



**FACTORS THAT CONTRIBUTE TO THE FAILURE OF MICRO
AND SMALL ENTERPRISE IN ADDIS ABABA CITY,
ETHIOPIA**

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**ADDIS ABABA UNIVERSITY
SCHOOL OF COMMERCE
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**Factors that contribute to the failure of Micro and Small Enterprises in Addis
Ababa city, Ethiopia**

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for the DEGREE OF MASTER OF SCIENCE IN DEVELOPMENT ECONOMICS.

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January, 2021

DECLARATION

I, Bayissa Jabessa, declare that study entitled by “**Factors that contribute to the failure of Micro and Small Enterprises in Addis Ababa city, Ethiopia**” is my original own work and study. All the source materials used for the study have been acknowledged. This study has never been presented in any other university. It is offered for the partial fulfillment of the degree of Masters of Science in Development Economics (MSc in Development Economics)

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This is to certify that the thesis prepared by Bayissa Jabessa entitled by “**Factors that contribute to the failure of Micro and Small Enterprises in Addis Ababa city, Ethiopia**” Masters of Science in Development Economics complies with the regulation of the university and meets the accepted standards with respect to originality, and has been submitted for examination with my approval as a university advisor.

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ACRONYMS

- CSA** - Central Statistical Agency
- EDRI** - Ethiopia Development Research Institute
- ETB** - Ethiopian Birr
- FMUDH** - Federal Ministry of Urban Development and Housing
- FDRE** - Federal Democratic Republic of Ethiopia
- FeUJCFSA** - Federal Urban Job Creation and Food Security Agency
- FeSMEDA** - Federal Small and Medium Enterprise Development Agency
- GDP** - Gross Domestic Product
- GTP-I** - Growth and Transformation Plan-one
- MSEs** - Micro and Small Enterprises
- NBE** - National Bank of Ethiopia
- USD** - United States of America Dollar
- SMEs** - Small and Medium Enterprises

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ABSTRACT

Micro and small enterprises (MSEs) development are among the focus areas where efforts are being made in Ethiopia to reduce poverty and foster economic growth and development. The main purpose of this study was to investigate factors that threaten the existence of MSEs and leads to the failure of MSEs in Addis Ababa. The study has selected 130 enterprises using stratified probability sampling from the sample frame of operating and closed MSEs, and conducted an interview via phone. A binary logistic regression model; that uses Stata statistical software was employed. Necessary tests such as model specification, model fitness, and multicollinearity tests were conducted and the assumed binary logistic regression confirmed to suit the model. The result was interpreted using the odds ratio and marginal effect. Accordingly, factors such as lack of self-motivation to start own business, lack of own work premises, lack of access to the market development, firm size micro-enterprise, and gender of a business owner being female were found significant and have positive relationship MSEs failure. Whereas factors prior work experience and lack of access to the use of technology have a negative relationship with MSEs failure. Therefore Addis Ababa job creation and enterprise development sector office and other concerned development agencies need to note factors identified for MSEs failure and use them as an input while planning and mentoring MSEs operators to reduce the effect of factors that contribute to MSEs failure and make a better business environment for business owners and sector can effectively contribute to the country's economic development. So as to reduce the constraints/challenges that lead to the MSE's failure, suggestions based on findings and research directions were forwarded.

Keywords:- MSEs failure, analyze factors and econometric analysis.

1. INTRODUCTION

1.1. Background of the study

Ethiopian government formulated Micro and Small Enterprise (MSEs) development and promotion strategy for the first time in 1997, and revised in 2011 with a renewed interest. The interests of revised strategy highly focused on job creation, employment and entrepreneurship, and grow to medium-size level for MSEs (FMUDH, 2016). There is no standardized and universally agreed definition of MSEs across the world, some prefer to say Small and Medium Enterprise(SMEs). In Ethiopia Micro-Enterprise are those business employing up to 5 persons including the enterprise owners and family members, with total assets of not more than ETB 100,000 for industry and with a total asset of not more than ETB 50,000 in case of the service sector is defined as a micro-enterprise whereas Small-enterprises are enterprises employing 6-30 persons and with a total asset of 100,001 to 1,500,000 ETB for industry and a total asset of 50,001 and up to 500,000 ETB for the service sector (FMUDH, 2016).

of MSEs employing up to 5 persons including the enterprise owners and family members, with total assets of not more than ETB 100,000 for industry and with a total asset of not more than ETB 50,000 in case of the service sector is defined as a micro-enterprise. Whereas Small enterprises are enterprises employing 6-30 persons and with a total asset of 100,001 to 1,500,000 ETB for industry and a total asset of 50,001 and up to 500,000 ETB for the service sector (FMUDH, 2016).

A study by Mulu *et al.*, (2018) recognizes the development of Micro and Small Enterprises (MSEs) in Ethiopia as an important vehicle for economic diversification, employment creation, income generation, and distribution, and poverty alleviation. In Ethiopia, the establishment of new MSEs and the associated employment has been increasing through the years. For instance the total number of MSEs has increased from 51,983 in 2010/11 to 271,519 in 2014/15. During this time period the total number of employment also increases from 806,322 to 2.8 million (FDRE, 2019). In three consecutive years from 2015/16 to 2017/18, on average 164,154 new MSEs were established every year with a total of 21 billion birr loan fund National level (National Bank, 2017). Although the development of MSEs was given a heavy promotion and direct support, the contribution made by MSEs to overall economic development and the annual

growth rate of the sector was significantly small. For instance, during GTP-I, medium and large industry achieved 19.2% annual average growth rate whereas the annual average growth rate achieved by MSEs was 4.1%. This is even worse in the manufacturing sector where the government has given more focus. Thus the annual average growth rate of MSE's is by far smaller than the entire economy annual average growth rate of 10.1% during the GTP-I (FDRE, 2019).

Given direct high support, and huge resource employed to the sector growth and development the return enjoyed was low when compared to the performance of the economy in general. Thus this may highlights high entry and exit of MSEs. MSEs' failure can be assumed when the actions of the business environment cause Small Enterprises operations to cease and/or the business closes down without achieving its goals (Mateus, 2015). Thus this was a problem for the country's growth and development and hence through this study, factors that contribute to MSEs failure were investigated, analyzed and identified. The result of the finding would be used as an input by promoters and supporters of MSEs.

1.2. Statement of the problem

Literatures indicate that since the time of the introduction of MSEs in Ethiopia, the number of MSEs established and jobs created has an increasing trend from year to year. For instance, there was a multiple increase in the number of MSEs, high number of employment size generated and huge loan funds were deployed every year in the last two decades (EEA, 2015).

According to the Urban Job Creation and Enterprise development (UJCED) report in 2018/9 budget year 28,348 MSEs were operating; among these nearly one-fourth were the newly established enterprises. During GTP-I, MSEs achieved on average growth rate of 4.1% and value addition contribution to Gross Domestic Product (GDP) was about 1.1% and the medium and large industry contribution was about 4% to the GDP(FDRE, 2019). In the strategy plan about 1% of the existing MSEs were expected to graduate and promote to middle level enterprise every year(FMUDH, 2016). But the performance of MSEs transfer to medium level enterprise in 2018/9 was, about 0.2% of a total stated plan (UJCED, 2019). The annual growth rate of MSEs was half of the entire average growth rate of the economy during GTP-I.

Thus MSE's contribution to national growth and GDP was not as much as expected even though direct support and promotion were invested. This may tell us that there were huge numbers of MSEs start-ups every year; and the number of MSEs able to survive and transfer to middle level enterprise was very limited. Significant number of MSEs failed in few years leaving only a very small percentage to grow into medium and large enterprises (FDRE, 2016). This implies that occurrence of high MSEs entry and exit or high MSEs failure. These may threaten an ongoing MSEs strategy and is a considerable problem for developing countries like Ethiopia where there is high resource limitation. Hence, the underlying factors that contribute to MSEs failure indeed needs to be studied and should be known.

Many researchers have focused and studied the performance/growth of MSEs and addressed factors that affect the performance/growth of MSEs (Berihu, Abebaw and Biruk, 2014), (Mulu *et al.*, 2018), (Daniel A. and Marcel F. 2018), (Solomon, Tarfasa, Daniel, 2016), and (Haftom Haile Abay, 2014). The aforementioned studies tried to analyze factors that constraints, challenges, or bottleneck for MSEs the performance/growth using descriptive analysis. These studies used only existing/operating MSEs, and did not look into closed MSEs as part and parcel of their studies. Studies that ignored closed enterprises cannot show the complete picture of MSE's performance/growth. Besides, the studies did not state anything about factors that contribute to MSEs' failure.

A study of performance/growth that ignore closed firms and study that take into account the closed firms and analyze the factors that contribute to the failures of MSEs were not different sides of the same coin. There could be different/unique factor(s) attribute behind MSEs failure. Hence, so as to fill this conceptual gap this study has considered both existing and closed MSEs. The study has analyzed demographic characteristics of study participants using descriptive analysis. On top of this, the study employed logistic regression analysis to assess the relationship between the dichotomous variable representing MSEs failure and factors analysis.

1.3. Basic Research Questions

Important research questions that this study raised and seeks to answer for problems attached to MSEs in Addis Ababa were as follows:-

1. What is/are an important factor(s) that affect the operation of MSEs and leads to the failure of MSEs in Addis Ababa and which is/are not?
2. What is the critical value of MSEs failure in Addis Ababa?

1.4. Objective of the study

1.4.1. General Objectives of the Study

The overall objective of this study was to investigate, identify and analyze the key factors that contribute to the failure of MSEs in Addis Ababa.

1.4.2. Specific objectives of the study

Specific objectives of the study were: -

- i. Assess the demographic characteristics of owners of MSEs in Addis Ababa.
- ii. Determine the rate of MSEs failure in Addis Ababa.
- iii. Identify factors that contribute to the failure of MSEs in Addis Ababa

1.5. Research Hypotheses

In analyzing the factors that contribute to the failure of MSEs in Addis Ababa city; the following hypothesis were devised.

Hypothesis 1: MSEs that don't get financial support from formal financial institutions experience failure.

Hypothesis 2: MSEs that lack own working premise experience failure.

Hypothesis 3: MSEs that operate in places where there is less to no infrastructure experience failure.

Hypothesis 4: MSEs that lack market development experience failure.

Hypothesis 5: MSEs owners/managers that lack managerial experience are prone to failure.

Hypothesis 6: Less-educated MSEs owners/managers experience more failure.

Hypothesis 7: Microenterprise experience more failure than small enterprise.

Hypothesis 8: MSEs owners/managers that lack self-motivation to start the business experience failure.

Hypothesis 9: MSEs that lack the use of technology experience more failure.

Hypothesis 10: Females MSEs owners more likely to fail than their male counterparts.

1.6. Significance of the study

This research has come up with some analysis of factors that contribute to MSE's failure and forwarded some insight for MSEs operators, researchers, planners, and policy makers while they plan and mentor the sector and make informed decision. The study enables MSEs operators and the new entrants prior information about the factors that contribute to MSEs failure, so that the overall risk of MSEs failure will be reduced and the intended goal will be maximized.

1.7. Scope and limitation of the study

The study was limited to analyze and identify factors that contribute to the failure of MSEs in Addis Ababa city. The target population of the study was currently operating and closed MSEs in the last three years. The nature of the population was a very large firm survey where the respondents were the owners/managers of the business who run against time, which makes the study difficult to maintain a high precision level by taking a large sample size because of resource limitations. Hence this study assumed to use an error of ($e = 0.09$) and at confidence level of 95%. The study uses probability sampling with a replacement to reduce the attrition rate with its limitation. Respondents' lack of willingness, reluctant in answering the questions, and political conditions of now a day were some of the challenges faced including the woreda expertise. These constraints may have some limitation on the result of findings.

1.8. Organization of the study

The rest of the paper is organized as follows: basic research questions, and objectives of the study, research hypothesis, and significance of the study, the scope of the study, and limitations of the study. Next to the introduction, scan of theoretical and empirical literature proceed. Then after starting with the profile of the study area and research methodologies were followed. Finally, the data analysis, and presentation and the result discussion, and conclusion, followed by the policy implication and recommendation of further study areas were presented.

2. REVIEW OF THEORETICAL LITERATURE AND EMPIRICAL EVIDENCES

2.1. Theoretical literature

The origin and development of small businesses was an argumentative issue in economic development across the world. The role of small businesses in an economy in the early years has been undermined, ignored, and even misinterpreted. Before 1960, large enterprises were assumed to play a principal role for the growth and development of the economy but the development of small enterprises was thought opposite. Formerly the development of MSEs was thought as it would retard the growth and development of the economy. The reason attached to this philosophy was that small enterprises hold resources rather than their contribution to economic growth and development that would have been used by large enterprises in a better way. But since the time of the emergence of computer-based technology in production, administration, and information has however reduced the role of economies of scale in many sectors. The structure of industry was changed from greater centralization towards decentralization, which resulted in a shift towards an increased role for small firms (Acs & Audretch, 1993) cited in (Gebremeskel and Tesfa, 2004). This newly-born way of thinking has given more weight to the promotion of small businesses and entrepreneurial initiatives at local, national, and international levels. Since then, the development of MSEs has got acceptance to play a fundamental role in contributing to the overall economic performance of countries (Karlsson et al. 1993).

Small businesses play an important role in community development by motivating more private investment back into lagging areas and spread the benefits of economic growth to people and places too often left behind. Through their capital investments, private small businesses and micro-enterprises create jobs and new opportunities that promote community-building and social activities in the rural and small towns by using a small amount of initial capital. A study by (Haftom, 2014) also states that the development of MSEs caught the attention of development practitioners and policymakers recently in Ethiopia because of high employment generating capacity, less capital intensive, and breeding ground for entrepreneurs.

2.1.1. Definition of MSEs in Ethiopia

The scan of literature made indicates that the definition of MSEs varies from country to country, time to time, sector to sector based on the economic condition and policy of a country. There is no standardized and universally agreed definition of MSEs across the world (FMUDH, 2016). Another important point to be noted here is MSEs and Small and Medium Enterprises (SMEs) have something in common ‘Small enterprises’ and mutually exclusive ‘Micro and Medium’. Thus MSEs and SMEs share many common characteristics even some countries prefer to use SMEs to MSEs and are also interchangeably used. The definition of MSEs used in Ethiopia today defined and redefined through time in line with MSEs policy and used parameters like the number of employees, asset, capital, sales turnover, etc. For example in Ethiopia, two different definitions of MSEs were adopted. The first definition of MSEs, consider only the amount of paid-up capital used, and the number of workers employed in MSEs. In this former definition, a total asset was not taken into account (FMUDH, 2016).

Table 1. The 1997 definition of MSEs in Ethiopia

Sector	Paid up capital
Micro enterprise	≤ ETB 20,000 (USD 1,200)
Small enterprise	≤ ETB 500,000(USD 30,000)

Source:- (FMUDH, 2016).

Central Statistical Agency (CSA) Ethiopia, Small Scale Manufacturing Industries Survey 2011 report definition to Small Scale Manufacturing Industries is a proxy used to MSEs. The definition mainly considers the size of the employment and the extent of automation. Large and medium scale manufacturing enterprises have been classified as establishments with more than ten employees using automated machinery, MSEs are establishments that engage manpower fewer than 10 persons using power-driven machinery, and cottage/handicrafts are household type enterprises located in households or workshops. The limitations of CSA definition, the size of capital, and service enterprises were ignored.

The 2011 revised definition of MSEs employing up to 5 persons including the enterprise owners and family members, with total assets of not more than ETB 100,000 for industry and with a total asset of not more than ETB 50,000 in case of the service sector is defined as a micro-enterprise. Whereas Small enterprises are enterprises employing 6-30 persons and with a total

asset of 100,001 to 1,500,000 ETB for industry and a total asset of 50,001 and up to 500,000 ETB for the service sector (FMUDH, 2016).

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Table 2. The revised definition of MSEs in Ethiopia

Level of enterprise	Sector	Headcount staff	Total asset in ETB	Total asset in USD
Micro enterprise	Industry	≤ 5	≤ 100,000	≤ 4,630
	Service	≤ 5	≤ 50,000	≤ 2,315
Small enterprise	Industry	6- 30	100,001-1,500,000	4,630 - 69,500
	Service	6- 30	50,001-500,000	2,315 - 23,150

Source:- FMUDH(2016).

Common criteria’s now days in literature and MSEs strategy documents used to define MSEs involve the following three basic criteria such as the number of full time employed persons, total assets or paid-up capital, and total annual sales turnover. In addition to these three basic criteria, some countries use the legal status of enterprises (legal entity) as a supplementary criterion. For this particular study, the revised 2011 definition was used.

2.1.2. Historical Development of MSEs in Ethiopia

In Ethiopia, a well full-fledged MSE development strategy was formulated in 1997 and institutionalized in 1998 and named as Federal Micro and Small-Scale Enterprise Development Agency(FeMSEDA) and Regional Micro and Small-Scale Enterprises Development Agencies (ReMSEDA). The strategy was revised in 2011 with renewed interest and far more ambitious targets (FDRE, 2011).

The Ethiopian government is working towards accelerated GDP growth and employment creation and transforms the country into an industrialized economy and increases the per capita income of its citizens to middle-income levels by 2025. Ethiopian rate of urbanization is estimated to be 5.4%. This makes the country the fastest urban growing than other African countries. The estimated urban dweller of the country is estimated to be 19 % and contribute about 38% to national GDP; urban GDP contribution was double when compared with the rural areas as per the population. Addis Ababa is home to 25% of the urban population in Ethiopia and is one of the fastest-growing cities in Africa (World Bank, 2015).

For rising labor force and young unemployment Ethiopian government introduced the development of MSEs as a potential area to be exploited and ought to play its role in the reduction of poverty and vulnerability(FDRE, 2019).

In order to realize this objective, the government offered promotion and direct support for MSEs development via facilitating access to markets, provision of technical and entrepreneurial training, and improving access to finance and working premises (FMUDH, 2016). The development of MSEs thus allows poor people to increase their income and accumulate assets. Self-employment, development of enterprise and nurturing technology would be enhanced(FDRE, 2019). In this regard Ethiopia's GTP seeks to transform the economy from a predominantly agrarian to a modern and industrialized economy(Tariku, 2018).

2.1.3. Importance of MSEs in Ethiopia

Ethiopia is among the poorest countries and working towards the achievement of sustainable development goals. In millennium development goals, the government has introduced different policies and strategies to the end of second growth and transformation plans to curve development related problems at the national level and reduce poverty. The development of

MSEs has given top priority areas and massive support and government investments done in urban areas to realize Ethiopia's development through creating job opportunities and transformation into an industrialized economy with middle-income country status(FMUDH, 2016). During GTP-I, a hundred thousands of entrepreneurs become being and millions of peoples have got job opportunity and at the end of the day in doing so the sector has played an important role in job creation, income distribution, technology transfer, and nurturing thereby poverty reduction(FDRE, 2019). Accordingly, MSEs played an important role in employment creation, stimulating and strengthening MSEs development given one of Ethiopia's top development priorities (Berihu and et al. 2014).

MSE operators serve as the most important pool of growth-oriented investors engaged in developing entrepreneurial attitudes and skills. MSEs were recognized as incubators of developmental investors (FMUDH,2016). Especially it has been playing a significant role in urban centers, help in creating wealth by providing labor and mobilizing other resources.

But many MSEs start-ups survived, and others fail in a few years leaving only a small percentage to grow into medium and large enterprises. On the contrary, MSEs are a means of lifting people out of poverty as well as accelerating development. It is also worthwhile to note that the range of MSE typologies goes even up to those supplying high-tech spare-parts for spacecraft (FDRE, 2019).

2.2. An empirical evidence of review literature

Many studies conducted on performance and growths of MSEs have indicated that the challenges or constraints of MSEs both in developed and developing countries. These studies analyzed factors that limit the growth of MSEs using descriptive analysis. The results of these studies finding various from time to time, town to town, region to region, country to country, and across the world based on the economic and social circumstance of the countries.

For instance a study conducted on roles and obstacles to SMEs Growth in Sub-Saharan Africa (SSA), reported electricity and access to finance was the most important hindrance for businesses operation in SSA(Sveinung Fjose, Leo A. Grünfeld, 2010). The report indicated used descriptive analysis on factors that barriers of SMEs growth were electricity and access to finance having share of 25% and 18% respectively.

A study conducted in Zimbabwe revealed that the root cause for SMEs' failure was managerial skill (Mudzviti, 2015). As indicated in his analysis the major reason behind the failure of SMEs was the failure of managerial function; poor planning, poor management skills, regulation restrictions, lack of funding access, and lack of training within SMEs than the external factors. A study by in Windhoek, Namibia using descriptive analysis argued that the major causes of SMEs' failure are a lack of planning, poor financial management, lack of management skills, inability to manage growth, lack of capital, access to finance and lack of training and education (Kambwale, 2015).

A review of journal surveyed on status of MSEs development in Ethiopia summarized that lack of finance, working premises, marketing problems, shortage of supply of raw materials, and lack of infrastructure were the most pressing problems that MSEs encounter in the day to day operations (Tariku. 2018).

An exploratory research conducted in major ten towns of Ethiopia has indicated that lack of access to finance was identified as a major problem of MSEs and was twofold than other factors (Berihu and et al.'s, 2014). In his analysis he indicated that the amount of credit that Micro Financial Institutions (MFIs) supplied to MSEs was much smaller than the demand and have only met about 50% of the demand for finance. Moreover, the prices of goods and services have been constantly increasing; the purchasing power of the money is so small and does not provide MSEs financial freedom as planned. With this finding result more than one-third challenges that MSEs face identified as lack of access to finance reported as a key and top constraint of MSEs.

The business performance or growth is related to the owner's motivation to establish the business. If the owner's motivation to establish the business is to be self-employed, then the business is likely to prosper, while if the owner's motivation to start the business is for meeting his/her household's subsistence needs, then the business is not likely to grow and perform well (Esther K. Ishengoma and Robert, 2017). In the same journal, link between managers'/owners' education and firms' performance as well as growth was addressed. One of the categories of human capital affects firms' competitiveness. This effect is related to managers'/owners' education, in that those with relatively higher levels of education have more ability to efficiently allocate resources to more productive lines of business and to select profit-maximizing inputs-combinations.

Study conducted on the main features of manufacturing MSEs face in ten major cities of Ethiopia in a day to day business operation, barriers to the growth of the businesses of MSEs were identified, ranked, and reported were lack of adequate working premises (22.2%), lack of access to credit (13.4%), and shortage of power supply (13.1%) (Mulu and et al. , 2018).

Similar study preliminary report conducted in the Addis Ababa, indicated that the top three barriers to SMEs growth were lack of access to finance(45%), land or work premises(37%), and electricity provision(21%)(Daniel and Fafchamps, 2018). The major reasons for the underperformance of MSEs were rent-seeking, low level of entrepreneurial competency, low technology and skill capability, as well as finance and market-related problems, have been the major challenges of MSEs (FDRE, 2016).

Education is thought to be a powerful instrument for the success of a business. The study by (Akshaya Kumar Mohanty, 2017 and Alemu Hawando, 2017) revealed that the low level of education of Entrepreneur limits their capacity to deal with plans that can lead to business growth like keeping proper books of records, prepares the business plan, taking advocacy issues to support their businesses and also look for more training programs to improve their businesses which is normally run by development organizations.

The study conducted on determinants of growth of MSEs empirical evidence from Ethiopia, indicates that for small enterprise, access to credit appears to be the main problem as these firms are too big for MFIs at the same time they are too small for commercial banks, reflecting the missing middle financial intermediation(Solomon, al et., 2016).

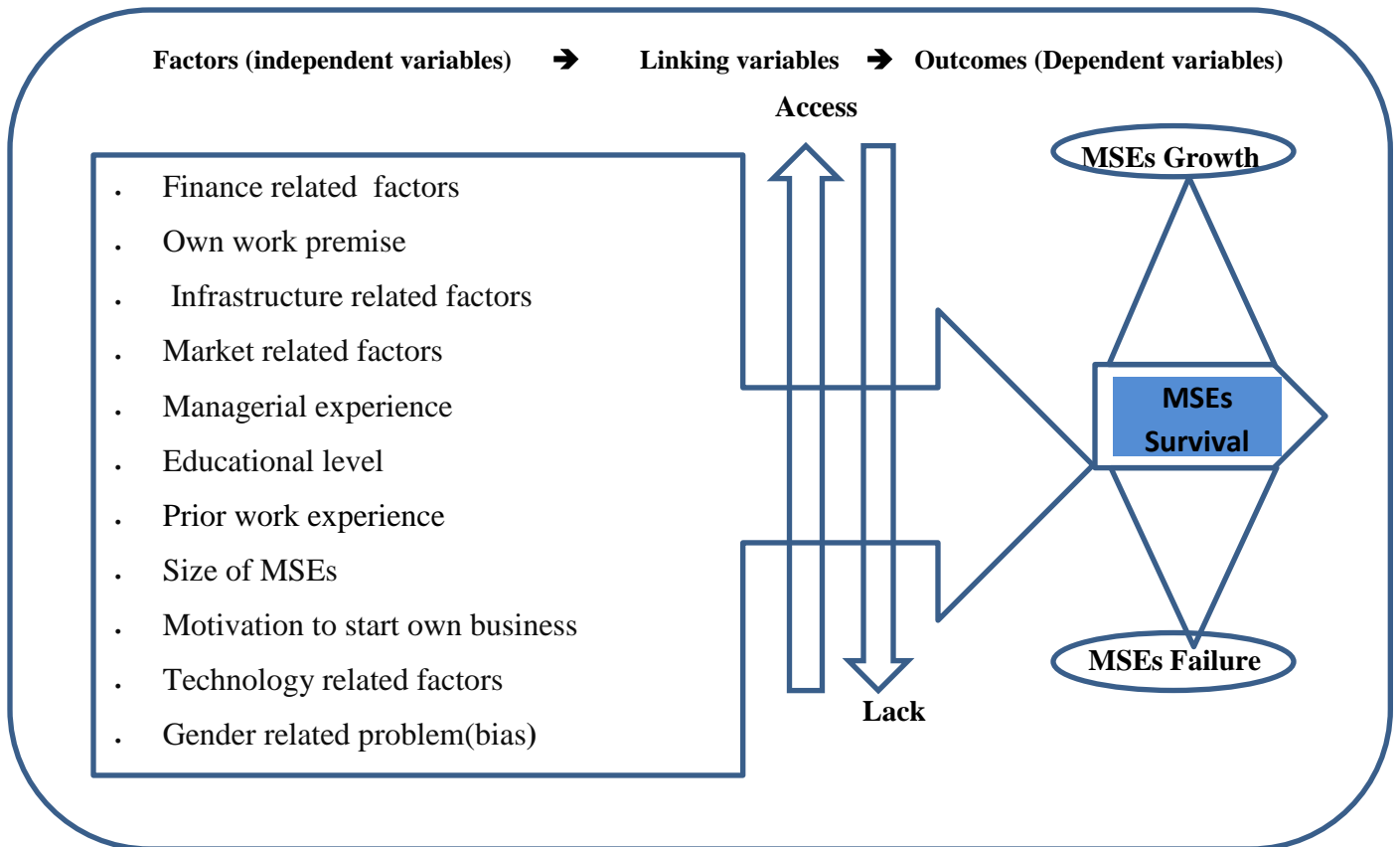
Research brief on MSEs has revealed that there has been a phenomenal growth in the number of MSEs and the size of employment generated by the sector (EEA, 2015). Moreover, the growing tendency shade light to self-employment and self-owned business by many young university graduates instead of looking for employment job from the public or private sector has been encouraging. The report states that improvements have been recorded in the performance of SMEs but have fallen short of expectations due to various challenges. Like many other studies, the reasons why new MSEs fails were lack of finance, access to market and low competitiveness, business information, working premises, poor acquisition of technical skills and managerial expertise, poor or inappropriate use of technology, and poor access to quality infrastructure.

Many studies conducted on MSEs' growth rate or performance were approached in such a way that by considering the existing MSEs only. In the first place studying MSEs' performance or growth rate and failure of MSEs cannot show the full picture of the MSEs without considering the closed MSEs and MSEs' growth rate and MSEs' failures are not different sides of the same coin. The result cannot be bi-implied. In the reviewed literature, the authors used descriptive analysis which cannot show the degree to which extent the determinant factors affect performance or growth. These are some of the gaps that could be addressed with this study.

2.3. Conceptual framework of the study

The conceptual framework of the study is summarized through examining studies of related literature and selected as major factors that contribute to failure MSEs or threaten the day to day operation/performance of MSEs and MSEs promotion; support Policy and Strategy was also taken into consideration. The selected factors framed into conceptual framework based on factual data reviewed in an empirical review literature. The following conceptualized framework depicts the access or lack of attributes of the selected factors measured objectively using close ended questions was used as an input in the day to day business operation would determine the output/outcome of MSEs (MSEs failure,(closed MSEs), or not(MSEs survival and growth) defined as dependent variables as shown in the figure below.

Figure 1. Conceptual frame work of the study



Source: Modified Ranjit Kumar (2011)

3. RESEARCH METHODOLOGY

3.1. Description of the study area

Addis Ababa is the capital city of Ethiopia, located at 9.01 to 29.9 °N and 38 to 44.48 °E, and covers an estimated area of 527 square kilometers. The city is the biggest, business center, sit for African union and many international diplomat for the country having a population projection of 7.8 million in the year 2019 (<http://worldpopulationreview.com/world-cities/Addis-Ababa-population/hl=en-ET>, accessed on Dec.2019). Addis Ababa is home to 25% of the urban population in Ethiopia and is one of the fastest-growing cities in Africa (World Bank, 2015) report. In urban areas of the country, including Addis Ababa, MSEs are the main source of employment as agriculture is in rural areas (Tariku, 2018).

3.2. Research design

This Research was designed in such a way that the objective of the study seeks to answer the question of the reason why MSEs fail to survive by analyzing the associated factors that contribute to the failure. The questionnaire was designed in English and translated into Amharic for the accuracy and convenience of data collection. An attempt was made to calculate the failure rate of MSEs but due to lack of administrative data record of closed MSEs in the last three years, this study was unable to calculate the failure rate of MSEs in Addis Ababa. The relationship between MSEs failure representing the dependent variable and the independent variables such as lack of access to market, lack of access to own working premise, lack of access to sufficient infrastructure, lack of access to credit or finance, lack of access to use technology, level of education, size of MSEs, managerial experience, prior work experience, gender related factor and lack of self-motivation to start the business were analyzed binary logistic regression analysis.

3.3. Sources of data and data collection techniques

This study used both primary and secondary sources of data. The primary data was obtained through a questionnaire. The data was collected from both existing MSEs owners/managers and closed MSEs owners/managers that have experienced failure in the last three years (2016/17 to 2018/19) through phone interviews. The face to face interview was changed to phone interview due to the outbreak of COVID-19 pandemic. Secondary sources of data such as report

documents, books, journals, published and/or unpublished research papers, and statistical documents were used.

3.4. Target population

The populations of the study were MSEs registered and licensed; existing MSEs and closed MSEs in the last three years in Addis Ababa. The sample frame of the study list and contact address of MSEs was taken from the Woreda Job creation and enterprise development bureau database. The first category of the study existing MSEs sample frame, was collected from a properly documented and updated data base of woreda Job creation and enterprise development. But the second closed MSEs sample frame of the study lists and contacts address of MSEs who have experienced failure in the last three years, was not properly documented in the woreda database. It would have been difficult to find the reliable data from source document. Sample frame of closed MSEs was organized with the effort put by the woreda officials, the data was extracted from different data source document and used with its limitation. Such an attempt was made because there was no better data source with proper documentation other than this option.

3.5. Sampling technique and sample size determination

Scientific sampling technique and sample size determination method was used to precisely measure the variables objectively intended for and at the end of the day to infer the finding obtained through sample survey to the whole population understudy. In such cases stratified random sampling method is recommended because it is accurate, divisible into relevant strata and it enhances better comparison (Ranjit Kumar, 2011). The study changed data collection method formerly designed in proposal from face to face survey to phone interview due to the fact that global outbreak of Covid-19 in the country restricted free movement by state emergency to compact effect of pandemic.

This study categorized the population into two strata as closed MSEs and Existing MSEs. For both closed and existing MSEs stratum, the study uses a simple random sampling method to select the respondents from the sample frame take from woreda job creation and enterprise development by using a random number generation approach. The sample size of the study was determined by applying the Taro Yamane (1967) sample size determination formula, then let the sample size is denoted by n , it was determined as follows:-

$$n = \frac{N}{1 + N(e^2)} \dots\dots\dots(1)$$

Where n is the sample size to be surveyed MSEs, N population of the study (the total number of both existing and closed MSEs) is 34, 821. The margin of error (e) is the number of errors that within the range of acceptable. Since the topic under study is a firm survey where the respondents are businessmen who run after time due to this fact this study assumed and used e=0.09 or 9% margin of error. The quantity of doubt that can be accepted in this study is the confidence level. The confidence interval in business research varies from 90% to 100% with 95% being the most commonly accepted.

$$n = \frac{34,821}{1 + 34,821(.09^2)} \approx 123$$

This study has planned and conducted 130 successful phone interviews. In order to achieve the required sample size and avoid attrition rate it is mandatory to substitute/replace each and every unsuccessful randomly selected enterprise due to the fact that phone did not answer, phone not working and wrong phone numbers as well as respondents lack of willingness to phone interview. One woreda from each ten sub-cities were randomly selected. And on average 13 MSEs were surveyed from each randomly selected ten woredas. The study has planned and subcategorized sample frame into two based on proportionate to figure of closed MSEs and existing MSEs in sample frame collected from woreda job creation and enterprise development bureaus for each woreda selected. Then the study planned to determine and select randomly n₁ and n₂ samples of closed and operating firms from respective sample frame of each woreda proportion to its sample frame size. Accordingly the study determine the rate of MSEs failure. But the approach failed to work in practice due to the fact that lack of administrative record data from respective sector office. Based on some sample frames obtained from woredas the study decided to use three-fourth (that is 97 of existing MSEs) and one-fourth(33 closed MSEs) of the study sample size determined and surveyed.

3.6. Definition of variables

Two types of variables defined in this study. These are dependent and independent variables. The dependent variables of the study are dichotomous which is MSEs failure or not. The independent (explanatory) variables are factors that contribute to MSEs' failure. The independent variables are selected based the stated objectives and hypotheses of the research which were identified through a thorough review of related literature. And selection process was made in such a way that factors; constraints, hindered, bottleneck, challenges for growth or performance of MSEs with the largest percentages and the most frequently reported or/and ranked as the topmost for MSEs performance or growth in the literature; these reasons proxies and may leads to MSEs failure.

On top of this, most of these selected independent variables were focus areas that have been promoted and supported by the government for MSEs' development. Here about eleven independent variables namely lack of access to market development, lack of own working premise, lack of access to infrastructure development, lack of access to finance, managerial experience, level of education, gender, enterprise size, owners motivation to start own business and lack of access to use of appropriate technology were selected for further study logistic regression analysis.

Table 3. Variable code and definition

Dependent variable (Y _i)	Independent variables(X _i)	Type of data	Code	Unit/value	Hypothesis tested
Y _i =1, MSEs failure	Problems related to finance/credit	Dummy	FINF	1 if MSEs lack access related to credit/finance, 0 otherwise	Not significant
	Problems related to Working premises	Dummy	WORKF	Work premise in which MSE operates; 1 if rented from private, leased from government, parent for free, 0 otherwise i.e Self-Owned	+Ve relationship
	Problems related to infrastructure development	Dummy	IFRADF	1 if MSEs lack access related to infrastructure development, 0 otherwise	Not significant
	Market development related problems	Dummy	MARKF	1 if MSEs lack access related to market development, 0 otherwise	+Ve relationship
	Lack of managerial experience	continues	MANAGF	Number of Year	Not significant
	Prior work experience	continues	PRIORWE XPF	Number of Year	-Ve relationship
	Less Educated MSE owner	Continues	EDUCF	Years of education	Not significant
	Enterprise size (Micro or Small)	Dummy	SIZEF	MSEs type of enterprise: 1 if the MSEs is Micro enterprise, and 0 otherwise i.e Small enterprise	+Ve relationship
	Lack of self-motivation to start own business	Dummy	MOTIF	MSEs Owner/ manager motivation to start own business; 1 if alternative wage job, loss of previous job, Continue family business, Balance family & work-life, and use opportunity arranged by the government; '0' otherwise that is saw market opportunity, and wanted to be own boss	+Ve relationship
	Lack of use of technology	Dummy	TECHNF	1 if MSEs lack access related to use of technology, 0 otherwise.	-Ve relationship
Gender	Dummy	GENDERF	1 if MSEs owner is female, 0 otherwise	+Ve relationship	

3.7. Methods of data analysis and presentation

Before the data analysis made, the data collected was edited, errors and omissions were then rectified. These activities were carried out to make the data easy for processing and analysis. Stata version 14 was employed to analyze both descriptive and inferential statistics and presented in descriptive forms. The internal consistency of the factors within and among the other factor variables was checked using the cronbach alpha test.

Both logistic and Probit regression were effective to analyze the relationship between the binary variables and independent variables contributing to MSEs failure (Korkmaz, Güney and Yüksel YİĞİTER, 2012). Logistic regression model preferred to Probit regression model, binary logistic regression analysis use of simple mathematical method of odds ratio and marginal effect use probability term to relationship between the binary dependent variable and contributing factors. Summary of stata results such as coefficients, odds ratio, and marginal effect, level of significance of factors, maximum likelihood, and variance analysis were presented. The necessary tests like Multi-collinearity, Ramsey RESET for model specification, and model fitness for the data conducted. A maximum likelihood method was applied to estimate the parameters of the binary logistic regression model. Then results were carefully interpreted using both odds ratio and marginal effect. Finally, the necessary discussions, conclusions and policy implications were inferred.

3.8. Rate of MSEs failure

Based on assessment made from different literature to measure the performance or growth rate of enterprises use variables like the number of employees, age of the firm, growth of sales, assets, profit, and equity. For instance study conducted to measure firm growth rate or performance of MSEs used Evans (1987) model (Haftom, 2014), (Arega, Muhammed and Daniel, 2016) and (Ibrahim and Saba , 2017). Evan firm growth model approach used changes in employment size that enterprises made from their startup up-to-date and firm age were preferred to the other variables. They argued that the reason why they preferred to use changes of employment size and age of enterprise to measure the performance or growth rate of MSEs to other measurements was these two variables can be easily remembered or referred by respondents and then the result can be modeled without any complication or further more steps. Had it been the other variable used to measure MSEs' growth rate or performance, it requires additional further steps so that readjustment of inflations needs to be done.

But attempting to measure the growth rate of MSEs considering the changes of employment and firm age is susceptible to error and because in today's dynamic world; the use of technology, technical training offered, development of entrepreneur skill, development of market networking and skill developed through time, promotion and direct support offered by the stakeholders, etc. at start-up and there after create difference in performance or MSEs growth rate. Thus growth rate model developed by Evan (1987) may not be effective.

Hence this study assumes the use of rate of change of MSEs existed across the years. But it was impossible to calculate rate of MSEs failure due to lack of reliable administrative data record.

For the consumption of factors analysis sample frame extracted and poorly summarized for sampling of closed MSEs. But the extracted and poorly summarized data cannot precisely measure rate of MSEs failure because its incompleteness. It would have been misleading if used accordingly. Thus plan of the study to calculate the rate of MSEs failure was not successful.

3.9. Model specification

In order to specify model for the variables under study it is important to analysis and note the nature of the dependent and independent variables. Here the independent variables are factors that contribute to the failure of MSEs and are many in number, discrete and continue in nature. Whereas the dependent variables (that is MSEs failure or not) are discrete, binary and mutually exclusive. Therefore the study needs a model that can be able to analyze input-output relationship of dependent and independent variables.

In case where there is input-output relationship of dependent and independent variables and the linear regression assumption of the observed values of the outcome variables fall close to those predicted variables the linear regression equation recommended to be used provided that the assumption of normal distribution holds. But with this regard there are two major problems that make use of linear regression inappropriate in a binary outcome. The first problem is the logistic regression does not require the linear relationship between dependent and independent variables. The second problem is the error terms or residuals do not need to be normally distributed. That is the assumption of normality and homoscedasticity inherent in linear regression is violated(Gujarati, 2004).

Because of these essential features of the dependent variable is binary or dichotomous and involves non-linear estimation probability density then these necessitate the use of binary logistic regression model as more appropriate and applicable to examine the relationship between dependent variable and independent variables (Korkmaz, Güney and Yüksel YİĞİTER, 2012) and Gujarati, 2004).

Thus for this typical study the independent variables under investigation are multiple in numbers, then multivariate analysis is a powerful tool, since it allows analysis simultaneously and have an advantage of reducing the effect of confounding factors (Berger, 2017).

The model is suitable for estimating parameters of interest when the dependent variable is not fully observed. Therefore, the conditional probabilities are expected to lie between 0 and 1. Then the linear and an additive combination of the explanatory variables predict the log odds. These predicted log odds can be converted back to odds (by taking the exponential) and to predicted probabilities using the logistic function.

In a model were, the outcome variable Y is qualitative, what would be done is that just find the probability of something expected to happen or not. With this let the outcome(Y) is measured on a binary scale (1, 0) and the independent, multiple explanatory are measured on scales on binary, categorical (discrete) or continuous scale. Now let's assume P_i probability that $Y_i = 1$ (the event occurs, MSEs failure), and $(1 - P_i) =$ probability that $Y_i = 0$ (the event does not occur, MSEs doesn't fail), the variable Y_i has the following probability distribution function. That is, Y_i follows the Bernoulli probability distribution. Here the Multiple Binary Logistic Regression model will be defined as follows (Gujarati, 2004).

$$P_i = E (Y_i = 1 / X_i) = \frac{\exp(\beta_0 + \sum \beta_i X_i)}{1 + \exp(\beta_0 + \sum \beta_i X_i)} \quad \text{Let } Z_i = \beta_0 + \sum \beta_i X_i$$

$$P_i = \frac{1}{1 + \exp(-(\beta_0 + \sum \beta_i X_i))} = \frac{1}{1 + \exp(-Z_i)} \dots\dots\dots (3)$$

Where Z_i ranges from $-\infty$ to ∞ , and P_i ranges between 0 and 1. Hence, P_i is non-linearly related to Z_i as well as X_i .

Then, probability of an event not to occur i.e $E (Y_i = 0 | X_i)$ will be stated as;

$$(1 - P_i) = 1 - \frac{1}{1 + \exp(-Z_i)} = \frac{\exp(-Z_i)}{1 + \exp(-Z_i)} = \frac{1}{1 + \exp(Z_i)}$$

Multiplying both numerator & denominator by $\frac{\exp(Z_i)}{\exp(Z_i)}$ results in:

$$(1 - P_i) = \frac{1}{1 + \exp(Z_i)} \dots\dots\dots (4)$$

Odds Ratio: is generally defined as the ratio of the probability of failure of MSEs (Y=1) to the probability of existing MSEs (Y=0). The numerator denotes the probability that Y=1 and the denominator is for the probability that Y= 0. The corresponding odds ratio (OR) would be obtained just by dividing equation (3) to equation (4)

$$\frac{P_i}{1 - P_i} = \left\{ \frac{1}{1 + \exp(-Z_i)} \right\} / \left\{ \frac{1}{1 + \exp(Z_i)} \right\}$$

Note that $\exp^{Z_i} = \left(\frac{p_i}{1-p_i}\right)$ is the odds of an event. Then,

$$\left(\frac{P_i}{1 - P_i}\right) = \exp^{Z_i} \dots\dots\dots (5)$$

Taking ln of both sides we will have

$$\ln\left(\frac{P_i}{1 - P_i}\right) = \ln \exp^{Z_i} = Z_i = \beta_0 + \beta_i X_i \dots\dots\dots (6)$$

Thus this is logistic regression model with binary dependent MSEs (failure or existing) and multiple independent variables can be expressed as follows:-

$$\ln(\text{MSEs failure}) = \ln\left(\frac{p_i}{1-p_i}\right) = \beta_0 + \sum \beta_i X_i \dots\dots\dots (7)$$

Where, i=1 to 11, MSEs_{failure} = the MSEs failure (Y=1) dependent variables given the independent variables

- X₁ = Credit or finance related
- X₂ = Lack of own working premise
- X₃ = Lack of Infrastructure development
- X₄ = Lack of market development

- X_5 = Lack of managerial experience
- X_6 = prior work experience
- X_7 = Educational level (years)
- X_8 = Size of MSEs (Micro or Small).
- X_9 = Lack of self-motivation to start own business
- X_{10} = Lack of (problem related to) use of technology
- X_{11} = Gender related problems (being a women)
- p_i = Probability of i^{th} MSEs is failure type
- $1-p_i$ = Probability of i^{th} MSEs is existing type.
- β_0 = Constant (intercept) and $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8, \beta_9, \beta_{10}$ & β_{11} are slopes (parameters) of the logistic regression model respective variables.
- \ln = Natural logarithm; and $\ln\left(\frac{p_i}{1-p_i}\right)$ = Natural logarithm of the odds ratio (logit model)

Here, \ln of the odds is linear in X_i , even though P_i and X_i have a non-linear relationship. So, the relationship between dependent variable and independent variables (determinant factors) can be easily interpreted by using odd ratio. The likelihood function is the joint probability distribution of the data, treated as a function of the unknown coefficients. The marginal effect measures the change in the probability of $Y=1$ as a result of a unit change in a particular explanatory variable. The marginal effect will be computed as follow by taking the partial derivative (∂) of continuous or discrete probability distribution (P) with respect to each X_i such that:

$$P_i(Y = 1/X_i) = \frac{1}{1 + \exp -(\beta_0 + \sum \beta_i X_i)}$$

Then taking the partial derivatives with respect to X_i

$$\frac{\partial p_i}{\partial x_i} = \frac{\partial \left(\frac{1}{1 + \exp -(\beta_0 + \sum \beta_i X_i)} \right)}{\partial x_i} = \frac{\beta_i \cdot (\exp -(\beta_0 + \sum \beta_i X_i))}{\{1 + \exp -(\beta_0 + \sum \beta_i X_i)\}^2}$$

Which can be re-written as: -

$$\frac{\partial p_i}{\partial x_i} = \beta_i \cdot \frac{1}{1 + \exp -(\beta_0 + \sum \beta_i X_i)} \cdot \frac{\exp -(\beta_0 + \sum \beta_i X_i)}{1 + \exp -(\beta_0 + \sum \beta_i X_i)}$$

Since, $P_i = \frac{1}{1+\exp -(\beta_0 + \sum\beta_i X_i)}$ & $(1 - P_i) = \frac{\exp -(\beta_0 + \sum\beta_i X_i)}{1+\exp -(\beta_0 + \sum\beta_i X_i)}$ so we can have the reduced form

$$\frac{\partial P}{\partial x_i} = \beta_i \cdot P_i (1 - P_i) \dots\dots\dots (8)$$

Interpretations will be done as a unit change in an independent dependent variable (X_i) does produce an effect of $\beta_i p_i (1-p_i)$ on the dependent variables (MSEs failure).

3.10. Reliability and Validity

Validity is defined as the extent to which variable under the investigation is accurately measured in a quantitative study. And validity refers to whether you can draw inferences about test scores related to the concept being studied (Roberta and Alison, 2015). Therefore the researcher tried to search different literatures and select sustainability variables and their measurement. For instance some of the variables taken from (Abera, 2012 and Mulugeta, 2014)

Validity and reliability are interconnected concepts. This can be demonstrated by the fact that a measurement cannot be valid unless it is reliable (Sullivan & Feldman, 1979). Internal consistency is assessed using item-to-total correlation, split-half reliability, Kuder-Richardson coefficient and Cronbach’s α (Roberta and Alison, 2015). In this test, Reliability was assessed using Cronbach’s α ; it is the most commonly used test to determine the internal consistency of an instrument. Based on Roberta and Alison the Cronbach’s α result is a number between 0 and 1. An acceptable reliability score is one that is 0.7 and higher. The validity and reliability of the instruments found in this research can confirm that these survey questionnaires can be used in there intact form in this city.

3.11. Ethical Considerations

Before the phone survey was conducted, the researchers informed the participants of the study briefly about the objectives of the study and consent for an ethical issues requirement met. Therefore the participants of the study feel free, develops trust and also refusal response rate reduced. The respondents were told for confidentiality of personal data. A researcher must consider these points because the law of ethics on research condemns conducting a research without the consensus of the respondents for the above listed reasons.

4. RESULTS AND DISCUSSION

4.1. Introduction

This discussion section was made based on data collected via phone interview conducted and data analysis using up to date stata version statistical software applied. Demographic characteristics of study participants were analyzed using descriptive analysis. And inferential analysis that use of binary logistic regression was applied to assess the relationship between the dichotomous variable representing MSEs failure. Necessary tests like reliability test, test for variable specification, test for omission of variable, Goodness-of-fit test (such as likelihood ratio, and Hosmer and Lemeshow's), and test for multi-collinearity analysis (using correlations analysis and variable inflation factor(VIF or 1/VIF)) were checked.

4.2. Background for data Analysis and discussion

The study has successfully conducted for 130 firms; 97 existing MSEs and 33 closed MSEs via phone interview. Descriptive statistics such as mean and standard deviation were used to analyze the demographic characteristics of operators and closed MSEs and in the meantime binary logistic regression analysis run to analyze the relationship between the MSEs failure and independent variables.

4.3. Descriptive analysis of the samples

Through this study as indicated in table 4 below, 74.6% operating and 25.38% closed MSEs were surveyed via phone interview. The study has used all the five business categories of sectors such as manufacturing, construction, trade, services, and urban agriculture. The percentage share of the study participants was manufacturing, construction, trade, services, and urban agriculture was 33.08%, 23.85 %, 21.54%, 13.85%, and 7.69% respectively. The study participant firm size was 70% micro-enterprise and the remaining 30% small enterprises. When looked at the gender composition of the respondents about 35% was females. With regard to MSEs failure, the high percentage share of nearly 64% was experienced by female MSEs owners/managers. Likewise, with respect to MSEs size, the highest percentage was that is 84.85% MSEs failure was experienced by the micro-enterprises than small-enterprises. Disaggregating the sector type the highest percentage of MSEs failure was experienced by construction sectors (27.27%) followed by service sectors (24.24%) and less likely MSEs failure was experienced by urban agriculture (9.09%) according to this study finding conducted in Addis Ababa

Table 4. Descriptive categorical variables analysis

S r . N o	Demographic variables	Categories	Closed MSEs			Operating MSEs			Total	
			Frequency	Percentage	Percentage to the same group	Frequency	Percentage	Percentage to the same group	Frequency	Percentage share of categories
1	Gender	Male	12	9.23	14.12	73	56.15	85.88	85	65.38
		Female	21	16.15	46.67	24	18.46	53.33	45	34.62
2	Enterprise Size	Micro	28	21.54	30.00	63	48.46	70.00	91	70.00
		Small	5	3.85	12.82	34	26.15	87.18	39	30.00
3	Sector type	Manufacturing	6	4.62	13.95	37	28.46	86.05	42	33.08
		Service	8	6.15	25.81	23	17.69	74.19	41	23.85
		Trade	7	5.38	25.00	21	16.15	75.00	28	21.54
		Urban agriculture	3	2.31	16.67	15	11.54	83.33	18	13.85
		Construction	9	6.92	90.00	1	0.77	10.00	10	7.69
Total firms surveyed			33	25.38	25.38	97	74.62	74.62	130	100

Source: - own survey, 2020.

As indicated in the table 5 below, the study participants' age ranges from 24 to 68 years, average age more than 36 years and age variance of about 7 years. The study participants' years of education of MSEs owners/managers ranges from 7 to 17, an average year of education is nearly 13 (that is above 12th grade) and, mean variation of about 2. The managerial experience of MSEs owners/managers ranges from 1 to 22 years and average managerial experience of owners/managers of the study was 5 years and mean variation was about nearly 5. The minimum age of firm ranges from 1 to 21 years and average age more than 6 years. And firms age variance of 5 years. The owner's prior years of experience ranges from 0 to 30 years old. The mean variation and average prior experience was nearly about 5 years.

Table 5. Descriptive continues variables analysis used in regression

Demographic characteristics	No. of observation	Mean	Std. Dev.	Min.	Max.
Age	130	36.28462	7.291531	24	68
Education	130	12.63077	2.279462	7	17
Managerial experience	130	5.042308	4.341987	1	22
Operational (firm age)	130	6.140385	5.104069	1	21
Prior experience	130	4.775	5.248648	0	30

Source :- STATA result , own survey 2020

Apart from factors analyzed via logistic regression analysis a summary made indicated in table 6 below, the data collected from the remark section of the questionnaire tells us the top most five factors that contribute for the failure of MSEs were lack of sufficient work premises, less support given by respective government authority, family responsibility, disagreement among the members of the cooperatives and political instabilities were reported.

Table 6. Descriptive summary of data collected from remark

No	Top five factors reported as reason for MSEs failure	No of observation's	Ranks
1	Disagreement among the members of the cooperatives	7	4
2	Family responsibility	8	3
3	Lack of sufficient work premises.	8	2
4	Less support given by respective government authority	10	1
5	Political instabilities	6	5

Own survey: summary excel sheet, 2020

4.4. Econometric Analysis

The logistic regression model is used to predict the presence or absence of a characteristic or outcome based on values of a set of predictor variables. The dependent variable is dichotomous variable that is MSEs failure or not. In order to determine the extent to which the explanatory variables explain the variance in the explained variable, logistic regression analysis was employed (Gujirati, 2004 and Berger, 2017). Based on the data collected following stata run independently the following estimation of model result was summarized as follows.

Table 7. Estimation of Model results

No.	MSEs Failure	Coefficient	Odds ratio(OR)	Marginal effects = dy/dx	P > z
1	GENDERF	1.7361	5.6751	0.189089	0.003*
2	EDUCF	-0.0639	0.9381	-0.0069587	0.602
3	MWEXPF	-0.0075	0.9925	-0.0008179	0.927
4	MOTIF	2.1570	8.6451	0.234932	0.001*
5	SIZERF	1.4702	4.3501	0.1601276	0.054***
6	WPREMSISF	3.2337	25.3736	0.3522034	0.020**
7	PRIORWEXPF	-0.2068	0.8132	-0.0225207	0.042**
8	FNFRF	0.2138	1.2383	0.0232832	0.824
9	IFRADF	-1.1324	0.3222	-0.1233398	0.392
10	MARKF	3.3090	27.3573	0.3604021	0.023**
11	TECHNF	-1.5195	0.2188	-0.1655016	0.087***
12	constant	-6.341	0.0017	-	-
Remarks					
1. No of observation =130 2. 95% confidence level 3. Log likelihood = -44.1452					
4. LR $\chi^2(11) = 59.01$ 5. Prob > $\chi^2 = 0.0000$ 6. Pseudo $R^2 = 0.4006$					

Source:- STATA result , from own survey 2020

Note that in statistics, a p-value is a measure of the probability that an observed difference could have occurred just by random chance. A smaller p-value means that there is stronger evidence or the greater the statistical significance of the observed difference. As can be seen in the table above running the logistic regression model using stata package p-values for each explanatory variable determined and most of the explanatory variables are found to be

statistically significant (at the 1%, 5% and 10% significance level). So there's evidence that each of these has an independent effect on the probability of MSEs failure. But these effects are positive or negative and significance was different. The P values with the following asterisks show different levels of significance of the respective variables and identified as significant variables for the study undertaken. * indicates 1 % level of significance, ** indicates 5% level of significance and *** indicates 10% level of significance. Accordingly, a quick look at the table (value of p) shows us that among the selected independent variables lack of self-motivation to start their own business and female business owner are found to be statistically significant at the level of 1% for this study. Next, factor variables such as lack of own work premises, lack of prior work experience, and lack of market development are found significant at 5%. Thirdly, micro in size of enterprise and lack of access to technological adoptions were found statistically significant at 10% for this particular study conducted to identify factors that contribute to the failure of MSEs in Addis Ababa city.

The remaining four factor variables examined and found insignificant were; education level of owner/managers, managerial work experience of owners/managers, and lack of credit or finance and infrastructure development related problems for this study in Addis Ababa city. Moreover more than 40 % of variation the MSEs failure was explained by the independent factors that were examined through the study. The study used 95% confidence intervals to measure the degree of uncertainty or certainty in a sampling method. The likelihood ratio chi-square of 59.01 with a p-value of 0.0000 tells us that our model fits significantly.

4.4.1. Interpretation of odds ratio and marginal effect

In binary logistic regression there is no linear relationship of the dependent variable and independent variables but the linear relationship of dependent and independent variables are interpreted in the comparison in probability terms as multiple of the odds ratio determined. And the marginal effect is used to interpret in comparison as a percentage increase or decrease (direction) based on the sign determined in marginal effect.

The odds ratio (OR) indicated in table 7, shows that the probability of MSEs failure for those MSEs owners who lack self-motivation to start their own business is 8.6 times higher than those MSEs owners who have self-motivation to start their own business. The marginal effect in the

same table shows that the probability of MSEs failure who lack self-motivation increase by 23.5% as compared to those MSEs owners who have self-motivation to start their own business. Thus the stated hypothesis that is, MSEs owners/managers that lack self-motivation to start the business experience failure is valid. This finding agrees with study conducted by (Esther K. Ishengoma and Robert, 2017) business performance or growth is related to the owner's motivation to establish the business. Business owner's motivation to establish the business is related to prosperity, while if the owner's motivation to start the business is for meeting his/her household's subsistence needs, then the business is not likely to grow and perform well .

As indicated in table 7 above, the odds ratio for gender shows that the probability of females who own business failure is nearly 5.68 times higher than their male counterparts and marginal effect tells us that the probability of MSEs failure for females increased by 18.9% as compared to males. This study finding agrees with the assumption made on the hypothesis. By the same taken, study conducted by (Ibrahim, W. and Saba, Y. , 2017) also revealed that the failure of MSEs business owned by women appear to be more severe than business owned by men experiences.

As indicated in model result estimation, the odds ratio of ownership of work premises determined 25.37 and its marginal effect; was 0.35. That can be interpreted as the probability of MSE's failure for business owners who lack their own work premises is 25.37 times higher than those who own their work premises. And its marginal effect tells us that the probability of MSEs failure for those who lack their own work premises increase by 35.22% than those who own their work premises. This discussion agrees with the hypothesis made. And study finding argues that one of the top most reasons why MSEs perform, less likely to grow or fail; was due to lack of work premises related problems constrained the existence and growth of MSEs (Berihu, and et al. 2014, Daniel and Fafchamps, 2018, and EEA, 2015).

When we come to prior work experience of owner/managers as indicated in table 7 above, the odds ratio tells us that the probability of MSEs owners' failure who have prior work experience is 0.81 times lower than those who do not have work prior work experience or novice and the marginal effect, indicates that the probability of MSEs failure by owners who have prior experience decrease by 22.5% than those of the novice. That means the probability of MSEs owners' failure is higher in novice than those who have prior work experience.

Among the significant factors prior work experience is the only continues significant factors then marginal effect can be determined as follows using the equation-8.

$$\begin{aligned} \frac{\partial P}{\partial x_i} &= \beta_i \cdot P_i (1 - P_i) \text{ Where } i, \text{ is prior work experience firm } i. \\ &= -0.2068 \cdot 0.042 \cdot (1 - 0.042) \quad \text{since, } \beta_i = -0.2068, P_i = 0.042, \text{ then } 1 - P_i = 0.958. \\ &= -0.2068 \cdot 0.042 \cdot 0.958 \\ &= -0.0083 \approx \underline{-0.01} \end{aligned}$$

An increase by one year in prior work experience of owners/managers decreases failure MSEs by 0.01 units. Then failure of MSEs of as a linear function of prior work experience can be re-written as:-

MSEs failure = $C_0 - 0.01X_{pwe}$, where C_0 = Constant prior work experience, and X_{pwe} , is prior work experience, keeping the other variables constant.

The odds ratio of the size of an enterprise indicated in model result estimation shows that the probability of MSEs failure for micro-enterprise is 4.35 times higher than small enterprise. And the marginal effect indicated in table 7, tells us that the probability of micro-enterprise failure increase by 16.0% as compared to small enterprises. Thus hypothesis made for this study was failure in micro enterprise is more common than small enterprise. Thus this finding agrees with the stated hypothesis and an econometric analysis the average annual growth rate of micro enterprises is significantly lower than small enterprises (Ibrahim and Saba, 2017).

The market development-related problems odds ratio determined indicated in table 7 is 27.36. Meaning the probability of MSEs failure for those who lack access to market development is 27.36 times higher than MSEs that have access to or privileged market development. For this variable its marginal effect is found 0.360; this describes the probability of MSEs failure for those enterprises found in areas where the market is not developed increase by 36.04% than MSEs who have access or full-fledged with the developed market. With this, the hypothesis made “MSEs that lack of market development experience failure” is valid. This result is consistent with (Berihu, and et al. , 2014), (Tariku, 2018) and many other researchers who identified market-related problems are the most pressing problems that MSEs face and threaten.

Finally table 6 above, odds and marginal effect of lack use of technology-related problems determined were 0.22 and -0.166 respectively. The OR indicates that the probability of MSEs failure due to less use of technology or technology-related problem decrease by 0.22 times as compared to those MSEs who have access to use proper technique in their operating system. The marginal effect tells us that the probability of MSEs failure by those enterprises who lack less access to the use of technology in their proper business operation decrease by 16.6% than those enterprises who have access to the use of technology. Meaning the probability of MSEs failure by those who have access or use of technology higher than those who lack or less access to technology in business operations. This argument disagrees with the hypothesis made that is “MSEs that lack use of technology experience more failure”. Thus, this result is inconsistent with the literature. But to the contrary of this study finding the study conducted by (EEA, 2015) disagree and argued that reasons for MSEs failure was poor acquisition of technical, poor or inappropriate use of technology. This might have happened probably due to miss use of technology or some other reason, then the reason behind this concept could be different and it requires additional further investigation.

4.5. Model Specification test

For confirmation of the assumed model the necessary tests such test the reliability of tools, validity of the data and model fitness suit binary logistic regression of the following necessary tests were employed.

4.5.1. Reliability Test

The reliability test of the binary response yes/no and categorical response variables used in this study, reliability analysis was conducted using Cronbach’s Alpha as the measurement. As rule of thumb reliability co-efficient of $\alpha \geq 0.7$ was considered as an adequate.

Stata result run to determine reliability test Cronbach’s Alpha multivariate analysis employed for each factors reliability scale coefficient for each factors; credit and finance related, infrastructure development related, market development related, and technology adoption related and found to be 0.8315, 0.7191, 0.4978, and 0.6895 respectively. Moreover, the stata run multivariate analysis for all the 24 factors together and the overall a reliability scale co-efficient was determined and found 0.7775. This indicates that an adequate level of internal consistency for the tool was used as shown in table 8 below.

Table 8. Cronbach's Alpha

Sr.No.	Factors contribute to failure of MSEs	Cronbach's Alpha	No of items
1	Credit and finance related	0.8315	6
2	Infrastructure development related	0.7191	7
3	Market development related	0.4978	7
4	Technology adoption related	0.6895	4
5	Over all reliability scale coefficient	0.7775	24

Source:- Own survey, STATA outcome 2020

4.5.2. Test for variable specification

The test for variable specification was conducted to confirm whether the probability function was correctly specified or not. In order to test variable specification the logistic regression run stata for the variables and link tested. As a rule of thumb if the model is correctly specified ‘_hat’ is statistically significant and ‘_hatsq’ is not (Gujarati, 2004).

Table 9. Test for variable specification

MSEs Failure	Coefficient	Std. Err.	z	P> z
_hat	1.138815	.2407798	4.73	0.000
_hatsq	.072931	.0550773	1.32	0.185
_cons	-.089511	.3205696	-0.28	0.780
Remark 1. 95% confidence leve 2. Number of obs = 130 3. Log likelihood=-43.9548 4. LR chi2(2) = 59.39 5. Prob > chi ² = 0.0000 6. Pseudo R ² = 0.4032				

Source:- Own survey, STATA outcome 2020

As indicated in the table 9 above, ‘_hat’ is statistically significant that is 0.0000 and ‘_hatsq’ 0.185 which is not statistically significant. And hence the model is correctly specified.

4.5.3. Test for omission of variable.

Ramsey RESET test, a model specification is fit or no omitted variables and ready for analysis if P-value stated in P>F greater than the chosen level of significances, that is., 1 %, 5%, and 10 %. The result indicated that the model had no relevant omitted variables since the test failed to reject the hypothesis, i.e., Prob > F = 5.67 was found greater than 10% significance levels of the specified model of the study

4.5.4. Goodness-of-fit test

4.5.4.1. Likelihood ratio (LR) test

The likelihood ratio was the default report done when the binary logistic regression run for odds ratio, or coefficient, or marginal effect. The estimated model fits the data well since the p value stata run for the assumed model determined to be 0.0000, which is statistically significant. Hence the data fits the model well(Gujarati, 2004).

4.5.4.2. Hosmer and Lemeshow's (HL) goodness of-fit test:

This test examines whether the predicted frequency and observed frequency match closely. The more closely they match, the better fit. The Hosmer-Lemeshow, $\chi^2(8)$ was determined 7.94 and the Prob > χ^2 is 0.4393. This indicates that the estimated model fit the data well, since the HLtest statistic is not statistically significant($p=0.4393$). Hence the model is good to fit (Gujarati, 2004).

4.5.5. Test for Multi-collinearity

The tests for multi-collinearity are done just to identify whether there are no exact or perfect linear relationships among the explanatory variables of the study. However, multi-collinearity problem is the existence of an ‘exact’ or a ‘perfect,’ linear relationship among some or all explanatory variables of a regression model(Gujarati, 2004). Multi-collinearity problem exist when there are a perfect or exact multiple between or among the independent variables.

Correlation matrix illustrates bivariate relationship between two independent. Correlation matrix examines the extent or direction of relationship among two variables and how one variable is related to another. Correlation matrix also indicates problem of multi-collinearity (Gujarati, 2004). Multi-collinearity would be a problem if the correlation result is above 0.80 and below -0.80. But, in this study, as indicated in the appendix III the correlation coefficients among the independent variables is less than or equal to 0.4270 and the smallest value is found greater than or equal to -0.2044. Thus none of the correlation coefficient determined matrix is not in the ranges where correlation problem suspect to be exist. Moreover, test the existence of multi-collinearity problem, can be run by checking VIF (Variance Inflation Factor) is utilized. In principle multi-collinearity test of the model states a variable whose values are greater than 10 or whose $1/VIF$ value is less than 0.1 indicates possible problem of multi-collinearity.

Table 10. The collinearity VIF and 1/VIF

Variables	Collinearity statistics		Variables	Collinearity statistics	
	VIF	1/VIF		VIF	1/VIF
IFRADF	1.58	0.633596	FNFRF	1.17	0.853558
MARKF	1.36	0.737408	SIZERF	1.16	0.859460
PRIORWEXPF	1.26	0.794629	EDUCF	1.11	0.897509
PREMSISF	1.25	0.798984	MOTIF	1.10	0.911379
WMEXRF	1.22	0.821603	GENDERF	1.09	0.917737
TECHNF	1.17	0.853083	Mean VIF	1.22	

Source:- STATA result , own survey 2020.

As can be seen in the table 10 above, the VIF ranges from 1.09 to 1.58 all are not in the range where the problem to suspect a problem of multicollinearity.

Therefore, the necessary tests such as reliability test, variable specification and omission, variance analysis, and data fitness to the model confirmed. The assumed model found effective in analyzing and identifying the factors that contribute to failure of MSEs. Then, the study result of sample can be inferred to the population and the discussion, conclusion, policy implication and recommendations scientific and evidence based.

4.6. Regression Model

The necessary tests summarized in the confirmed that the assumed binary logistic regression model is effective in analyzing and identifying the factors that contribute to failure of MSEs. With this study the statistical result obtained from the binary logistic regression run by using stata as shown in the table 6, the coefficients and constant for the independent or explanatory variables were found and suited into the model as follows.

$$\log(\text{MSEs failure}) = -6.341 + 3.2337\text{WPREMSISF} + 3.3090\text{MARKF} - 0.2068\text{PRIORWEXPF} + 1.4702\text{SIZERF} + 2.1570\text{MOTIF} - 1.5195\text{TECHRF} + 1.7361\text{GENDERF}.$$

Where,

GENDERF is gender, MOTIF is self-motivation of owner/manager, SIZERF is size of enterprise, WPREMSISF is work premises, PRIORWEXPF is prior work experience of owner/manager, IFRADF infrastructure development problem, MARKF is market development related problem, and TECHRF is technology related problem.

- The educational level, managerial experience, finance/credit, and infrastructure-related variables all factors are found insignificant for this particular study conducted in Addis Ababa. That means these factors were not factors that contribute to the failure of MSEs in Addis Ababa.

5. CONCLUSIONS AND POLICY IMPLICATIONS

5.1. Summary and Conclusions

The demographic characteristic of owners/managers of study participants was analyzed and summarized using descriptive analysis. One-third of the study participants were females and the included sector types such as manufacturing, trade, service, construction and urban agriculture both micro and small enterprises. Majority of the study participants that is 70% were micro enterprises. The age of respondents varies from younger to older/retirement and average age greater than 36 years old. And the educational level of owners/managers also varies from nearly primary complete to university graduate and an average year of education was in the range of TEVT/college/university graduate. Likewise the managerial experience of owners/managers varies from novice (0 years) to well experience (30 years).

Among MSEs failure experienced the most frequently observed was in construction sectors followed by service sectors. And in comparative term the less likely failure of MSEs was urban agriculture. Moreover a summary of data collected as remark shows that the topmost five factors that contribute to the failure of MSEs were lack of sufficient work premises, less support given by respective government authority, family responsibility, disagreement among the members of the cooperatives and political instabilities were mentioned.

The following conclusions were made based on econometric analysis run using stata.

- MSEs Owners that lack self-motivation to start their own business is higher than those owners who have self-motivation to start their own business.
- MSEs Failure for females' business owners is more common than their male counterparts.
- MSEs Owners with no prior work experience more likely experience failure.
- MSEs Owners that lack own work premises experience more failure than those who own.
- The failure of microenterprise is more common than small enterprise.
- MSEs Owners that lack access to market development experience more failure than with better access.
- For unknown reason enterprise with better access or use of technology experience more failure. This situation might happen, had it been the technology is misused.

In general with this particular study conducted in Addis Ababa city the failure of MSEs visa-vice lack of self-motivation to start own business, lack of own work premises, lack of market development, microenterprise in the size and business owner being a female have a positive relationship. Whereas the MSEs failure with prior work experience, and lack of access to better technology in their day to day operation have negative relationship.

5.2. Policy Implications

In the last two decades, MSEs have been given much attention by the Ethiopian government. This is mainly because it was assumed to play an important role in creating wide job opportunities, improving household income and wellbeing, and boosting the national economy, particularly for the urban community. But the operators of the MSEs constrained by a number of factors that hinder the growth of MSEs and fail to survive. With this study factors that limited and constrained the development of enterprise and leads to MSEs failure in Addis Ababa. Following the discussion and conclusion made important recommendations and policy implications were forwarded.

With this study self-motivation of entrepreneurs to start own business was found as one of the significant factor that contributes for the failure of MSEs. A person who works at own interest is more productive and prosper than those who are working to maintain their subsistence and survival. Hence Addis Ababa job creation and enterprise development office needs to conduct compressive entrepreneur's motivation pre-assessments, evaluate and identify whether the new entrants have motivation or not before they entitled to get license as a cooperatives or individuals to start their own business as MSEs. With a compressive analysis, entrepreneurs who are suspected to lack of self-motivation to start their own business and have dependency syndrome should be more trained.

The other important reason for MSEs failure found was lack of prior work experience. To reduce this effect Addis Ababa job creation and enterprise development and any other concerned development agents should be able to deliver sufficient capacity building training both for the existing and the new entrants so as to equip them with the necessary skill and create awareness about the real the business environment and hence the new MSEs adjust themselves on how to make business; fit to survive, make reasonable profitable, develop better business experience and became competent and grew to middle level enterprise.

Market access related problem is also among the main reasons for the failure of enterprises, the government and interested parties should give emphasis on ways that can increase access of market to the MSEs. In this regard Addis Ababa job creation and enterprise developments should work market research and development that gives more privileges to additional new market segments needs to be created in Addis Ababa and market linkages both in and outside Addis Ababa, export and import their product or service conducive environment should be made by the government.

The other challenging problem that threaten the existence of enterprise identified was lack of access to own work premises in Addis Ababa is series problem thus a clear rule and regulation should be stated regarding existing sheds, and continuous follow-up and better management's strategy needs to be implemented and additional shades with sufficient work premises needs to be constructed. Law that enforces the regulation or revision and transparent shade management system should be strictly followed.

Here a gender related problem that is one of the crosscutting issues being a female was also identified as one of the reason for MSEs failure. Development without participation of women cannot be realized, so gender inclusiveness and special support that makes better business environment and capacitating women through training and overall the inherited behavioral views advised to be improved by all mankind.

In this study the amazing result, access to use of technology found as reason for MSEs failure. This may happen probably due to the misuse of technology by MSEs operators. So the Addis Ababa MSEs and other development agents need to work so as to curve this problem through extensive training on what and how MSEs use technology efficiently in production, promotion strategy, and administration system properly and hence MSEs maximize their profit and minimize cost in short run and survive in a business and transfer to middle level enterprises in long run.

Last but not least and very important as of today regarding the political instability reported in addition to factor analysis indicated as main reason for MSEs failure, thus the political community including the government should entertain free ideas in such a way that cannot affect the social and economic environment of the country. This has to be exercised!

Among the five sectors MSEs, the study revealed that the failure of MSEs by urban agriculture was less likely hence it's advisable to work more in these areas so that the new MSEs entrants would be benefited more if they engaged in urban agriculture. On the other hand, the highest MSEs failure was more common in the construction sector followed by service sectors hence Addis Ababa job creation and enterprise development office needs to further conduct research in these sectors and further identify the specific reason that lets them to failure and support them more as far as their contribution for urbanization bold than others.

5.3. Future research direction

Addis Ababa job creation and enterprise development are the main mentors of MSEs who supposed to support and provide the necessary technical and direct support for the sector; was assumed to offer the data of both existing and closed MSEs. The problem that the study face in practice was the entitled office only keep and offered well-organized data of existing MSEs from their database but do not own the lists of closed firms. With an effort made by the woreda experts, some frame list that can be used for factor analysis was organized and used with its limitation, but the frame list that was collected from woreda was poorly organized, this made difficult the use of data to calculate failure rate of MSEs. The reason behind the logic was the sample frame list organized for sampling was not a complete list, since the figure is not reliable. It is hard to use and determine the rate of MSEs failure. Unless and otherwise attempting to calculate failure rate using incomplete data would be miss leading. That is why this study fails to do so. Researchers' intervention and rehabilitation programs who would launch such and like programs face a similar challenge. Hence it is advisable for other researchers to fill the gap in their future research. The topic under study was less researched, interested individual academic researcher, research institutes, and a person who have the motivation and capacity to conduct research are recommended to do it in other town and at the national level.

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APPENDIX- I. English Questionnaire
ADDIS ABABA UNIVERSITY
SCHOOL OF COMMERCE
SCHOOL OF GRADUATE STUDIES

SECTION 1: INTRODUCTION

Dear respondent,

I am _____. This study is being conducted by Addis Ababa University a graduate student of Development Economics. The purpose of this interview is to collect data on the ‘factors that contribute to Micro and Small Enterprises failure in Addis Ababa’. You are randomly selected by chance based on the list collected from Woreda job creation and enterprise development. The data that you share with me will be kept confidential and used for an academic research purpose and never be disclosed to anyone else moreover the analysis will be made to the sector but not firm-level. The questionnaire may take 15-20 minutes. Having this specific purpose I ask you to share me via phone interview; a genuine, honest and timely response that is very important for the success of this study on time and your contribution is also important in identifying factors that contribute to MSEs' failure in Addis Ababa.

Sincerely,

General Instructions (for Interviewer)

- ✓ No need for writing owners/respondent's names.
- ✓ For both multiple-choice and Yes or No questions please circle only once for each case.
- ✓ For open-ended questions write down the point briefly.

Study area identification particulars

Sub-city_____ **Woreda** _____ **Questionnaire code** _____

**SECTION 2: GENERAL BACKGROUND INFORMATION OF OWNERS OR
OWNER-MANAGER OF MICRO AND SMALL ENTERPRISES.**

1. Current status of MSEs (please don't ask the respondents) ? 1. Closed 0. Existing
2. Gender of owner/owner-manager: 1. Male 2. Female

3. 1. Problems/factors related to credit or finance

Sr. No.	I will read questions related to financial issues . Please tell me for each question by realizing your business experience whether each stated factors affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise or not by saying Yes or No.	Circle 1 if the respondent says yes and 0 if not	
		1. Yes	0. No
3.1.1	Did/does lack of access to finance affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0
3.1.2	Did/does lack of sufficient loan affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0
3.1.3	Did/does lack of fair interest rate charged by MFIs and banks affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0
3.1.4	Did/does limited access to working capital affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0
3.1.5	Did/does shortage of working capital affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0
3.1.6	Did/does high collateral requirement from banks and other lending institutions affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0

3.2. Problems/factors related to Infrastructure Development

Sr. No.	I will read questions related to infrastructure development issues . Please tell me for each question by realizing your business experience whether each stated factors affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise or not by saying Yes or No.	Circle 1 if the respondent says yes and 0 if not	
		1. Yes	0. No
3.2.1	Did/does lack of access for power grid affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0
3.2.2	Did/does high Power outage (high Electricity interruption) affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0
3.2.3	Did/does lack of access for water pipeline affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0
3.2.4	Did/does high water interruption (less water supply) affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0
3.2.5	Did/does lack of suitable road affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0
3.2.6	Did/does lack of access to transport affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0
3.2.7	Did/does high cost of utility (electricity, water, and transport) affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0

3.3. Problems/factors related to Market development

Sr. No.	I will read questions related to market development issues . Please tell me for each question by realizing your business experience whether each stated factors affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise or not by saying Yes or No.	Circle 1 if the respondent says yes and 0 if not	
		1. Yes	0. No
3.3.1	Did/does lack of market linkage affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0
3.3.2	Did/does lack of market information affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0
3.3.3	Did/does lack of marketing skill affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0
3.3.4	Did/does limited market opportunity creation affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0
3.3.5	Did/does high market competition affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0
3.3.6	Did/does lack of access to standardized raw materials affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0
3.3.7	Did/does consistent raise in price of raw material affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0

3.4. Problems/factors related to use of technology

Sr. No.	I will read questions related to the use of technology . Please tell me for each question by realizing your business experience whether each stated factors affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise or not by saying Yes or No.	Circle 1 if the respondent says yes and 0 if not	
		1. Yes	0. No
3.4.1	Did/does lack of skills to handle new technology affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0
3.4.2	Did/does lack of appropriate machinery and equipment affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0
3.4.3	Did/does failure to select proper technology affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0
3.4.4	Did/does lack of skill for new product development affected the performance of your MSEs and contributed/contributes for the failure of your business enterprise?	1	0

Thank you so much for your time and efforts in answering the questions.

And if you have any additional comment that affected or could contribute to the failure MSEs apart from the points we have gone through you are welcome!!

Appendix-II. Amharic Questionnaire

አዲስ አበባ ዩኒቨርሲቲ ኮሙኒኬሽን ድህረ ምረቃ ት/ቤት

ክፍል 1: መግቢያ

የጥናቱ ተሳታፊ በመሆንዎ በቅድሚያ አመሰግናለሁ።

እኔ ————— እባላለሁ። ይህ መጠይቅ የተዘጋጀው በአዲስ አበባ ዩኒቨርሲቲ የዴቪዥን መንግሥት ኢኮኖሚክስ ድህረ ምረቃ ተማሪ ለመመረቁያ ጥናታዊ ጽሁፍ ታስቦ የተዘጋጀ ነው። የዚህ ቃለ መጠይቅ ዓላማ በአዲስ አበባ ከተማ ጥቃቅንና አነስተኛ ኢንተርፕራይዞች ልማት ለውድቀት አስተዋጾ ያላቸውን ምክንያቶችን ለማወቅ መረጃ ለመሰብሰብ ሲሆን እርሶም የተመረጡት ከወረዳው ሥራ ፈጠራ እና ኢንተርፕራይዞች ልማት ጽ/ቤት ከተወሰደ ስም ዝርዝር ላይ በእጣ ነው። ለዚህ ጥናት የሚያጋሩኝ ማንኛውም መረጃ ሚስጥራዊነቱ የተጠበቀና ለትምህርት አላማ ብቻ የሚውል መሆኑንና ለሌላ አካል ተላልፎ እንደማይሰጥ እንዲሁም የጥናቱ ትንታኔ የዘርፉን አጠቃላይ ገጽታ እንጅ የአንድን ድርጅት መረጃ የማያሳይ መሆኑን በቅድሚያ ለማሳወቅ እወዳለሁ። መጠይቁ ከ15 እስከ 20 ደቂቃ ሊወስድ ይችላል። ይህንን ታሳቢ በማድረግ እርስዎም እውነተኛና ታዳሚነት ያለውን በስልክ ምላሽ በመስጠት ለጥናቱ መሳካት እና የአዲስ አበባ ከተማ የጥቃቅንና አነስተኛ ኢንተርፕራይዞች በመጉዳት ለውድቀት ሚና/አስተዋጾ የሚጫወቱ ምክንያቶችን በመለየት የድርጅቱን እንዲወጡ እጠይቃለሁ። አመሰግናለሁ !

አጠቃላይ መመሪያ (ለመረጃ ሰብሳቢ)

- ✓ በዚህ መጠይቅ ላይ ስም መጻፍ አስፈላጊ አይደለም ።
- ✓ ለእያንዳንዱ ጥያቄ አንድ ጊዜ ብቻ ምርጫውን በማክበብ ይሆናል ።
- ✓ ክፍት ለሆኑት ጥያቄዎች መልሱን በአጭሩ ጻፍ/ፊ ።

የጥናቱ የአካባቢ መለያ

ከ/ከተማ _____ ወረዳ _____ የመጠይቁ ኮድ _____

ክፍል 2: አጠቃላይ የኢንተርፕራይዞች ባለቤት ወይም ባለቤትና ስራ አስኪያጅ መረጃ

1. ኢንተርፕራይዞች አሁን ያለበት ሁኔታ (መረጃ ሰጭ አይጠየቅም) 1. የከሰመ/የተዘጋ/ስራ ያቋረጠ 0. በስራ ላይ
2. ጾታ 1. ወንድ 2. ሴት
3. እድሜ (በሙሉ ዓመት) _____
4. ከፍተኛው የትምህርት ደረጃ (በዓመታት ብዛት) _____
5. የድርጅቱ ባለቤት/ባለቤትና የስራ አስኪያጅ ስራ ልምድ (በዓመታት ብዛት) _____

6. የተሰማሩበት የስራ ዘርፍ (sector type) ?

1. ማምረት 2. ግንባታ 3. የከተማ ግብርና 4. ንግድ 5. አገልግሎት 6. ሌላ (ይገጽ) _____

7. ይህንን ቢዝነስ እንዲጀምሩ ያነሳሳዎት አንድ ዋና ምክንያት ምንድነው ?

- 1. አማራጭ ስራ ማጣት
- 2. በፊት የነበረኝን ስራ በማጣቴ
- 3. የተሻለ መልካም የገበያ አጋጣሚ በማየት
- 4. የቤተሰብ ቢዝነስ ለማስቀጠል
- 5. የቤተሰብና የስራ ጊዜ ለማጣጣም
- 6. የራስ አለቃ ለመሆን
- 7. በመንግስት የተመቻቸውን እድል ለመጠቀም
- 8. ሌላ (ይገጽ) _____

8. የኢንተርፕራይዙ ዓይነት ጥቃቅን ነው ወይስ አነስተኛ? 1. ጥቃቅን 2. አነስተኛ

9. የስራ በታ የይዘታ ዓይነት

- 1. የግሌ
- 2. ከግለሰብ በኪራይ
- 3. ከመንግስት በኪራይ/በሊዝ
- 4. የቤተሰብ(በነጻ)

10. ድርጅቱ ምን ያህል ጊዜ በስራ ላይ ቆይቷል? ____ ዓመት ____ ወር

11. ይህንን ቢዝነስ ከመጀመርዎ በፊት የሌላ ቢዝነስ ስራ ልምድ ነበረዎት? ካለዎት (ህብረት ስራ ከሆነ ሊቀመንበሩን ጠይቅ) ____ ዓመት ____ ወር

ክፍል-3: ለጥቃቅንና አነስተኛ ኢንተርፕራይዞች ዉድቀት ሚና ሊጫወቱ/ተጽእኖ ሊኖራቸው የሚችሉ ምክንያቶች

ከዚህ በታች የኢንተርፕራይዞች አፈጻጸም በመጉዳት ለዉድቀት ሚና/አስተዋጾ ልኖራቸው የሚችሉ ዋና ዋና ምክንያቶች ተዘርዝረዋል :: መረጃ ሰጪዎች ለእያንዳንዱ ጥያቄ ከዝህ ቀደም የነበረውን የዕለት ተዕለት የቢዝነስ ነባራዊ እንቅስቃሴዎቻቸውን ልምዳቸውን መሰረት በማድረግ መልስ እንድሰጡ ይጠበቃል :: ለእያንዳንዱ ጥያቄ "አዎን" ወይም "የለም" በማለት የሚመልሱትን መልስ በተቀመጠዉ ኮድ መሰረት አንድ ጊዜ ብቻ በማክበብ የመረጃ ሰጪዉን መልስ ያመለክቱ ::

3.1. ከገንዘብ ጋር ተያያዥነት ያላቸው ችግሮች

ተራ ቁጥር	ከዚህ በመቀጠል ከገንዘብ ጋር ተያያዥነት ያላቸውን ጥያቄዎችን አነባለሁ። እባክዎን እርስዎም ለእያንዳንዱ ጥያቄ የቢዝነስዎ ነባራዊ ሁኔታ ጋር በማገናዘብ የተጠቀሰው ምክንያት የቢዝነስዎን የአፈጻጸም ውጤትን በመጉዳት ለውድቀት ሚና/አስተዋጾ ከነበረው/ካለው “አዎን” ምንም ሚና/አስተዋጾ ከሌለው ደግሞ “የለም” በማለት መልስ ይስጡ ።	የመልስ ሰጫው መልስ አዎን ከሆነ 1 የለም ከሆነ 0 ይከበብ	
		1. አዎን	0. የለም
3.1.1	ገንዘብ አለማግኘት የቢዝነስዎን የአፈጻጸም ውጤትን በመጉዳት ለውድቀት ሚና/አስተዋጾ ነበረው/አለው ወይ?	1	0
3.1.2	በገንዘብ/በዓይነት በቂ የሆነ ብድር አለማግኘት የቢዝነስዎን የአፈጻጸም ውጤትን በመጉዳት ለውድቀት ሚና/አስተዋጾ ነበረው/አለው ወይ?	1	0
3.1.3	በተመጣጣኝ ወለድ መጠን ከባንክ እና ከአነስተኛ የገንዘብ ተቋሚት ብድር አለማግኘት የቢዝነስዎን የአፈጻጸም ውጤትን በመጉዳት ለውድቀት ሚና/አስተዋጾ ነበረው/አለው ወይ?	1	0
3.1.4	ለመስሪያ/ለመንቀሳቀሻ የሚሆን የገንዘብ ውስንነት የቢዝነስዎን የአፈጻጸም ውጤትን በመጉዳት ለውድቀት ሚና/አስተዋጾ ነበረው/አለው ወይ?	1	0
3.1.5	ለስራ ማስኪያጃ የሚሆን የገንዘብ እጥረት የቢዝነስዎን የአፈጻጸም ውጤትን በመጉዳት ለውድቀት ሚና/አስተዋጾ ነበረው/አለው ወይ?	1	0
3.1.6	ከፍተኛ የንብረት ዋስትና መስፈርት በባንኮች እና ሌሎች አበዳሪ ተቋማት መጠየቅ የቢዝነስዎን የአፈጻጸም ውጤትን በመጉዳት ለውድቀት ሚና/አስተዋጾ ነበረው/አለው ወይ?	1	0

3.2. ከመሰረተ ልማት ጋር ተያያዥነት ያላቸው ችግሮች

ተራ ቁጥር	ከዚህ በመቀጠል ከመሰረተ ልማት ጋር ተያያዥነት ያላቸውን ጥያቄዎችን አነባለሁ ። እባክዎን እርስዎም ለእያንዳንዱ ጥያቄ የቢዝነስዎ ነባራዊ ሁኔታ ጋር በማገናኘብ የተጠቀሰው ምክንያት የቢዝነስዎን የአፈጻጸም ውጤትን በመጉዳት ለውድቀት ሚና/አስተዋጾ ከነበረው/ካለው “አዎን” ምንም ሚና/አስተዋጾ ከሌለው ደግሞ “የለም” በማለት መልስ ይስጡ ።	የመልስ ሰጭው መልስ አዎን ከሆነ 1 የለም ከሆነ 0 ይከበብ	
		1. አዎን	0. የለም
3.2.1	የመብራት መስመር አቅርቦት አለመኖር የቢዝነስዎን የአፈጻጸም ውጤትን በመጉዳት ለውድቀት ሚና/አስተዋጾ ነበረው/አለው ወይ?	1	0
3.2.2	ከፍተኛ የሆነ የመብራት ስርጭት መቆራረጥ/መጥፋት የቢዝነስዎን የአፈጻጸም ውጤትን በመጉዳት ለውድቀት ሚና/አስተዋጾ ነበረው/አለው ወይ?	1	0
3.2.3	የውሃ መስመር አቅርቦት አለመኖር የቢዝነስዎን የአፈጻጸም ውጤትን በመጉዳት ለውድቀት ሚና/አስተዋጾ ነበረው/አለው ወይ?	1	0
3.2.4	ከፍተኛ የሆነ የውሃ መጥፋት (አቅርቦት ማነስ) የቢዝነስዎን የአፈጻጸም ውጤትን በመጉዳት ለውድቀት ሚና/አስተዋጾ ነበረው/አለው ወይ?	1	0
3.2.5	ለትራንስፖርት ምቹ የሆነ መንገድ አለመኖር የቢዝነስዎን የአፈጻጸም ውጤትን በመጉዳት ለውድቀት ሚና/አስተዋጾ ነበረው/አለው ወይ?	1	0
3.2.6	የትራንስፖርት አቅርቦት ችግር የቢዝነስዎን የአፈጻጸም ውጤትን በመጉዳት ለውድቀት ሚና/አስተዋጾ ነበረው/አለው ወይ?	1	0
3.2.7	ከፍተኛ የሆነ የመብራት፣ የውሃ እና የትራንስፖርት ወጪ የቢዝነስዎን የአፈጻጸም ውጤትን በመጉዳት ለውድቀት ሚና/አስተዋጾ ነበረው/አለው ወይ?	1	0

3.3. ከገቢያ ልማት ጋር ተያያዥነት ያላቸው ችግሮች

ተራ ቁጥር	ከዚህ በመቀጠል ከገቢያ ልማት ጋር ተያያዥነት ያላቸውን ጥያቄዎችን አነባለሁ። እባክዎን እርስዎም ለእያንዳንዱ ጥያቄ የቢዝነስዎ ነባራዊ ሁኔታ ጋር በማገናኘብ የተጠቀሰው ምክንያት የቢዝነስዎን የአፈጻጸም ዉጤትን በመጉዳት ለዉድቀት ሚና/አስተዋጾ ከነበረዉ/ካለዉ “አዎን” ምንም ሚና/አስተዋጾ ከሌለዉ ደግሞ “የለም” በማለት መልስ ይስጡ ።	የመልስ ሰጭዉ መልስ አዎን ከሆነ 1 የለም ከሆነ 0 ይከበብ	
		1. አዎን	0. የለም
3.3.1	የገበያ ትስስር ባለመኖሩ የቢዝነስዎን የአፈጻጸም ዉጤትን በመጉዳት ለዉድቀት ሚና/አስተዋጾ ነበረዉ/አለዉ ወይ ?	1	0
3.3.2	የገበያ መረጃ ዕጦት የቢዝነስዎን የአፈጻጸም ዉጤትን በመጉዳት ለዉድቀት ሚና/አስተዋጾ ነበረዉ/አለዉ ወይ ?	1	0
3.3.3	የገበያ ክህሎት ማጣት የቢዝነስዎን የአፈጻጸም ዉጤትን በመጉዳት ለዉድቀት ሚና/አስተዋጾ ነበረዉ/አለዉ ወይ ?	1	0
3.3.4	ዉስንነት ያለዉ የገበያ እድል መኖሩ የቢዝነስዎን የአፈጻጸም ዉጤትን በመጉዳት ለዉድቀት ሚና/አስተዋጾ ነበረዉ/አለዉ ወይ ?	1	0
3.3.5	ከፍተኛ የሆነ የገበያ ዉድድር መኖሩ የቢዝነስዎን የአፈጻጸም ዉጤትን በመጉዳት ለዉድቀት ሚና/አስተዋጾ ነበረዉ/አለዉ ወይ ?	1	0
3.3.6	ደረጃዉን የጠበቀ ጥሬ እቃ አቅርቦት አለመኖሩ የቢዝነስዎን የአፈጻጸም ዉጤትን በመጉዳት ለዉድቀት ሚና/አስተዋጾ ነበረዉ/አለዉ ወይ ?	1	0
3.3.7	የጥሬ እቃ ዋጋ ንረት የቢዝነስዎን የአፈጻጸም ዉጤትን በመጉዳት ለዉድቀት ሚና/አስተዋጾ ነበረዉ/አለዉ ወይ ?	1	0

3.4. ከተክኖሎጅ አጠቃቀም ጋር ተያያዥነት ያላቸው ችግሮች

ተራ ቁጥር	ከዚህ በመቀጠል ከተክኖሎጅ አጠቃቀም ጋር ተያያዥነት ያላቸውን ጥያቄዎችን አነባለሁ። እባክዎን እርስዎም ለእያንዳንዱ ጥያቄ የቢዝነስዎ ነባራዊ ሁኔታ ጋር በማገናኘት የተጠቀሰው ምክንያት የቢዝነስዎን የአፈጻጸም ዉጤትን በመጉዳት ለዉድቀት ሚና/አስተዋጾ ከነበረዉ/ካለዉ “አዎን” ምንም ሚና/አስተዋጾ ከሌለዉ ደግሞ “የለም” በማለት መልስ ይስጡ ።	የመልስ ሰጫዉ መልስ አዎን ከሆነ 1 የለም ከሆነ 0 ይከበብ	
		1. አዎን	0. የለም
3.4.1	አዳዲስ ቴክኖሎጅ የመጠቀም ክህሎት እጦት የቢዝነስዎን የአፈጻጸም ዉጤትን በመጉዳት ለዉድቀት ሚና/አስተዋጾ ነበረዉ/አለዉ ወይ ?	1	0
3.4.2	ተገቢ/ተስማሚ የሆነ ማሻንና መሳሪያዎችን አለማግኘት የቢዝነስዎን የአፈጻጸም ዉጤትን በመጉዳት ለዉድቀት ሚና/አስተዋጾ ነበረዉ/አለዉ ወይ ?	1	0
3.4.3	ተገቢና ትክክለኛ ቴክኖሎጅ መምረጥ ባለመቻልዎ የቢዝነስዎን የአፈጻጸም ዉጤትን በመጉዳት ለዉድቀት ሚና/አስተዋጾ ነበረዉ/አለዉ ወይ ?	1	0
3.4.4	አዳዲስ ምርትና አገልግሎት የፈጠራ ክህሎት እጦት የቢዝነስዎን የአፈጻጸም ዉጤትን በመጉዳት ለዉድቀት ሚና/አስተዋጾ ነበረዉ/አለዉ ወይ ?	1	0

ጊዜዎን መስዋዕት በማድረግ ጥያቄዎችን በመመለስ ላደረጉልኝ ቀና ትብብር ልባዊ ምስጋና እያቀረብኩኝ ተጨማሪም አስተያየት ካለዎት ለመወያያ ከነሳናቸዉ ዉጭ የአፈጻጸም ዉጤትን በመጉዳት ለዉድቀት ሚና/አስተዋጾ ነበረዉ/አለዉ ካለ ይንገሩኝ።

Appendix- III. STATA Results

1. hotelling Age EDUCF WMEXRF MOTIF SIZERF PREMSISF entoperational PRIORWEXPF

Variable	Obs	Mean	Std. Dev.	Min	Max
-----+-----					
Age	130	36.28462	7.291531	24	68
EDUCF	130	12.63077	2.279462	7	17
WMEXRF	130	5.042308	4.341987	1	22
MOTIF	130	.3846154	.4883863	0	1
SIZERF	130	.7	.4600303	0	1
PREMSISF	130	.8769231	.3297964	0	1
entoperati~1	130	6.140385	5.104069	1	21
PRIORWF	130	4.775	5.248648	0	30

1-group Hotelling's T-squared = 15724.011					
F test statistic: $((130-8)/(130-1)(8)) \times 15724.011 = 1858.8463$					
H0: Vector of means is equal to a vector of zeros					
F(8,122) = 1858.8463					
Prob > F(8,122) = 0.0000					

2. mean GENDERF Age EDUCF WMEXRF MOTIF SIZERF PREMSISF entoperational PRIORWEXPF

	Mean estimation		Number of obs = 130	
	Mean	Std. Err.	[95% Conf. Interval]	
GENDERF	0.3461538	0.0418868	0.2632797	0.429028
Age	36.28462	0.6395096	35.01933	37.5499
EDUCF	12.63077	.199922	12.23522	13.02632
WMEXRF	5.042308	.3808174	4.288851	5.795764
MOTIF	0.3846154	.0428343	0.2998667	0.4693641
SIZERF	0.7	0.0403473	0.6201718	0.7798282
PREMSISF	0.8769231	.0289251	0.8196941	0.934152
entoperational	6.140385	.4476564	5.254685	7.026084
PRIORWEPF	4.775	.4603369	3.864212	5.685788

3.1. Test scale = mean(unstandardized items)

Average inter item covariance: .1084874

Number of items in the scale: 6

Scale reliability coefficient: 0.8315

3.2. Test scale = mean(unstandardized items)

Average inter item covariance: .0633416

Number of items in the scale: 7

Scale reliability coefficient: 0.7191

3.3 Test scale = mean(unstandardized items)

Test scale = mean(unstandardized items)

Average interitem covariance: .0633416

Number of items in the scale: 7

Scale reliability coefficient: 0.7191

3.4 Test scale = mean(unstandardized items)

Average inter item covariance: .0277622

Number of items in the scale: 7

Scale reliability coefficient: 0.4978

**3. Average Test scale =
mean(unstandardized items)**

Reversed items: highmarketcompetition
lackofappropriatemachineryan

Average inter item covariance: .0299729

Number of items in the scale: 24

Scale reliability coefficient: 0.7775

4. Correlate GENDERF EDUCF WMEXRF MOTIF SIZERF PREMSISF PRIORWEXPF FNFRF IFRADF MARKF TECHNF , (obs=130)

	GENDERF	EDUCF	WMEXRF	MOTIF	SIZERF	PREMSISF	PRIORW	FNFRF	IFRADF	MARKF	TECHNF
GENDERF	1.0000										
EDUCF	-0.1167	1.0000									
WMEXRF	-0.0333	0.0055	1.0000								
MOTIF	0.1559	0.0450	0.0617	1.0000							
SIZERF	0.0882	0.0931	-0.1605	-0.0345	1.0000						
PREMESF	0.0265	0.0319	0.1011	-0.1370	0.0613	1.0000					
PRIOWEXF	-0.0128	0.0468	0.2884	-0.0582	-0.1084	0.1720	1.0000				
FNFRF	0.1450	-0.0786	0.0765	0.0201	0.1186	0.1516	-0.1515	1.0000			
IFRADF	0.0061	-0.1565	0.0560	-0.2044	0.2403	0.3699	-0.0329	0.1931	1.0000		
MARKF	0.0015	0.0088	0.0308	-0.0313	0.2420	0.1234	-0.1463	0.2747	0.4270	1.0000	
TECHNF	-0.1291	0.1302	0.1576	-0.0187	0.0622	-0.0219	-0.1817	0.0391	0.1473	0.1808	1.0000

5. estat vif or 1/vif

Variable	VIF	1/VIF
IFRADF	1.58	0.633596
MARKF	1.36	0.737408
PRIORWEXPF	1.26	0.794629
PREMSISF	1.25	0.798984
WMEXRF	1.22	0.821603
TECHNF	1.17	0.853083
FNFRF	1.17	0.853558
SIZERF	1.16	0.859460
EDUCF	1.11	0.897509
MOTIF	1.10	0.911379
GENDERF	1.09	0.917737
Mean VIF	1.22	

6. logit MSEsFailures GENDERF EDUCF WMEXRF MOTIF SIZERF PREMSISF PRIORWEXPF FNFRF IFRADF MARKF TECHNF

Iteration 0: log likelihood = -73.647764

Iteration 1: log likelihood = -48.438311

Iteration 2: log likelihood = -44.305941

Iteration 3: log likelihood = -44.145595

Iteration 4: log likelihood = -44.145186

Iteration 5: log likelihood = -44.145186

Logistic regression Number of obs = 130

 LR chi2(11) = 59.01

 Prob > chi2 = 0.0000

Log likelihood = -44.145186 Pseudo R2 = 0.4006

MSEsFailure	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
GENDERF	1.736096	.5881582	2.95	0.003	.583327	2.888865
EDUCF	-.0638906	.1225125	-0.52	0.602	-.3040106	.1762294
WMEXRF	-.0075091	.0824402	-0.09	0.927	-.1690889	.1540706
MOTIF	2.156997	.620743	3.47	0.001	.9403633	3.373631
SIZERF	1.47019	.7614562	1.93	0.054	-.0222366	2.962617
PREMSISF	3.233709	1.384901	2.33	0.020	.5193539	5.948065
PRIORWF	-.2067711	.1017962	-2.03	0.042	-.4062881	-.0072542
FNFRF	.2137716	.9589161	0.22	0.824	-1.665669	2.093213
IFRADF	-1.132428	1.323587	-0.86	0.392	-3.726611	1.461754
MARKF	3.308985	1.455072	2.27	0.023	.4570957	6.160874
TECHNF	-1.519531	.8883593	-1.71	0.087	-3.260683	.2216209
_cons	-6.341037	2.327739	-2.72	0.006	-10.90332	-1.778752

7. logistic MSEsFailure GENDERF EDUCF WMEXRF MOTIF SIZERF PREMSISF PRIORWEXPF FNFRF IFRADF MARKF TECHNF

Logistic regression	Number of obs	=	130			
	LR chi2(11)	=	59.01			
	Prob > chi2	=	0.0000			
Log likelihood = -44.145186	Pseudo R2	=	0.4006			

MSEsFailure	Odds Ratio	Std. Err.	z	P> z	[95% Conf. Interval]	
-----+-----						
GENDERF	5.675143	3.337882	2.95	0.003	1.79199	17.97289
EDUCF	.9381076	.1149299	-0.52	0.602	.737853	1.192712
WMEXRF	.992519	.0818234	-0.09	0.927	.8444338	1.166573
MOTIF	8.645139	5.36641	3.47	0.001	2.560912	29.18431
SIZERF	4.350062	3.312382	1.93	0.054	.9780088	19.34854
PREMSISF	25.3736	35.13992	2.33	0.020	1.680941	383.0114
PRIOWEXF	.8132058	.0827813	-2.03	0.042	.6661183	.9927721
FNFRF	1.23834	1.187464	0.22	0.824	.189064	8.110931
IFRADF	.3222498	.4265255	-0.86	0.392	.0240743	4.31352
MARKF	27.35733	39.80689	2.27	0.023	1.57948	473.8418
TECHNF	.2188144	.1943858	-1.71	0.087	.0383622	1.248098
cons	.0017625	.0041026	-2.72	0.006	.0000184	.1688487

8 . margins, dydx(*) atmeans

Conditional marginal effects Number of obs = 130

Model VCE : OIM

Expression : Pr(MSEsFailure), predict()

dy/dx w.r.t. : GENDERF EDUCF WMEXRF MOTIF SIZERF PREMSISF PRIORWEXPF FNFRF IFRADF MARKF TECHNF

at : GENDERF = .3461538 (mean)
 EDUCF = 12.63077 (mean)
 WMEXRF = 5.042308 (mean)
 MOTIF = .3846154 (mean)
 SIZERF = .7 (mean)
 PREMSISF = .8769231 (mean)
 PRIORWEXPF = 4.775 (mean)
 FNFRF = .5948462 (mean)
 IFRADF = .4326154 (mean)
 MARKF = .6023846 (mean)
 TECHNF = .4634615 (mean)

	-----+-----					
	Delta-method					
		dy/dx	Std. Err.	z	P> z	[95% Conf. Interval]
	-----+-----					
GENDERF		.189089	.0703233	2.69	0.007	.0512579 .3269201
EDUCF		-.0069587	.0135056	-0.52	0.606	-.0334292 .0195118
WMEXRF		-.0008179	.0090006	-0.09	0.928	-.0184588 .016823
MOTIF		.234932	.078538	2.99	0.003	.0810003 .3888637
SIZERF		.1601276	.0801907	2.00	0.046	.0029567 .3172984
PREMSISF		.3522034	.1458712	2.41	0.016	.0663012 .6381057
PRIORWEXF		-.0225207	.010687	-2.11	0.035	-.0434669 -.0015746
FNFRF		.0232832	.1044505	0.22	0.824	-.1814359 .2280023
IFRADF		-.1233398	.1455531	-0.85	0.397	-.4086187 .161939
MARKF		.3604021	.1572787	2.29	0.022	.0521415 .6686628
TECHNF		-.1655016	.092356	-1.79	0.073	-.346516 .0155127

9 . linktest

```
Iteration 0: log likelihood = -73.647764
Iteration 1: log likelihood = -45.499826
Iteration 2: log likelihood = -44.032645
Iteration 3: log likelihood = -43.957214
Iteration 4: log likelihood = -43.954848
Iteration 5: log likelihood = -43.954839
Iteration 6: log likelihood = -43.954839

Logistic regression      Number of obs   =    130
                        LR chi2(2)      =    59.39
                        Prob > chi2     =    0.0000

Log likelihood = -43.954839      Pseudo R2      =    0.4032
```

```
-----
MSEsFailure | Coef.   Std. Err.   z    P>|z|   [95% Conf. Interval]
-----+-----
      _hat | 1.138815   .2407798   4.73   0.000   .6668954   1.610735
     _hatsq | .072931   .0550773   1.32   0.185  -.0350184   .1808805
      _cons | -.089511   .3205696  -0.28   0.780  -.7178158   .5387938
```

11. . estat gof, group(10)

Logistic model for MSEsFailure, goodness-of-fit test

(Table collapsed on quantiles of estimated probabilities)

```
number of observations   =    130
number of groups        =     10
Hosmer-Lemeshow chi2(8) =    7.94
Prob > chi2             =    0.439
```

12. Ramsey RESET test using powers of the fitted values of MSEs Failure

Ho: model has no omitted variables

```
F(3, 116) = 5.67
```

13. tabulate MSEs Failure GENDERF, cell column row rowsort colsort

SEs |

Failure/Fi	GENDERF		
rmstaus	0	1	Total
0	73	24	97
	85.88	53.33	74.62
	56.15	18.46	74.62
1	12	21	33
	14.12	46.67	25.38
	9.23	16.15	25.38
Total	85	45	130
	65.38	34.62	100.00
	65.38	34.62	100.00

14. tabulate MSEs Failure SIZERF, cell column row rowsort

MSEs |

Failure/Fi	SIZERF		
rmstaus	0	1	Total
0	34	63	97
	87.18	69.23	74.62
	26.15	48.46	74.62
1	5	28	33
	12.82	30.77	25.38
	3.85	21.54	25.38

Total	39	91	130
	30.00	70.00	100.00
	30.00	70.00	100.00

15. tabulate MSEs Failure Sectype, cell column row rowsort

MSEs						
Failure/Fi	Sectype					
rmstaus	1	2	3	4	5	Total
-----+-----+-----						
0	37	1	15	21	23	97
	86.05	10.00	83.33	75.00	74.19	74.62
	28.46	0.77	11.54	16.15	17.69	74.62
-----+-----+-----						
1	6	9	3	7	8	33
	13.95	90.00	16.67	25.00	25.81	25.38
	4.62	6.92	2.31	5.38	6.15	25.38
-----+-----+-----						
Total	43	10	18	28	31	130
	33.08	7.69	13.85	21.54	23.85	100.00
	33.08	7.69	13.85	21.54	23.85	100.00