The Survival of Female-owned Micro Enterprises in the UMkhanyakude District

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Abstract

The purpose of this research report is to determine factors that increase the probability of rural female entrepreneurs remaining in business for at least two years or longer. Contemporary development theory asserts that women play a prominent role in uplifting their families and developing their communities. The promotion of entrepreneurship among women in rural communities has been shown to be a formidably successful approach to development. Owing to the paucity of local studies in this vein, this project investigated the causal factors behind female entrepreneurs of the uMkhanyakude district staying in business for two years or more. Primary data were collected from entrepreneurs operating their businesses in the locality, using snowball sampling method, a sample of 273 entrepreneurs were interviewed by means of questionnaires. Logistic regression was used to estimate factors that increased the probability of women staying in business. The study revealed that the higher the levels of business experience, education, business success and hours spent on business the greater the chances of women staying in business. Financial and input constraints were major restrictions on women staying in business. Marital status, age, competition and marketing constraints were found to be insignificant. As most of the entrepreneurs in the uMkhanyakude district depend on stokvels and their saving for financing their businesses, the study suggest that such groups be harnessed by the DTI in the Grameen-bank type programmes manner which offer poor rural women low-cost loans for entrepreneurial purposes.

Electronic ISSN: 2519-5476; DOI: https://doi.org/10.29086/2519-5476/2017/sp20a4

Keywords: Logistic regression, microenterprises, survivalists, women, entrepreneurship

Introduction

South Africa as a whole suffers from high levels of poverty, unemployment and income inequality, and in the absence of adequate social benefits, women operating microenterprises, are often a shield for their families (and by extension their communities) against the ravages of unemployment (Tshabalala 2013). Microenterprises can be characterized as a sector that is easy to enter because it relies on indigenous resources; such businesses are normally family owned and small in scale; labour intensive, using adapted technology and skills acquired outside the formal school system, and operate in unregulated and competitive markets (Kang'ethe & Serima 2014). The present study extends the definition to include survivalists, retail and service industries. According to the National Small Business Act, microenterprises are informal, usually run by the owner and the family. Moreover, the survivalists have the income generated below the poverty line, providing minimum means to keep the unemployed and their families alive. It is notable that most females in developing countries engage in economic activities that do not normally figure in labour statistics or are not recognized as work at all, such as subsistence agriculture and household activities (Francavilla, Giannelli & Grilli 2013).

Most female workers in developing countries, particularly in South East Asia and Africa, do not have salaried jobs, and are far less involved in paid economic activities than male workers. They often produce goods at home for market sale, or labour on the family farm or work in small family-run businesses (Francavilla *et al.* 2013). Women have firmly and steadily begun to extend their advantage in the economic sphere by running and managing SMEs and even ones involving large investments (Dzisi & Obeng 2013). This economic empowerment increases women's access to economic resources and opportunities including jobs, financial services, property and other productive assets, skills development and market information. However, women usually invest a higher proportion of their earnings in their families and communities than men, meaning that women save a much smaller proportion of income or nothing at all (OECD 2012).

Our study does not focus on gender equality as such, but insights into the issue assist in making sense of women's work and the role of women in development projects. Gender inequalities and lack of attention to gender in agricultural development are reported to have contributed to lower productivity, higher level of poverty and under nutrition (FAO 2011), whereas increased equality can lead to faster growth. However, without an equitable distribution of benefits from growth, its effects on women will be marginal. In addition, inequality is viewed as a human rights matter, giving rise to exclusion and failure to hear marginalised people's voices, and potentially triggering crime, disease, ignorance and poverty (Ntale, Litondo & Mphande 2014).

There are many institutions that support small businesses, such institutions include: Centre for Small Business Promotion, Ntsika Enterprise Promotion Agency, NAMAC, KHULA, The Provincial SMME Desks, Land Bank, Industrial Development Corporation, National Empowerment Corporation, and Isivande Women's Fund. However, the micro enterprises in the uMkhanyakude district are still facing financial constraints due to lack of information and information dissemination.

The present study aimed to assess whether there are differences in the performance of male and female-owned enterprises and whether age, business experience, marital status, education, business operating hours and constraints such as input, financial, marketing and competition affects the performance of female-owned business in the uMkhanyakude district. These factors were derived from the literature discussed below.

The article is structured as follows: the literature review, focuses on the theoretical and empirical aspects of gender, development and entrepreneurship; it presents the research methodology; and lastly it presents and discusses the results and the conclusion offers recommendations.

Literature Review

Harries-White and Heyer (2010) believe that rural poverty in South Africa stems from the historically generated unequal power and racial relations that reverberate into the present. Black women in particular have faced triple oppression: for being a woman, poor and black. According to Olah, Richter & Kotowska (2014), the traditional reproductive role of women was not normally thought of as breadwinners. However, since the 1970s, with the rise of feminist thinking, development agencies and practitioners have transformed the way

women are perceived and have afforded them a central role in the development agenda.

Women in Development

The Women in Development (WID) movement focuses on approaches involving equity, anti-poverty and efficiency. It was formulated in the early 1970s by a Washington-based network of female development professionals who argued that modernization was affecting men and women differently. Instead of improving women's rights and status, the development process appeared to be contributing to a deterioration of their position (May 2013). Women in Development (WID) gave primacy to women's productive roles and their integration into the economy as means of improving their status; it was part of a strategy to reformulate women's identity for development policy.

In addition to the WID agenda, there was a simultaneous effort by liberal feminists to achieve equal rights and employment equity for women in the United States. Central to the feminist's concern was the idea that women's disadvantages stem from stereotyped customary expectations held by men, internalized by women, and promoted through various agencies of socialization (Matomela 2015). Liberal feminists believed that women's disadvantages can, in principle, be eliminated by breaking down these stereotypes by giving girls better training, and exposing them to more varied role models through equal opportunity programmes, anti-discrimination legislation, and freeing labour markets. One implication of the WID approach was that there was little focus on men and on power relations between men and women.

WID advocates claimed that the failure of government to acknowledge and utilize women's productive roles within and beyond the household led to the inefficient use of resources (Cuberes, David & Teignier-Baque 2012). Improving women's access to technology and credit would raise their productivity and impact positively on national development.

Gender and Development

The Gender and Development (GAD) perspective emerged in the 1980s as a response to the failure of WID programmes to effect qualitative and lasting

changes in women's social status. GAD is a holistic approach, focusing on social, economic, political and cultural forces that determine how men and women differ as they participate in, benefit from, and control project resources and activities. This approach shifts the focus from women as a group to the socially constructed relations between women and men, and it emphasizes the need to challenge existing gender roles and relations. GAD promotes a development process that transforms gender relations in order to enable women to participate on an equal basis with men in determining their common future. According to Beneria, Berik & Floro (2016) GAD stressed the strategic needs of women and advocated a 'bottom-up' process of transforming gender power relations through individuals or groups developing awareness of women's subordination and building their capacity to challenge it. GAD emerged from frustration with the lack of progress of the WID policy in changing women's lives and influencing the broader development agenda. It saw women's real problem as the imbalance of power between women and men. There are different focuses of GAD, some of which emphasise primarily on the gender division of labour and gender roles focusing on gender as a relation of power embedded in development institutions. GAD approaches generally aim to meet women's practical gender needs and their more strategic gender needs by challenging existing divisions of labour or power relations (Moser 2012).

The present paper views entrepreneurship among rural women as their attempt to break the historical and cultural shackles of subordination to men and to assume their rightful role in society on an equal basis to their male counterparts.

Access To Finance and Barriers To Growth

Institutions like Grammen Bank and BRAC (Bangladesh Rural Advancement Committee) that provide microfinance to destitute rural women were born out of the enlightened view of women challenging gender inequality by asserting themselves in all spheres of human activity achieved through the awareness of, both individually and collectively, how power relations operate in their lives (Nai 2010). The provision of microfinance to indigent women on a group liability basis instead of any collateral has empowered them socially, economically and politically, since the 1970s; this microfinance innovation has spread throughout the world thus empowering millions (Sultana, Zaaba & Umemoto 2010).

In South Africa an interesting variant of a communal savings club for microfinance formations (commonly known as stokvels) managed by mainly women, has evolved among the working class and rural folk where each member contributes to the pool and on a rotational basis will acquire the pooled funds; should a member have an agent need for finance he/she can borrow from the pool at some nominal cost. Such informal system have empowered rural women who otherwise would not have access to credit, to become entrepreneurs (Matuku & Kaseke 2014).

The Grameen Bank was founded in Bangladesh in September 1983 as an independent microfinance institution. It is a private specialized bank with 94% of the stock owned by the poor rural borrowers and the remaining 6% owned by the government. According to Sultana *et al*. (2010), as of July 2009 the bank had 7.93 million borrowers, 97% of whom were women. One of its functions is to operate as a savings bank and provide microenterprise loans with no restriction as to the loan size. Sultana *et al.* (2010) analysed the role of credit institutions as the providers of small loans to poor women in rural Bangladesh and revealed that, aided by micro loans from then Grameen bank, women could start small local businesses that had previously been impossible for them to do. Rural financial programmes have been largely designed and implemented with the male head of household as the intended client, and they have failed to recognize women as active, productive and engaged economic agents with their own financial needs and constraints. Women constitute approximately half of the global rural labour force and, while not always counted, they are economically active in each subsector of the rural economy. Even though millions of women worldwide contribute to national agricultural output and family food security, detailed studies from Latin America, South Asia, and sub-Saharan Africa consistently indicate that rural women are more likely to be credit constrained than men of equivalent socio-economic conditions (Fletschner & Kenney 2014).

Microcredit provides an opportunity for low-income earners, including women, to improve their economic and social status. Mbonyane and Ladzani (2011) examined factors that hinder the growth of small businesses in South African townships in order to create awareness of these factors, to develop guidelines for small business owners, and to promote successful business enterprises. They determined the size of the business by the number of full-time employees, total annual turnover and total gross asset value. They found that barriers to growth included lack of awareness of government initiatives,

poor financial management, overtrading, crime, poor credit records, lack of management expertise, poor infrastructure, lack of information, and poor access to communication technology. Their results suggest that, in Kagiso Township, slow growth rate could be attributed partly to lack of support for small, medium and micro-enterprises from support institutions, and partly to their own internal weaknesses. Furthermore, they found that the most common impediments to business growth in South African townships were lack of legal knowledge, lack of funding, and a general lack of business acumen.

Perhaps number of these constraints can be addressed through the establishment of organised women entrepreneur groups with characteristics involving an amalgamation of home brewed stokvels and the imported Grammen Bank type formation.

Personal Motivation to Self-Employment

According to a study by Moses & Amalu (2010), entrepreneurial motivations often fit into push or pull categories, where push factors are characterized by personal or external factors (for example, marriage break-up, or being passed over for promotion) and often have negative connotations. Alternatively, pull factors are those that draw people to start businesses, such as seeing an opportunity. Dawson and Hanley (2012) applied the theory of push and pull factors and used a gender comparative approach to explore the nature of potential gender differences within entrepreneurial motivations. The findings suggested that both women and men appear similarly motivated by personal factors and opportunities available. Three gender differences were found, however women were more influenced than men by a desire for independence; the women considered their children as motivators more than the men did; and the men were influenced more by job dissatisfaction than the women were.

Self-esteem has been shown to reveal individuals' disposition towards business risk (Sirec & Mocnic 2012). Loarne-lemaire, Maalaoni & Dana (2017) studied gender, age and self-employment as they investigated age and gender differences in the initial motivation for starting a business. The results revealed that self-employment was a reactive rather than a productive decision for both older and young women as well as men; however, women were less inclined to seek self-employment actively as their employment option of choice.

Sirec and Mocnic explored the personal characteristics and possible differences between male and female Slovenian entrepreneurs, which could help to explain and encourage better reactions to the gender gap in Slovenian entrepreneurship. The study emphasizes the fact that entrepreneurs do not only need knowledge, expertise, and professional competencies, but also various skills and abilities influenced by personal characteristics. Their findings suggest that women identify business opportunities differently from men and also try to exploit them differently.

Gender and Performance Linkages

Small firms often remain small because they face formidable barriers to growth. Although they have higher expected growth rates than larger firms, they do not have an easy existence (Coad & Tamvada 2012): they suffer from newness and face difficulties stemming from lack of experience and knowledge, and the fact that they have not yet been legitimated or recognised in the market place. According to Kalnins & Williams (2014), enterprises managed by men are bigger and exist for longer than the ones owned by females, but the fields in which both men and women establish businesses are very similar. Coad and Tamvada (2012) examined growth and barriers to growth among small firms in India. The young firms were fragile and vulnerable, unable to weather adverse shocks, and suffered from the lack of legitimation and recognition. The barriers to growth were especially felt in female-owned firms, and often seemed to relate to raw materials and market problems. Rural firms were found to be vulnerable to problems concerning raw materials, equipment, management, and power shortages and were relatively less exposed to problems concerning labour and lack of demand.

Ramadani, Hisrich & Gerguri-Rashiti (2015) discussed some of the main gender issues affecting female entrepreneurs in Albania, Macedonia and Kosovo in South-eastern Europe and their participation in business activities at various levels. These issues include personal characteristics, motives for starting a business, characteristics of their businesses and operations, size of the business, revenues, family status, management problems and their self-perceived required competencies. Their findings indicated that women entrepreneurs in Kosovo face extensive limitations in enterprise development. Their performance normally depends on their access to resources (for example,

education, finances and markets) and to their entrepreneurial capital (for example, technical skills, employment experience, negotiation skills, strategic capabilities, business and social networks, and product supply channels).

Kobeissi (2010) examined the impact of five gender variables (female education, female economic activities, female earnings ratio, fertility rate, and gender empowerment) on the extent of female entrepreneurial activities in 44 developed and developing countries. The study found female education, extent of female economic activities, female earnings ratio, and fertility rate to be significant with two different dependent variables (female entrepreneurship start-ups per 100 adult populations and female to male entrepreneurship start-up ratio). Variable related to gender empowerment was found to be significant with one of the two dependent variables. OECD (2012b) found that growth is low for businesses whose owners did not finish high school, but having a college or university degree did not significantly affect an owner's capacity to grow.

Females' Time Allocation

Many women were fired from their jobs due to pregnancy or the illness of a family member, which meant they left the labour market. They had to start their own businesses, giving them flexible hours as a strategy for juggling the demands of family and paid work. For this reason, women tend to place a higher value than men do on having jobs with flexible hours (World Bank 2011).

Long working hours can generally be expected to result in some offsetting increase in output per men-hour. The offset is greater the more hours are worked per week or per year, but if extreme hours are worked, there is a point when reducing them can increase output. Shorter hours then result in less fatigue, greater intensity of work, fewer mistakes, better quality of output, less wastage and less absenteeism. Such personal effects are reinforced by the institutional factor. Many jobs require an individual's presence as long as the establishment remains open, but do not fully occupy him or her throughout that time so the work done can in fact be compressed and completed in fewer hours (Caruso 2014). While higher incomes pull women towards more leisure time, higher wages push them in the opposite direction and out of the home. Men are normally breadwinners since they earn more than women in the market, so

women's earning power is diminished through childbearing activities. Movement of women in and out of the labour force as compared to men is a major reason for their higher unemployment (Kyei & Gyekye 2012).

The focus of the present study is to investigate what factors affect the success of rural women entrepreneurs in the uMkhanyakude district characterised as more deprived in regards to development programmes and infrastructure. In order to do so, we concentrated on factors that increase the probability of women entrepreneurs staying in business for two years or longer.

Research Plan and Methodology

The UMkhanyakude district is located in northern KwaZulu-Natal. It is a district with five local municipalities, namely, Jozini, The Big 5 False Bay, Hlabisa, Mtubatuba and UMhlabuyalingana. It is a rural area with lack of development and poor service provision. For this reason, business development services are not readily available; few banks operate, and offer loans that are seldom large enough to enable significant growth of enterprises. The district is strategically linked to the provincial markets of KwaZulu-Natal, Mpumalanga and to the neighbouring market of Swaziland. According to the 2011 Census, the district has a population of 625,846, of which 54.76% are females and 45.24% males respectively.

In order to investigate the causal factors behind female entrepreneurs remaining in microenterprises for two years and longer in the uMkhanyakude district, this study collected primary data from entrepreneurs operating their businesses in the five local municipalities of uMkhanyakude district after the ethical clearance to conduct research was granted. Snowball sampling was used to select participants where one participant recommended several other people involved in microenterprises. This sampling technique is often used in hidden populations that are difficult for researchers to access, or in cases where a sampling frame is hard to establish. It is assumed that cases are affiliated through links that can be exploited to locate other respondents based on existing ones (Chandrasekhar & Lewis 2011).

A sample of 300 entrepreneurs was interviewed using a questionnaire instrument, however, only 273 observations were usable as 27 questionnaires were deemed to be spoilt owing to discrepancies in the responses to various questions as well as not having answered a significant number of questions.

All participants submitted a signed informed consent, and were made aware that they were free to withdraw from the survey at any time and that they were not obliged to answer questions with which they were uncomfortable. Moreover, they were informed that their anonymity would be preserved and that only general trends and patterns in the data would be reported in academic papers. The information collected via questionnaires related to entrepreneur characteristics (age, gender, marital status, education), enterprise characteristics (type of industry or sector, age of business, initial and current employment levels, sales and profits as a measure of qualitative growth in sales), major constraints and problems (source of start-up capital, access to credit facilities, marketing and competition).

After the questionnaires were returned, the data coding was coded using a statistical package for social science (SPSS) and arranged in an analysable form. Descriptive statistics and the logistic regression were generated using SPSS. Both descriptive and inferential statistics were used as tools of evaluation in the data analysis. Although a non-probability sampling technique was used to collect a data, fortuitously the data points covered the entire uMkhanyakude district with a wide variety of businesses being involved, hence it was deemed feasible to employ the parametric logistic regression approach to analyse the data.

The Logistic Model

This study uses the logistic model (see Gujarati & Porter, 2009), which has become the standard method of analysis in a situation where we have to describe the relationship between a binary response variable (i.e. Y = 1 or 0 and is assumed to have a binomial distribution) and one or more explanatory variables. Given the nature of the response variable it is common practice to model the outcome (1 or 0) as probabilities of the event occurring Pr (Y = 1 e.g. success of a business) or not occurring Pr (Y = 0, e.g. failure of a business). The probabilities are modelled as a function of a linear combination (or a linear predictor) of the explanatory variables (e.g.$\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_k X_k$, where the X_i's are explanatory variables and the β_i's are regression coefficients). Since, by definition, the probabilities must lie between 0 and 1, the linear predictor can assume any value between -∞ and +∞. Probabilities are transformed into logits in order for them to be equated to the linear predictor

of explanatory variables. A logit is defined as the natural logarithm of the odds that an event happens (i.e. Y = 1). The following logistic regression model is derived by equating the transformed probabilities (logits) to the linear predictor:

$$Logit\ Y = ln\left(\frac{\Pr(Y=1)}{\Pr(Y=0)}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_k X_k \qquad (1)$$

Equation (1) is estimated via the maximum likelihood method. A positive β_i is interpreted as a unit rise in X_i increases the log odds of Y = 1, while a negative $\beta_i$decreases the log odds of Y = 1. Furthermore, by taking logs on both sides the log odds model can be converted to an odds model as follows:

$$\frac{\Pr(Y=1)}{\Pr(Y=0)} = e^{\beta_0+\beta_1 X_1+\beta_2 X_2+\cdots+\beta_k X_k} = e^{\beta_0} e^{\beta_1 X_1} e^{\beta_2 X_2} \ldots e^{\beta_k X_k} \qquad (2)$$

Equation (2) suggests that the odds that an event occurs changes multiplicatively with changes in the explanatory variables; for example, holding all variables except $X_k$constant, the odds ratio that Y=1 when X_k changes by one unit is e^{β_k}. Z-stat are used to confirm the significance of the parameters of the above regression model. This study estimates the logistic regression model of the form expressed in equation (1).

Our logistic regression model assesses what factors increase the probability of female entrepreneurs to stay in business for two years and longer, hence in this regression the dependent variable, SFE (successful female entrepreneurs) takes on a value of 1 if female, otherwise 0. This implies that all males in the sample who operate businesses both successfully and unsuccessfully for two years and more as well as women who operated failed businesses were categorised as Y=0. Success was defined by an increase in factors including a rise in profitability, increase in asset values, number of clientele and number of workers (both casual and permanent). This binary dependant variable was regressed against a vector of predictors including age of an entrepreneur, marital status, education, business performance, business experience, hours the business is open per year, and business constraints associated with finance, input/supplies, competition and marketing. Theories contend that female entrepreneurs experience different constraints in business activities than their male counterparts. All the above predictor variables were

derived from the literature presented above in the literature review. The logit model based on success in female entrepreneurship (SFE) is as follows:

$$logOddsSFE = \beta_0 + \beta_1 exp + \beta_2 edu + \beta_3 fcon + \beta_4 icon + \beta_5 mstat + \beta_6 ohou + \beta_7 perf + \beta_8 age + \beta_9 comp + \beta_{10} mcon + \mu_i$$

Equation (3): The Z-statistics generated by the maximum likelihood method is used to test for the statistical significance of the variables. The Wald test as well as the Hosmer-Lemeshow goodness of fit test is to be used to assess how well the covariates explain the dependent variable. Table 1 provides a summarised account of all the variables used in the logistic regression models together with the coding that was used in our study.

Table 1: Summary of Variables used in the Logit

Variables	**Definition**
$\boldsymbol{P_i}$ (Business Performance)	1 = increase; 0 = decrease
$\boldsymbol{sfe}$ (Successful female entrepreneur)	1 = successful female entrepreneur; 0 = otherwise (inclusive of both successful and unsuccessful males and unsuccessful females)
$\boldsymbol{edu}$ (Level of Education)	1 = illiterate; 2 = some primary education; 3 = completed primary education; 4 = completed junior secondary; 5 = have matric; 6 = have tertiary education
$\boldsymbol{exp}$ (Business experience)	Number of years in business.
age (Entrepreneurs' age)	1 = 16-24; 2 = 25-34; 3 = 35-44; 4 = 45-54; 5 = 55-64; 6 = 65 and above.
$\boldsymbol{mstat}$ (Marital status)	1 = married or widowed; 0 = single or divorced

fcon (Financial constraints)	1 = yes; 0 = no.
comp (Competition constraints)	1 = yes; 0 = no
mcon (Marketing constraints)	1 = yes; 0 = no.
icon (Input/supplies constraints)	1 = yes; 0 = no.
ohou (Hours operating business)	Average Number of hours a business entrepreneur operates in a year

Data Analysis

Table 2: Descriptive statistics comparing female headed enterprises and male headed enterprises.

	Entrepreneur involvement by gender				**Frequency**	**%**
	Female	**%**	**Male**	**%**		
Gender						
Female	-	-	-	-	134	49.1
Male	-	-	-	-	139	50.9
Business performance (perf)						
Increase	47	17.2	70	25.6	117	42.9
Decrease	87	31.9	69	25.3	156	57.1
Age of an entrepreneur (age)						
16-24	11	4.0	20	7.3	31	11.3
25-34	44	16.1	42	15.4	86	31.5
35-44	49	17.9	43	15.8	92	33.7
45-54	18	6.6	16	5.9	34	12.5
55-64	12	4.4	12	4.4	24	8.8
65 and above	0	0	6	2.2	6	22

Education of an entrepreneur (edu)	17	6.2	6	2.2	23	8.4
Illiterate	2	0.7	10	3.7	12	4.4
Some primary education	6	2.2	8	2.9	14	5.1
Completed primary education	20	7.3	21	7.7	41	15.0
	66	24.2	47	17.2	113	41.4
Completed junior secondary	23	8.4	47	17.2	70	25.6
Have matric						
Have tertiary education						
Business experience (bexp)						
5 years and below	70	25.6	55	20.2	125	45.8
6-10 years	47	17.2	52	19.0	99	36.3
11-19 years	16	5.8	29	10.5	45	16.7
20 years and above	1	0.4	3	1.2	4	1.6
Financial Information (fcon)						
No financial constraints	57	20.9	89	32.6	146	53.5
Have financial constraints	77	28.2	50	18.3	127	46.5
Belong to savings clubs	124	45.4	90	33.0	214	78.4
Access to bank credit	31	11.3	51	18.7	82	30.0
Received government support	0	0	0	0	0	0
Competition problems (comp)						
Don't have competition	45	16.5	53	19.4	98	35.9
Have competition	89	32.6	86	31.5	175	64.1
Marketing constraints (mcon)						
Don't have marketing constr.	96	35.2	101	37.0	179	70.3
	38	13.9	38	13.9	76	27.8
Have marketing constraints						
Input/supplies constraints (icon)	87	31.9	105	38.5	192	70.3
Don't have input constraints	47	17.2	34	12.5	81	29.7
Have input constraints						

Marital status (mstat)						
Single/Divorced	80	29.3	88	32.3	167	61.5
Married/widowed	54	19.8	51	18.7	105	38.5
Operation hours per year (ohou)						
2000 hours and below	15	5.6	3	1.2	18	6.6
2001-4000 hours	96	35.1	85	31.3	181	66.3
4001 and above	23	8.6	51	18.5	74	27.1

Discussion of Table 2 Results

Concerning the sample observations of 273 enterprises, 49.1% were female-headed enterprises and 50.9% were male-headed enterprises, respectively. Out of 49.1% female-headed enterprises, only 17.2% experienced an increase in business performance for the past two years, whereas, 31.9% experienced a decrease in their business performance. In regard to the 50.9% male-headed enterprises, 25.6% experienced an increase in their business performance whereas 25.3% experienced a decrease in their business performance in the past two years.

Out of 11.3% overall entrepreneurs in the age group 16-24, only 4% were female entrepreneurs while 7.3% were male. Additionally, out of 31.5% entrepreneurs in the age range 25 to 34, 16.1% were women and 15.4% were men. Of 33.7% entrepreneurs in the age range 35 to 44, 15.8% were male entrepreneurs and 17.9% were female entrepreneurs. Of a total of 12.5% overall business owners between the ages 45 and 54, 6.6% were female entrepreneurs and 5.9% were male entrepreneurs. The percentage of male and female entrepreneurs who were between the ages of 55 and 64 is equal (4.4%). Lastly, 2.2% of male entrepreneurs were aged 65 and above, whereas women of this age tend not to be involved in businesses. The results show that apart from the 16-24 and over 65 years categories where men tend to dominate, in the rest of the groups, men and women tend to be evenly distributed. Incidentally these appear to be the most productive age groups, for at the lower end most participants have some years of experience and at the upper end the individuals are experienced and still have a significant amount of work life still available to them.

It was noted that 8.4% of the entrepreneurs surveyed were illiterate, for which 6.2% were females while 2.2% were males. 0.7% of female business owners reported having some primary education, as compared to 3.7% of their male counterparts. Overall, these results mean that 12.8% of respondents have not attainted secondary education at all. Female entrepreneurs who have completed primary education comprised 2.2% whilst male counterparts accounted for 2.9%. Of female business owners, 7.3% completed junior secondary education and 7.7% of male entrepreneurs achieved the same level. Out of 41.4% entrepreneurs with matric, only 17.2% were male business owners and 24.2% were female entrepreneurs. Lastly, 8.4% of female entrepreneurs and 17.2% of male entrepreneurs have tertiary education. Although it is laudable that females tend to dominate males in that a greater number have matriculated and have completed tertiary qualifications, it is a cause for concern that 33% of the respondents have not matriculated.

Regarding business experience, 20.2% of male entrepreneurs reported to have 5 years and below whereas 25.6% of female entrepreneurs reported to have similar years in business. Out of 36.3% entrepreneurs with business experience of 6 to 10 years, 17.2% were female owners and 19% were male owners. Male entrepreneurs have marginally more experience compared to female entrepreneurs in the 1 to 10 years category. However, in the categories above 10 years of experience men tend to dominate, for example there were only 5.8% of female entrepreneurs with 11 to 19 years of business experience while male entrepreneurs with same years of experience amounted to 10.6%. Additionally, male business owners with 20 years of experience and above equal 1.2% while female entrepreneurs comprise 0.4%. These results are quite interesting for they suggest that the newer generation of females is more enterprising compared to the older generation. This could be due to the younger generation being more educated and liberated and hence would imply that government policies to empower women through entrepreneurship are much more likely to succeed if they are targeted towards younger women.

Although 53.5% of entrepreneurs reported not to have financial constraints, only 20.9% were females while 32.6% were males. Female and male entrepreneurs with financial constraints amounted to 28.2% and 18.3%, respectively. The questionnaire asked an open ended question regarding how they financed their operations on an on-going basis. Most of the respondents explained that they relied on their own savings, money lenders, and family members as well as their savings groups (stokvels). Interestingly, 78.4% of the

respondents have affiliations to stokvels of which 45.4% were female and 33% were male. It is this finding, where women are involved in large numbers in cooperative schemes that raises the possibility of the Grameen type financing scheme taking root in rural communities. Only 30% of the respondents enjoyed access to bank credit, of which 11.3% were females and 18.7% were male, perhaps these differences might explain why more women tend to join savings clubs. Surprisingly, a number of respondents who had access to bank credit also used these alternative (more expensive or less optimal) sources of financing which implies that they had limited access to commercial credit and is an indication that the market has failed to integrate credit worthy rural entrepreneurs fully into the banking system. What came as a shock was that none of the entrepreneurs interviewed cited government financial support as their source of start-up capital.

As expected, almost 70% of the businesses in the sample possess some form of business constraint. Moreover, female entrepreneurs tend to experience more constraints compared to their male counterparts. In regard to the nature of the constraints, apart from financial constraints the questionnaire identified competition, marketing and input constraints as the main challenges facing rural entrepreneurs. Specifically, 32.6% female business owners' cited tight competition, as compared to 31.5% male owners. 16.5% females and 19.4% males do not face competition challenges, which suggests that, to a degree, opportunities for establishing businesses in UMkhanyakude are available. Approximately 30% of the respondents appeared to have marketing and input constraints, and of these, female entrepreneurs are mostly affected by such constraints.

Regarding marital status, the study classified single and divorced entrepreneurs as one category and also clustered married and widowed entrepreneurs as another category. The findings show that out of 49.1% female entrepreneurs, 29.3% are single/divorced whereas 19.8% are married/widowed. Furthermore, out of 50.9% male entrepreneurs, 32.2% are single/divorced whereas 18.7% are married/widowed. The study revealed that most of female entrepreneurs are single or divorced, quite similar to their male counterparts.

Concerning business operation hours per year, 35.1% female entrepreneurs operate between 2001 and 4000 hour per year as compared to 31.3% male entrepreneurs in the same category. 18.8% male entrepreneurs operate their businesses from 4001 hours and above in a year.

Comparatively, only 8.6% females open their businesses for such hours. The study concludes that female entrepreneurs spend fewer hours in their businesses as compared to their male counterparts. These variations in the number of hours worked per year may be caused by female entrepreneurs largely being involved in agricultural and commercial activities which are seasonal in the case of agriculture, and limited in the context of commercial enterprises. Moreover, commitment to home based activities might be yet another factor.

Presentation and Discussion of Logistic Regression Results

The covariates reported in the findings of our regression model in Table 3 include insignificant variables such as marital status, age of an entrepreneur, marketing constraints and competition constraints. Due to its statistical insignificance, these variables are not interpreted in this paper as their interpretation is meaningless and not solid.

Interpretation of the Results: Table 3

The coefficient on business experience is highly statistically significant at the 1% level, which may be roughly interpreted as indicating that an additional year of experience in business may lead to the increase in the log-odds in favour of the women remaining in entrepreneurship by 0.144 units. A stricter interpretation arises when taking the antilog (see Gujarati & Porter 2009) which gives a value of 0.154 and may be interpreted as indicating that an additional year of experience in business increases the probability of women remaining in business by 15.4%. This result corresponds to the findings of the study by Ramadani, Hisrich & Gerguri-Rashiti (2015) who found that the performance of female owned enterprises in West, East and Southern Africa usually depends on their access to resources including technical skills, work experience and negotiation skills.

The educational level of the entrepreneurs in our study has a positive coefficient that is statistically significant at a 10% level and may be interpreted as a 1% increase in level of education may lead to an increase in the log-odds of such female entrepreneurs remaining in business by approximately 0.210 units.

Table 3: Estimates of a binary logit model based on gender involvement in SMEs

	Coef-ficient	**Std. error**	**Z-stat**	**Prob.**	**Antilog**
Constant	-2.284	0.994	-2.297	0.021**	0.898
Business experience (bexp)	0.144	0.042	3.439	0.0006***	0.154
Education of an entrepreneur (edu)	0.210	0.120	1.745	0.080*	0.233
Financial constraints (fcon)	-0.759	0.296	-2.563	0.010**	0.531
Input constraints (icon)	-0.681	0.309	-2.204	0.027**	0.493
Marital status (mstat)	-0.497	0.335	-1.484	0.137	0.391
Operation hours per year (ohou)	0.0003	0.0001	2.742	0.006***	0.003
Business performance (perf)	0.575	0.282	2.040	0.041**	0.777
Entrepreneurs' age (age)	-0.148	0.170	-0.872	0.382	0.137
Competition constraints (comp)	0.199	0.319	0.624	0.532	0.220
Marketing constraints (mcon)	0.122	0.310	0.395	0.692	0.129
Akaike Information Criterion (AIC) Schwarz Criterion (SC) LR Statistic Prob. (LR stat)	1.282 1.427 50.104 0.00000	Log likelihood Deviance Rest. Log likelihood		-164.028 328.057 -189.080	

Notes: Dependant variable: SFE (1 = successful female entrepreneur, 0 otherwise)

****; **; * Statistically significant at 1%, 5% and 10% levels of* Notes:

These results show that an increase in the level of education raises the probability of women staying in business by 23.3%. This implies that education plays an important role in terms of level of intellectual, technical skills and strategic capabilities, which in turn contributes positively to entrepreneurship success, and enabling women to stay in business. These findings confirm results by Kobeissi (2010) that female education is significant in all statistical estimations with female entrepreneurship activities.

The coefficient for financial constraints has a negative sign and is highly statistically significant at a 5% level. It may be roughly interpreted as indicating that the presence of financial constraints leads to a decrease in the log-odds of a woman remaining in business. However, a stricter interpretation shows that financial constraints decrease the probability of a female staying in business by as much as 53.1%. This implies that financial constraints are a major obstacle to women remaining in business. According to Mbonyane & Ladzani (2011), slow growth can be attributed to lack of financial support that small and micro enterprises receive from government support institutions.

Input/supplies constraints have a negative coefficient and this factor is statistically significant at a 5% level, suggesting that input constraints cause a reduction in the log-odds of the women entrepreneurs staying in business by 0.681. Furthermore, it reflects that an increase in input constraints reduces the likelihood of female entrepreneurs remaining in business by 49.3%. This finding is consistent with that of Coad & Tamvada (2012) that rural firms in India are vulnerable to problems relating to raw materials, equipment, management, and power shortages, but are relatively less exposed to problems concerning labour and lack of demand.

The coefficient associated with the operation-hours-per-year variable is highly statistically significant at a 1% level. It may be roughly interpreted as a one percent increase in hours a business is open each year leads to a rise in the log-odds of female remaining in entrepreneurship by 0.0003 units. When taking an antilog, the result shows that working longer hours raises by 0.03% the likelihood of a female entrepreneur in our sample population remaining in business. This result contrasts with the findings by Caruso (2014), which states that longer hours lead to exhaustion, less intensity of work, more mistakes, poor quality, more wastage and more absenteeism, whereas reduction in hours worked per year normally increases output per year. Although females tend to work fewer hours relative to males because of their roles as care-givers on the domestic front, however one is inclined to believe the results of the regression

model due to its rigor.

The coefficient of business performance is positive and statistically significant at a 5%. It may be loosely interpreted as a 1% increase in business performance leading to the increase in the log-odds in favour of women staying in business by 0.575 units. This further implies that increased business performance motivates female entrepreneurs to remain in business by 77.7%. This finding is consistent with findings by Moses & Amalu (2010) that people are motivated by pull factors which are factors that draw them to business, such as seeing an opportunity on growth and success.

The logistic regression is therefore expressed as follows:

$$\begin{aligned}\text{logOdd}\, SFE = {} & -2.284 + 0.144bexp + 0.210edu - 0.759fcon \\ & - 0.681icon - \ 0.497mstat \ + 0.0003ohou + 0.575perf \\ & - 0.148age + 0.199comp + 0.122mcon + \mu_i\end{aligned}$$

Diagnostic Tests

In the likelihood ratio (LR) statistic under the null hypothesis that none of the regressors are significant, the degrees of freedom equals to the number of variables (10). The LR statistic is 50.104 and the P value is 0.000000, thus refuting the null hypothesis that all the coefficients are simultaneously insignificant. Therefore we conclude that variables included in the model are important determinants of female and male entrepreneurs' involvement in micro and small businesses. The unrestricted log likelihood is -164.028 and the restricted likelihood is -189.080; according to Gujarati (2012), the latter is obtained by assuming that there are no repressors in the model but only the intercepts, whereas the unrestricted log likelihood is the value obtained with all the repressors including the intercepts in the model. Our computed likelihood ratio is 50.104 and is highly significant, this means that the unrestricted model that includes all the regressors is appropriate.

Goodness of Fit Tests

It is important to emphasize that goodness of fit measures in binary regression are of secondary importance. However we use the Hosmer-Lemeshow goodness of fit statistic to test whether or not the model best fits the data. The

Hosmer-Lemeshow test ensures that the model fits better than a null model with no explanatory variables. If the test/p-value is significant, for example, if it is within the threshold of 0.05, it provides evidence that the model does not fit well.

Table 4: Wald test and Hosmer-Lemeshow goodness of fit test

	Value	**Df**	**Prob.**
F-statistic (Wt)	3.8022	10.26	0.0001
Chi-square	38.0228	10	0.0000
Hosmer-Lemeshow test	7.2159	8	0.5135
Andrews statistic	8.2973	10	0.5998

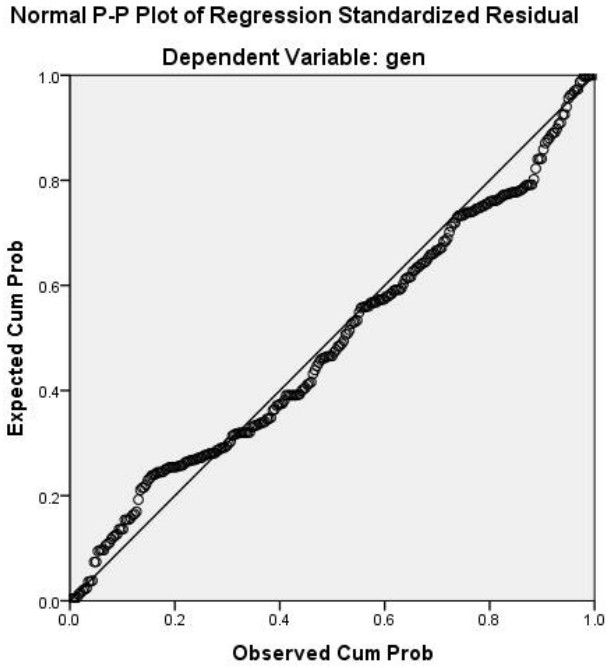
Results presented in Table 4 record the Wald test for parameter estimation of the logistic regression and the H-L goodness of fit test. The Wald test is commonly used to test the significance of estimation for each explanatory variable and thereby to conclude whether or not the variable should be in the model. As the probabilities of the F statistic and chi-square are significant, we therefore reject the null hypothesis that these determinants are equal to zero and we conclude that all the variables in this model explain the success of female entrepreneurs in business for at least two years and longer. Table 4, shows that the Hosmer-Lemeshow goodness of fit test is not significant hence its p-value is 0.5135, which means that the model adequately fits the data. Hence the traditional diagnostic statistics confirm that the restricted model is a good predictor of women staying in business for a minimum of two years or longer.

Model Diagnosis and Detecting Influential Observation

This subsection provides further evidence that our model is a convincing predictor of factors influencing women in our sample to remain in business for two years or more. Diagnostic plot for the model is shown in figure 1. After a model has been fitted, it is useful to check how well it fits the data. Computing different residuals that comprise the Deviance residuals and Standardized/ Normalised residuals and their plots, helps to judge the model fit, and Cook's distance helps to identify influential points.

The normal P-P Plot of regression standardizes residuals in figure 1 shows that the residuals follow the diagonal, which is the condition for the normal distribution. The estimated values are closely related to the actual values, indicating that the model provides a good fit.

Figure 1: Normal P-P Plot of Regression Standardized Residual



Conclusion

This study research project on rural female entrepreneurs largely because it views empowerment of women in business as an ideal approach to address poverty and unemployment is rural areas but also to shatter traditional rural biases and stereotypes that oppress women and confine them to playing marginal roles in rural development. The regression results showed that business experience, education levels, business success and hours spent in

operating the business have a positive effective on women staying in business for at least two years or more. These findings confirm the need to offer short business and financial management courses to rural entrepreneurs for the purposes of increasing the probability of them growing successful businesses. Such short courses could be offered through University community engagement projects or NGO based programmes.

Furthermore, financial constraints adversely affect the probability of women staying in business for two or more years. Ideally Grameen bank type programmes that offer poor rural women low cost loans for entrepreneurial purposes, ought to be introduced in the uMkhanyakude area. Such programmes are group-based programmes that work at the level of women cell groups that are involved in supporting and mentoring one another to run efficient businesses and to make timeous loan payments. A seasoned entrepreneur heads the cell and the cell serves as a screening mechanism to avoid adverse selection of new group members and is also involved in monitoring business operations of successful loan applicants which prevents the moral hazard problem from arising. This approach is likely to work in rural areas because stokvel programmes that have a long history in such areas operate on a similar basis and can be easily extended to assimilate Grameen type functions.

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