bank's 2016 Nicaraguan Enterprise Survey of 333 formal sector firms. The next section discusses the pertinent literature, section three reviews the data and descriptive statistics, section four reports the results with a discussion, and the last section concludes the article.

## LITERATURE REVIEW

There is a growing body of literature surrounding female entrepreneurship as a distinct area of entrepreneurship research focus and contribution. Generally, the extant literature suggests: 1) self-employed participation rates for women are generally lower than men; 2) women launch entrepreneurial endeavors with fewer financial resources, women encounter more restricted access to formal financial channels, and women receive fewer investments from angel and venture capital markets than men; 3) there is sectoral segregation whereby self-employed women are more likely to occupy economic space in consumer-oriented retail and personal services and less likely to export compared to self-employed men; and 4) women entrepreneurs tend to own smaller enterprises curtailing firm performance than men (Jennings & Brush, 2013). With respect to Nicaragua, the literature is mostly representative of the Nicaraguan case—that is Nicaraguan female entrepreneurs are somewhat more constrained regarding financial access, lean toward a retail focus, and are smaller in enterprise size than male-owned Nicaraguan firms—but the literature is not so representative with respect to self-employment participation rates where Nicaraguan women outpace Nicaraguan men.

In addition, Langowitz and Minniti (2007, p. 357) suggest that the propensity toward female entrepreneurship originates from the perception of “the existence of opportunities, self-confidence in one’s own entrepreneurial skills, and knowing other entrepreneurs” who may be engaged in business startup. As stated, some markets may be less “visible” for female entrepreneurs to engage; Orser et al. (2010)

note that Canadian female-owned firms are less likely to export vis-à-vis their male counterparts. Santiago-Castro and Pisani (2013) also find that female entrepreneurs in Puerto Rico are less likely to engage export markets while facing many local competitors. Williams et al. (2017) study the connection between informality at firm start-up and firm performance across 127 countries utilizing female ownership as a control variable. Yet the study and role of female entrepreneurship may be more than a control variable in the firm progression from informality to formality, particularly in emerging market environments (Pisani, 2016; Pisant et al., 2017).

Notwithstanding the growth in publications surrounding female entrepreneurship over the past 30 years or so, there are still gaps in knowledge especially in regard to female entrepreneurship in emerging market contexts. Female entrepreneurship and associated gender roles in developing and emerging markets may be heavily influenced and conditioned by culture in the form of “local traditions and norms” (Welter, 2017, p. 166) and enterprise location, such as home-based businesses (Pisani & Yoskowitz, 2012).

There is little extant study of self-employment generally and of female self-employment more specifically in Central America. Two studies do focus exclusively on Nicaraguan female entrepreneurship. In his study of the female self-employed in Nicaragua during the 1990s, Pisani (2006, p. 92) notes the “importance of work experience, access to capital, and stability in the home in the creation of self-employed female directed enterprises.” Pisani also finds evidence of opportunity- and necessity-based self-employment selection and sectoral switching following the national business cycle. That is, when the economy slumps, self-employment had the highest returns for women, hence opportunity-led entrepreneurship. When the economy rebounds, self-employment attracts women who cannot maximize their returns in the wage and salaried sector, hence necessity-led entrepreneurship. Additionally, the informal sector in Nicaragua often becomes a refuge for necessity-based female entrepreneurs. Pisani (2016) in his examination of Nicaraguan small in-home convenience-like stores or “*tienditas*” owned primarily by female entrepreneurs and ubiquitous throughout the country, classified informal *tiendita* enterprises as failing (30.4%), ailing (18.6%), stable (25.4%), and healthy (25.6%) with the healthiest firms earning profits of \$4 or more per day.

As almost no research has focused on formal sector female entrepreneurship in Nicaragua, hence this present research is exploratory. Consequently, the research questions posed explore the fundamental essence of female entrepreneurship in Nicaragua.

- What are the basic characteristics of female-owned businesses in Nicaragua?
- Are there unique a) start-up conditions, and b) general business constraints faced by female-owned enterprises in Nicaragua?
- How does female ownership impact the composition of firm-level management in Nicaragua?

## DATA & SUMMARY STATISTICS

The survey data for this study derives from the 2016 Nicaragua Enterprise Survey undertaken by the International Finance Corporation (IFC) of the World Bank (WB) and is archived at the WB.<sup>4</sup> The WB enterprise survey series “is a firm-level survey of a representative sample of an economy’s private sector” (World Bank Group, 2017). Since 2006, this standardized survey has been deployed in 148 countries covering more than 160,000 firms. The standard questionnaire contains about 200 questions recorded in 13 main sections: firm-level demographics, general information, infrastructure and services, sales and supplies, degree of competition, innovation, capacity, land and permits, crime, finance, business-government relations, labor, business environment, and performance.

The WB’s Enterprise Survey sampling objectives (methodology) used for its cross-sectional Nicaraguan sample include: randomization, representativeness of the urban formal private sector excluding agriculture, and sufficient number of respondents for robust statistical testing (World Bank, 2016)<sup>5</sup>. The survey was stratified by industry (i.e., manufacturing, retail, and other services<sup>6</sup>), by firm size of permanent workers (i.e., small, 4-20 employees, medium, 21-50 employees, and large, 51 or more employees), and by location (i.e., Managua, other than Managua<sup>7</sup>).

In all, 333 enterprises were randomly surveyed from a universe of 1,455 firms (World Bank, 2017c). The reported non-response rate was 39.3% with non-participating firms replaced with randomly selected comparable firms. Lastly, the World Bank contracted completion of the survey through *Borge y Asociados* (Borge and Associates, a Central American public opinion research firm) and the Salvadoran organization FUSADES (*La Fundación Salvadoreña para el Desarrollo Económico y Social* [Salvadoran Foundation for Economic and Social Development]). The Enterprise Survey was administered in Nicaragua between October 2016 and June 2017 and was completed in a face-to-face interview.<sup>8</sup> The WB provides weight estimates to generalize to the population as a whole. The median assumption weight is employed in the analysis herein representing an adjusted 63.6% of the estimated universe of registered firms. Overall, the WB describes the data as is in good condition.

Univariate descriptive statistics are examined in exploration of the first research question: “what are the basic characteristics of female-owned businesses in Nicaragua?” Sample base descriptive statistics for Nicaraguan firms that are

4 The data is housed at <http://www.enterprisesurveys.org/Data> and was released for non-WB purposed research in August 2017.

5 Sampling information in this section is derived from The Nicaragua 2016 Enterprise Surveys Data Set document.

6 This categorization also excludes financial intermediation, real estate and renting activities and public sector, and utilities.

7 The other than Managua region includes East (Masaya, Granada, and Carazo), West (Chinandega and Leon), and North (Esteli, Jinotega, and Matagalpa). The World Bank recommends combining East, West, and North into one categorical group.

8 The survey implementation information is derived from the 2016 Nicaraguan Implementation Report, titled “The Nicaragua 2016 Enterprise Surveys Data Set” available at: <http://www.enterprisesurveys.org>.

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majority female-owned, have female ownership participation (but not majority female-owned), and male-owned firms for reference are displayed in Table 1. The descriptive emphasis is placed on majority female-owned firms (defined as 50.0% ownership or more) that make up 32.7% of all firms. Of note, firms with female ownership participation (less than 50% female ownership) comprise just 3.0% of firms; the remaining 64.2% of firms are male-owned. All of the variables presented in Table 1 are significantly different among the three ownership groups. Majority female-owned firms are relatively smaller in terms of number of employees and annual sales.<sup>9</sup> More than half of majority female-owned firms are located outside of the capital city of Managua in contrast to male-owned firms. Industry sector, though somewhat similar across groups, illustrates a difference in concentration for female-owned firms in manufacturing, less so among other services.

Table 1: 2016 Descriptive Statistics for Nicaraguan Formal Enterprises by Gender

Variable	Majority Female Owned	Female Ownership Participation	Male Owned
Current Mean No. of Full-Time Employees (std.dev.)	18.9 (30.6)	26.9 (22.7)	23.6 (67.8)
Mean Annual Sales US\$ (std.dev.)	617,311 (3,243,453)	(67.8) 1,222,759	1,607,030 (9,473,167)
Location(%)			
Managua	44.2	98.7	57.5
Not Managua	55.8	1.3	42.5
Industry (%)			
Manufacturing	22.1	3.5	18.9
Retail	50.9	69.3	50.8
Other Services	27.0	27.2	30.2
Top Manager Female(%)	72.1	6.6	4.8
Mean Years of Experience for Top Manager in Sector (std.dev.)	22.1 (10.9)	24.5 (4.9)	21.9 (12.0)
Began Operations as an Informal Enterprise (%)	22.6	0.0	14.2
Online Website (%)	41.4	67.5	37.7
Business Innovation [new products/ services introduced over last 3 years] (%)	37.9	58.5	51.5

<sup>9</sup> All monetary values are reported in US dollars at the exchange rate of 1 US dollar equals 29.32030 Nicaraguan córdobas as reported on Dec. 31, 2016 from XE.com.

Variable	Majority Female Owned	Female Ownership Participation	Male Owned
Obstaclesto Services/Land- Yes			
Electricityasan Obstacle (%)	54.5	62.4	75.5
Telecommunications as an Obstacle (%)	61.7	70.3	58.6
Land (%)	40.9	11.8	46.4
Other Business Obstacles - Yes			
Business Licensing and Permits (%)	52.1	36.2	69.0
High Transportation Costs (%)	35.9	4.8	34.4
Insufficient Access to Finance (%)	36.1	4.8	27.3
Crime, Theft, Disorder (%)	40.2	33.6	45.1
Labor Regulations (%)	45.2	90.8	64.3
Corruption (%)	56.9	70.2	62.7
Tax Rates (%)	45.6	68.9	63.8
Tax Administration (%)	52.1	89.5	60.2
Has Checking or Saving Account (%)	70.4	100.0	88.0
International Trade			
Import Operations	22.1	74.1	34.2
Export Operations	7.9	1.3	10.9
On-Site Tax Compliance- Visited by Tax Official [last 12 months] (%)	77.5	89.5	59.4
Compete Against Informal Firms – Yes (%)	54.0	85.5	78.5
Percent of All Firms	32.7	3.0	64.2
N	2,480	228	4,866

Notes: i) all results are weighted; ii) variables by row in italics are significantly different among the three groups (at the .01 level), estimated by comparison of means or cross-tabulations.

Of major significance, female-owned firms are 72.1% of the time headed by a top female manager who is very experienced; for male-owned firms and firms with female participation, seldom are women the top manager. More than one-fifth of majority female-owned firms (FOFs) began operations informally perhaps precipitating increased interest from tax officials. Informal origins may also



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provide FOFs insider knowledge of the informal sector including more nuanced options to compete against informal rivals, perhaps reducing competition from the informal sector. Informality, in essence, creates an environment where enterprises function outside the purview of government oversight and peripheral at best to the formal institutions of capitalism such as a smaller scope of banking interaction or engagement in international trade. FOFs show lower rates of new product innovation over the past three years. Yet 41.5% of FOFs possess an online website and generally fewer obstacles— performance rates for an online presence and fewer obstacles that are largely better than their male counterparts. Nevertheless, the gamut of business obstacles exists for all ownership groups.

## RESULTS & DISCUSSION

In this section, the remaining two research questions are empirically explored and discussed through multivariate analyses. These are: Are there unique start-up and general business constraints faced by female-owned enterprises in Nicaragua? And, how does female ownership impact the composition of firm-level management in Nicaragua?

### Startup: Unique Start-up Constraints Faced by Female-owned Enterprises in Nicaragua

Two questions within the enterprise survey allow for some exploration of startup conditions for majority owned female enterprises (the second research question, part a). The first is whether or not the firm began life in the informal or formal sector and the second is the number of fulltime employees at startup. To find a potential relationship, a logistic regression was estimated. A logistic regression is an appropriate methodological instrument when the dependent variable is binary, allows for relaxed assumptions, and provides an estimation of the odds or likelihood of an event occurring.

The dichotomous dependent variable is firm ownership by gender, where majority female-owned businesses=1, and male owned businesses=0.<sup>10</sup> The primary independent variables are firm informality at enterprise initiation (informal=1, otherwise=0) and the number of fulltime employees at startup. Three standard control variables were included in the estimation, firm sales, firm location (Managua = 1, otherwise = 0), and industry sector (manufacturing, retail, and other services; other services served as the reference category). Nicaraguan majority owned female firms are 41.3% more likely to have begun operations in the informal sector as compared to their male owned counterparts (see Table 2).<sup>11</sup> Furthermore, each additional fulltime employee at startup decreases the likelihood of being a majority female-owned firm by 1.4%. Hence, Nicaraguan majority female owned enterprises are more likely to begin life with fewer fulltime employees and in the informal sector than male owned Nicaraguan enterprises.

10 Partially female owned firms (ownership less than 50%) were omitted from this analysis.

11 This is calculated as  $|1 - \beta|$ , see the last column in Table 2 ( $|1 - 1.413|$  or .413 or 41.3%).

Table 2: Logistic Regression Results for Ownership (Female Ownership=1) and Startup Characteristics

Variables+	$\beta$ Coefficient	S.E.	Wald	Sig. ^	Exp( $\beta$ )
Constant	-.926	.061	229.429	.000#	.396
Informal at Startup (Yes=1)	.346	.070	24.511	.000#	1.413
Number of Full-Time Employees at Startup	-.014	.003	23.685	.000#	.986
<b>Control Variables</b>					
Annual Sales	.000	.000	12.537	.000#	1.000
Location (Managua=1)	.577	.055	111.559	.000#	1.782
Industry Classification			.849	.654	
Manufacturing	.059	.077	.586	.444	1.060
Retail	.000	.063	.000	.994	1.000
-2 Log Likelihood   significance level: 8623.749   .000					
Cox & Snell R2   Nagelkerke R2: .045   .063					
Hit Ratio (%): Yes   No   Overall: 0.0   99.4   66.7					

Notes: +Reference categories= Location, Managua; Industry, Other Services.

^ Represents significance at the \*P<0.10; †P< 0.05; and #P<0.01 levels.

Source: Authors' calculations from the 2016 Nicaraguan Enterprise Survey.

### General Business: Unique General Business Characteristics, Obstacles, and Constraints Faced by Female-owned Enterprises in Nicaragua

This sub-section focuses on the contemporary determinants of majority female-owned Nicaraguan enterprises with respect to selected general business characteristics, obstacles, and constraints (providing empirical insights into part b of the second research question). To find a potential relationship, a logistic regression was estimated. The dichotomous dependent variable is firm ownership by gender, where majority female-owned businesses=1, and male owned businesses=0.<sup>12</sup>

<sup>12</sup> Partially female owned firms (ownership less than 50%) were omitted from this analysis.

The primary independent variables, selected *a priori* because of the exploratory nature of the current research, are the number of current employees; an online presence through a public website (yes=1, otherwise=0); the presence of business innovations defined as the firm-level introduction of a new product or service over the last three years (yes=1, otherwise=0); firm-level obstacles to: access electricity (yes=1, otherwise=0), acquire land (yes=1, otherwise=0), obtain business licenses or permits (yes=1, otherwise=0), incur high transportation costs (yes=1, otherwise=0), access to finance (yes=1, otherwise=0), thwart crime/theft/disorder (yes=1, otherwise=0), follow labor regulations (yes=1, otherwise=0), confront corruption (yes=1, otherwise=0), pay taxes because of existing tax rates (yes=1, otherwise=0), and conduct business in the face of tax administration (yes=1, otherwise=0); firm possession of a checking/saving account (yes=1, otherwise=0); import (yes=1, otherwise=0); export (yes=1, otherwise=0); received a visit by a tax official in the preceding 12 months (yes=1, otherwise=0); and firm-level competition with informal competitors (yes=1, otherwise=0). Three standard control variables were included in the estimation, firm sales, firm location (Managua=1, otherwise=0), and industry sector (manufacturing, retail, and other services; other services served as the reference category).

The logistic regression results for Nicaraguan majority female-owned enterprises are reported separately as either more likely or less likely vis-à-vis their male counterparts below. The obstacles in which female-owned firms are more likely to face than male-owned firms include: access to electricity, 193.3% more likely; acquisition of business licenses or permits, 55.0% more likely; and following labor regulations, 159.2% more likely (see Table 3). Female-owned firms are 95.7% more likely to have an online presence through a website and are 136.5% more likely to import goods necessary for business operations than male-owned firms. With regard to possession of a checking or saving account, female-owned enterprises are 673.3% more likely to have a checking or saving account than male owned enterprises. Lastly, majority female owned companies are 113.4% more likely to experience competition from informal businesses in their business segment than male-owned companies.

Table 3: Logistic Regression Results for Ownership (Female Ownership=1) and General Business Characteristics, Obstacles, & Constraints

Variables+	$\beta$ Coefficient	S.E.	Wald	Sig. ^	Exp( $\beta$ )
Constant	-.512	.197	6.734	.009‡	.599
Number of Current FT Employees	.000	.001	.139	.709	1.000
Website (Yes=1)	.671	.088	57.822	.000‡	1.957
Business Innovation# (Yes=1)	-1.338	.077	304.098	.000‡	.262
Electricity an Obstacle (Yes=1)	1.076	.086	155.428	.000‡	2.933
Telecommunications an Obstacle (Yes=1)	-1.052	.084	158.584	.000‡	.349
Land an Obstacle (Yes=1)	.081	.083	.954	.329	1.084
Business License/Permit an Obstacle (Yes=1)	.439	.087	25.332	.000‡	1.550
High Transport Cost an Obstacle (Yes=1)	-2.207	.149	220.523	.000‡	.110
Finance an Obstacle (Yes=1)	-1.778	.150	140.881	.000‡	.169
Crime/Theft/Disorder an Obstacle (Yes=1)	-1.207	.077	244.438	.000‡	.299
Labor Regulations an Obstacle (Yes=1)	.953	.084	127.132	.000‡	2.592
Corruption an Obstacle (Yes=1)	-.203	.091	4.916	.027†	.816
Tax Rates an Obstacle (Yes=1)	.084	.086	.962	.327	1.088
Tax Administration an Obstacle (Yes=1)	-.077	.095	.666	.414	.926
Checking/Saving Account (Yes=1)	2.046	.095	459.320	.000‡	7.733
Import (Yes=1)	.861	.086	99.289	.000‡	2.365
Export (Yes=1)	-.040	.124	.105	.746	.961
Visit by Tax Official in Last Year (Yes=1)	-1.290	.083	242.531	.000‡	.275
Compete vs. Informal Firms (Yes=1)	.758	.077	96.226	.000‡	2.134
<b>Control Variables</b>					
Annual Sales	.000	.000	2.494	.114	1.000
Location (Managua=1)	.561	.086	42.331	.000‡	1.752
Industry Classification			185.888	.000‡	
Manufacturing	.869	.111	61.819	.000‡	2.385
Retail	1.366	.100	185.760	.000‡	3.920
-2 Log Likelihood   significance level: 6224.673   .000					
Cox & Snell R2   Nagelkerke R2: .320   .445					
Hit Ratio (%): Yes   No   Overall: 62.3   92.5   82.5					

Notes: +Reference categories= Industry, Other Services.

# Introduced a new product and/or service over the last 3 years.

^ Represents significance at the \*P<0.10; †P< 0.05; and ‡P<0.01 levels.

Source: Authors' calculations from the 2016 Nicaraguan Enterprise Survey.

The obstacles in which majority female-owned firms are less likely to face than male-owned firms include: access to telecommunications, 65.1% less likely; report high transportation costs, 89.0% less likely; access to finance, 83.1% less

likely; incur crime, theft, or disorder, 70.1% less likely; and suffer government corruption, 18.4% less likely. Majority female-owned enterprises are 73.8% less likely to have introduced a new good or service over the past three years as compared to male-owned enterprises. And female-owned firms are 72.5% less likely to have been visited by a government tax official over the preceding 12 months in contrast to male-owned firms.

### Composition of Firm-level Top Management in Majority-owned Female-owned Enterprises in Nicaragua

To uncover the relationship between ownership and top management (the third research question), a logistic regression was estimated. The dichotomous dependent variable is firm ownership by gender, where majority female-owned businesses=1, and male owned businesses=0.<sup>13</sup> The primary independent variable is top manager is female (=1), otherwise=0. Three standard control variables were included in the estimation, firm sales, firm location (Managua=1, otherwise =0), and industry sector (manufacturing, retail, and other services; other services served as the reference category). Majority female ownership and organizational leadership are closely linked. Indeed, Nicaraguan female business owners are 45 times more likely to have a female as the top manager than Nicaraguan male business owners (see Table 4). This result indicates that majority female ownership heavily impacts the composition of top management answering the third research question. This result is not true of minority (less than 50%) female owned firms.<sup>14</sup>

Table 4: Logistic Regression Results for Ownership (Female Ownership=1) and Top Manager (Female Top Manager=1)

Variables+	$\beta$ Coefficient	S.E.	Wald	Sig. ^	Exp( $\beta$ )
Constant	-2.143	.084	647.895	.000†	.117
Top Manager Female	3.830	.082	2168.014	.000†	46.053
Control Variables					
Annual Sales	.000	.000	3.399	.065*	1.000
Location (Managua=1)	.255	.074	11.806	.001†	1.291
Industry Classification			6.624	.036†	
Manufacturing	.233	.105	4.935	.026†	1.263
Retail	.200	.087	5.317	.021†	1.222

-2 Log Likelihood | significance level: 5197.263 | .000

Cox & Snell R<sup>2</sup> | Nagelkerke R<sup>2</sup>: .407 | .563

13 Partially female owned firms (ownership less than 50%) were omitted from this analysis.

14 Significant (p=.011) logistic regression results for partially female business ownership (1-50%) indicates a 61.1% lower likelihood of a female top manager vis-à-vis male owned firms (majority female owned firms omitted from the analysis). This result is tentative because of the small number of partially owned female businesses in the sample.

Notes: +Reference categories= Location, Managua; Industry, Other Services.

^ Represents significance at the \* $P < 0.10$ ; † $P < 0.05$ ; and ‡ $P < 0.01$  levels.

Source: Authors' calculations from the 2016 Nicaraguan Enterprise Survey.

## Discussion

The three research questions organize this discussion. The first research question focused on the basic characteristics of formal majority female-owned businesses in Nicaragua. Approximately one-third of all formal business enterprises in Nicaragua are majority female-owned, this compares with 14.5% globally and 21.8% in Latin America and the Caribbean (World Bank, 2017d). This higher participation rate in business may in part be explained by the mobilization and involvement of women in the social and political life of Nicaragua since the revolutionary era of the 1970s (Babb, 2001; Pisani, 2006). The remainder of the basic business characteristics is enveloped in the other research questions and will be addressed below.

At startup, the results indicate a much higher likelihood of informal origin for female-owned Nicaraguan enterprises. This may reflect a period of transition and uncertainty, at times culturally nuanced, to ease into the business sector in face of gendered and often chauvinist challenges from society (Pisani & Yoskowitz, 2012). In turn, this may limit the initial size of female-owned businesses as per the number of fulltime employees in order to reduce visibility in the community. Additionally, resource constraints may work against larger startup size for female-owned firms.

After startup, these resource constraints may account for the generally smaller contemporary enterprise scale in terms of number of employees and firm sales of female-owned enterprises, perhaps encouraging female-owned firms to locate further away from the more intensely competitive market in Managua, the capital city. Majority female-owned Nicaraguan firms are typically led by an experienced female manager and oftentimes begin organizational life in the informal sector. Early organizational life in the informal sector may make formal Nicaraguan female-owned firms more vulnerable to competition from informal business actors and perhaps less innovative over time requiring imported inputs. Furthermore, informality may make the transition to formality more challenging with regard to accessing business licenses or permits, securing electricity, and following labor regulations, but less visible targets for crime, theft, or disorder, transportation issues, or interest from government and tax officials. Closeness to informality of female-owned firms may also create an eagerness and distinction for formality as evidenced by enhanced likelihood of checking and saving accounts which may facilitate financing and a public presence online with a website including access to telecommunications.

Critically for the advancement of women in business, majority female-owned firms provide opportunities for women in top management roles. And they do so at a rate that is 45 times greater than male-owned enterprises. Thus, building management capacity among businesswomen in Nicaragua has fallen to majority female-owned enterprises. Discouragingly, some female participation in ownership does not provide access to or a path for female top managers.

## CONCLUSION

This exploratory study of urban formal female entrepreneurship in Nicaragua illustrates the important role of women in business. Three results deserve particular consideration in the conclusion: the high rate of female entrepreneurship, the facilitating role of the informal economy, and the advancement of female managerial talent. First, it is noteworthy that majority female-owned enterprises comprise nearly one-third of all urban formal sector businesses in Nicaragua—this is unexpected because of the relatively low rate of overall economically active women in the workforce. Second, for more than one-fifth of FOFs, the informal economy serves as the incubator for business operations that transition into formality. The informal sector is often dismissed as a negative externality of economic development in emerging markets; in Nicaragua it is instead the business cradle for many FOFs. Lastly, it is within majority female-owned firms where top management is female. In FOFs, women are able to assume top leadership roles and acquire substantial managerial experience on par with their male counterparts.

These three elements have important public policy implications. As policy-makers seek to expand the entrepreneurial ecosystem, clearly facilitating majority female-owned enterprises in the marketplace will allow nascent entrepreneurial forces reflected in high rates of female self-employment to flourish. Policy-makers should perceive the informal economy, not as a wasteland for underemployed labor, but as a potential stepping stone for business development, much like the introductory story of Jessica Flores and her pet clinics. Additionally, policy-makers should encourage and develop female business leaders through mentoring and educational programs in conjunction with successful majority female-owned enterprises.

This study is not without its limitations. First, the World Bank Enterprise Survey data only covers the urban economic environment and the formal economy. Nicaragua still has a large rural population, comprising 41% of the population, which the survey does not cover. Nicaragua also has a large informal sector—employing two-thirds or more of all Nicaraguans—a sector that is not included in the survey data.

Moving beyond this starting point in understanding some of the basic characteristics of Nicaraguan female entrepreneurship, further research may explore the 15 point gap between female and male rates of self-employment. Also, qualitative research as to the training and development of female top managers, particularly in majority female-owned enterprises, may provide actionable insight into providing rewarding career paths for women, businesses, and the economy. Lastly, connecting the inflection points between the informal and formal economy to discern which informal business concerns may achieve success as a formal enterprise is warranted.

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