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## **Influence of technological changes on growth of women- owned micro and small enterprises in Kitui County, Kenya**

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### **Abstract**

This paper examined the influence of technological changes on growth of women owned micro and small scale enterprises in rural areas of Kitui County. The study used descriptive survey as the research design involving a target population of 390 women owned MSEs drawn from manufacturing, agriculture, commerce and services sectors in Kitui County. Proportionate stratified sampling was used to form a sample of 194 women entrepreneurs. Simple random sampling was applied on the sample to select the respondents from each sector for the study. The research instruments were pre – tested, questionnaire and observation guide covering all the study parameters. Analysis of the data was done using descriptive and inferential statistics. The study findings revealed that there is no significant relationship between technology and growth of women owned enterprises in Kitui County. From the findings it was observed that majority of women entrepreneurs were not using mobile phones to do business and majority of women in rural areas are not computer literate. The study recommended that policy makers to encourage utilization of appropriate technology by MSEs, continuous training and dissemination of information to women entrepreneurs. Development of an online Women’s Trade Portal. Building on existing resources, this could be an ‘one-stop-shop’ Internet site to provide practical guidance to women entrepreneurs. Web-based networks for women locally, nationally and internationally should be established.

**Keywords:** Technological changes, Growth of MSEs, Kitui County, Women -Owned Enterprises

### **1. Introduction**

The growth and success of women-owned enterprises is one of the most profound changes in the business world today. There is no doubt that women are an emerging market force (IFC, 2011). Various governments and scholars share the vision that women entrepreneurship is crucial for employment creation, poverty reduction and the introduction of new cycles of innovations, which, in turn, stimulates socio-economic growth of countries (Timmons & Spinelli, 2004)<sup>[36]</sup>.

Despite general commitments to poverty reduction, structural adjustment reforms imposed by the IMF and the World Bank locked African nations into growth strategies directed towards debt servicing priorities. This has led to impoverishment, particularly among women and children in rural areas. Poor growth strategy envisages accelerated poverty reduction as ‘an economic imperative for global prosperity (UNDP, 2007)<sup>[39]</sup>. In Japan, women seldom achieve promotions to important managerial posts, and although this situation is changing, entrepreneurs in Japan find that “doing business” is generally preserved for men. Consequently an American woman may find it difficult to do business in Japan. When it comes to wealth it is still a man’s world out there. A report by Tulip Financial Research (TFR) in 2010 estimated that there are now more than 70,000 women in the UK with liquid assets of over £2.5 Million. However, women are likely to make their money through management, rather than running their own business and business people tend to be richer than corporate players. Still when it comes to the highest ranks of management, women are seriously behind (Rowe & Hong, 2000)<sup>[31]</sup>.

Entrepreneurship all over the world is emerging today as an avenue for gainful employment, a means of helping women to assert themselves in the world of work, and a way of improving both their economic and social status.

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Micro and Small Enterprises (MSEs) are viewed as a key driver of economic and social development in the African context. They represent a large number of businesses in a country, generate much wealth and employment and are widely considered to be vital to a country's competitiveness. MSEs are hailed for their pivotal role in promoting grassroots economic growth and equitable sustainable development (Maru & Chemjor, 2013)<sup>[17]</sup>.

### 1.1 Growth of women owned MSEs in Kenya

Growth of MSEs owned by women is one of the strategies of achieving the MDGs and the Kenya Vision 2030. Growth in this context means increase in number of MSEs, increase in sales turnover, increase in profits, increase in number employees, increase in production and service levels or increase in total capitalization. There is a significant growth in female self-employment, with women now starting new ventures at three times the rate of men. Women participation in income-generating projects and self-employment has received considerable attention though they perform more poorly than male-owned enterprises and are also smaller in size and are located in poorer areas (Zororo, 2011)<sup>[41]</sup>.

There is a growing recognition of the role that women in business play in countries' economies, Kenyan is no exception to this trend. Female entrepreneurship in Kenya has been increasing and becoming more visible over the last decade. Women-owned businesses are contributing to economic growth and wealth creation, creating employment opportunities for other women and men as well. Moreover, economically active women represent a potentially profitable market niche for the financial sector. Yet, despite the apparent benefits of increased levels of women's entrepreneurship in Kenya, women business owners report that they face a series of constraints when it comes to setting-up or expanding a business. Some of the concerns raised are similar to those faced by men. But the lack of data on women entrepreneurs has hindered both understanding and systematic analysis of the constraints that women face in the business world (Economic survey 2006)<sup>[29]</sup>.

### 1.2 Technology Changes and growth of women MSEs

Schumpeter (1961)<sup>[34]</sup> simply defines the entrepreneur as the one who brings about innovations which is what creates real development in the economy. Without the entrepreneur the economy would grow too slowly. The entrepreneur creates 'revolutionary' expansions in the economy by creating new combinations of existing resources, such as new products, new production methods or new markets, new sources of supply of raw materials and semi manufactured products and development of new organizations. In other writings, entrepreneurship implies innovation, risk taking and pro-activeness (Drucker, 1985)<sup>[6]</sup>. This is in accordance with the view that true economic development and growth is not incremental but comes from discontinuous jumps or leaps. Schumpeter (1961)<sup>[34]</sup> stated that the economy does not grow like a tree, steadily and continuously, but through individuals' creative or innovative responses to opportunities.

Schumpeter states that either by necessity or by desire entrepreneurs create qualitatively new phenomena, which is what makes the economy grow. The entrepreneurial function or role thus defined by its disproportional contribution to the economy. Or in other words, an entrepreneur is one who contributes significantly more than

others to the economy by virtue of creativity and realizing new combinations. Although Schumpeter expected that innovations would primarily be manifested in new organizations there has been a focus on renewal of existing business where innovations would occur in existing ventures (Kuratko, 2005)<sup>[13]</sup>. Capacity to assess risk is a facilitating factor for entrepreneurship development in any country. Modern development is the development of technologies. Production cannot meet the demand of the market unless its quality is up-dated every time with the up-dated technologies. It is obvious from a research that rural women entrepreneurs always depend on traditional technologies. They don't have much technical knowledge and they don't have the capability to take risk as well. The opportunities for introducing new technology in the country have increased considerably but such opportunities are mostly available for urban entrepreneurs. As compared to that there is very little scope for rural entrepreneurs to enjoy such facilities. Familiarity with these technologies inspires urban entrepreneurs to take risk. Due to the shortage of knowledge, rural women entrepreneurs cannot assess risk which is the key indicator of women entrepreneurship development.

Carr and Hartl (2010)<sup>[2]</sup> found that in many cases technology and innovative practices have literally 'lightened the load' for women –reducing the need to spend so much time and energy fetching wood and water or carrying goods to market by hand. One downside they found however: as innovations increased the profitability of some enterprises (such as drying/selling fish or grating cassava mechanically rather than by hand in West Africa), men either started taking over their businesses or setting up competing enterprises. Recent study by Mwabobia (2013)<sup>[23]</sup> highlighted numerous ways that mobile phone technology in particular has improved the lives of rural women from personal safety and greater independence to opening up business opportunities. The report however noted, that a tremendous gap in access to mobile phone technology still exists in much of the developing world, not only for the entire population but pointing out that women are far less likely than men in many countries to have access to mobile telephony.

In addition, Kwake, Ocola, and Adigun (2006)<sup>[14]</sup> found that access to ICT alone does not improve the lives of rural women. Similarly, Duncan (2004)<sup>[7]</sup> suggested that lack of technology and the knowledge of how to use it are both significant impediments for women business owners in rural Ethiopia. When technology and innovative practices are coupled with educational assistance and training, however, adoption improves and benefits are greater. For example, Petridou and Glaveli (2008)<sup>[28]</sup> found that women-focused training not only improved self-confidence among women in rural Greece, but the introduction of specific skills, such as use of technology and opportunity identification, improved business success and innovative behaviour. Limited access to capital is integral to an innovative firm trying to bring new or improved goods or services to the market.

Most women business owners surveyed report that limited access to capital was one of the key challenges they faced when they first launched their businesses, and it is still the top obstacle they face when continuing to innovate and grow their businesses. Limited access to new markets is another key factor in growth-oriented innovation. There is

often a gap between the number of women and the number of men included in international trade missions. While nearly all women business owners use computers for business, limited access to the Internet in least developed countries have resulted in far fewer creation of web pages for women-owned enterprises. These business owners also have limited access to social media networks, hindering growth of customers. Women business owners who are focused on growing their enterprises have a strong appetite for introducing new ICT tools. Improving basic access to information and communications technologies in developing countries can help enhance innovation and entrepreneurial creativity. Innovation-focused women business owners often do not have mentors or role models (Gill & Brooks, 2010) [9].

De Bruin, Brush and Welter (2007) [5] referred to women entrepreneurs as those who innovate, imitate or adopt a business activity. Given that entrepreneurship is the set of activities performed by an entrepreneur, it could be argued that being an entrepreneur precedes entrepreneurship. Appropriate technology is one that is suitable to the environment, culture and level of development of the people. In Kenya, there is a general lack of appropriate technology available to women entrepreneurs. During a recent visit to APDK and UDPK, there was no data available on adaptive technology or assistive devices suitable to women entrepreneurs. During the primary phase of this study, it will be important to follow up on this issue. Social and cultural constraints to women's entrepreneurship and innovation are waning for women business owners in developing countries. However, several challenges make it difficult for women to engage in an entrepreneurial activity independently from the development context, such as the problem of dealing with the life puzzle, i.e. taking care of family and business at the same time. Finally, the lack of capacity-building in the form of growth-oriented or technology- focused training and technical assistance is a constraint (OECD, 2009) [26]. However, the availability of data is still scarce. To begin with, definitional issues complicate data collection. Furthermore, some national systems prohibit statistics on the individual level, making gender specific analyses impossible. Even in those few countries where data are available, important information on development over time (panel data) and for the whole population are missing. This is the same in Kenya in general and in Kitui County in particular.

### 1.3 Purpose of the study

The purpose of the study was to examine the influence of technological changes on the growth of women-owned MSEs in rural areas of Kitui County in Kenya and recommend strategies of enhancing growth of the enterprises.

### 1.4 Scope of the Study

The study was restricted to establishing the influence of technological changes on women owned MSEs in rural areas of Kitui County as one of the strategies for growth of enterprises. The County had approximately 2888 such MSEs out of which only 390 are owned by women (KNBS, 2010) [11]; mainly in manufacturing, agriculture, commerce and services sectors and spread across the main trading centers.

## 2. Materials and Methods

The study examined level of technological changes as a strategy of influencing growth for women owned MSEs in rural areas of Kitui County and used descriptive survey as the research design. The target population was 390 from which a sample of 194 respondents was drawn using proportionate stratification as sampling design. Stratified random sampling and simple random sampling were used to constitute the respondents. The minimum sample size of 384 respondent was calculated using the formula  $n = p\% \cdot q\% \cdot [z/e\%]^2$ ; where  $n$  was the minimum sample size required,  $p\%$  was the proportion that took part in the study,  $q\%$  was the proportion that did not take part,  $z = 1.96$  which was the  $z$  value corresponding to 95 percent confidence level for the study and  $e\%$  was the margin of error (Saunders, Lewis & Thorn Hill, 2007) [33]. An adjusted sample size of 194 respondents was calculated using the formula  $n_a = n/[1 + (n-1)/N]$ , where  $n_a$  was the adjusted sample size,  $n$  was the minimum sample size calculated above,  $N$  was the total population (Saunders, Lewis & Thorn Hill, 2007) [33]. The approximate proportionate representation from each category was calculated using the formula  $n_a \cdot C_s / N$  where  $n_a$  was the adjusted sample size,  $C_s$  was stratum size and  $N$  was the total population.

The growth of women enterprises was measured with the parameters sales turnover, the number of employees in the enterprise and the profitability levels. Technological changes was measured with parameters creativity, training, innovation, use of Information and Communication Technology, research and development to establish whether they influenced growth of women enterprises in Kitui County. The primary data was collected using a semi structured questionnaire and an observation Schedule which covered all the study parameters. The instruments were pre – tested for reliability and validity before the questionnaires were administered to the respondents through drop and pick later method (Kothari, 2004) [12]. While observation schedule were used by researcher to make personal observation of the respondents and their businesses to complement data generated from the questionnaires. The returned questionnaires were numbered and the responses coded using a Likert scale of 1 to 5. The resultant quantitative data was analyzed using simple descriptive and inferential statistics with the aid of SPSS. Frequencies and percentages were used to assess the background information of the respondents while mean, standard deviation and the inferential statistics measured the influence of technological changes on the growth of women owned MSEs in Kitui County. The data was also fitted into the simple regression model  $Y = \beta_0 + \beta_1 X$ , where  $Y$  was growth of women owned enterprises,  $X$  was technological changes,  $\beta_0$  was the  $Y$  intercept (Constant) and  $\beta_1$  was the coefficient of  $X$ . The coefficient of determination,  $R^2$ , indicated the explanatory power of technological factor.

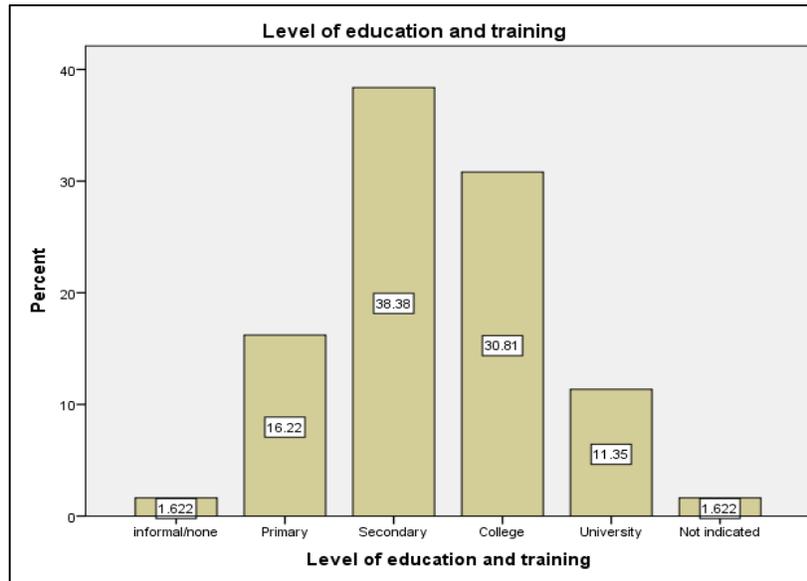
## 3. Results

The number of valid and acceptable questionnaires for analyses returned were 185 and hence, the response rate for study was approximately 95.4 percent which is adequate for statistical reporting and generalization to the population (Arora & Arora, 2003) [1]. The results are as presented in Table 1 to 6 and figure

**Table 1:** Background Information

Attribute	Category	Frequency	Valid percent		
Nature of MSE business	Commerce	91	49.1		
	Services	46	24.9		
	Agriculture	26	14.1		
	Manufacturing	22	11.9		
	Total	185	100.0		
Age	Below 21 years	4	2.2		
	21-30 years	69	37.3		
	31-40 years	67	36.2		
	41-50 years	31	16.8		
	Over 50 years	11	5.9		
	Declined	3	1.6		
Marital status	Total	185	100.0		
	Single	39	21.1		
	Married	115	62.2		
	Separated	15	8.1		
	Widowed	13	7.0		
Family size	Declined	3	1.6		
	Total	185	100.0		
	Between 1 and 3	84	45.4		
	Between 3 and 5	83	44.9		
	More than 5	10	5.4		
Period in business	Not indicated	8	4.3		
	Total	185	100.0		
	Less than 3 years	50	27.0		
	3-5 years	84	45.4		
	Over 5 years	48	26.0		
Total				185	100.0

Source: Author's (2015)



Source: Authors (2015)

**Fig 1:** The level of education of the respondents.

**Table 2:** Technology and growth of women owned MSEs

Indicators	Strongly agree	Agree	Undecided	Disagree	Strongly disagree	Median
Innovation of new entrepreneurial skills strengthened your enterprise performance	8%	43%	1%	30%	18%	2.0
You produce new products and develop new production methods in your business	6%	20%	4%	54%	16%	4.0
You have developed modern organization structure in your business	5%	28%	8%	44%	15%	4.0
Your business has capacity to assess risks	21%	53%	2%	17%	7%	2.0
Access to internet has boosted the performance of your business	6%	22%	10%	48%	15%	4.0
Use of cell phone has facilitated and eased your business transactions	12%	50%	8%	18%	12%	2.0
Modern technology is suitable utilized in the place where my business is situated	7%	34%	7%	38%	14%	4.0

Source: Author's (2015)

**Table 3:** Growth of women owned MSEs

Mean	72.6757	Shapiro-Wilk for residuals	Shapiro-Wilk for growth
Variance	2813.23	Statistic 0.975652	Statistic 0.9555
Std. Deviation	53.0399	df 185	df 185
Minimum	-80	Sig. 0.03832	Sig. 1.4E-05
Maximum	200		
Skewness	0.43777		
Kurtosis	0.35102		

Source: Author's (2015)

**Table 4:** Model Summary of the Coefficient of Determination

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.244 <sup>a</sup>	0.059	0.054	51.5784

Source: Author's (2015)

**Table 5:** ANOVA statistic of technological changes

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	30793	1	30793	11.575	.001 <sup>b</sup>
Residual	486841	183	2660.33		
Total	517634	184			

Source: Author's (2015)

**Table 6:** Regression Coefficients for technological changes

	B	Std. Error	T	Sig.
(Constant)	31.899	12.571	2.537	0.012
Technology	13.231	3.889	3.402	0.001

Source: Author's (2015)

#### 4. Discussion and Results

The results in Table 1 showed that 49.1 percent of women were in commerce, 24.9 percent in personal services, 14.1 percent in agriculture and 11.9 percent manufacturing as shown in table 1. Hence, 74 percent of women-owned enterprises in Kitui County are in commerce and services while 26 percent were in agriculture and manufacturing. These findings support other studies that have shown majority of business women are mainly in the service sector, agricultural and a few in the manufacturing (Dzisi, 2008) <sup>[8]</sup>. The results in Table 1 showed that most of the enterprises are operated by women between 21-30 years making 37.3 percent, followed closely by those aged 31-40 years at 36.2 percent. Those between 41 -50 made 16.8 percent and those below 21 years made 2.2 percent while four respondents did not declare their age. Therefore, there are more young women (75.7%) carrying out enterprises than older ones (24.3%). This is consistent with the report that majority of youth in Kenya are jobless hence, they need to engage in self-employment (Republic of Kenya, 2006) <sup>[29]</sup> and the need for financial independence. However, those women above 50 years of age were the minority in business, supporting the view that the current business environment requires aggressive, energetic and well informed entrepreneurs (Ngige, 2005) <sup>[24]</sup>. The results also showed that most of the respondents (62.2%) were married women, followed by the single at 21.1 percent, those separated were 8.1 percent while the widowed were 6.5 percent. Married women may be supported by their spouses and this might explain why many of them were in businesses as opposed to the rest (Orwa & Tiagha, 2012) <sup>[27]</sup>.

Further, 45.4 percent of the respondents had family size ranging between 1 to 3 members, followed by 3-5 members at 44.9 percent, while those with a family size of more than 5 members were 5.4 percent (See table 1). Therefore, majority of women entrepreneurs preferred small families

and this could be due to increased cost of living in Kenya. Again, table 1 shows that 45.4 percent of the respondents had been in business for between 3-5 years while 27 percent had been in business for less than 3 years and 26.0 percent had done business for over 5 years. Hence, 72.4 percent of the women in Kitui County were in business for a period not exceeding 5 years. This trend supported the studies that many MSEs do not survive for long or they transit to big ones or perhaps they are self-limiting in the sense that one is pushed out of operations in the course of time by unfavourable conditions. This could account for the observations that majority of the businesses are young and less than 5 years in operation (Longenecker, *et al*, 2006) <sup>[15]</sup>. The results in Figure 1 showed that 38.4 percent of the respondents had attained secondary education 30.8 percent had attained college education 16.6 percent had primary education while 11.3 percent had university education. 1.6 percent had informal or none and a similar percentage did not disclose their education level. Hence, majority of women entrepreneurs (80.4%) had attained above primary education level. These findings disagree with a previous study that established that entrepreneurship is relegated to those with low mental intellect (Muriungi 2012) <sup>[22]</sup>. It also disapproves **Wegulo (2006)** whose results showed that comparatively, men operators in MSEs had higher educational attainment than their women counterparts, and that a number of operators had no formal education at all. The results in Table 2 indicates that when respondents were asked whether innovation of new entrepreneurial skills strengthened their enterprise performance, 8% of the respondents were in strong agreement, 43% agreed, 1% were undecided, 30% were in disagreement and 18% were in strong disagreement. The modal class is of the respondents who were in agreement. The median was found to be 2 which imply that on average the respondents were in agreement that innovation of new entrepreneurial skills strengthened their enterprise performance. These findings reveal that majority of the respondent, 51% were in agreement while 48% disagreed that innovation of new entrepreneurial skills strengthened their enterprise performance. These study findings concur with Keshap (2008) <sup>[10]</sup> who stated that information and communications

based technologies increase our ability to share and learn from success stories about new technology based business models. The challenge and opportunity is to increase access to knowledge networks so that information sharing among women entrepreneurs can exist at a whole new level of value.

When the respondents were asked whether they produce new products and develop new production methods in their business, 6% of the respondents were in strong agreement, 20% agreed, 4% were undecided, 54% were in disagreement and 16% were in strong disagreement. The modal class is of the respondents who were in disagreement. The median was found to be 4 which imply that on average the respondents were in disagreement that they produce new products and develop new production methods in their business. These findings showed that majority of the respondent, 70% were in disagreement while 26% agreed that they produce new products and develop new production methods in their business.

When the respondents were asked whether they have developed modern organization structure in their business, 5% of the respondents were in strong agreement, 28% agreed, 8% were undecided, 44% were in disagreement and 15% were in strong disagreement. The modal class is of the respondents who were in disagreement. The median was found to be 4 which imply that on average the respondents were in disagreement that they have developed modern organization structure in their business. Further analysis revealed that majority of respondents 59% were in disagreement while 33% agreed that they have developed modern organization structure in their business.

When the respondents were asked whether their business has capacity to assess risks, 21% of the respondents were in strong agreement, 53% agreed, 2% were undecided, 17% were in disagreement and 7% were in strong disagreement. The modal class is of the respondents who were in agreement. The median was found to be 2 which imply that on average the respondents were in agreement that their business has capacity to assess risks. These findings reveal that majority of the respondent, 74% were in agreement while 24% disagreed that their business has capacity to assess risks. These findings are in line with entrepreneurship principles which emphasize on starting small and grow (Morrison, 2000)<sup>[29]</sup>.

When the respondents were asked whether access to internet has boosted the performance of their business, 6% of the respondents were in strong agreement, 22% agreed, 10% were undecided, 48% were in disagreement and 15% were in strong disagreement. The modal class is of the respondents who were in disagreement. The median was found to be 4 which implies that on average the respondents were in disagreement that access to internet has boosted the performance of their business. Further analysis revealed that majority of respondents 63% were in disagreement while 28% agreed that access to internet has boosted the performance of their business. These findings reveal that women entrepreneurs have not embraced new technology as part of growing their business. At the same time this could be as a result of absence of infrastructure in the rural areas.

When the respondents were asked whether the use of cell phones has facilitated and eased their business transactions, 12% of the respondents were in strong agreement, 50% agreed, 8% were undecided, 18% were in disagreement and 12% were in strong disagreement. The modal class is of the

respondents who were in agreement. The median was found to be 2 which imply that on average the respondents were in agreement that the use of cell phones has facilitated and eased their business transactions. Further analysis revealed that majority of respondents 62% were in agreement while 30% disagreed that use of cell phones has facilitated and eased their business transactions. The findings confirm the fact that although the majority of women have college and university education they are not using their cell phones to facilitate businesses.

When the respondents were asked whether modern technology is suitably utilized in the place where their business is situated, 7% of the respondents were in strong agreement, 34% agreed, 7% were undecided, 38% were in disagreement and 14% were in strong disagreement. The modal class is of the respondents who were in disagreement. The median was found to be 4 which imply that on average the respondents were in disagreement that modern technology is suitable utilized in the place where their business is situated. Further analysis revealed that majority of respondents 52% were in disagreement while 41% agreed that modern technology is suitably utilized in the place where their business is situated. These findings confirm that these women are coming from rural areas of Kitui County where infrastructure is weak.

Factor analysis was used to summarize data to be more manageable without losing any important information and therefore making it easier to test hypothesis (Tabachnik & Fidell, 2013)<sup>[35]</sup>. Factor analysis was used mainly to reduce the variables to a manageable size and to have a better understanding of the variables. Stated that factor analysis is a technique used for specific computational techniques. These factors, also called latent variables, aim to measure things that are usually hard to measure directly, such as attitudes and feelings. It is a way of explaining the relationship among variables by combining them into smaller factors (Coakes & Steed, 2001)<sup>[3,1]</sup>.

The pilot study used factor analysis to confirm which indicators belonged to which variable. The indicator or sub variable belong to the variable it loads highest. The pilot study also assumed factor loading of 0.7 as acceptable and retainable. Conventionally, variables that have a factor loading of 0.4 or greater within a particular factor are considered to be its major components, and factors are usually given names relating to their major components (Manly, 1994). The basic idea of factor analysis is to find a set of latent variables that essentially contain the same information with the manifest variables (Moustaki & Joreskog, 2006)<sup>[20]</sup>. This helped the researcher to reorganize the items under investigation into a more precise group of variables and build confidence on retention of possible items. The factor analysis resulted to the retention of; 6 items under level of education and training. The factor analysis was also used to determine the factor score weights for each indicator which were later used to get total scores for the variables for further analysis.

The reliability coefficient was 0.846 which lies between 0 and 1.00 and above the acceptable minimum value of 0.7, hence, the results in this study were reliable (Nunnally & Bernstein, 2004)<sup>[25]</sup>. The Shapiro-Wilk normality test for the standardized residuals was 0.975652, which was significant at 185 degrees of freedom with a significance of 0.038 which is less than 0.05. This implied that the residuals followed a normal distribution as required for the linear

regression. The indicators did not exhibit multi-collinearity and were not auto-correlated and hence; fit to be used for analysis. From table 3, the mean growth was 72.676 with a standard deviation of 53.04. The skewness and kurtosis were 0.43 and 3.51 respectively. Hence, the skewness and kurtosis results were not exactly 0 and 4 as of a normal distribution. A normality test gave the Shapiro - Wilk statistic for the growth to be 0.9555 with a significance of 0.000 which is less than 0.05 (see table 3). Hence, with 95 percent confidence, the data on growth was normally distributed.

The variables were fitted to the regression model  $Y = \beta_0 + \beta_5 X_5$ . Table 4, presents a summary of regression model results. The value of R and  $R^2$  are 0.244 and 0.059 respectively. This shows that there is a positive linear relationship between Technology and growth. The  $R^2$  indicates that explanatory power of the independent variable is 0.059. This means that only 5.9% of the variation in growth is explained by the model  $Y = \beta_0 + \beta_1 X_1$ . The ANOVA Table 5 shows an F statistic that has a significance level of 0.000. This shows that the estimates in the regression equation fitted are not jointly equal to zero implying a good fit. The regression model was a good fit and could significantly predict the dependent variable (growth) at  $F(1, 183) = 11.575$ ;  $P = 0.001$ . Table 6 shows the results of Coefficients to the model  $Y = 31.9 + 13.2X_1$ . The model estimates coefficient for  $X_1$  as significant at 0.05 level of significance. This is because the p value of 0.000 is less than 0.05. The constant term is also significant since it has a p value less than 0.05. The constant term is the percentage growth when technology is at zero units. The coefficient of  $X_1$  implies that increasing Technology increases the growth by 13.231%.

## 5. Conclusion

The study findings revealed that there is no relationship between technology and growth of women owned enterprises in Kitui County. The regression model was a good fit and could significantly predict the dependent variable (growth) at  $F(1, 183) = 11.575$ ;  $P = 0.001$ . The value of R and  $R^2$  are 0.244 and 0.059 respectively. This shows that there is a positive linear relationship between technology and growth. The  $R^2$  indicates that explanatory power of the independent variable is 0.059. This means that only 5.9% of the variation in growth is explained by the model  $Y = \beta_0 + \beta_5 X_5$ . The model estimates coefficient for  $X_1$  as significant at 0.05 level of significance. This is because the p value of 0.000 is less than 0.05. However, from the multiple regression the variable technology does not have significant influence on growth because its coefficient has a p value of 0.692 which is greater than 0.05.

Since the coefficient of technological changes is insignificant at 0.05, the study accepted the null hypothesis and concluded that technological changes do not significantly influence the growth of women-owned micro and small scale enterprises in rural areas of Kitui County. These studies agree with World Bank (2006)<sup>[38]</sup> studies that stated, technology is the key to accessing international markets. The use of technology and the increasing reach of the Internet have allowed small businesses to profit from the global business market. This gap could be the reasons for businesses not growing in Kitui County. In the village technology is not being used. This could be attributed to lack of infrastructure that is not available in rural areas. This

forms a barrier to entrepreneurs to access international markets through global usage of internet which is an avenue to services like multilingual capabilities and online sales that provide new opportunities for internet commerce and communications. The study findings revealed that there is no relationship between technology and growth of women owned enterprises in Kitui County.

From the study findings it was observed that majority of women entrepreneurs were not using mobile phones to do business because they find making calls expensive. Internet is another limiting factor that most of the areas are not served with the necessary infrastructure. It is also evident that majority of women in rural areas are not computer literate, this limits the communication and networks with their suppliers and customers. This illiteracy is due to inadequate time and family responsibilities that prevent most of rural women from travelling outside their village to participate in training and technology demonstrations, while their limited knowledge about the kinds of services offered hinders them from accessing available services. The study concluded that use of Internet and cell phones is a prerequisite for a successful business. Other factors include availability of credit, business skills, entrepreneurial mind set, markets and networks. In conclusion women need supportive and enabling environment to grow their businesses.

## 6. Recommendations

Women to be encouraged to embrace new technology by use of mobiles and Internet to carry out businesses. The policy makers to encourage utilization of appropriate technology by MSEs. This can be done through continuous training and dissemination of information to women entrepreneurs. To develop of an online Women's Trade Portal. Build on existing resources, this could be a 'one-stop-shop' Internet site providing practical guidance and strategic planning support to women entrepreneurs. To establish web-based networks for women locally, nationally and internationally. The researcher recommends that special programmes should be put in place by the policy makers and other agencies to train and mentor women particularly in entrepreneurship. This would change women mind set thus making women owned enterprises more competitive. Polytechnics to be equipped with incubators to provide space for women in manufacturing and processing enterprises to grow their business. Graduates should be trained to provide business mentoring, counselling and advisory services to women- owned MSEs. There is need to sensitize women entrepreneurs and encourage them to form business networks. Women need mentoring and well-developed professional networks than men because they do not have forum where they can exchange ideas and views for their businesses.

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