

Full Length Research Paper

The growth determinants of micro and small enterprises and its linkages with food security: The case of Mecha district, Amhara region, Ethiopia

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The study assessed the growth determinants of micro and small enterprises (MSEs) and its linkages with food security in Mecha district of Amhara region. The research was conducted to fill the empirical gaps regarding the linkages of MSEs growth with food security. Previous researches conducted in Ethiopia on the MSEs growth did not explicitly show the relationships of the growth of those enterprises on households' food security. The objectives of the research were: to identify the determinant factors of MSEs growth, to assess the household food security status of MSEs operators, and to examine the linkages of MSEs growth with households food security status. The research was mixed research and conducted through concurrent triangulation design. The data collection methods were questionnaire, key informant interview and focus group discussions. Stratified sampling method and purposive sampling methods were implemented to select samples. The data was analyzed through a binary logistic regression and chi-square test. The findings of the study show that the factors that significantly determine the MSEs growth were government support, work premise accessibility, training, previous work experience, record keeping, possession of license and lack of market linkages. The chi-square test of independence result indicates that, there is a significant relationship between MSEs growth and the households food security status. Thus, as the MSEs grow, the households' food security status of MSE operators' improves.

Key words: Micro and small enterprises, Mecha district, operators, households food security, growth.

INTRODUCTION

Ethiopia has been struggling to address food insecurity for decades, however food insecurity is a major problem for millions of Ethiopians (Anderson and Farmer, 2015; FEWS NET, 2016). Various assessments indicate that more than one-third of the Ethiopian population were food insecure (MoFED, 2013; WFP and CSA, 2014). The Amhara region is among the most food insecure regions in Ethiopia and about 35% of the region's population is

food insecure (WFP and CSA, 2014). Teshome (2010) found that in Mecha district of the Amhara region only 5% of the households could cover their annual food consumption. Similarly, Achenef et al. (2016) also indicated that food insecurity is highly prevalent at Mecha district and more than half of the households were food insecure.

Prioritizing the Micro and Small Enterprises (MSEs)

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development is key for enhancing the income of urban households and food security; as indicated by Tacoli (2017) urban food security in the low and middle income contexts is mainly determined by income of households. The MSEs sector is a major source of employment in developing countries by employing half of the urban population, and generates about one-third of the urban income (Prediger and Gut, 2014; Todaro and Stephen, 2012). Vandenberg (2006) also indicated that the MSEs have bigger contribution for food security, poverty reduction and employment generation for the urban households.

Skinner and Haysom (2017) identified that there is a rural bias in the food security agenda that neglects the urban MSEs operators which have serious policy implications on food security. The Ethiopian government ignored the development of MSEs as a primary mechanism for reducing urban food insecurity. For instance, the food security program of Ethiopia did not consider the MSEs as a key means of reducing urban food insecurity (MoARD, 2009). However, in the 2015 urban productive safety net program, the MSEs were identified as one means of reducing the urban food insecurity. The 2015 urban productive safety net program targets to integrate the MSEs development with urban food security (MUDHCo, 2015; Federal Negarit Gazette, 2016).

Various researches have been conducted on the food (in) security situation in Ethiopia. For instance, Teshome (2010) and Achenef et al. (2016) studies about the food insecurity conditions of rural households. Etana and Tolossa (2017) explored how unemployment could lead to food insecurity in Addis Ababa. However, most researches conducted on food security in Ethiopia centered at the rural areas and researchers gave little for urban food insecurity. Furthermore, the food security status of urban households that operates the MSEs in the urban areas of the Amhara region was less explored.

The impacts of MSEs development for enhancing urban food security was not well studied although various researchers studied the roles of MSEs in Ethiopia. For instance, Siyum (2015) studied on the role of MSEs in urban poverty alleviation at Addis Ababa. Bereket (2010) also studied on the role of MSEs for employment creation and income generation in Mekelle city. Thus, there is lack of empirical studies on how the MSEs growth links with the food security status of households.

The existence of many food insecure urban households in Ethiopia, poor initiation on behalf of the government to use the MSEs for alleviating urban food security, and limited empirical studies on exploring MSEs potential for enhancing urban food security motivates the researcher to be interested on this issue. The researcher explores that there is lack of researches conducted to assess the determinant factors for MSEs growth and how it links with urban food security in the Amhara region. Thus, the study was conducted to fill these empirical and knowledge gaps.

The objective of the study was to assess the growth determinants of MSEs and its linkages with food security. The specific objectives of the study were:

- (1) To identify the determinants of micro and small enterprises growth.
- (2) To assess the micro and small enterprises operators household food security status.
- (3) To examine the linkages of MSEs growth with households food security.

MATERIALS AND METHODS

The research approach was a mixed research. For the study, the researcher utilized both quantitative and qualitative data collected through survey, key informant interviews and focus group discussions. The research design was a cross-sectional survey design. Victor Jupp (2006) defines cross sectional survey design any collection of data from a sample of individuals (or groups) at a particular point in time as a basis for inferring the characteristics of the population from which the sample comes. For the research the data was collected at one point of time and have no time dimension.

The populations of this study were the MSEs operators at Mecha District and Merawi town administration in the Amhara region. Based on Mecha district technical vocational enterprises development (TVED) office and Merawi town administration TVED office reports, there were about 3639 active MSEs operators in 2016. A proportionate stratified sampling and purposive sampling techniques were employed to draw the samples. The researcher stratified the MSEs operators into five strata based on the type of their business sector. The MSEs sectors categorized for stratification were the manufacturing, construction, trade, urban agriculture and service sectors. The researcher took the samples through the sampling formulae of Taro Yemane (Israel, 1992)

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

where N is the population, n is the sample, and e is sampling error.

The researcher has employed survey questionnaire, key informant interviews and focus group discussions (FGDs) to collect primary data. Before administering the questionnaire, the researcher conducted a pre-test for about 10% of the samples. The information gathered through key informant interview was used to triangulate information collected with questionnaire and FGDs. The researcher conducted four FGDs which mainly focused on qualitative data. Check list was prepared as an instrument for collecting data through the FGDs.

The independent variables of the study were identified based on previous literatures and studies. These variables were: sex, level of education, ownership form, licensing, record keeping, experience, training, premise accessibility, market linkages and government support (Table 1).

To analyze the data collected through questionnaires, the researcher employed Statistical Package for Social Sciences (SPSS) software. The researcher applied a binary logistic regression model to identify the determinants of MSEs growth. The data analysis focuses on the binary MSEs growth outcome (Growing" or "Survival") and which of the factors are predictive of the MSEs growth.

The researcher has identified the growth status of MSEs based on their employment growth. In various studies, change in employment size, sales turnover and total assets is used to measure enterprises growth. According to Tefera et al. (2013) it is

Table 1. Independent variables.

Variable	Categories	Variable definition
Sex	Male Female	Sex of the MSE operators
Level of education	No education Grade 1-8 Grade 9-12 Above 12 th Grade	The operators level of education
Ownership form	Sole proprietorship Partnership Cooperatives	Whether the MSE owner is a sole-proprietor, partnership or cooperatives.
Licensing	Not Licensed Licensed	Whether the MSE is formally registered and licensed or not.
Record keeping	Does not keep records regularly Keep records regularly	Whether the MSE operators keep record of their operations regularly or not
Experience	No Experience Have Experience	The MSE operators prior work experience
Training	No training Have training	Whether the MSE operators get training
Premise Accessibility	Not accessible Accessible	The accessibility of the MSEs work places for their customers.
Market linkages	Do not have market linkages Have market linkages	Whether the MSEs have market linkages or not
Government Support	Not Supported Supported	Provision of government support services for the MSEs

difficult to access reliable data on the growth of fixed assets and sales hence measuring of growth through changes in employment size is objective and reliable. Similarly, Abay et al. (2014) claims that most MSEs operators/owners in Ethiopia do not keep records and they are extremely reluctant to give accounting information to external parties. Thus, it is difficult to get reliable time series data on growth of fixed assets/sales. Therefore, to identify the MSEs growth, the researcher took employment size growth as a means of measuring the MSEs growth. To do so, Evans (1986) formula of firm growth is

$$gr = \frac{\ln St' - \ln St}{Ea}$$

where *gr* represents the MSE growth, *St'* represents the enterprises current employment size, *St* represents the enterprise's initial employment size, and *Ea* represents the enterprise's age.

By taking the growth (*gr*) result, the MSEs growth status is categorized into either growing or survival. In other words, if *gr* is > 0 the MSE growth status is growing; and if *gr* is ≤ 0 the MSE growth status is survival.

The researcher utilized a binary logistic regression model to identify the determinant factors of MSEs growth. The data analysis focuses on the binary MSEs growth outcome (Growing" or "Survival") and which of the factors are predictive of the MSEs growth.

The functional form of logistic regression model is specified as follows (Gujarati, 2009; Landau and Everitt, 2004).

$$P_i = E(Y = 1/X_i) = \frac{1}{1 + e^{-(\beta_0 + \beta_i X_i)}} \quad (1)$$

For ease of exposition, Equation 1 is written as:

$$P_i = \frac{1}{1 + e^{-Z_i}} \quad (2)$$

The probability that a given MSE is growing is expressed by Equation 2, while the probability for an MSE being survival is expressed by:

Table 2. Binary logistic regression model result.

Variable	B	Sig.	Exp(B)
Sex	-0.209	0.596	0.811
Level of education	-0.050	0.816	0.951
MSEs ownership form	-0.079	0.773	0.924
Business license	1.790***	0.007	5.989
Record keeping	1.645***	0.000	5.183
Previous experience	1.646***	0.000	5.187
Access for training	1.738***	0.000	5.689
Premise accessibility	0.949***	0.000	2.584
Market linkages	0.440***	0.001	0.644
Government support	1.478***	0.000	4.385
Constant	-7.367	0.000	0.001
-2Log likelihood	215.961	-	-
Model Chi-square	249.330	0.000	-
Correctly predicted Survival MSEs	92%	-	-
Correctly predicted Growing MSEs	83.7%	-	-
Overall cases correctly predicted	89%	-	-

***Significant at 1% level.

$$1 - P_i = \frac{1}{1 + e^{Z_i}} \tag{3}$$

Therefore, we can write:

$$\frac{P_i}{1 - P_i} = \frac{1 + e^{Z_i}}{1 + e^{-Z_i}} \tag{4}$$

Now, $\frac{p_i}{1-p}$ is simply the odd ratio in favor of MSE growing; the ratio of the probability that a MSE growing to the probability of the MSE being survival. Finally, taking the natural log of Equation 4, we obtain:

$$L_i = \ln \left[\frac{P_i}{1 - P_i} \right] = Z_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n \tag{5}$$

where P_i is a probability of growing ranges from 0 to 1 and Z_i is a function of “n” explanatory variables (x) which is also expressed as:

$$Z_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n \tag{6}$$

where β_0 is an intercept, $\beta_1, \beta_2, \dots, \beta_n$ are slopes of the equation in the model, L_i is log of the odds ratio, which is not only linear in X_i but also linear in the parameters. X_i is the vector of relevant MSE characteristics.

If the disturbance term (U_i) is introduced, the logistic regression model becomes:

$$Z_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + U_i \tag{7}$$

The MSEs growth linkages with households food security was examined through chi-square test. First, the households’ food insecurity status was identified through the Household Food Insecurity Access Scale (HFIAS). The HFIAs is an effective measurement in indicating food security (Odusina, 2014). According to Coates et al. (2007) the HFIAS yields information on food insecurity at the household level and it is a continuous measure of the degree of food insecurity in the household in the past 30 days. Seifu et al. (2015) suggests that the HFIAS is a valid tool to measure the household food security (insecurity) in urban and rural settings. The HFIAS score has nine occurrence questions and each occurrence question has one frequency of occurrence question. The HFIAS score variable was calculated for each household by summing the codes for each frequency-of-occurrence question. The maximum score for a household is 27 and the minimum score is 0. Based on the HFIAS score the households were categorized into three levels of food security: food secure, moderately food insecure and severely food insecure.

For this study, content analysis was applied for analyzing the qualitative data. The researcher has prepared a list of categories depending on the previous literatures and the data for the analysis of data obtained through interviews and focus group discussions.

RESULTS AND DISCUSSION

Determinant factors of the MSEs growth

The binary logistic regression model was applied to estimate the effects of hypothesized independent variables on the growth of MSEs (Table 2).

The binary logistic regression model indicates that determinant for MSEs growth are: government support, market linkages, accessibility of working premises for customers, access to training, previous work experience in a related business, record keeping practice and

possession of business license. However, operators' sex, level of education, and MSEs ownership form were found insignificant for the MSEs growth.

The government support provision is statistically significant for the MSEs growth at less than 1% level of significance. Enterprise who gets government support has a better opportunity to grow than those MSEs who did not get government support services. The odd ratio shows that those MSEs who receive government support are 4.385 times more likely to grow than MSEs that do not have government support. Related to this result, Berihu et al. (2014) also found that government support was essential for the MSEs, and those enterprises who have utilized all available government support achieved better growth because the government provides resources, entrepreneurial training, and skill upgrading. The researcher found that the Amhara regional government TVED bureau and the Mecha district TVED offices provide different types support for the MSEs such as finance, working premises, training, land, and market linkages. Thus, the government support services play a key role for facilitating the MSEs growth.

Accessibility of working premises for the customers positively affects the MSEs growth at less than 1% level of significance. Accessibility of working premises has a positive relationship with the MSEs growth. By looking at the odds ratio, an MSE whose working premises are accessible to customers has 2.584 times more likely to grow than other MSEs whose working premise is inaccessible for customers. Accessibility of working premise to customers indicates better access to market, the presence (or absence) of which can affect firm growth. The MSEs operators said that they were interested to establish their MSEs in the downtowns to get more customers though the renting prices of working premises at downtown areas is costly.

Access for training is a significant factor for MSEs growth at 1% level of significance. Access for training has a positive relationship with the MSEs growth. The odds ration indicates that MSEs run by those operators who get training related to the MSE business are 5.689 times more likely to grow than other MSEs run by operators that did not get training. Access to training became a significant variable because it facilitates the opportunity for MSE operators to use their potential, and it facilitate skill and knowledge and experience sharing. Abraham (2013) also found that access to training is a significant factor for MSEs growth. For Amha (2015), access to training before starting business was a statistically significant factor that negatively affects MSEs growth. However, his study focused at the determinant factors of MSEs owned by the youth operators.

Previous work experience in a related business affects the MSE growth at 1% significance level. Previous work experience and MSEs growth has positive relationships. The odds ratio shows that MSEs run by operators who have previous work experience in the MSE business are

5.187 times more likely to grow than MSEs run by inexperienced operators. The MSE operators who have experience use their previous skill and knowledge to make the enterprises profitable and perform efficiently which facilitates for the growth of their MSEs. Amha (2015) found that experience in similar business positively influences the growth of youth MSE operators. Berihu et al. (2014) also observed that previous work experience was a main factor for MSEs success and "...those who have worked as employees in factories in the formal sector tend to perform better. Likewise, for Abraham (2013) previous work experience of the manager among the significant factors for the MSEs growth.

Record keeping practice affects the growth of MSE positively at 1% significance level. Record keeping practice has a positive relationship with the MSEs growth. The odds ration indicates that MSEs that keep records regularly are 5.2 times more likely to grow than other MSEs who did not keep records. Fantaye (2016) also identified that MSEs that adopt a formal record keeping and financial control system in their internal practice perform better than others which did not keep recordings. Recording the profits and losses have benefits for showing the MSE operators about the progress, profits and failure of their enterprises and enhances to make adjustments for the operations of their MSEs. Keeping the MSEs records regularly is important for establishing market linkages with customers, wholesalers and other MSEs. Keeping records also have a positive role in facilitating government support provisions for the MSEs because the government tends to provide support to those enterprises which keep records regularly.

Possessing license is another significant factor for MSEs growth, which is a determinant factor at less than 1% significance level. MSEs who have business license are 5.987 times more likely to grow better than other MSEs who do not have business license. Possession of license was used as a pre-requisite for the MSEs to access the support services. Because the support services from the government are provided for registered (licensed) MSEs this could positively affect their growth. Licensing also facilitates for market opportunities, access to finance and enables the MSEs to compete for bids and contracts.

Household food security status of MSEs operators

In the study area, the majority of MSE operators' households were found food insecure. About 42.3% of the households were food secure, 37.7% were moderately food insecure and 20% of the households were severely food insecure (Table 3).

The result shows that there exist distinctions across MSEs sectors on the food security level of the operators households. The survey result shows that about 41.8% of

Table 3. A cross tabulation of the MSEs Sectors with households food security status.

Parameter	Household's food security status (HFS)			Total		
	Food secure	Moderately food insecure	Severely food insecure			
MSEs Sectors	Manufacturing	Count	38	30	23	91
		% within The HFS	25.3	22.4	32.4	25.6
	Trade	Count	30	54	23	107
		% within HFS	20.0	40.3	32.4	30.1
	Service	Count	46	38	22	106
		% within The HFS	30.7	28.4	31.0	29.9
	Construction	Count	14	4	0	18
		% within HFS	9.3	3.0	0.0	5.1
	Urban Agriculture	Count	22	8	3	33
		% within The HFS	14.7	6.0	4.2	9.3
Total	Count	150	134	71	355	
	% within The HFS	100	100	100	100	

The MSEs sectors x The household's food security status cross tabulation.

households from the manufacturing sector were food secure and the rest 58.2% households were food insecure. From the trade sector, about 28% were food secure and 72% of the households were food insecure. From the service sector about 43.4% were food secure and the remaining 56.6% were food insecure. From the construction sector, 77.8% of the households were food secure and the remaining 22.2% of households were food insecure. From the urban agriculture sector, 66.7% were food secure and the remaining 33.3% were food insecure households.

The result indicates that majority of households from the construction sector and the urban agriculture sector have a better level of food security. The majority of households from the trade sector followed by the manufacturing and service sectors were found to be food insecure.

Thus, we can say that for enhancing the households' food security, the type of the MSE sector matters, the manufacturing and urban agriculture sectors contribute for reducing food insecurity than the trade and service sectors. This could happen due to the better support that the sectors receive from the government. The urban agriculture, construction and manufacturing sectors, are prioritized in the government support services, and receiving a better government may help them to ease food insecurity. The operators of the urban agriculture sector participate in food production, which enhances food availability for their households, so their sector helps them to have a better level of food security. The trade

and service sectors receive the lowest support from the government than other sectors and this condition handicapped their growth and the contribution of these MSE sectors in enhancing urban food security. Many food insecure households seen in the manufacturing sector could be due to the low level of growth in the sector than the others although the MSEs in the manufacturing sector receive various supports from the government.

The linkages of MSEs growth and households food security

The MSEs growth status was categorized into survival and growing based on the change in employment size as an indicator of enterprises growth. Then the linkages of MSEs growth with households food security were assessed through chi-square test (Table 4).

The survey result indicates that about 150 households were food secure from the whole participants in the survey and 134 households were moderately food insecure but 71 households were severely food insecure. From the whole severely food insecure households, 78.9% of them work in an enterprises whose growth status is survival and the rest 21% operators work at a growing MSEs. From those operators whose household was moderately food insecure (134 households), about 72% of them works in a survival MSE, while 27.6% of them works in a growing MSE. About 150 households

Table 4. A chi-square test on MSEs growth with households food security level.

Parameter	Level of food security				Chi-square Tests	
	Food secure	Moderately food insecure	Severely food insecure	Total		
Survival	Count	73	97	56	226	26.092***
	Percent	48.7	72.4	78.9	63.7	
MSEs growth status	Count	77	37	15	129	
	Percent	51.3	27.6	21.1	36.3	
Total	Count	150	134	71	355	
	Percent	100	100	100	100	

***Indicates that coefficients are statistically significant at 1%.

were food secured households and from those households 51.3% of them works in a growing MSEs while the rest 48.7% work in a survival MSEs.

The chi-square test result indicates that there is a significant relationship between the MSEs growth status and the households level of food security at 1% level of significance ($\chi^2=26.092$, $df=2$, $p=0.000$). In a chi-square test, we reject the null hypothesis if 2-sided significance reported in the last column and in the row corresponding to the Pearson chi-square is less than the significance level selected (Ajai and Sanjaya, 2009).

We can state the null hypothesis as the operator's household food security level is not dependent with the MSEs growth status. As it is clearly seen in the table, the p-value (0.000) is less than the commonly accepted level (0.05), so that we can reject the null hypothesis. From this result, we can claim that when the operator's MSE grows, the operator's household's food security status improves.

In the key informant interviews, the researcher found that there is little cooperation among government institutions at Mecha district for facilitating the MSEs growth and enhancing the food security of urban residents. The TVED offices, the food security offices did not cooperated for common targets and acted separately.

Regarding the relationship between food security and the informal economy in South Africa, Even-zahav (2016) found that the informal food economy plays a key role as a daily/weekly food access and utilization node in South Africa. However, his study covers the whole informal sectors beyond the MSEs.

The statistical result in this study indicates that the MSEs sector could play a key role for alleviating food insecurity. However, this study shows that growing an MSE but not running the MSE reduces food insecurity. Similarly, Fraser et al. (2014) expressed that the MSEs are an integral component of addressing the urban food insecurity because the MSEs are source of employment and urban food consumption.

Related studies on the role of MSEs for food security in

Ethiopia indicated that operating in an MSE does not bring a radical improvement in food security status of households. For instance, Siyum (2015) reported that operating in the MSEs, the MSEs can decrease food shortage of the operators.

Conclusions

The study indicated that the determinants for the MSEs growth (at 1% level of significance) are availability of government support, accessibility of working premises for customers, access for training, prior work experience of the operators, and proper record keeping practices at the MSEs. These factors affect enterprises growth positively. Therefore, to promote the MSEs as a means of alleviating urban food security, we need to focus on these variables. In other words, disregarding the impacts of these variables on the growth of MSEs affects the concerned bodies' efforts to improve the livelihoods of MSEs operators particularly the food security status of urban households.

The study indicated that there is variation among MSEs sectors in enhancing food security. The operators' households food security status at the manufacturing and urban agriculture MSEs sectors were found better than the food security status of trade and service sectors. Thus, we can conclude that for enhancing the households' food security, the type of the MSE sector matters. However, the government favored the urban agriculture, manufacturing and construction sectors for providing various support services. The support provisions by the government have its own role for the construction and urban agriculture sector operators to have better food security status than others. Therefore, extending the support service provision for all MSEs sectors could improve the food security status of MSEs operators across various sectors.

The findings show that there is a significant relationship between MSEs growth status and the operator's

households food security at 1% level of significance. From the chi-square statistics result, we can pronounce that as the MSEs growth improves from survival to growth status, the operators' households food security level improves. An ownership of MSEs is not just a solution for the food insecurity problem. Instead, facilitating the conditions for MSEs growth seems the key solution for the urban food insecurity problem of Ethiopia.

RECOMMENDATIONS

The study indicated that the MSEs growth and food security has a positive relations. Thus, integrating the urban food security and MSEs development policy is crucial. For the implementation of the urban food insecurity policy needs holistic approaches that integrate various government institutions. Clear procedures that enhance the implementation of the urban food security policy, and a follow up mechanism to correct implementation failures shall be arranged.

The MSEs sector must be supported through strengthening municipal level capacity to address the nexus between urban food insecurity and informal economy and enhancing institutions that provide an enabling environment for MSEs. The focus of the government must be on facilitating the growth of established MSEs than rushing to increase the number of new MSEs.

CONFLICT OF INTERESTS

The author has not declared any conflict of interests.

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