

SUDANESE WOMEN ENTREPRENEURS

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The number of female entrepreneurs is growing around the globe. The rate of women's entrepreneurship in Africa is higher than in any other region of the world but no studies have focused on North Sudan. We investigate female entrepreneurs in North Sudan by addressing these questions: (1) What are the major challenges North Sudanese female entrepreneurs face in (a) venture startup, and (b) running their businesses, (2) What are the main support sources enabling North Sudanese female entrepreneurs' (a) venture startup, and (b) successful management of their new ventures?, and (3) Is there family involvement in the North Sudanese female entrepreneurs' businesses; and if so, how? Personal issues, management skills, and obtaining financing are challenges while sources of support include schooling and previous work experience, moral support, and institutional support. Implications are discussed.

Keywords: Female entrepreneurs; North Sudan; family business.

1. Introduction

In 2010, over 100 million women in 59 countries (52 percent of the world's population) started and grew a new enterprise (Kelly *et al.*, 2011). In terms of Gross Domestic Product (GDP), this amounted to a whopping 84 percent. Female entrepreneurs comprise 1.5 percent to 45.4 percent of the adult female population in their respective economies and

over 80 million women across those regions ran businesses they launched at least three and a half years previously (Kelly et al., 2011). Together, these approximately 180 million women exemplify the contributions made by women to entrepreneurship around the globe (Kelly et al., 2011). The total number of female entrepreneurs in Africa is unknown, but is estimated to be significant and involves primarily necessity entrepreneurs. The United Nations data on business women in the informal sector in Africa account for 70 percent of the agricultural work force and produce 70 percent of the food for the continent (Liberia Government, 2012).

Although female entrepreneurs are gaining in numbers around the globe, only ten percent of all entrepreneurship research investigates these entrepreneurs (Cooper and Brush, 2012). However, research on women's entrepreneurship is receiving more attention recently as evidenced by a second special issue on women's entrepreneurship in May of 2012 in *Entrepreneurship Theory & Practice*, specialty journals (e.g., *International Journal of Gender and Entrepreneurship*), conferences, books, reports, edited volumes, as well as articles in the popular press (e.g., *New York Times*, October 11, 2012, "Women Entrepreneurs Drive Growth in Africa") (For more details, see Hughes et al., 2012).

African female entrepreneurs are also getting more attention. Of the sixty-five papers, workshops and symposia presented at the first African Academy of Management Conference held in January of 2013, one looked at some aspect of female entrepreneurs and their businesses. This paper answers the call to study regions not previously explored set forth by Hughes et al. (2012). This paper investigates women entrepreneurs in one North African country, North Sudan, their unique characteristics, the challenges they face given the current economic conditions and provides recommendations based on the results of our study. We suggest the elevated importance of family support in women-owned small business owing to potential limitations in raising financial and other forms of capital; therefore, the principal research question addressed in our empirical analysis is: (1) How does family support (i.e. moral support provided by family) affect the challenges and advantages in successful venture start-ups and management in women-owned businesses? Understanding what has shaped North Sudan is crucial for further developing women's entrepreneurship and women-owned family firms to have a lasting impact on its economy. We begin with an overview of women and entrepreneurship and female entrepreneurs in Africa. Then, we develop our hypotheses and present our methodology. We conclude with a discussion of the results, future research directions and implications for public policy.

2. Women and Entrepreneurship

Female entrepreneurship started to appear more prominently in the 1980s (Coughlin, 2002). Because women had limited access to capital, business and technical education and management experience, self-employed women were mainly from liberal arts backgrounds and unlikely to launch businesses in male-dominated industries prior to the 1980s (Moore and Buttner, 1997). The number of female entrepreneurs dramatically increased after the 1980s when women were gradually accepted as a major part of the labor force in some

industrialized countries, especially the United States (Coughlin, 2002; Moore and Buttner, 1997). Non-profit organizations, such as Catalyst, also contributed to increasing the number of female entrepreneurs as well as broadening their acceptance. The development of female entrepreneurship not only creates new jobs, but also adds wealth to the economy (Coughlin, 2002; Brush *et al.*, 2010). As a result, female entrepreneurs are one of the fastest growing sectors in the world (Brush *et al.*, 2010).

Recently, entrepreneurship has been discussed in small and medium enterprises (SMEs) in a variety of contexts (Aaltion *et al.*, 2008). Especially when it comes to SMEs, women predominate (The World Bank, 2012). This has led many researchers to focus on the SME sector as a main area for female entrepreneurs (Brush, 1992; Coughlin, 2002). Although industrialization and globalization have given female entrepreneurs' around the globe wider opportunities to start new businesses in a variety of fields, in Africa small businesses dominate because of the lower level of economic development. Africa is set to double its population from one to two billion by 2050. With the World Bank reporting in their annual ranking of commercial practices that 36 out of 46 governments in Africa made doing business easier in the last year, the opportunities for small business are enormous (The World Bank, 2012) and for female entrepreneurs — if the formal economy is more opened up for them.

3. Female Entrepreneurs in Africa

The rate of women's entrepreneurship in Africa is higher than in any other region of the world, with an estimated two-thirds of women participating in the labor force (Clappaert, 2012). Although women-owned businesses are smaller in size relative to businesses men own in Africa (Amin, 2010), many of these businesses are necessity-based and support extended families. Despite this fact, studies concerning female entrepreneurs in Africa are sparse. We found nine academic studies on female entrepreneurs in Africa in the last five years. Although the differences between countries, culture and contexts are vast, we have summarized these studies to give the reader a better overall understanding of the magnitude and depth of studies on African women entrepreneurs that are available and have divided the studies by regions following Fick's (2002) concept that there is no single one Africa and the countries should be grouped into meaningful segments.

3.1. West Africa

A qualitative study of cowpea street food vendors in Ghana and Niger was conducted in 2009. These businesses are important to the alleviation of poverty through the employment of women while also providing low cost, nutritious food for the low income city population. Otoo, Fulton, Ibro and Lowenberg-Deboer (2011) found that income from these women-owned businesses contributed directly to the overall welfare of their families, including health and education. In Niger, women earned four times more than the legal minimum wage and sixteen times higher in Ghana. The researchers found that religious beliefs, stable locations and lack of financial resources all contributed to these women's success (Otoo and Fulton, 2011).

Sixty-two active female entrepreneurs from three regions of Nigeria were surveyed and data were gathered on personal demographics, perceptions of the business environment and their venture, and motivation to start their business. [Halkias et al. \(2011\)](#) found that female entrepreneurs are affected by micro-financing and family dynamics that partially shape and influence the business and how it is developed. They found no or very few significant differences between male and female entrepreneurs. The authors suggest the level of education on role models for female entrepreneurs are further explored ([Halkias et al., 2011](#)). Although Nigerian women provide the majority of labor, their productivity is severely lowered by overall inequality in education and unequal access to land and productivity inputs. It has been found that women make larger contributions to economic life than men in Nigeria ([Bardasi et al., 2007](#)). Women's basic survival needs lead in the 1980s onward to starting businesses as a necessity to support themselves and their families ([Halkias et al., 2009](#)). Reducing the barriers to entry, such as access to credit and education, are essential for female entrepreneurs to grow in Nigeria.

3.2. East Africa

[Belwal et al. \(2012\)](#) examined female entrepreneurs in Ethiopia regarding microfinancing. Microfinancing includes savings, credit, insurance and other forms of financing ([Kirkpatrick and Maimbo, 2002](#)). Sixty percent of microfinancing is tied to farm investments and 40 percent is attributed to businesses and petty trading accounts ([Pitamber, 2003](#)). Women have attracted special attention from the microfinance institutions (MFIs) because of the social benefits women have gained from participating in microfinance programs, including higher aspirations, lower marginalization, higher use of contraceptives and less likely to marry at an early age ([Tesfaye, 2003](#); [Ledgerwood, 2000](#)). [Cohen and Sebstad \(2005\)](#) found in Kenya, Tanzania and Uganda that access to microfinance services improved risk management, empowered women and lowered their vulnerability to risk. It also led to more proactive behavior that reduces stress from deleting savings and borrowing or selling of the assets and better enables them to deal with financial tough times ([Cohen and Sebstad, 2005](#)). Demand for rural financial services largely remains unmet. Small businesses in Ethiopia employ an estimated 1.5 million, and a higher proportion of women ([Desta, 1999](#)) because of a high rate of female heads of households both in the urban (35%) and rural (20%) areas. [Desta \(1999\)](#) found that these women owned businesses, used small amounts of money and had little business background, which generates low profits and savings so there is a low level of earnings back into the business. Start-up capital comes from personal savings or from relatives who loan money, moneylenders (interest rates as high as 300%) and microfinance services. In another study, 123 Ethiopian female entrepreneurs created 852 jobs for themselves and others, of which 596 were full-time, paid jobs or 4.8 jobs per enterprise. They had no problem accessing microfinancing but were not large enough for bank loans and were missing in the middle between the two-85 percent that depended on personal savings and family support for their business financing. The inability to acquire a land title and the lack of working premises hindered female entrepreneurs ([International Labor Organization,](#)

2003). *Belwal et al. (2012)* surveyed and interviewed 86 women in three cities (Kirkos, and Bole sub-cities of Addis Ababa) to examine the effect of microfinancing on the success of women-owned businesses. Results showed that small women-owned businesses partially benefited from credit and savings services but the income has not resulted in any qualitative improvement in their lives other than repaying the loans and maintaining the businesses already established before the microfinancing. Their business grew very little and they were unable to employ anyone outside of their family. More importantly, they could not cover their personal care, education, or medical costs so the improvements in their lives were small (*Belwal et al., 2012*). The authors recommend that policy changes occur to benefit female entrepreneurs and extend MFI services to deal with the constraints these women entrepreneurs face.

Bradley et al. (2012) also conducted a related survey on small business owners involved in a microcredit program in Kenya, neighboring Ethiopia. They questioned the premise that if capital is increased through funding education, access to networks, or loans-encompassing human, social and financial capital, then business development would naturally follow. In fact, in developed countries where access to capital is more abundant, only three to ten percent of the population is entrepreneurs (*Bosma et al., 2009*). Therefore, they found reason to doubt that people in emerging economies are more entrepreneurial than the general population in developed nations. The authors argue that a creativity and discovery view is more important to economic development as capital becomes more abundant. They tested this proposition with 201 small business owners who were involved in microcredit programs. The study did not report gender of these owners. They found that firm performance does lead to reduced signs of poverty and innovation was found to be an important intervening variable for business, social and individual capital to improve results for business owners (*Bradley et al., 2012*). Differentiation-related innovation, defined as newness compared to competitors' product offerings, compared to novelty-related innovation, defined as newness in relation to the community in which the customer lives, was more important for entrepreneurs' firm performance (*Bradley et al., 2012*). Findings showed that family business experience had a positive relationship on differentiation-related innovation but a negative relationship with novelty-related innovation. However, family business experience did have a positive relationship with performance. The authors contend that capital alone is not enough, but rather that performance of poor entrepreneurs is one idea, so creativity is as important in a developing economy as a highly developed one. Implications for public policy and what industries entrepreneurs enter with micro-finance loans and the outcomes with innovation and performance are discussed. None of the industries entered by the small business owners led to positive results with performance or innovation.

3.3. Central Africa

In a study based on institutional theory, a number of environmental barriers were examined, including social-cultural, legal, economic, political and technological barriers (*Amine and Staub, 2009*). In addition, negative conditions in the local regulatory environment,

as well as normative and cognitive systems, resulted in additional burdens for these women who desire to become entrepreneurs and start their own businesses in sub-Saharan Africa. *Amine and Staub (2009)* recommend the use of social marketing to impact social beliefs, attitudes, norms and behaviors women entrepreneurs have to contend with that negatively affect them as well as using social marketing to change the institutional systems and market environments gradually.

3.4. South Africa

Traditionally, women were discriminated against when starting businesses by policies that favored white men (*Marthur-Helm, 2005*). Since the Gender Policy Framework was passed in 2008, all forms of discrimination against women were supposed to be eliminated. However, discrimination in the traditional male-dominated construction industry still persisted (*Lingard and Lin, 2003; Dainty et al., 2004; Bryne et al., 2005; Oldham, 2004*). Despite this, women were still entering the South African construction industry at the lowest grade levels that restricted them to public sector project values that were at a minimum (about 20,000 euros) with five to ten workers including themselves (*Madikezela and Haupt, 2009*). *Haupt and Fester (2012)* completed an extensive needs assessment of South African women-owned construction businesses in anticipation of an empowerment initiative for all of South Africa. They reviewed current and past studies and made recommendations based on lessons learned. The authors found that fair procurement practices, construction sites that are women-friendly, a construction bank and career-aligned training with good mentoring are the main points needed to transform existing businesses to businesses that are multi-skilled and able to participate fully in the mainstream construction sector and get into the higher grades of contractors (*Haupt and Fester, 2012*). These findings led to workshops and broader-based stakeholder involvement to change the face of women-owned construction businesses in South Africa.

3.5. North Africa and Hypotheses

3.5.1. The country of North Sudan and its female entrepreneurs

Sudan was the largest country in Africa before the secession from South Sudan in 2011 (<http://www.arab.de/arabinfo/sudan.html>). North and South Sudan has been at war for more than three quarters of its existence since it declared its independence from the British and Egyptian governments in 1956. It is bound to the north by Egypt, north east by the Red Sea, east by Eritrea and Ethiopia, south by Kenya, Uganda and Zaire, west by The Central African Republic and Chad, and north-west by Libya. As of 2011, the population of North Sudan was estimated at 45,047,502. The Sudanese population is one of the most diverse on the African continent within two distinct major cultures — Arab and black African. There are hundreds of ethnic and tribal subdivisions and language groups, which makes effective collaboration a major political challenge. Conflict rooted in deep cultural and religious differences has slowed Sudan's economic and political development and forced massive internal displacement of its people.

Only one study has been conducted on female entrepreneurs in North Sudan, which was more than a decade ago. Pitamber (1999) found that most female entrepreneurs in Sudan are 20–49 years of age and are married with four to five children. The vast majority (90%) lack computer skills. The majority of these entrepreneurs had at least a high school degree, 97 percent started their businesses themselves, and their businesses are primarily beauty salons, foods and cookies, and hand crafts. Three percent had permanent locations in shopping centers and buildings outside the home. Although Sudanese female entrepreneurs face many challenges; the most pressing concern is the lack of training, difficulties obtaining funding, the lack of government support and the balance between business and family responsibilities.

A recent study by Hattab (2012), in examining the Global Entrepreneurship Monitor (GEM) data on Algeria, Egypt, Lebanon, Morocco, Syria, West Bank and Gaza Strip, and Yemen from 2008-2009, concluded that more Arab women are starting businesses in these countries, but the percentage is low compared to men. Only an average of 28 percent of adult women are “economically active” in the Middle East, the lowest rate in the world (Freedom House, 2010; UNDP, 2005; The World Bank, 2007).

3.5.2. Hypotheses

To date, because there has not been any other study regarding female entrepreneurs specifically in this area with unique ethnic, political and economic characteristics, we do not know whether there have been any changes on these findings. In an attempt to fill this gap in the literature, we suggest family support in the form of moral support can be a valuable intangible resource for Sudanese female entrepreneurs in their venture startup and management. This may be particularly important when they face challenges such as personal problems and lack of or limited management skill, which can restrict their raising financial, human and social capital to successfully manage and grow their businesses (Chang *et al.*, 2009). However, when Sudanese female entrepreneurs’ receive moral support from their families, it may be easier for them to deal with personal problems through increased strength and resilience obtained from family support and also feel stronger to recognize and acknowledge the managerial skill set gaps and aim for improvement in those areas. Hence:

Hypothesis 1. Family moral support will be negatively associated with Sudanese female entrepreneurs’ personal problems during the establishment and management of their businesses.

Hypothesis 2. Family moral support will be positively associated with Sudanese female entrepreneurs’ recognition of their need to improve their managerial skill sets during the establishment and management of their businesses.

Moreover, Sudanese female entrepreneurs may vary in their education and work experience levels. It would also be important to know more about the impact of family moral support on their perceptions of the benefits of education and work experiences to their businesses. We expect that Sudanese female entrepreneurs with family moral support

will have a more positive outlook and perceive higher levels of benefits of education and work experiences to their businesses. Therefore:

Hypothesis 3. Family moral support will be positively associated with Sudanese female entrepreneurs' perceptions regarding their perceiving education beneficial to the businesses.

Hypothesis 4. Family moral support will be positively associated with Sudanese female entrepreneurs' perceptions regarding their perceiving work experiences beneficial to the businesses.

We test our hypotheses and present the results in the following section.

4. Methodology

4.1. Sample

A self-administered questionnaire, adapted from the *Hisrich et al. (2006)* study on Ukrainian female entrepreneurs was utilized. The 48 item survey was translated and back-translated into Arabic using the procedure by *Earley (1987)*. Additionally, the survey was pre-tested and adjustments made to adapt to local cultural conditions. The questionnaire included a cover letter discussing the importance of the research and thanking them for their participation. While Hisrich and his colleagues distributed the cover letter and questionnaire through business centers in five cities across the Ukraine, our questionnaire was similarly distributed only we used on-line distribution methods as well as field collection.

Data collection took place in north Sudan during October–December of 2011 using both field research methods. Eighty-nine out of 103 questionnaires submitted using field and online research methods were usable for a 86.4 percent response rate. The data collection was completed by a student in business administration under the supervision of one of the authors of the study. Some of the respondents were not literate so the student read the question and assisted them in filling out the survey. The promotion for the on-line version of the questionnaire (https://uncg.qualtrics.com/SE/?SID=SV_1Fx1z3NEWqx8eHO) to female entrepreneurs was made by two Sudanese women associations. Ninety-nine percent of the respondents were from the capital city of Khartoum and one percent of the respondents were from the village of Aljabalab, a town of 6,000 located about a four hour drive from Khartoum.

Respondents ranged from under 20 to over 60 years of age. The largest age group is 40–49 years old, accounting for 40 percent of the participants, followed by 30–39 years and 50–59 (24 percent each). Six percent of the participants are over 60 years of age and six percent of the respondents are less than 30 years old. Sixty-nine percent of the respondents are married (which reflects Sudanese culture with a strong emphasis on family values), ten percent single and 21 percent are separated (two percent), divorced (seven percent) or widowed (12 percent).

Only fifteen percent of women reported their businesses as a family business. Their businesses are new and mostly are comprised of first generation (if at all) family

members. Eighty-eight percent of businesses employ no immediate family members and 98 percent — no relatives. In addition, a decisive majority (81 percent) started their business alone. Only three percent started with a spouse or another family member (also three percent). Ten percent bought a business from a non-family member. Their businesses are small, with 58 percent having no employees (just the owner-operator) and 33 percent having less than ten employees. Only nine percent of the respondents had more than ten employees.

The major area of the businesses activity varies widely among the respondents. As expected, female business ownership is concentrated primarily in the retailing and services industries where companies are relatively smaller in terms of employment and revenues compared to other sectors. Retailing comprises 32 percent of the businesses, followed by nineteen percent in food-related businesses, ten percent in design businesses, and ten percent in tailoring businesses. Other service businesses comprised a total of nineteen percent, including two percent in day care businesses, two percent in henna design skin art businesses and two percent in real estate businesses.

Most female entrepreneurs started their businesses either locally (76 percent) or in a neighboring city (eleven percent) and remain solely domestic businesses. No woman had started their business internationally and none is currently operating internationally. The majority of business owners (81 percent) own more than 50 percent of their business. Seventeen percent of female business owners construct their budget annually and 44 percent construct it according to demand. Only one percent of respondents have a long range plan, while 25 percent have a seasonally adjusted plan.

One of the major positive motivating factors of business ownership is income. Our findings showed that 100 percent registered higher annual incomes than the national average income, \$3,000 US (Central Intelligence Agency, 2004). Fifteen percent of those who answered this question earn four times or more than the national average per person, including ten percent of women who had incomes eight times higher or more than the national average. This indicates that entrepreneurial activity is highly financially rewarding and female entrepreneurs have real chances to achieve success. Spouses' incomes followed a similar pattern. This question was not answered with as much frequency as the norms in Sudan do not encourage discussing income or comparisons with spouses.

4.2. The variables

4.2.1. The dependent variables

In each model, we used a different dependent variable to capture the impact of family moral support on Sudanese female entrepreneurs' challenges and advantages in establishing and managing their ventures. In Models 1 and 2, we focused on the challenges, and in Models 3 and 4 — on the advantages related to the establishment and managing their businesses from the perspective of family support. In the first model (Hypothesis 1), the dichotomous dependent variable measured women's biggest personal problems during the establishment and running of their businesses — (1) the presence of any combination of emotional stress, family stress, loneliness, influence of business on family relationships,

influence of business on personal relationships, poor/or lack of support, loneliness, time management, dealing with males and/or dealing with drivers, and (0) the absence of any of such problems.

The second dependent variable (Hypothesis 2) indicated the need (1) or a lack of it (0) for additional skills/knowledge women thought they would need in the future: marketing, purchasing, general management, interpersonal skills, finance, general services, technology and computers and/or language. In the third model (Hypothesis 3), we focused on the perceived importance of education and measured it at two levels: (1) yes, my schooling has been helpful in my business activities and (0) no, it wasn't. Finally, in the last model (Hypothesis 4), we measured the importance of previous work experience similarly.

4.2.2. *The independent variable*

In each of the four models, we used the same dichotomous independent variable (*family support*), measured at two levels: (1) when moral support from the family member (spouse, child, parent, sibling and/or a relative) was acknowledged by a female entrepreneur and (0) when it wasn't. We used this measure initially designed to measure altruism to capture the support of family members (Becker and Vance, 1993). Unlike Chang et al.'s (2009) measure of family support by adapting four items from Becker and Vance's (1993) measure of altruism, we only adapted the family moral support item considering the economic challenges and human, social and financial capital limitations of Sudanese families owing to political and governmental instabilities in their country.

4.2.3. *The control variables*

We controlled for four demographical factors owing to their potential impact on the dependent variables pertaining to perceptions (Rutherford and Holt, 2007; Stewart et al., 2008):

Marital status indicates whether the respondent is single, married, or separated/divorced/widowed.

The number of years in business is a dichotomous variable measured at two levels: (1) if more than three years and (0) if no more than three years.

Age is a categorical variable measured at three levels: (1) 39 years old or less, (2) 40-49 years old and (3) 50 or more years old.

Education is a dichotomous variable measured at two levels: (1) if more than a high school and (0) if no more than a high school.

The choice of the cut-off levels for the variables' categories was based on theoretical considerations and their frequency distributions.

4.3. *Analyses and results*

To test the relationships between the family support and the major challenges (Hypotheses 1 and 2) and advantages (Hypotheses 3 and 4) Sudanese female entrepreneurs face and enjoy, respectively, in their business activities, we conducted four binary logistic regressions. In each model, the dependent variable was measured sequentially

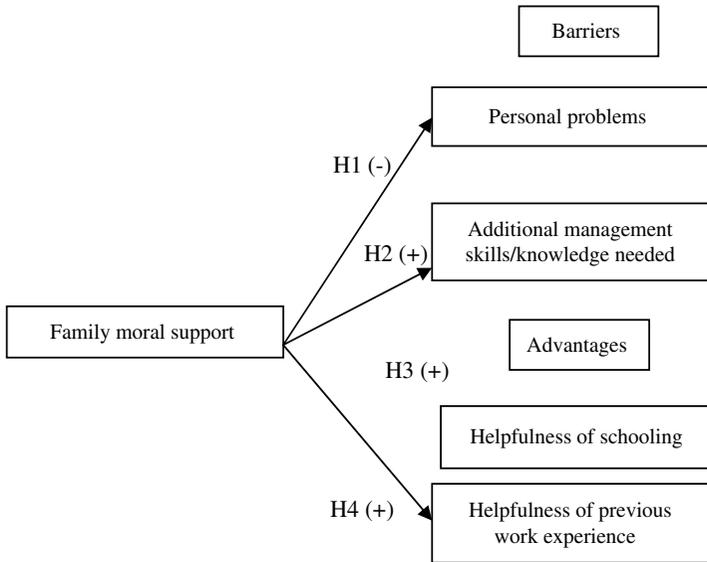


Fig. 1. Study Design.

against the control and independent variables by first entering the control variables and then adding the independent variable. The study design is depicted in Fig. 1, descriptive data including zero-order correlations are presented in Table 1 and the results of the binary logistic regressions are presented in Table 2.

The models have adequate fit because the Hosmer and Lemeshow's goodness of fit test p -values are comfortably greater than 0.05. Prediction success rates overall are moderately good between 63 and 86 percent, an improvement on the 52-55 percent correct classifications with the constant (the intercept only) models. The Nagelkerke's R^2 are somewhat lower, between 0.14 and 0.53. The logistic regression models were run against the dependent with the control variables only (the nested model), then were run again for the full model with the control variables and the independent variable. The results showed a moderate increase in Nagelkerke's R^2 and the prediction success rates when the independent variable was added to each of the four models. Also, the chi-square difference between the intercept only model and the model with all predictors entered was significant in the case of the full model ($p < 0.05$) and not significant for the nested model. Thus, adding the independent variable to the set of control variables improved the predictive power of the model.

Two hypotheses were confirmed: the greater moral support of their families, the less likely female entrepreneurs are to experience personal problems (Hypothesis 1), and the more likely they are to indicate the need for additional management skills/knowledge (Hypothesis 2). On the other hand, family moral support has no statistically significant effect on the likelihood of schooling (Hypothesis 3) or previous work experience (Hypothesis 4) being perceived as helpful in the women's business activities.

Table 1. Means, standard deviations and correlations ($N = 84$).

Variables	Mean	Std. Deviation	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Personal problems	0.466	0.501	1	0.004	0.197	-0.012	0.153	0.157	-0.112	0.010	0.259*	-0.009	-0.249*	0.255*	-0.054
2. Future skills/knowledge needed	0.456	0.501	0.097	1	0.097	0.012	0.465**	0.015	-0.078	0.078	0.295**	-0.171	-0.112	-0.003	-0.118
3. Helpfulness of schooling	0.218	0.416	1	1	0.267	-0.028	-0.088	0.114	0.114	-0.064	0.195	-0.035	-0.160	0.530**	-0.172
4. Helpfulness of previous work experience	0.467	0.505	1	0.033	1	0.021	0.021	0.051	0.051	-0.071	-0.084	-0.098	0.177	0.151	0.161
5. Family support	0.735	0.443	1	1	0.735	-0.083	1	-0.083	0.103	-0.055	0.028	0.091	-0.124	0.020	0.190
6. Marital status: single	0.102	0.305	1	0.305	1	-0.507**	1	-0.507**	-0.171	-0.171	0.354**	-0.121	-0.225*	0.073	0.038
7. Marital status: married	0.693	0.464	1	0.464	1	1	1	1	-0.762**	-0.762**	-0.063	-0.037	0.103	0.105	0.035
8. Marital status: separated/widowed/divorced	0.205	0.406	1	0.406	1	1	1	1	1	1	-0.200	0.136	0.055	-0.175	-0.069
9. Age: 39 years old or less	0.302	0.462	1	0.462	1	1	1	1	1	1	1	-0.532**	-0.433**	0.276*	-0.117
10. Age: 40 to 49 years old	0.395	0.492	1	0.492	1	1	1	1	1	1	1	1	-0.532**	-0.010	-0.049

Table 1. (Continued)

Variables	Mean	Std. Deviation	1	2	3	4	5	6	7	8	9	10	11	12	13
11. Age: 50 or more years old	0.302	0.462											1	-0.269*	0.169
12. Education	0.448	0.500												1	-0.116
13. Years in business	0.730	0.446													1

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

Dependent variables:

1. Personal problems: 1 = Yes; 0 = No
2. Future skills/knowledge needed: 1 = Yes; 0 = No
3. Helpfulness of schooling: 1 = Yes; 0 = No
4. Helpfulness of previous work experience: 1 = Yes; 0 = No

Independent variable:

5. Family support: 1 = Yes; 0 = No

Control variables:

6. Marital status: Single
7. Marital status: Married
8. Marital status: Separated/Divorced/Widowed
9. Age: 39 years old or less
10. Age: 40 to 49 years old
11. Age: 50 or more years old
12. Education: 1 = More than a high school; 0 = No more than a high school
13. Years in business: 1 = More than three years; 0 = No more than three years

Table 2. Logistic regression results.

	Model 1 N = 84	Model 2 N = 84	Model 3 N = 84	Model 4 N = 84
Independent variable:				
Family support	-1.428* (H1: confirmed)	2.455*** (H2: confirmed)	-0.95 (H3: not confirmed)	-0.266 (H4: not confirmed)
Control variables:				
Marital status (single) ²	0.207	-1.333	-3.258*	0.116
Marital status (married)	-0.398	-1.023	-1.442	-0.611
Years in business	0.430	-1.083	-0.833	0.572
Age (below 39 years) ³	1.450**	1.507*	0.844	-1.229
Age (40–49 years)	0.694	-0.385	0.286	-0.982
Education	0.881*	-0.220	4.376***	1.347*
Hosmer and Lemeshow χ^2	3.02 ($p = 0.93$)	6.53 ($p = 0.59$)	1.46 ($p = 0.99$)	7.35 ($p = 0.14$)
-2LL	101.79	93.56	53.76	53.43
Overall % correct	67.9%	73.8%	85.7%	61.9%
Nagelkerke R ²	0.21	0.31	0.53	0.14

Barriers

Model 1. Dependent variable: Personal problems¹

Model 2. Dependent variable: Additional management skills/knowledge needed

Advantages

Model 3. Dependent variable: Helpfulness of schooling

Model 4. Dependent variable: Helpfulness of previous work experience

Note. Regression coefficients: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$; two-tailed tests

¹ The dependent variables are all dichotomous with 1 = Yes; 0 = No

² 'Marital status (separated/divorced/widowed)' used as base category

³ 'Age (50 or more years old)' used as base category

Concerning the control variables, we found age and education to have statistically significant effect on the dependent variables. Younger women entrepreneurs (no more than 39 years old) are more likely to experience personal problems but also to indicate the need for additional management skills/knowledge than those more mature entrepreneurs who are 50 or more years old. Women who have higher than a high school education are more likely to experience personal problems than those with lower education levels. Similarly, they are more likely to consider both schooling and previous work experience helpful in their business activities than those with lower education levels. Neither marital status nor the number of years in business was found to be significantly related to any of the dependent variables.

5. Conclusion

In our study, we focused on the impact of the family support (i.e. moral support provided by family) on the challenges and advantages perceived by female entrepreneurs. Indeed, family moral support may be a key resource for Sudanese female entrepreneurs when external sources of support are substantially limited owing to not only the national economic challenges but also difficulties in establishing peace and political stability. In

such a context, raising human, social, financial and even survivability capital can be extremely difficult for Sudanese female entrepreneurs elevating the importance of family moral support for them.

To have a better understanding of the impact of family support on the perceived challenges and resources, we examined the effects of family moral support on the Sudanese female entrepreneurs' perceptions concerning entrepreneurial challenges (i.e. personal problems and need for additional management skills/knowledge) and advantages (i.e. benefits of education and benefits of previous work experiences). Consistent with our expectations, we found a negative relationship between family moral support and perceived personal problems. We also found that family moral support positively affects the perceptions regarding the need to obtain additional management skills/knowledge. These findings suggest family moral support can make Sudanese female entrepreneurs feel stronger to manage personal problems and also realize and acknowledge the areas for development.

However, interestingly, family moral support does not lead to significant positive perceptions regarding the benefits of education and work experiences. It rather appears that Sudanese female entrepreneurs feel more secure and better rooted within the framework of family moral support, and therefore, do not think their previous work experience and education are relevant to their businesses. The Sudanese female entrepreneurs who lack family moral support may be relying more on education and previous work experiences and see these as more influential on their businesses than the ones relying more on family moral support.

6. Limitations and Future Research

This survey was conducted online and mostly through support organizations and networks of female entrepreneurs and is not a random but a convenience sample. Therefore, the results are strongly influenced by people who can use the internet and belong to networking organizations. Future studies should include in the sample female entrepreneurs who do not use the internet or do not use the internet on a regular basis. Other means to gather data should also be included, such as student-based businesses, university technology transfer businesses begun by women, representative samples throughout Sudan in rural and urban environments and matched gender-based samples.

As another future research avenue, longitudinal studies can investigate the impact of changes in the life styles and culture along with government initiatives on Sudanese female entrepreneurs over time. Indeed, it would be interesting to explore how the changes encouraging more women's opportunities will affect female entrepreneurs in Sudan in the long-run.

Future research can also examine the impact of Sudanese female entrepreneurs with family support on innovations in the economy. We expect that if qualified women with family support combined with higher education and motivation can have the opportunity to utilize their knowledge base by creating their ventures through family and external support (Chang *et al.*, 2009), they may be the drivers of innovations in Sudanese economy.

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