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Microfinance and Survival of Micro & Small Enterprises in Ethiopia

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Abstract
The objective of the article is to examine the effect of microfinance on the survival of micro & small enterprise in Ethiopia using a survival analysis approach. A survey method was used and 340 MSEs were randomly selected. Cox Proportional Hazards analysis and Kaplan Meier survival analysis techniques were employed. The survival time was measured using MSEs business age. The study revealed that the highest failure of MSEs was recorded in the urban agriculture and construction sectors. The findings suggested that gender, working premises, level of education, loan grace period, borrowing cost, access to microcredit, access to new markets and the ability to produce new product types are the significant factors that determine MSEs survival. The study concluded that microfinance has a significant positive effect on MSEs survival. Therefore, MFIs should enhance their prevailing policies and strategies to upsurge loan to Micro and Small Enterprises, augment savings mobilization to realize the intended goals of fighting poverty, dropping unemployment and encouraging economic growth in Ethiopia.
Keywords: MSEs, Survival, Cox Proportional Hazards, Kaplan Meier, Ethiopia
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Introduction

Micro and Small Enterprises (MSEs) are the main pillars for an employment opportunity, fighting poverty, encouraging democratization, and supporting the development process in many countries (Anne, 2014).MSEs are the vital economic actors in the development process of emerging nations for it helps to accelerate growth, achieve continuous employment prospects, fortify alliance among MSEs, and then boost export (Shava & Rungani, 2016).The contribution of MSEs to GDP and employment differs among economies. For instance, they offer more than 45% of the entire employment and 33% of GDP in emerging countries, while their GDP share in developed economies is greater than 50% (Amoah & Amoah, 2018). MSEs require capital to smooth their growth and operations. However, the fundamental constraint for small and new established enterprises is access to finance (Aldaba, 2012;Levy, 1993).The poor households constrained with adequate finance to smooth their production process, allocate factors of production optimally, and manage risks. It would be difficult to manage and run their business unless appropriate financial support is provided. The major sources of finance for MSEs are micro-financial institutions, personal savings, families and relatives (Gerba & Viswanadham, 2016).Since the poor and MSEs do not qualify the loan delivery requirements of banks such as collateral, Micro Financial Institutions (MFIs)are the alternatives to cut risks allied with their productions, upsurge profits, liquidity storage, increase returns from savings, and help to expand and diversify their business (NG'ANA, 2013;Assefa*et al*., 2005). Thus, MFIs are recognized as one of the poverty reductions tools in most developing countries including Ethiopia (Wolday, 2003).The main source of funding for MSEs in Ethiopia is MFIs. They kindle the performance and development of MSEs through delivering financial and non-financial products and services such as loan, savings, insurance, entrepreneurship training (Oleka*et al.*, 2016).The ability of MSEs to save and accumulate capital for business expansion depends on the extent to which they can access finance (Hossain, 1988).

Ethiopia's MSE strategy which was launched in 1997stressesmainlyassuringrapid and continuous economic growth, generating job opportunities, and enhance the transition of the agriculture-based economy to industry. Even if the sector was envisioned to generate jobs in cities in the development plan of the country, supporting the sector is beyond the existing primacies since they are recognized as a catalyst for nurturing the industrial sector. But, a large number of enterprises are dissolved and only a few enterprises had been promoting to medium and large enterprises. For example, from about half a million MSEs, only 1% which is about 5000MSEs would promote to medium and higher enterprise levels (FeMSEDA, 2011). This implies that the failure rate of MSEs is very serious. Despite several studies on microfinance and MSEs performance in Ethiopia (Bekele & Zeleke, 2008;Regasa, 2015; Amentie *et al*., 2016; Gerba & Viswanadham, 2016; Mersha & Ayenew, 2017); there is inadequate study regarding the link between microfinance and MSEs survival. Thus, this article contributes to the field of Small business development in developing countries like Ethiopia by showing how microfinance affects firm survival.

The objective of this paper is to examine the effect of microfinance on the survival of MSEs. For this purpose, 340 MSEs managers/owners were chosen randomly. To compare active and non-active MSEs, Kaplan-Meier survival analysis was used. 309 MSEs were censored, while 31 were non-censored. The paper is arranged as

follows: the following part examines a review of literature and hypothesis development. The third section is material and methods. The fourth section is results and discussion, and finally conclusions, limitations, future research recommendations, and practical implications.

Literature Review

Theories of Firm Growth

One of the most widely studied issues in the economic literature is firm growth. There are some reasons for the significance of studying firm growth. The possibility of firm survival is positively associated with firm growth (Geroski, 1995). Positive growth of firms can hire more labour and impact economic growth positively, while negative growth firms will result in a net loss of jobs (Penrose, 1959). Firm performance is positively related to innovation (Thornhill, 2006). The following are the main firm growth theories.

Jovanovic (1982) develops a life cycle model of firm growth based on learning. According to him, people can perceive how they perform in the firmly competitive market, and learn about their abilities over time. He suggested that there is asymmetric information between young and old firms. Thus, old firms have more information than new ones. Hence, more young firms exit from the industry and only firms that survive will grow faster than old ones. On the other hand, the Efficiency theory of firm growth was first proposed by Leibenstein in 1960. According to him, the internal (efficient planning, regulation, willingness to accept new technologies, and the ability to organize workflows) and external factors (input and output market fluctuations, actions of a trade union, government and taxation policies) determine the economic efficiency of firms. If the firm experiences a low unit cost of production, it implies that that firm is attaining economic efficiency.

The other firm growth theory is Marris's theory of firm growth. According to this theory, managerial control would lead to firm performance. Brock and Evans (1986) identify three models of small firm growth. These are the stochastic, human capital, and learning-by-doing models. The vital elements of these models capture the features of other models (Le, 2009). The stochastic model justifies the likelihood of business performance which depends on the possibility and the distribution of firms in a market. The model is strongly linked with the proportionate effects of Gibrat's law. It advocates that firm growth doesn't depend on the size of the firm at the start-up (Gibrat, 1931). On the other hand, the human capital model demonstrates that skill varies among employees and firms. Consequently, the demographic factors of the owner/manager of a firm such as owners age, business experience, years of schooling and entrepreneurship training, style of firm management, job-related background, attitude to growth, personal visions and objectives affect the growth of firm(O'Farrell & Hitchens, 1988).Finally, the learning model examines variations in the management ability of entrepreneurs. Firms can learn steadily their actual efficiency after they start production. Subsequently, observing and learning their potential abilities, firms will adjust their production function and exploit the market share based on their efficiency level (Storey, 1994;You, 1995). The model envisages that the size and age of the firm are negatively related to firm growth and failure rates (Liedholm, & Mead, 1999). Thus, the stochastic, human capital, and learning models can capture the different components of small firm growth.

MSEs Survival Prediction and Analysis

Survival analysis helps to know the portion of a population that will survive after a certain time, the rate at which they will perish or fail, and how certain features of the firm rises or falls the odds of survival (Łobos, 2013). Lobos investigated the survival analysis of MSEs in Poland using 147 samples and his study reveals that larger firms are less likely to fail than smaller ones. Besides, the possibility of survival upsurges with the firm's size (Jovanovic, 1982;Lane *et al*., 1986; Hopenhayn,1992; Audretsch & Mahmood, 1994).

Lane et al.(1986)predicted business failure using a cox regression model. 334 effective & 130 unsuccessful banks from the period 1979 to 1983 were used. Their study shows that the results of the Cox model were similar to discriminant analysis on the early and hold-out data, but lower Type I Errors was observed in the Cox model. This finding was similar to the studies of (Crapp & Stevenson, 1987). Laitinen and Luoma (1991)examined also the precision of the Cox model relative to discriminant and logit analysis using 36 failed and 36 successful firms. The firms are categorized into two based on their hazard ratio. In addition, Kauffman and Wang (2003) used survival analysis to assess the factors that determine the survival of internet firms. Industry, business, e-commerce, and macroeconomic explanatory variables. Their study found that consumer and commercial business groups are less likely to fail.

Audretsch and Mahmood (1995)employing the SA technique and their result reveal that that new business success was associated with the firm and industry characteristics. New businesses with better technology and innovation are more likely to survive over the existing firms. On the other hand, the survival of firms can also be influenced by the size and nature ownership structure. Hence, large size firms are expected to survive more than smaller ones. The newly established firms are more probable to fail than existing firms (Agarwal & Gort 1996). However, large size firms are more likely to fail (Ghemawat&Nalebuff, 1985; Das & Srinivasan, 1997). Honjo(2000)studied industrial firms' failure based on business age under operation from 1986 to 1994 in Japan.

His study shows that financial capital and firm size significantly influence firm failure when applied independently, while financial capital only is significant when the two variables are incorporated simultaneously in the model.

Bekele and Zeleke (2008) identify determinants of small firm failure and survival. Their study shows that about 79 of the MSEs faced the problem of accessing funds from banks. Hence, about 64 of MSEs get access to funds from informal financial institutions such as equib[1]. According to the study, firms that convert their savings into investment enhance their growth by a factor of 5.25 i.e., Firms that change savings to investments are 5.25 more likely to grow than those who do not. Also, past liquidation tends to raise the probability of failure by a factor of 3.65, while firms that participate regularly in equib are 3.25 times more likely to survive than those that do not participate in the scheme. A study by (Abiola, 2011) indicates that microfinance enhances the survival of MSEs. Her study found that regular participation in microfinance, access to microcredit, reinvestment of profit, entrepreneurial education, and compulsory savings are the main determinants of MSEs survival. Hence, the following hypotheses are developed:

H1: The survival rates of micro and small enterprises are significantly different in Ethiopia
H2: There are significant differences among the survival rates of business sectors in Ethiopia
H3: Microfinance has a significant positive effect on the survival of MSEs in Ethiopia

Material and Methods

Research Design, Data and Sample

Quantitative research design is employed to examine quantitative data, while the qualitative approach is used to analyze people's attitudes, perceptions, culture, and behavior(Creswell, 2014; Kothari, 2009)(Kothari, 2009). Hence, a quantitative research design is employed. The study employed both primary and secondary sources of data. The secondary data was collected from ANRS micro and small enterprises development office annual reports while the primary data was collected from legally licensed MSEs.The target population was the registered MSEs and Amhara Credit and Saving Institution (ACSI). First, the Amhara National Regional State was purposely chosen because it took the lions to share in loan distribution at the national level in 2017/18 to MSEs and ranked third in its MSEs concentration. Second, depending on MSEs concentration and distributed loans, Zones and cities were selected. Finally, 340 MSEs were randomly chosen out of 25,441 legally licensed MSEs usingCochran (1977). This was shown in table 1.

Table1: The proportion of sample size from selected Zones and cities

No.	Selected zone/city	Number of MSEs	Proportion	Number of Sample MSEs
1	West Gojjam zone	9001	0.35	120
2	East Gojjam zone	4718	0.185	63
3	Oromiya special zone	446	0.017	6
4	Bahir Dar city	6591	0.259	88
5	Gondar city	4685	0.184	63
Total		25441	1	340

Source: author's computation, 2023

A self-administered survey questionnaire was employed to collect data. The questionnaire was composed of entrepreneurs, firm and microfinance characteristics since all these features determine jointly or independently business survival. Data was encoded and analysed using Stata14.0. Descriptive statistics and inferential analysis were estimated.

Reliability and Validity

Validity indicates whether a survey measures what it intends to measure, while reliability is the uniformity of a measure. The survey questionnaire was distributed to experts to ensure content analysis. Hence, their comments and suggestions were included. The sample size for reliability pretest ranges between 1% and 10% of the total sample (Mugenda& Mugenda, 2003). Thus, from the entire sample, about 10% was used as a pilot study to ensure reliability. Cronbach's alpha reliability coefficient lies in the range between zero and one. If the coefficient is closer to one, the internal consistency of the items in the scale will be greater. The most widely acceptable alpha coefficient is above 0.70(George & Mallery, 2003; Daunfeldt & Daniel, 2015). Therefore, Cronbach's alpha reliability test was conducted for 47 items in this study and it deemed reliable since the alpha coefficient for five items was 0.94.

Analytical Model Specification

Survival analysis was chosen as an analytical tool because it helps to understand the process of events either to

[1]Equib is one of the local informal institutions established voluntarily to collect a specific amount of money from the members on a specific date to be paid on round and lottery basis to the members in Ethiopia. The members know each other and thus trust each other to make the Equib function smoothly.

death or failure(Harrell, 2015). It also helps to identify the issue of multicollinearity using forward and backward variable selection procedures, determine the effect of predictors on the life of firms and events can be studied over time. Hence, primary and secondary data were used and the survival time was measured using MSEs business age in this article. There are two basic techniques of survival analysis namely: TheKaplan-Meier and Cox Proportional Hazards Analysis

The Kaplan-Meier (KM)

According to Jenkins(2004), the Kaplan-Meir estimator is a nonparametric technique used to measure the survival function or the likelihood of facing an event after a given time point. The Kaplan-Meir estimator can be functionally written as:

$\hat{S}(t)=\prod_{ti\leq} \frac{ni-}{ni}$, where n_i and d_i are the number of enterprises that are still at risk and those that failed at time t_i. We stratify the data set based on the type of the business sector and business size. Then the Kaplan-Meier estimator was calculated and statistical tests were used to examine the differences among the groups.

Cox Proportional Hazards Analysis

The Cox proportional hazard regression model is a survival curve analysis that incorporates multiple predictors like multiple regression analysis. This model assumes that the population hazard- ratio is constant over time(Kim, 2016). Thus, the Cox proportional hazard model can be specified as:

$$h(t) = h_0(t)e^{\sum_{i=1}^{k} \beta_1 X_1+\beta_2 X_2+\cdots\ldots\ldots\ldots+\beta_k X_{k+} u_i} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

where, h(t) is the hazard function which is determined by a set of k predictors (X_i's)and t is the survival time, exp (β_i) are the hazard ratios (HR).

Equation (1) can be rewritten as a multiple linear regression of the logarithm of the hazard on the variables X_i, with the baseline hazard being an 'intercept' term that varies with time.

$$\log h_0(t)=\alpha +\beta_1X_1+\beta_2X_2+\ldots\ldots+ \beta_iX_{13}+u_i+\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where β_i is the vector coefficients measure the effect size of covariates, h_0 is the baseline hazard. A value of β_i greater than zero, or equivalently a hazard ratio greater than one, indicates that as the value of the i^{th} covariate increases, the event hazard increases and thus the length of survival decreases. Specifically, the X_i's are:

X_1= gender;X_2= type of ownership; X_3= work premises; X_4= years of schooling; X_5=location of business; X_6=loan received based on business plan;X_7= long process to access loan in MFIs; X_8=High collateral requirements; X_9= bureaucracy;X_{10}= duration of loan; X_{11}= interest rate; X_{12}=lack of access to microcredit;X_{13}=Lack of market linkages; X_{14}=inability to produce new products.

Results and Discussion

Descriptive survival analysis of MSEs

Though the government gives attention to the development of MSEs, a large number of enterprises may liquify and only a few enterprises had been promoted to medium and large enterprises. For example, from about half a million MSEs, only 1% which is about 5000MSEs would promote to medium and higher enterprise levels (FeMSEDA, 2011). This implies that the failure rate of MSEs was very serious.

The number of MSEs established, the number of employment opportunities created, and the number of failed MSEs is presented in appendix-2. From 2013-2018, about 1,119,858 MSEs were created and these enterprises are owned by 63,5733 operators. The highest numbers of MSEs were created in 2013, while the smallest was in 2018. The data for the number of MSEs and operators created was available from 2013-2018, however, the data for the number of active/survived MSEs was available only from 2013-2015. Accordingly, about 55.6% of the total MSEs created from 2013-2015 were failed. The highest failure (85.5%) of MSEs was recorded in urban agriculture followed by the construction sector (74.3%). Only 45.8% of MSEs in the trade sector failed. It was only 8.4% of the total MSEs created were found active on July 1/2015. Though the MSEs sector plays an important role in creating job opportunities and supports the transformation of the economy, the sector was found with a high failure rate.

To compare active and non-active MSEs, KM survival probability curves were used. The survival time of the sampled MSEs was measured by business age in the study. MSEs that were still active in the business were recognized as censored during the period studied. In this study, 309 MSEs were censored, while 31 were MSE were non-censored. Non- censored MSEs are those we couldn't find complete information and confirmed that they are out of operation from the legal registration.

MSEs Failure in terms of the business sector

Table2indicates that from the sampled MSEs in five sectors, the majority (45%) of the failed MSEs were in urban agriculture followed by the manufacturing sector (32%). The construction sector is found to be the third in terms of MSEs failure, while there was no failed MSEs observed in the service sector during the study. The results are

expected. The urban agriculture and manufacturing sectors failed relative to others because they have been challenged with a lack of working premises, market linkage, technology and working capital.

Table 2: Analysis of MSEs failure by business-sector (in percentage)

Status of MSEs	manufacturing	construct	urban agr	trading	services	Total
Survived	155	16	77	56	5	309
	50.16	5.18	24.92	18.12	1.62	100.00
	93.94	80.00	84.62	94.92	100.00	90.88
	10	4	14	3	0	31
Failed	32.26	12.90	45.16	9.68	0.00	100.00
	6.06	20.00	15.38	5.08	0.00	9.12
	165	20	91	59	5	340
	48.53	5.88	26.76	17.35	1.47	100.00
	100.00	100.00	100.00	100.00	100.00	100.00

Source: own study, 2023

Life Table Estimation for Survival Analysis by Category of business size

Table-3 shows the survival rates of micro and small enterprises. As it is indicated, including year 2 but not year 3, there is no failure registered for both micro and small enterprises. However, as time goes up, for example, from year 6 to 7 interval, about 79.07% of small firms survive, while 85.20%of micro-enterprises survive and the rest failed. Similarly, from year 8 to 9, about 69% of small enterprises and 14.80% of micro-enterprises failed. Thus, as time goes, micro-enterprises have a better survival rate or life than small enterprises. That means, survival rate declines over time. The interval displayed as 2 3 indicates that the interval including 2 and up to, but not including, 3.The reported survival rate is the survival rate just after the close of the interval.

Table 3:Life table estimation for survival analysis by Category of business size (in percentage)

Business-size	Interval		Beg. Total	Deaths	Lost	Survival (%)	Std. Error	95 Conf. Int.	
	2	3	208	0	3	1.0000	0.0000	.	.
Small	3	4	205	1	33	0.9947	0.0053	0.9629	0.9993
	4	5	171	6	57	0.9528	0.0175	0.9033	0.9773
	5	6	108	5	53	0.8944	0.0302	0.8172	0.9401
	6	7	50	4	31	0.7907	0.0556	0.6556	0.8775
	7	8	15	4	7	0.5157	0.1168	0.2740	0.7126
	8	9	4	1	3	0.3094	0.1745	0.0493	0.6330
	2	3	132	0	2	1.0000	0.0000	.	
Micro	3	4	130	2	27	0.9828	0.0120	0.9331	0.9957
	4	5	101	1	22	0.9719	0.0161	0.9147	0.9909
	5	6	78	4	31	0.9097	0.0337	0.8158	0.9570
	6	7	43	2	23	0.8520	0.0506	0.7181	0.9254
	7	8	18	0	8	0.8520	0.0506	0.7181	0.9254
	8	9	10	0	9	0.8520	0.0506	0.7181	0.9254
	9	10	1	1	0	0.0000	.	.	.

Source: own study, 2023

Survival Time Analysis of Enterprises by business size

Table-4 shows the survival time of MSEs by size. The table shows the 25th, 50th, and 75th percentiles of survival. The 25th percentile for small enterprise is 7 years which means that 25%of small enterprises have a survival time of fewer than 7 years, while the 25th percentile for the micro-enterprise is 9 years which implies that 25% of microenterprises have a survival time of fewer than 9 years. Also, the 50th percentile for small enterprises is 8 years which indicates that 50% of small enterprises have a survival time of fewer than 8 years whereas the 50th percentile for micro-enterprises is 9 years which implies that 50% of microenterprises have a survival time of fewer than 9 years. Regarding the 75th percentile, small enterprises have a missing value which indicates the existence of a high prevalence of censoring while the 75th percentile of micro-enterprises is 9 years which implies that 75% of microenterprises have a survival time of fewer than 9 years. The study indicates that the survival time of microenterprise is relatively higher than the small enterprise in ANRS, Ethiopia.

Table 4. Survival time of MSEs by size

Enterprise	Time at risk	Incidence Rate	No. of Subjects	|------ Survival time -----|		
				25	50	75
Small	965	.0217	208	7	8	.
Micro	645	.0155	132	9	9	9
Total	1610	.0193	340	8	9	9

source: own study, 2023

KM Survival Estimate by MSEs size

The KM method is most commonly used to estimate the probability of experiencing an event after a certain point in time. It is used to comparing the survival time of MSEs concerning micro-credit program participation. Table-5 shows that the survival time of microenterprises (4.89 years) is higher than small enterprises (4.66 years).MSEs that participated in microcredit have an average survival time of 4.75 years. To test the significance of the estimates, Log-rank, Breslow (generalized Wilcoxon), and Terone Ware diagnostics were employed and the result was found all significant at 5%and 10%. The finding shows that the survival time of micro and small enterprises are significantly different. Hence, the alternative hypothesis is accepted and the null is rejected. The result is consistent with studies of (Ghemawat & Nalebuff, 1985; Das & Srinivasan, 1997). But the reasons for the difference need further research.

Table5: KM Survival Estimate of MSEs by size

MSEs category	Estimate(years)	Std.Err	95 Conf. Int.	
			Lower limit	Upper limit
Small Enterprise	4.66	.085	4.489	4.827
Micro Enterprise	4.89	.133	4.623	5.149
Overall	4.75	.073	4.601	4.892

Source: own study, 2023

Diagnostic Test of KM Estimate

Table6: Diagnostic tests of equal variance

Tests	Chi-Square	Df	Sig
Log Rank (Mantel-Cox)	3.79	1	0.0743*
Breslow (Generalized Wilcoxon)	7.58	1	0.0059**
Tarone-Ware	4.03	1	0.0447**

Source: own study, 2023

*Significant at 10%, ** significant at 5%

KM Survival Estimate by Kind of Business Sector

The KM survival probability estimate by kind of business sector in the table- 7 shows that the urban agriculture and service sectors have the highest survival time of 5.06 and 5.0, respectively. The manufacturing & construction sectors ranked third and fourth with a survival year of 4.73 and 4.70 years, respectively. Finally, the trade sector has the lowest survival time of 4.28 years. The study indicates that microcredit may not be the proper instrument to influence the survival of the trade sector in ANRS, Ethiopia. Sectoral analysis of enterprises has indicated that microcredit is generally appropriate for service, urban agriculture and manufacturing sectors because these sectors are in the focus areas of the MSEs development strategy of the country. They can access credit and government support easily as compared to the trade sector since they can employ more labour and adds value regardless of their capital requirements. The Overall survival probability estimate for MSEs financed by MFIs is 4.75 years.

Table7: KM Survival Estimate by Kind of Business Sector

Business Sector	Mean Estimate(years)	Std.Err	95 Confidence Interval	
			Lower bound	Upper bound
Manufacturing	4.73	.1091	4.518	4.947
Construction	4.70	.3252	4.060	5.339
Urban agriculture	5.06	.1324	4.805	5.326
Trade	4.28	.1658	3.961	4.6143
Service	5.0	.6324	3.755	6.244
Overall	4.75	.073	4.601	4.892

Source: own study, 2023

KM Diagnostic Tests by business sector

Table-8 shows the estimates of the Terone Ware, Breslow (generalized Wilcoxon), and Log-rank diagnostic tests which are all significant at 5% and10%. The findings indicate that the survival time among the business sectors

(that is, manufacturing, construction, urban agriculture, trading, and service) is statistically different. Hence, the alternative hypothesis stating that there are significant differences among the survival rates of business sectors is accepted. The result is consistent with the findings of (Abiola, 2011).

Table8: Diagnostic tests of equal variance by business sector

Tests	Chi-Square	Df	Sig
Log Rank (Mantel-Cox)	8.52	4	0.0743**
Breslow (Generalized Wilcoxon)	10.45	4	0.0335*
Tarone-Ware	8.81	4	0.0659**

Source: own study, 2023

*significant at 5%;** significant at 10%

Generally, the nonparametric survival analysis indicates two straightforward shreds of evidence on the business operation of MSEs: First, there is a survival differential among business sectors (manufacturing, construction, urban agriculture, trade, and service) and survival difference based on the size of enterprises micro; second, the risk of failure is high after the first five years of operation, especially for small enterprises. This implies that micro-enterprises may survive more through exploiting the government's inclusive support while the government may relinquish gradually from supporting small enterprises considering that they tend to mature. Most often, the government delivers inclusive support to MSEs particularly during the start-up time and gradually deviates its focus from supporting the existing enterprises to establishing new ones. Thus, there is a need to establish continuous, effective, and inclusive support interventions for MSE at least up to the level they graduate to medium enterprises. Besides, there is also a need to examine the factors behind the survival rates among MSEs and the sectors MSEs engage in.

The Cox proportional Hazard Estimation

A semi-parametric analysis using cox proportional hazard estimation technique was employed to find out the factors associated with the survival rate differential between micro and small enterprises. The proportional hazard assumption was tested with the global test. The global test proves that the assumption of the proportional hazard was met (0.9995)(appendix-1). "The survival rate of an enterprise may be influenced by various factors, such as owner, firm, and business strategy characteristics and the overall socio-business environment the enterprise is operating" (Woldehanna et al., 2018). Hence, in this study, the owner/manager, MSEs, and microfinance characteristics are considered as factors that can affect the survival of enterprises.

Table10: Cox Proportional Hazard Estimation

Covariates	Haz. Ratio	Std.Err.	p-value	Sig
Gender (Female)	.181	.144	.032	**
Type of own(base sole proprietorship)	1	.	.	
Partnership	4.849	5.66	.176	
Cooperatives	.928	1.889	.971	
Work premise (no)	24.328	28.84	.007	***
Year of schooling	1.186	.115	.079	*
Location of business	1	0	.551	
Loan based on business plan	1.214	.287	.413	
Long process in accessing microcredit	1.702	1.102	.411	
High collateral requirement to access credit	.972	.327	.933	
Bureaucracy to access credit	1.934	1.49	.392	
Dur of loan	.054	.076	.04	**
Interest rate (R) (8 base)	1	.	.	
15.R	.003	.011	.076	*
17.R	.002	.007	.054	*
Lack of access to microcredit	2.010e+11	2.991e+11	0.000	***
Lack of market linkages	7.013e+12	6.890e+12	0.000	***
Inability to produce new products	6.695e+12	8.312e+12	0.0000	****

Mean dependent var	4.747	SD dependent var	1.364
Pseudo r-squared	0.502	Number of obs	340.000
Chi-square	148.038	Prob> chi2	0.000
Akaike crit. (AIC)	183.033	Bayesian crit. (BIC)	251.954

*** $p<.01$, ** $p<.05$, * $p<.1$

Source: own study, 2023

Table8 shows the cox proportional hazard estimations of explanatory variables that have influenced the

survival of MSEs in Ethiopia. The finding suggests that gender has a significant positive effect on the probability of MSEs failure or drop out. The hazard ratio of the variable gender is 0.181 with a p-value of 0.032. Other things remain the same, this result shows that women-owned/managed MSEs are 0.181 times more likely to fail than men-owned/managed MSE. This finding was consistent with other studies (Woldehanna et al., 2018).Education is assumed to be one of the critical elements in enhancing the performance of any business. Year of schooling, as indicated in table -8, has a significant influence on the survival of MSs with a hazard ratio of 1.186 and p-value of 0.079. The finding revealed that the probability of failure to MSEs increase as the year of schooling increases, ceteris paribus. This seems wrong, however, in developing countries where industrialization is weak, college or university graduate entrepreneurs that were engaged in different business sectors would gradually leave their business in search of public paid jobs. The study indicated that MSEs operators do not necessarily need higher education qualification to engage in the sector especially in developing countries but they require skills. The result is consistent with other studies (Woldehanna *et al.*, 2018; Taylor, 1999).Own work premises are one of the key factors that affect business growth. Firms that do have their own working premises are feeling confident and stably run their business. In this study, the hazard ratio for the variable working premises (no) is 24.328 with a p-value of 0.007. This shows that MSEs that do not have their working premises are 24.328 times more likely to fail than MSEs that have their working premises, other things remain the same. This implies that own working premise was fundamental for survival and sustenance of MSEs in business operation.

The finding suggested that the loan grace period has a significant positive effect on the survival of MSE with a hazard ratio of 0.054 and a p-value of 0.04. This indicates that MSEs with short loan duration were 0.054 more likely to fail than those with a long loan grace period, other things unchanged. Similarly, borrowing cost has a negative effect on accessing microcredit. Three different interest rate types would be charged to customers of ACSI based on the type and nature of business the client is engaged in. For example, if the MSEs operator was engaged in manufacturing sectors and if it is in line with the government focus sector, then ACSI would charge 8%, which is, of course, an interest rate charged on revolving funds where the government is liable for loan defaults. On the other hand, if the operator is engaged in trade or service sectors, ACSI would charge either 15%or17%interest rates based on the relative importance of the business in creating job opportunities, adding value and generating foreign exchanges. In this study, the hazard ratio of borrowing cost of 17% was 0.02 with a p-value of 0.054. This indicates that firms that borrowed with an interest rate of 17% from ACSI are 0.02 times more likely to fail than those that borrowed at 15% and 8%. Similarly, the hazard ratio of the borrowing cost of 15% was 0.03 with a p-value of 0.076. This result indicates that MSEs that borrow with an interest rate of 15% from ACSI are 0.03 times more likely to fail than those that borrow with an interest rate of 8%. Thus, the study confirmed that borrowing cost is one of the vital factors that determine MSEs success or failure, ceteris paribus.

Several studies have been conducted about the role of microcredit on the growth and survival of firms and their study revealed that microcredit has a positive effect on the growth and survival of firms if the loan is utilized for the intended purpose. The hazard ratio of lack of access to microcredit was 2.010e+11 with a p-value of 0.000. The finding indicated that MSEs that couldn't access microcredit easily, ceteris paribus, were 2.010e+11 times more probable to fail than firms that could access microcredit. Thus, the study shows that all other things constant, access to microcredit play an important role in the survival of MSEs in Ethiopia, particularly in ANRS.Hence, the alternative hypothesis stating that microfinance has a positive significant effect on MSEs survival is accepted. The result is consistent with the findings of other authors(Abiola, 2011; Honjo, 2000;O'Farrell and Hitchens, 1988).

Access to new markets for any business venture contributes significantly to the survival and expansionof business. The hazard ratio of the variable inability to market access was 7.013e+12 with a p-value of 0.000, which shows that MSEs that do not get better market access or linkages for their products and services, ceteris paribus, were 7.013e+12 times more likely to fail than firms that had better market linkages and access. Similarly, the inability to produce new products is found to be a significant determinant of firm survival. That is, the hazard ratio of the variable inability to produce new products is 6.695e+12 with a p-value of 0.000, which shows that MSEs that are unable to produce new product type based on market demand, other things remain same, were found to fail more likely than those MSEs that endeavour to develop new marketing strategies through developing new product types. Generally, gender, working premises, level of education, loan grace period, borrowing cost, access to microcredit, access to new markets and the ability to produce new product types are the significant factors that determine MSEs survival. Accordingly, all the null hypotheses proposed in the paper were rejected and the alternatives were accepted. The finding is consistent with other others (O'Farrell & Hitchens, 1988;Bekele & Zeleke, 2008; Le,2000; Abiola, 2011).

Conclusion

Emerging countries, like Ethiopia, launched MSEs development strategies to facilitate their development process. MSEs are the main pillars for job opportunity, fighting poverty, encouraging democratization, and supporting growth. The findings suggested that from about half a million MSEs, only 1% which is about 5000MSEs would promote to medium and higher enterprise levels. The study also revealed that the highest failure of MSEs was

recorded in the urban agriculture and construction sectors, respectively in the period studied. The study concluded that the survival time of microenterprises was relatively higher than the small enterprises. The study also indicated that the survival time among the business sectors was statistically different. The findings suggested that gender, working premises, level of education, loan grace period, borrowing cost, access to microcredit, access to new markets and the ability to produce new product types are the significant factors that determine MSEs survival. The study concluded that microfinance has a significant positive effect on MSEs survival.

Limitations of the study and Future Research Suggestions

The findings of this article depend on quantitative data collected through the use of semi-structured questionnaires. The findings would be more complete if it includes more qualitative data to answer the reasons and how microfinance influences MSEs survival.

Practical Implications

The article assesses the role of microfinance on MSEs survival. MSEs Operators should be committed to utilizing microfinance products and services, their entrepreneurial capacities properly to survive in a stiff business climate. Reinforcing the prevailing capacity of microfinance institutions is very important since the credit disbursed to MSEs has a significant impact on their survival. Assessing access to microfinance products and services, access to new market linkages and the ability to produce new product types should be the focus of operators, bureaus of micro and small enterprise development and microfinance institutions.

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Appendix-1: Global Test of proportional-hazards assumption"

Time: Time

	chi2	df	Prob>chi2
global test	4.42	18	0.9995

Appendix-2: Number of MSEs created and failed

Business sector	2013		2014		2015		2016		2017		2018		Survived, MSEs reported July1/2015 ()		Failed MSEs()
	No. MSEs created	No. of operators	No. MSEs created	No. of operators	No. MSEs created	No. of operators	No. MSEs created	No. of operators	No. MSEs created	No. of operators	No. MSEs created	No. of operators	MSEs	operators	
Manufacturing	14328	23178	11354	20264	8610	18133	15242	26082	5695	10760	5120	8920	47.1	6.9	52.9
Construction	3389	23329	4246	20065	6636	18915	1862	4620	964	2120	823	1959	25.7	8.8	74.3
Service	30543	54432	16529	26892	18010	26495	11893	15248	5858	11488	5859	10543	43.0	7.8	57.0
Urban agriculture	3352	22629	6813	23179	19992	19541	17740	30945	10621	24253	6421	12818	11.5	4.0	88.5
Trade	70173	82243	26538		30629	30739	30817	37736	17225	38277	17596	28207	54.2	11.4	45.8
Total	121785	205811	65480	90400	83877	113823	77554	114631	40363	48621	35819	62447	44.4	8.4	55.6

Source: Compiled from ANRS TVET Bureau annual reports and own computation, 2019