WOLKITE UNIVERSITY

COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCES

DEPARTMENT OF STATISTICS

FACTORS AFFECTING THE GROWTH OF MICRO AND SMALL ENTERPRISES: A CASE OF GUBRE SUB-CITY

PREPARED BY:

RUTH MEKEBO----------NCSR/294/09

ABDREZAK SHAMIL------NCSR/007/09

ADVISOR: MR. GETU BOJA (M.Sc)

A Research Project Submitted to Statistics Department in Partial Fulfillment of the Requirements for the Award of Bachelor Degree of Science (B.Sc) in Statistics

Joune, 2019

WOLKITE,

ETHIOPIA

Table of Contents

Content **Page**

CHAPTER –THREE

ACKNOWLEDGEMENT

The successful completion of this research proposal was done with the support of almighty God to whom we owe a great gratitude, as we shall continue to remain thankful to him. Our heartfelt thanks go to our advisor Mr.Getu Boja for his commitment on the research at each stage and for making helpful comments and suggestion that guided us its good end. We further wish to thank for Gubre sub city micro and small enterprises office found in Gubre for their cooperation and kindness in providing access to information regarding MSE.

SUMMARY

Micro and Small Enterprises (MSEs) play an important economic role in many countries and recognized as an important vehicles of economic diversification, employment creation, income generation and distribution, and poverty alleviation. MSEs occupy a prominent position in the development agenda of many developing countries like Ethiopia. Currently, in Ethiopia, the government has been promoting the development of MSEs through the formulation and implementation of Micro and Small Enterprises Development Strategy and the number of MSEs in the country is steadily growing. But, much more important than increase in their numbers, their current status, stage and pace of development is significant because most MSEs are hibernated from growing and faced with the threat of failure due to many factors. Little research exists that examines these factors influencing performance of MSEs in developing countries, especially in Ethiopia. In our research we tried to identify the factors that influence the growth of MSE in Gubre sub-city and make some statistical analysis and according to our result the findings indicate that the growing MSE is associated with sex, education level, age, infrastructure and working premise. However, age, sex education level has statistically significant association with growth of MSE. On the other hand from the result of binary logistic regression it can be concluded that the factors such as with infrastructure and working premise had not significant effect on growth of MSE.

List of Acronyms/Abbreviations

CSA = Central Statistics Authority

CSA = Central Statistics Agency

FeMSEDA = Federal Micro and Small Enterprise Development Agency

ILO = International Labor Organization

MSEs = Micro and Small Business Enterprises

MOTI = Ministry of Trade and Industry

OMO = Open market operation

SNNP = south nation nationalities and people

List of tables

CHATER ONE

1. Introduction

1.1. Background of the Study

Micro and Small Scale Enterprise play crucial role in economic development and social wellbeing both in developing and developed world. In many countries, nowadays there is a varied recognition of the contribution of Micro and Small Enterprises (MSE) to economic growth; recently the role of MSE in economic growth, urban poverty reduction and employment creation have engaged most of the discussions among government, policy makers and academicians. Wolde and Geta (2015) in their research paper stated that in most fast developing countries MSE by virtue of their size, location, capital investment and their capacity to contribute for urban poverty reduction and generate greater employment have proved their powerful effect for rapid economic growth. The sector is also known in bringing economic transition by effectively using the skill and talent of people without requesting high level of training, much capital and sophisticated technology.

The sector is also described as the national home of entrepreneurship, they are the primary vehicles by which new entrepreneurs provide the economy with a continuous supply of ideas, skills, and innovations (Katua2014).In addition Carrier (2008) stated that: The MSEs are more fertile than their larger enterprises in terms of innovation and development. The MSE sector is characterized by highly diversified activities which can create job opportunities for a substantial segment of the population. This indicate that the sector is quick remedy for unemployment problem. To curb unemployment and facilitate the environment for new job seekers and self-employment a direct intervention and support of the government is crucial.

The sector is seen as an essential catalyst for job creation, unemployment reduction and social progress at large since it takes the lion share of fast growing labor force in the world particularly, 48 percent in North Africa, 51 percent in Latin America, 65 percent in Asia and 72 percent in Sub-Saharan African countries (ILO, 2002). In Ethiopia about half of the urban work force is engaged in MSEs sector and Addis Ababa nearly accounts for 40 percent of the total operators in Micro Enterprise activities (Gebrehiwot and Wolday: 2005. Regarding Employment generation of MSEs in Ethiopia in the PASDEP period (2005/06-2009/10) it

was planned to create 1.5million employment opportunity. Accordingly through 167,835 MSE 1.4million employment opportunities were created (MoUDC, 2011).

As part of the industrial sector MSEs are increasingly becoming popular and important in the Ethiopian economy as they would play a decisive role in contributing to employment generation, poverty reduction and the opening of wider distribution of wealth and opportunities (HK HAILU. 2010). In Ethiopia, MSEs Sector is the second largest employment generating sector following agriculture. A national survey conducted by Ethiopian Central Statistical Authority (CSA) in 2005 in 48 major towns indicates that nearly 585,000 and 3,000 operators engaged in micro and small scale manufacturing industries respectively, which absorb about 740,000 labor forces. Accordingly, the whole labor force engaged in the micro enterprises and small scale manufacturing industries is more than eight folds (740,000 persons) to that of the medium and large scale manufacturing industries (90,000 persons). This is a contribution of 3.4 percent to GDP, 33 percent of the industrial sector's contribution and 52 percent of the manufacturing sector's contribution to the GDP of the year 2001 (CSA, 2005).

Micro and small enterprise in Ethiopia are however confronted with several factors that affect the performance of MSE. The major factors include financial problems, lack of qualified employees, lack of proper financial records, marketing problems and lack of work premises, etc. Besides, environmental factor affects the business which includes social, economic, cultural, political, legal and technological factors. In addition to these, there are also personal attitudes or internal factors that affect the performance of MSE, which are related to the person's individual attitude, training and technical know-how (Werotew. 2010).

Generally, there are external and internal factors which are still affecting the performance of MSEs. In Gurage zone the majority of the residents are engaged in micro and small enterprise, specifically on trade, service, construction, urban agriculture and manufacturing. In terms of ownership types, micro and small enterprise of the zone can be classified as sole proprietorship and cooperatives. The cooperative type of micro and small enterprise are organized and working condition are facilitated (access to credit service, access to land, etc.) by Gurage zone micro and small enterprise agency in cooperation with other government

bodies such as OMO Micro finance, Gurage zone municipality and other responsible government bodies.

The sole proprietor types of micro and small enterprises are self-operated, or two or more paid laborers and/or nonpaid family members. The majority of MSEs of Gurage zone are the sole proprietor types. The study conducted by (Abdulaziz .A, 2009), although the majority of the resident of the zone make their livelihood on micro and small enterprise (specifically in terms of employment and income generation), there are multiple of constraints and problems associated to the sector.

Among the most critical constraints included are access to finance, lack of land, lack of market (especially for cooperatives), lack of managerial and entrepreneurial skills and lack of infrastructure (water, road and electric power). Therefore, intention of this study is to make sure whether those constraints are really available at Gubre sub city or not. Beside these, our research will identifies and analyzes the varied problems that hamper the growth, development and sustainability of the micro and small enterprises at Gubre Sub City.

1.2 Statement of the problem

Micro and small enterprises contribution is significant to economic and social development of both the developed and developing countries. And although MSEs are known as good potentials for providing employment opportunity, generating income, skills, goods, services and reducing poverty, the contribution and the role of the sector is challenged and constrained by various policy, structure and institutional related problems inadequate supportive environment, and other social and cultural bottlenecks.

The contribution of MSEs is very low in compared with that of other countries due to financial problem, lack of qualified employees, lack of proper financial records, marketing problems, lack of working premises and raw materials. (Devereux and Sharp2006 cited in Zeleke Worku. 2009 and Admasu Abera. 2012) identified that lack of access to finance is the most influential factor from among all adverse factors hindering the growth and development of the MSE sector in Ethiopia. In Gurage zone, MSEs have a problem of finance when

establishing the business. Most individual sources of finance come from personal savings and loans acquired from relatives, friends and money lenders with high amount of interests. After the business goes operational, the probability of becoming profitable and paying back debts along with accrued interest is less.

Besides, MSEs do not conduct market research and design a product or service as per the need of customers (Abdulaziz .A. 2009). For MSEs, lack of premises is unquestionably a serious problem in the city. Most informal operators do not get access to suitable locations where they can get easy access to markets (HLCLEP. 2006). Further, the problem of technical procedures and appropriate technology used by the firm are another factor associated with high technology of equipment's and use of new technologies.

To address the above problems, this study therefore aims to provide a holistic view of factor affecting the growth and success of MSEs through a comprehensive review of literature and statistical analysis available on the area. And, conducting such a research seems essential in the light of the fact that different problems centered in this sector. Finally, this study is made an effort to analyze the varied problems of MSEs at Gubre sub-city and forwarded possible suggestion to the policy makers and business operators.

1.3. Objective of the study

1.3.1. General objectives

The general objective of this study is to assess the factors that are mostly affecting the growth and success of MSEs at Gubre sub-city.

1.3.2. Specific objectives

In light of the general objective and the specific objectives of this study are:

- To identify and assess the challenges of MSEs on their business efforts.
- To examine the possible factors and if they have significant effect on the growth of the MSEs.
- To identify the reason why MSEs are not performing well.
- To recommend possible solution to alleviate the problem of MSEs.

1.4. Significance of the Study

- The findings of this study is help to the micro and small enterprises coordination office and the owners of such enterprises may be able to know the real problems and then to seek solutions for these problems.
- The findings of this study is useful to the government; to assist in policy formulation and development for a framework for age, sex, education level of the operator, marketing, work premises and other factors that affect the growth and success of MSE.
- Moreover, the finding of this study is helpful to the policy makers and financial institutions how to encourage in establishing or expanding MSEs.

Finally, the findings of this study were assisted academicians both the researcher itself led to expand the limit of our knowledge when conducting the research in details and the other researchers he/she is uses as a guideline for conducting the topic further. In reality, literature on MSEs in Ethiopia especially in Gurage zone is limited and most of the available studies were not conducted in line with growth, success and socioeconomic contribution aspects of micro enterprises. Therefore, the intension of this research will be to assess both internal and external factors that are affecting the growth and success of MSEs in a holistic way by targeting and deeply investigating those operators who are engaging in manufacturing, construction, services, trade and urban agricultural activities in Gubre sub-city.

1.5. Scope of the study

The study assessed factors influencing the performance of MSEs in Gubre sub city where a number of MSEs were operating. But due to time and finance constraints this research limited to only in Gubre sub-city on the issue of factor that affect the growth and success of micro and small business enterprises. And the targeted micro and small business enterprises are found in southern nation, nationality and people of Ethiopia (SNNP) in Gurage zone.

The findings of this study can't necessarily represent for other MSEs Sectors & similar to these businesses in the whole city, because the sample is not a representation of the entire MSEs in the city. Therefore, the results cannot be taken as uniform to generalize for MSEs those were not part of this study.

CHAPTER TWO

2. LITRATURE REVIEW

Introduction

At this chapter, the researcher reviewed some theoretical and empirical work on Micro and Small Scale Enterprises, which has received a great deal of attention in contemporary development literature and national plans of developing countries. This is because, it has been realized that most countries have programs to develop this sector of the economy since it is believed that the sector is the engine of growth for every economy and especially in all developing countries like Ethiopia. Further to this, there is some conceptual work, which used to support the study.

2.1 Prior research

There is now a wide-ranging recognition of the influence of micro and small enterprises to economic growth; recently the role of MSE in economic growth and employment creation has occupied most of the discussions among government, policy makers, academicians, researchers and economists in both developed and emerging countries. In most fast developing countries MSE by virtue of their size, location, capital investment and their capacity to generate greater employment have proved their powerful propellant influence for speedy economic growth.

Birhanu Tereda (June 2014) research on factors that affecting the performance of MSEs in Gurage zone three selected woredas, he stated that the contribution is very low in compared with that of other countries due to financial problem, lack of qualified employees, lack of proper financial records, marketing problems, lack of working premises and raw materials. In Gurage zone, MSEs have a problem of finance when establishing the business. Most individual sources of finance come from personal savings and loans acquired from relatives, friends and money lenders with high amount of interests. After the business goes operational,

the probability of becoming profitable and paying back debts along with accrued interest is less.

His research assess the impact of influential factors that affect the growth of MSEs by using samples of 150 MSEs from Gurage zone selected wordas. According to this research most of MSEs Operators are have no efficient experience or knowhow to perform their activities effectively and efficiently.

Regarding infrastructural facilities, most of MSEs Operators had no adequate infrastructural facilities at the given study area, specially insufficient and interrupted electric power and water supply. These lead to them, unable to generate adequate profit by satisfying the needs of the customers. Infrastructural problem is not only the problem of the study area problem it is a country wide problem, therefore this problem is not solved by the MSEs operators rather than by the government of the country.

The result of the finding shows that majority of MSEs operators in the study area does not have enough working premises. Because of this, the MSEs Operators are not perform their business related activities effectively and efficiently. And also, the location of the working premises is not suitable for attracting the new customers that means, the working premises have no access to market.

Regarding external environmental factors, majority of MSEs operators activities are affected by external related problem such as technological related problems i.e. the MSEs operators are didn't have the opportunity to get modernized technology at the given study area this made them unsuccessful. And the other external problem is, there was a problem of market linkage with the external parties such as vendor, suppliers and customers. Because of there was a problem of marketing linkage through external parties, most of the time the MSEs Operators are kept their products in the store.

It is true, finance, management and experience, working place, infrastructural, marketing and external environmental factors are factors that affect the growth and success of MSEs, this does not mean that all factors are equally affect the growth and success of the business enterprises. As compared with the other factors, unfulfilment of infrastructural facilities, shortage of working premises and shortage of finances for start-up and expansion purposes are the top most factors that affect the growth and success of MSEs activities at Gurage zone three selected Woreda.

Pearson's Product moment correlation Coefficient was also used to determine the relationship between factors related to finance, infrastructure, marketing, management and experience, working place and external environmental factors with the growth and success of MSEs.

2.2 Related Literature

Definitions of Micro and Small Enterprises differ from country to country, depending on one or more of brinks lay down in respect of investment, employment, poverty reduction, turnover etc. The issue of what establishes a small or micro enterprise is a major concern in the literature; even the term Micro and Small Enterprises (MSE1) defiantly used on various countries and on different literature to express the same categories of business.

The definition of firms by size varies among researchers as well as writers. Others define MSE in terms of their legal status and method of production. Some attempt to use the capital assets while others use labor and turnover level. Counties have also defined MSEs based on their own context and development scenario. The term MSE covers a wide-ranging of definitions and measures, varying from country to country and varying between the sources reporting MSE statistics. Due to its ease of collection, some of the commonly used criteria are the number of employees, total net assets, sales, and investment level. However, the most common basis for definition is employment and here again there is variation in defining the upper and lower size limit of an MSE. Despite this variance, a large number of sources define an MSE to have a cut-off range of 0-250 employees (OECD, 2004).

Micro and small enterprises considered as a vital component of the socio-economic development of both developed and developing countries, usually some of these enterprises collapse within the first few years of their start-up. Of those operating, some grow rapidly, while others grow slowly. So, it is important to identify the cause factors of better performance because it helps new entrants of the sector consider the factors and use for their future in the business (Alasdairand Abdel Rahim, 2007).

These factors could vary from one country to another due to the economic, geographical and cultural differences. This kind of investigation of the MSEs performance related factor is very important for developing countries like Ethiopia because the research conclusion could be useful for the economic development planners as well as to individual entrepreneurs and business owners in the countries concerned.

A healthy MSEs contributes prominently to the economy through creating more employment opportunities, generating higher production volumes, increasing exports and introducing innovation and entrepreneurship skills.

As Gebreyesus (2009) citied in Dababnehand Tukan (2007), the characteristic of MSEs not only reflects the economic patterns of a country but also the social and cultural dimensions. These differing patterns are noticeably reflected within different definitions and criteria of MSEs adopted by different countries: whereas some refer to the number of employees as their distinctive criteria for MSEs, others use invested capital, and some other use a combination of the number of employees, invested capital, sales and industry type.

CHAPTER THREE

3. DATA AND METHODOLOGY

3.1 Study area

The study was carried out in and around Gubre sub city, Wolkite, Gurage zone. Wolkite is a town and separate woreda in south¬-western Ethiopia. The administrative center of the Gurage zone of the southern Nations, Nationalities and Peoples region(SNNPR),this town has a latitude and longitude of 8.283oN 37.783oE and an elevation between 1910 and 1935 meters above sea level. Wolkite town is far apart from capital city of Ethiopia that means from Addis Ababa 158 km, and the study area Gubre sub-city is far apart 170 km from Addis Ababa and 12 km from Wolkite town.

3.2 Data source

Statistical data can be classified as Primary& Secondary data. Among them, this research will be conducting by using primary source of data; this will be collected information from the entrepreneur by preparing questionnaires and for knowing the number of MSEs in the sub city we ask the municipality office related with MSE.

3.3 Study Design

To obtain data at one point in time from a sample selected relevant for the investigation of factors that affect the growth of MSEs , used by descriptive analysis methods. This study with structured questionnaires, which administered through distributing to sample of MSEs in Gubre sub city. The questionnaire was prepared and distributed to ensure fair and equitable distribution and response from the respondents which was expected to give a true or fair representation of the views of the respondents to allow for generalization in the final analysis.

3.4 Population of the Study

The study population was micro and small enterprises in the Gubre sub city. The population participated in the survey has been selected by using simple random sampling methods. The total, inhabitants of 200 enterprises with the member of around 1000 people from different

site in Gubre sub city who have the number of each enterprise in their age and sex and other related variables.

3.5 Sample Size

Sample survey questions for 18 entrepreneur who own the enterprises to find the probability of failure and success mean that not growing and growing for the finding of sample size for study who is representative from 200 MSE in this sub-city.

Questions Is your enterprises is growing?	Response
Growing	12
Not Growing	6

So, sample size determination was done using the finite population correction factor formula as follows:

$n_0 = \frac{z^2_{\alpha/2}}{d^2} pq$ (To determine the sample size in estimating the mean or the proportion

(Kothari, 1999 and Cochran, W.G., 1997)

$$n = \frac{no}{1 + no/N}$$

n= sample size with-considering in the stud

$Z_{\frac{\propto}{2}}$ = Value of the standard normal distribution

d = margin error

N= total number of micro and small enterprises

P = proportion of growth of the micro and small enterprises, a = level of significance, q = 1-p

Where d= 0.07, a= 0.05, p = 12/18= 0.67, & q= 0.33

No $= \frac{(1.96)2(0.67)(0.33)}{(0.07)2} = 173$

Since the population was heterogeneous, to address each respondent and to collect real information the researcher taken participants who have know-how on the area and this reduces time and cost.

The researcher used the correction method as the best sample size determination. Considering the population correction factor, the sample size was as follows;

$$n = \frac{no}{1 + no/N} \qquad n = \frac{173}{1+\frac{173}{200}} = 93$$

3.6 Variables included in the study

Variables that used in this study are categorized as independent (explanatory variable) and dependent (response variable). Independent variable is a variable that explains or predicts the response (dependent) variable whereas the dependent variable is a variable which is explained or predicted by those explanatory variables.

3.6.1 The response (dependent) variable

-Growth of micro and small enterprises (not growing=’0’, growing=’1’).

3.6.2 The predictor (independent) variables

-Education level (10+1=’0’, 10+2=’1’, 10+3 and above=’2’, below10=’3’)

-Age of entrepreneurs (18-30=’0’, 31-40=’1’, 41-50=’2’, above 50=’3’)

-Infrastructure facilities (poor=’0’, fair=’1’, good=’2’, very good=’3’)

-Working premises (family premises=’0’, own=’1’, government owned=’2’, rented from private owners=’3’)

-Sex of entrepreneurs (female=’0’, male=’1’)

3.7 Methodology

Both descriptive and inferential statistics will be used. The study use bar chart, and tables from descriptive statistics. And from that of inferential statistics, the study use chi-square test of independence and logistic regression models. Data involves many steps like tabulation and analyzing of the study in both descriptive and inferential statistics.

3.7.1 Descriptive statistics

Descriptive statistics is a part of statistics that deal with methods and techniques of organizing, summarizing, presenting, reporting and arranging the data without making generalization beyond the data. It summarizes mass of the numerical data in to meaningful form by using various statistical techniques such as tables, charts, graphs, and so on.

3.7.2 Inferential statistics

It describes the data with making inference or conclusion and summarizing source of numerical data into meaningful form. In analyzing data both univariate and multivariate are used. This study is also used chi-square test of independence and binary logistic regression.

3.8 Chi-square test of independence

The chi-square (χ^2) test for independency is used when we have two descriptive variables are associated. The objective of chi-square test of independency is to test whether there is association between two categorical variables.

H0: There is no association between dependent and independent variables Vs

H1: There is association between dependent and independent variables.

The appropriate test statistics is given by Chi-square distribution is with (C-1) (R-1) degree of freedom. Where, C=total number of column, R=total number of row.

$$\chi^2 = \sum\sum \frac{(O_{ij} - E_{ij})^2}{E_{ij}} \sim \chi^2_{\alpha}((R-1)(C-1)) \text{ ---------- (3.1)}$$

Where,χ^2cal is the value of random variable whose sampling distribution approximately very close to the chi-square distribution with (R-1) (C-1) degree of freedom.

O_{ij}- observed frequency of i^{th} row and j^{th} column.

E_{ij}- expected frequency of i^{th} row and j^{th} column.

3.8.1 Assumption of Chi-square test of independence

The Assumption of Chi-square Test of independency were:

- The observation must be independent of each other.
- The sample must be randomly selected from the population.
- The expected frequency of each category must be at least 5.
- It is always positively skewed.

The Statistical Test:

$$\chi^2 = \sum\sum \frac{(O_{ij} - E_{ij})^2}{E_{ij}} \sim \chi^2_{\alpha}((R-1)(C-1)) \quad \text{..... (3.1)}$$

The degree of freedom associated with contingency table possessing r-row and c-columns=, X2(r-1) (c-1) the test x Cal with x α/2(c-1)* (r-1)

Where, Oij=is the observed class frequency

Eij=is expected cell frequency.

r= number of row variables.

C= number of column variable

Decisions: - if x2Cal>x tab then reject Ho.

If x Cal<x tab then fail to reject Ho.

P-value is the smallest level of the test for which the null hypothesis (Ho) is rejected

That is when p-value greater than the significance level, Ho is not rejected.

Test of Hypothesis

H0: Response and explanatory variable are independent.

H1: Not H0.

Decision Rule: Reject the null hypothesis and accept the alternative hypothesis if p-value is less than α-value

Conclusion: based on the decision.

3.9 Logistic regression model

Logistic regression is a special case of generalized linear models in which the mean of the response variable is related to explanatory variables through a regression equation. The elements of such a model are a distribution for the response variable and a function that links the distribution to the explanatory variables called a link function. Logistic regression can be binary, multinomial and ordinal logistic regression.

If the response variable is usually dichotomous for the response taken as success and failure Logistic regression model in a single explanatory variable x for binary response variable (y =1, as probability of success and y = 0, as probability of failure) and when is probability of success at value x. The binary logistic regression is a type of regression which used to when the dependent variables dichotomous and the independent variables are any type Ordinal logistic regression is a type of regression which used to when the dependent variable is more than two variable. Which is the rank value but real distance between categories is unknown.

3.9.1 Model Building Using Logistic Regression/ Variable Selection

The are several computational techniques for generating subset regression models and illustrate criteria for evaluating the model are all possible regression which requires that the analyst if all regression equations involving one candidate reggressor, two candidate reggressor and so on. And the second is step wise-type procedures which consists forward selection, back ward elimination and step-wise reggressors. In this study we use back ward step –wise regression.

3.9.1.1 Step-wise Regression

Step-wise regression is a modification of forward selection in which at each step all reggressors entered in to the model are reassessed. And also it is a combination of forward selection and backward elimination procedure. It has advantage in terms of the number of subset models check before each subset size is decided.

The criteria for a variable in the model may vary one problem to other and from one scientific discipline to another. The rational for minimizing the number of the variables in the model is that result model is more likely to be numerically stable and more easily generalized. The more variables included in the model, the greater estimated standard errors become and the dependent variable model becomes an observed data.

There are several steps one can follow to aid in the selection variables of logistic regression.

The selection procedure should begin with care full an available analysis of each variable. For nominal, ordinal and continuous variables with few integer values, we suggest this contiguous table.

Upon completion of unavailable analysis, we assume selected variables for multivariate analysis. Once the variable has been identified, we begin with a model, containing the entire selected variables.

3.9.2 Odds Ratio

Logistic regressions work with odds so it is necessary to define both odds and odds ratio. The odds are simply the ratio of the probabilities for the two possible outcomes. If p is the probability that the event will occur, then 1 –p is the probability that the event will not occur: odds=p/(1-p)in 2× 2 tables, within row 1 the odds of success are odds1=p_1/(1-p_1)and within row 2 the odds of success equal odds2=p_2/(1-p_2).The ratio of the odds from the two rows pi=odds1/odds2 is called odds ratio. Whereas the relative risk is a ratio of two probabilities, the odds ratio pi is a ratio of two odds. Interpretation of odds ratio are this $〖e〗^{\beta j}$ is the factor by which the odds changes when the j^{th} independent variable increase by one unit, if βj is positive then the odds increase and if βj is negative, the odds decrease.

Note: When a logistic regression is calculated, the regression coefficient (b1) is the estimated increase in the log odds of the outcome per unit increase in the value of the exposure. In other words, the exponential function of the regression coefficient (eb1) is the odds ratio associated with a one-unit increase in the exposure.

3.9.3 Parameter Estimation for Logistic Regression

The maximum likelihood and non-iterative weighted least square the two meet computing. Estimation methods used in fitting logistic regression model (Hosmer & Lemeshow, 1989).When the assumption of normality of the predictors does not hold, the non- iterative weighted least square method is less efficient. In contrast the maximum likelihood estimation method is appropriate for estimating the logistic model parameters due to this less restrictive nature of underlying assumption (Hosmer & Lemeshow, 1989) hence in this study the maximum likelihood estimation technique will be applied to estimate parameters of the model consider the logistic model.

For estimation of coefficient in logistic we will use (MLE) maximum Likelihood estimation.

$L(\beta)=\prod_{i=1}^{n} [p(x)^y (1-p[(x)])^{(1-y)}]$

Where p(x)^y=probability of success for the different value of x.

y-is the response variable.

To estimate the parameter we differentiate the likelihood function with respect to each parameters and equation to zero as follows.

For constant we find $(\partial L(\beta))/(\partial(\beta o)) =0$ and

For the slopes we find the partial derivative of the likelihood function with respect to the parameters and equal to zero $(\partial L(\beta))/(\partial(\beta j))=0$.

3.10 Assessment of model adequacy

Once a model has fit to a given data, it is a good statistical practice to check the adequacy of the model, which is essentially checking the agreement between the observed values under the model. If the agreement between the observed and the corresponding fitted values is good, the model may be acceptable. If not, the current form of the model will certainly not be acceptable and the model will need to be revising.

This aspect of the adequacy of a model is widely referred to as goodness off it. An ill fitted model is says to display lack of fit. The discrepancy between observed data and fitted values under an assumed model can be assesses by several statistical measures

3.10.1 The Wald test statistic

The Wald test is a way of testing the significance of particular explanatory variables in a statistical model. In logistic regression we have a binary outcome variable and one or more explanatory variables. For each explanatory variable in the model there were associated parameters. If for a particular explanatory variable, or group of explanatory variables, the Wald test is significant, then we were conclude that the parameters associated with these variables are not zero, so that the variables should be included in the model. If the Wald test is not significant then the explanatory variables can be omitted from the model.

To test statically significance of each coefficient (β) in the model

$Z= \beta/(Se(\beta))$ Where β= coefficient of regression.

Se(β)= standard error of the coefficient.

Z= normal distribution.

This **Z** value is the squared yielding Wald statistics with a chi-square distribution of 95%CI.

Hypothesis testing:-

The hypothesis testing for the i^{th} explanatory

Ho: The coefficient associated with the predictor is equal to zero.

H1: The coefficient associated with the predictor is not equal to zero.

3.10.2 The Hosmer - Lemeshow Test

The final measure of model fit is the Hosmer-Lemeshow goodness of fit statics, which measure the correspondence between the actual and the predicted value of the dependent variables. The Homers-Lemeshow test is commonly used test for assessing the goodness of fit model and allows for any number of explanatory variables, which may be continuous or categorical. In this case better model fit is indicated by smaller difference in observed and predicted statistic. The logistic model of Hosmer-Lemeshow Statistic (G^2HL) is given by;

$G^2HL=\Sigma (O_j-n_j\pi_j)/n_j\pi_j(1-\pi_j)\sim X^2$……..

Where, O_j = Number of observations in the j^{th} group

n_j=Number of observations in the j^{th}group and

π_j = Estimated probability in the j^{th}group.

According to Hosmer and Lemeshow, G^2HL is used after partitioning the observations into 10 equal sized groups based on their predicted probabilities Hosmer, D.W and Lemeshow, S., (2001).

3.10.3 Goodness Test of the Model

A goodness-of-fit test, in general, refers to measuring how well do the observed data correspond to the fitted (assumed) model. We were using this concept throughout the course as a way of checking the model fit. Like in a linear regression, in essence, the goodness-of-fit test compares the observed values to the expected (fitted or predicted) values.

A goodness-of-fit statistic tests the following hypothesis:

H0: the model is good to fit vs.

H1: the model is not good to fit (or, some other model MA fits)

Most often the observed data represent the fit of the saturated model, the most complex model possible with the given data. Thus, most often the alternative hypothesis (H1) was represent the saturated model which fits perfectly because each observation has a separate parameter. The goodness of fit or calibration of a model measures how well the model describes (explains) the dependent variable. Assessing the goodness of fit involves examining how close values predicted by the model with that of the observed value.

After fitting the logistic regression model, there are several techniques used in examining the goodness, adequacy and usefulness of the model.

CHAPTER FOUR

4. STATISTICAL DATA ANALYSIS

The purpose of this chapter was analysis the factors that affecting the growth of micro and small enterprises ,kinds of support and linked regulatory surrounding, employment created and their sectorial distributions besides confronts and potential predictions of MSE growth would be examined.

Table 4.1: Frequency table of the respondent

Variable	Categories	Growth of micro and small enterprise		Total frequency
		Growing	Not growing	
Age	18-30	20(21.5%)	8(8.6%)	28(30.5%)
	31-40	18(19.4%)	28(30.1%)	46(49.5%)
	41-50	4(4.3%)	8(8.6%)	12(12.9%)
	>50	5(5.4%)	2(2.2%)	7(7.5%)
Sex	Male	17(18.3%)	30(32.3%)	47(50.5%)
	Female	30(32.3%)	16(17.2%)	46(49.5%)
Level of education	Below 10	4(4.3%)	11(11.8%)	15(16.1%)
	10+1	11(11.8%)	9(9.7%)	20(21.5%)
	10+2	19(20.4%)	11(11.8%)	30(32.3%)
	10+3 and above	13(14%)	15(16.1%)	28(30.1%)
Infrastructure	Poor	4(4.3%)	6(6.5%)	10(10.8%)
	Fair	24(25.8%)	15(16.1%)	39(41.9%)
	Good	11(11.8%)	20(21.5%)	31(33.3%)
	Very good	8(8.6%)	5(5.4%)	13(14%)
Working primes	Family own	10(10.8%)	11(11.8%)	21(22.6%)
	Own	16(17.2%)	21(22.6%)	37(39.8%)
	Government	15(16.1%)	12(12.9%)	27(29%)

	Rent from private	6(6.5%)	2(2.2%)	8(8.6%)

The result of the data analysis presented in the above table 4.1 show, that out of 93 respondents the frequency and percent of respondents' characteristics in the growing category of MSE. Thus, on table 4.1, we can see that 20(21.5%) of the respondents have age (18-30).We can see that 18 (19.4%) of the respondents have age (31-40).And 4(4.3%) are age (41-50) and 5(5.4%) of the respondents have age (greater than 50).

From the above table 4.1 we can see 30(32.3%) of the respondents are female and 17(18.3%) are male, from this the most sex of respondent that participating in micro and small enterprise are female.

From the above table 4.1 we can see 4(4.3%) respondent have below 10 educational level and 11(11.8%) respondent have educational level 10+1 and 19(20.4%) respondent have educational level 10+2 and 13(14%) respondent have educational level 10+3 and above, from this the most participating in micro and small enterprise are respondent that educational level have 10+2.

From the above table 4.1 we can see infrastructure of respondents 4(4.3%) poor, 24(25.8%) fair and 11(11.8%) good, 8(8.6%) very good. From this the most participating infrastructure of respondents in micro and small enterprise are fair. And similarly working premise of respondents 10(10.8%) family own, 16(17.2%) own and 15(16.1%) government own, 6(6.5%) rent from private owners, from this the most participating working primes of respondents in micro and small enterprise are owner of the working premises of the MSE is the entrepreneur.

The interpretation of the frequency and percent of the respondent in the table in the category of not growing also interpreted this way.

4.1 Analysis of chi-square

Chi-square analysis is used to test whether the attributes (covariates) are significantly associated or not. The hypothesis is given by;

$H_{O:}$ the given attributes are not significantly associated

$H_{1:}$ the attributes are significantly associated.

Chi-square analysis for the selected variable

Table 4.2 Chi-Square Tests

	Pearson chi-square	df	p-value
Age	9.926	3	0.019
Sex	7.847	1	0.005
Level of education	5.733	3	0.125
Infrastructure	5.772	3	0.123
Working primes	3.046	3	0.385

The hypothesis is given by;

$H_{O:}$ the given attributes are not significantly associated

$H_{1:}$ the attributes are significantly associated.

From table 4.2 variable which had p-value of pearson chi-square less rhan $\alpha=0.05$ was considered has significant association with growing of MSE where as variable which had p-value greater than $\alpha=0.05$ had no significant association
so from above table 4.2 the variable age and sex had significant association with growing of MSE and the variable level of education, infrastructure and working perimis had no significant with growing of MSE.

Table 4.2. Omnibus test of model coefficients

		Chi-square	Df	Sig
Step1	Step	42.946	13	0.000
	Block	42.946	13	0.000
	Model	42.946	13	0.000

Ho: βj=0 (the independent variables could not predict growing of MSE)

H1: at least one independent variable can predict growing of MSE.

From Table 4.2 we have added one new variable to the model, which has reduced the -2log likelihood by 42.946 with 13 degree of freedom. The p-value for the result of adding to the model is depicted in the table 4.2 and we can see that this is 0.000 which is less than the α-level of significance (0.05).hence we would conclude that, the addition of each independent variable to the model is statistically significant. And positive chi-square value indicates that the chi-square value has increase from the previous step.

Table 4.3 Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	85.969[a]	.370	.370

The Cox and Snell R^2 or Nagelkerks R^2 is analogous statistic in logistic regression to the coefficient of determination R^2 in linear regression. In this study Cox and Snell R^2 indicate that, about 37 % of variable in the dependent experience of the growth of MSE is explained by the independent variable. Also nagelkerke R^2 indicate that 37%.

Hosmer and Lemeshow Test

Step1	Chi-square	Df	Sig.
	7.333	8	0.501

Table 4.3.1: Model goodness of fit test

Ho=the model is good fit

H1=the model is not a good fit

Since the p-value (0.501) is greater than α=0.05 the statistical level of significance and it implies that fail to reject the null hypothesis (Ho). So we conclude that the model is a good fitted model.

Table 4.3.2 classification table for block zero

Observed		Predicted		
		growth of micros and small enterprises		Percentage correct
		Not growing	Growing	
Growth of micros and small enterprises	not growing	0	46	0.0
	Growing	0	47	100
overall percentage				50.5

A classification table 4.3.2 is a 2 x 2 table in the logistic regression output for a dichotomous response and reports correct and incorrect estimates obtained by the logistic regression model. The overall percentage of the model is 50.5 this indicates that the model is a good model.

4.4 Result of binary logistic regression

Variables	Category	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I.for Exp(B)	
								Lower	Upper
Age	Age(Ref)			12.602	3	.006			
	Age(1)	.653	1.094	.357	1	.550	1.922	.225	16.415
	Age(2)	-1.909	1.037	3.388	1	.066	.148	.019	1.132
	Age(3)	-1.951	1.288	2.297	1	.130	.142	.011	1.772
Sex	Sex(1)	2.103	.617	11.626	1	.001	8.192	2.445	27.443
Level of education	Levelofeducation(Ref)			9.424	3	.024			
	Level of education(1)	2.195	.996	4.860	1	.027	8.981	1.276	63.216
	Level of education(2)	3.196	1.056	9.153	1	.002	24.443	3.082	193.833
	Level of education(3)	1.997	.978	4.168	1	.041	7.368	1.083	50.129
Infrastructure	Infrastructure(Ref)			6.691	3	.082			
	Infrastructure(1)	-.767	1.169	.431	1	.512	.464	.047	4.591
	Infrastructure(2)	.685	.906	.572	1	.449	1.984	.336	11.722
	Infrastructure(3)	-1.035	.904	1.312	1	.252	.355	.060	2.088
Working primes	Working primes(Ref)			3.158	3	.368			
	Working primes(1)	-1.896	1.234	2.361	1	.124	.150	.013	1.686
	Working primes(2)	-2.092	1.219	2.947	1	.086	.123	.011	1.345
	Working primes(3)	-1.605	1.227	1.713	1	.191	.201	.018	2.222
	Constant	-.208	1.890	.012	1	.912	.812		

Table 4.4 Estimates, standard errors, Wald, degree of freedom, p-values, estimated odds-ratio

Table 4.4 contains the estimated coefficients (under the column heading β̂) and estimated values of the logistic regression model that predict the growth of MSE. The standard error of the estimates (under the column heading S.E) will help in computing the Wald Statistics. The

Wald statistic, which is the square of the ratio of the coefficient to its Standard error, has a chi-square distribution with one degree of freedom.

The significance of the Wald statistic (under the column labelled Sig) tells the importance of the predictor variable in the model. The column exp(β), is the factor by which the odds of the growth of MSE change when the i^{th} independent variable increases by one unit. If βi is positive, exp(βi) will be greater than one, which means the odds of growing of MSE increases. If βi is negative, exp(βi) will be less than one, which means the odds of the growth of MSE decreases.

The fitted model can be written as:-

$$\text{Logit}(\pi) = \beta 0 + \beta 1X1 + \beta 2X2 + \ldots\ldots\ldots + \beta pXp$$

Where: X1, X2…..XP are the independent variable

X_1=Sex (1)

X_2=level of education (1)

X_3= level of education (2)

X_4= level of education (3)

β1, β2…βP are coefficient of independent variable and

βo is constant (intercept).

Logit (π) = -0.208+ 2.103X1 + 2.195X2+3.196X3+1.997X4

Where βo= -0.208

Interpreted of Odd Ratio.

Table 4.5 gives the odds ratios for each variable. The first categories of the explanatory variables are used as reference. The odds ratio is the ratio of the odds of an event occurring in one group to the odds of it occurring in another group.

Estimated odds ratios and 95% confidence interval for odds ratio

We can interpret the odds ratio of place of Sex obtained in the above table using The reference category female. Were the odd ratio male (OR=8.192) [CI 2.445- 27.443] times more likely than female who uses the micro and small enterprise. For the variable education, the reference category is 10+1.were the odd ratio of 10+2 (OR=8.98) [CI 1.276-63.216] times more likely than that education were 10+1. Similarly the odd ratio of for both

10+3 &above and below 10 were (24.443&7.368) respectively More likely than the education level of 10+1.

4.4.1 Interpretation for coefficients of significant variables

Wald test

Since Wald test is used to test the statistical significance of individual coefficient (β) in the model and the test statistic is a chi-square statistic.

The hypothesis to be tested is:

H0: To conclude that the given coefficient is significant to model based on the following:-

i) The chi-square (Wald) statistics must be greater than tabulated statistic ($\chi^2_{0.05,1}$)

ii) P- Values of coefficients are less than the level of significance, α=0.05.

For β1:-From the parameter estimation above; the chi-square statistics (Wald) =8.192 is greater than $x^2_{0.05,1}$= 3.84 the p-values for the β1 =0.001 is less than 0.05 level of significance. Thus based on this result we see that the coefficient of sex (1) significant to the model.

For β2: From the parameter estimation above; the chi-square statistics (Wald) = 8.98 is greater than$x^2_{0.05,1}$= 3.84 the p-values for the β2 =0.027 is less than 0.05 level of significance. Thus based on this result we see that the coefficient of education level (1) is significant to the model.

For β3: From the parameter estimation above; the chi-square statistics (Wald) =24.443 is greater than $x^2_{0.05,1}$= 3.84 the p-values for the β3 =0.02 is less than 0.05 level of significance. Thus based on this result we see that the coefficient of education level (2) is significant to the model.

For β4: From the parameter estimation above; the chi-square statistics (Wald) = 7.368 is greater than $x^2_{0.05,1}$= 3.84 the p-values for the β2 =0.041 is less than 0.05 level of significance. Thus based on this result we see that the coefficient of education level (3) is significant to the model.

CHAPTER FIVE

5. CONCLUSION AND RECOMMENDATION

5.1 Conclusions

The main objective of this study was to investigate the factors that determine the growth of MSE in Gubre sub city. We conclude this study was an attempt to examine the impact of some factors that determine the growth of MSE in Gubre sub city. In this analysis we have looked at logistic regression models that can be applied when our outcome is represented by a binary variable. We see in the above interpretation the Proportional odds assumption is justified binary regression models can be a powerful means of summarizing relationships that utilizes all the information present in the binary outcome. Furthermore, the findings indicate that the growing MSE is associated with sex, education level, age, infrastructure and working premise. However, age, sex education level has statistically significant association with growth of MSE. On the other hand from the result of binary logistic regression it can be concluded that the factors such as with infrastructure and working premise had not significant effect on growth of MSE.

5.2. RECOMMENDATIONS

Based on the findings of our study, the following recommendations were put forward

- In relation to the education level of the owners, those enterprises owned by individuals with education level of 10+3 and above shows better performance. In this respect enterprise owners should focus on up grading themselves in education by using alternative programs. Also other stakeholders of the sector, especially Micro and Small Development Agencies should work on providing short term training that helps enterprises in their business work.
- The government should seek ways to empower women economically by producing income generating schemes and increasing this opportunities also this opportunities to women would be an inspiration for those who do not thought they have chance to be female entrepreneur who own and manage the enterprises.

1 REFERENCE*:*

-CSA (2002), Central Statistical Agency (CSA) (various years). Report on Urban Informal Sector Sample Survey. Addis Ababa: various issues, Research PaperNo.2009/51.

CSA (2003), Report on small scale manufacturing industries survey, Addis Ababa.

-HK Hailu (2010) success factors in micro and small enterprises cluster development: case of Gullele Handloom clusters in Ethiopia.

-Woretaw Bezabih Assefa (2010): An engine for sustainable growth, development, prosperity and good governance Amen business group.

-Gebrhiwot.A and Wolday.A (2005): policy impact and regulatory challenges of micro and small enterprises in Ethiopia resented at the second International conference on Ethiopian economic association A.A.

-Gebreeyesus.M (2009): Innovation and micro enterprises growth in Ethiopia, World institution for economic development research.

-Gurage zone micro and small enterprises development bureau manual.(2005).

-Katua,N.T(2014) .Role of MSEs in employment creation and growth in selected countries. In journal of Education and research 2, 461-472

-Berhanu Tereda (June, 2014); the assessment of factor that affects the growth of micro and small enterprises in Gurage zone three selected woredas.

-The challenges of growth, employment and social cohesion. Discussion document for the Joint ILO-IMF conference in cooperation with the office of the Prime Minister of Norway. ILOIMF, (2010)

-Gebrehiwet Ageba & Wolday Ameha. (2004). Survey of development of micro and small

Enterprises in Ethiopia. Ethiopia development research institute. Addis Ababa.

-MSE Development Sector annual statistical bulletin. FeMSEDA, (2015)

-ILO (2004), Poverty Challenge in Africa: Placing Decent Employment at the Heart of the Battle, World Employment Report 2004-2005, Geneva.

- Antenane Abeiy Ejigayehu (June, 2017); Factors affecting performance of Micro and Small Enterprises in Addis Ababa: The case of Addis Ketema Sub City Administration (City Government of Addis Ababa)

- Kaleleoul Fantaye (August, 2016); Factors influencing the performance of micro and small enterprise in Addis Ababa: a study of selected MSEs of Bole sub-city.

- Zeleke W. (2009). “Efficiency in management as a determinant of long-term survival in micro. Small and medium enterprises in Ethiopia. Problems and Perspectives in Management”. Volume 7. No 3.