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Determinants of Product Diversification Among Micro and Small Enterprises in Wolaita Zone, Ethiopia: An Econometric Analysis

Tekle Leza [α], Sandraa Rajan [σ] & Berhanu Kuma [ρ]

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I. Introduction

Mounting poverty level in developing countries is a posing formidable threat to the very sustainability of the economies. The poverty indicators such as Gross Domestic Product (GDP) per capita, low life expectancy, low educational enrolment, many people living below $1.25 a day, nutrition, etc., point to gravity of poverty situation in developing countries. Country specific development programmes are underway in these countries to alleviate poverty.

Micro and Small-scale Enterprises (MSEs) play a pivotal role in the socio-economic development particularly in developing economies. MSEs have greater economic benefits than large firms in terms of employment generation and growth since they use more of what a country is endowed with and less of what it lacks (Admassie and Matambalya, 2002; Habtamu*et al.*, 2013). Unlike large-scale enterprises, which are often capital-intensive and import-dependent for raw materials and machinery, MSEs mostly use locally available resources. By creating employment opportunities for the semi-skilled and unskilled labor, MSEs could increase the household income of the labor force at the micro level and reduce the level of poverty at the macro level, apart from creating the basis for a more sustained industrial development. Moreover, MSEs' nurture of indigenous entrepreneurial and managerial talents which foster economic development, poverty reduction and employment generation (Eshetu and Zeleke, 2008). Needless to say that promoting MSEs has become a preferred development strategy in many developing countries.

Statistics reveal the facts about concrete contribution of MSEs in developing countries. MSEs as well as medium enterprises account for about 30 per cent of employment and 17 per cent of GDP (Beck and Demirguc-kunt, 2005). In developed countries, the share of the enterprises is even larger; about of 50 per cent to GDP and about 60 per cent of employment. As economies grow, the share and contribution of MSEs willnaturally increase. In these economies, the

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expansion of these enterprises is significantly important as they are closely associated to the livelihoods of the poor and disadvantaged groups that include women and youth (Robu, 2013).The MSEs in Ethiopia contributes to about 3.4 per cent of the GDP, about 33 per cent of the overall industrial production and 52 per cent of the manufacturing output (Habtamu*et al.*, 2013). Government of Ethiopia has acknowledged the role of these enterprises in the economic growth and transformation. The Growth and Transformation Plan (GTP I), for instance, has envisaged that micro and small scale enterprises create employment opportunities for about three million people and thereby enhance household income, domestic saving, reduce unemployment and poverty, particularly benefiting the women and the youth (Mo FED, 2014).However, MSEs are faced with a number of problems. In the first place, there seems to be a bias against MSEs in Ethiopian as in many other developing countries in terms of the support provided to them. Product diversification sometimes does not bring the expected results such as sales volume, revenue and profits. The most often reason of need of knowledge and skills in the field of change management, insufficient training, technical know-how (Luxenber, 2004)

Researcher experiencesas well as Trade and Industry statistical abstract showed that MSEs at Wolaita Zone (The study location in Ethiopia) continue to be capital-starved and remain low in their job creation potential. Furthermore, the Zone has not yet exploited their potential very well to contribute towards economic development, job creation and poverty reduction. Their contribution to the local economy, capital accumulation and employment generation remains much low. This is due to lack of basic entrepreneurial and quality management systems, such as management of financial and customer focused activities, in order to enhance enterprises competitiveness. The managerial inefficient leads MSEs to incur unnecessary cost and wastage resulting in low returns on invested capital. As a result, less competitive MSEs are unable to compete effectively in the market impacting the entire MSEs sector performance in the country as well as in the study area (Fikirte and Endrias, 2013).

Product diversification among MSEs is known to contribute to risk mitigation and stable MSE sector for job creation. Besides, product diversification is a good business development tool for MSEs. It brings new opportunities through new product lines and services, as well as makes easier the consumption of its products by producing complementing goods or offering complementing services. Furthermore, diversifying small enterprises may be looking for synergies or the sharing of co-specialized innovative assets between different lines of business (Baptista, *et al*, 2010). Hence, the government initiated various support programmes with the aim to improve MSEs' competitiveness and performance through enhancing innovation and product development capabilities, competence and technology such as upgrading existing product quality, improving design and packaging, and training (Geberyesus, 2009). Product diversification is essential for MSEs to become competitive, build business volume and graduate to medium sized enterprise status, thus, creating new employment opportunities (Ernst, 2004and Geberyesus, 2009). Successful implementation of product diversification enhances MSEs to become competitive in a market, increases its market share and provides opportunities to penetrate existing and new markets (Luxenber, 2004).

The effectiveness of above interventions, however, depends on identifying key factors that foster or inhibit product diversification of MSEs. MSEs are heterogene-ous in objective, capability, competencies and compe-titiveness. They differ in terms of promoters and enterprises' socioeconomic background, access to scale economies and access to financial resources. Understanding different factors determining product diversification is crucial in order to formulate effective policies and strategies.

Systematic literature survey conducted by the researchers revealed that no study has been undertaken so far in the study area to investigate the afore-mentioned issue. However, there are a number of features which make the present study different from the existing empirical studies. First, few number of the studies probed into the issue of MSEs product diversification, employing econometric techniques. In the econometric analysis, the proposed study employed Heckman two-stage regression analysis to unravel the issue of choice and level of diversification which accounts for the problem of censoring. Second, the study used more objective measure of the product diversification in small business. Third, the study dealt with endogeniety problem by using two stages least square estimation techniques by separating the existing instrumental variables. This study was conducted to identify determinants of product diversification decision and level of diversification in Micro and Small Enterprises in Wolaita Zone, Ethiopia.

II. Research Methodology

a) Study Area

Wolaita Zone is one of 14 zones in *Southern Nations, Nationalities and Peoples' Region (SNNPR) of Ethiopia*. The capital of the Zone, *Sodo town*, is situated at 378 km to south of *Addis Ababa* city, the capital of Ethiopia. According to Central Statistical Authority (CSA, 2007) estimated population projection of the Zone is 1,796,578out of which 49.27 per cent are males and 50.73 per cent are females. The population density of the Zone is 445 persons per Km^2. The average urban household size was 4.8. The total geographical area of

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the Zone is 4,541Km^2.Micro and Small Enterprises (MSEs) played an important role in creating income and employment opportunities that have bearing on poverty reduction. The Zone has 2548 Micro and 192 Small Enterprises established during 1997-2005 that include all economic sectors. Similarly the sector comprised of different economic sub sectors i.e. manufacture 357(13.1 per cent), construction 814(29.7 per cent), Trade 748(27.3 per cent), service 612(22.3 per cent) and urban agriculture 209(7.6 per cent). These sectors created jobs for 16,191 people in the study area.

b) Sampling Technique

Study unit for the research was MSEs. Multistage sampling technique was employed to select representative units of MSEs. At the first stage, Wolaita Zone was purposively selected due to largest number of MSEs (WOZTID, 2015). Besides having unexploited potential for MSE development, Wolaita Zone was the jurisdiction for the research and development program of *Wolaita Sodo University*. At the second stage, three administrative towns (*Sodo, Boditi and Areka*) were selected purposively from the target Zone as they housed largest numbers of MSEs and members. At third stage stratified random sampling technique was used as the MSE population was heterogeneous. It was necessary to classify the population into two strata. These were Micro and Small Enterprises that were major components of sectors in the study area.

c) Sample Size Determination

To determine appropriate sample size simplified formula which was developed by Yamane (1967) was used.

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

Where, n=required sample size; e =degree of error margin (at 0.05); and N= total population of MSEs. The sample size was computed from the population of 790 Micro and 112 Small enterprises. Accordingly, 265 and 87 from micro and small enterprises respectively were selected. The total sample size was 352 drawn from the three administrative towns in proportions to the number of MSEs. Thus, 228 units from Sodo, 69 units from Areka and 55 units from Boditi were included in the sample. Systematic sampling technique was employed to draw sampling units from each stratum.

d) Data Sources and Methods of Data Collection

Both qualitative and quantitative data were collected from primary and secondary sources. Quantitative data from primary sources were collected through interview schedule while qualitative data were collected through key informant interview, focus group discussions and personal observations. The relevant data were collected from 352 sample MSE managers. An interview schedule was prepared in English and translated into *Amharic* to ease communication during data collection. The interview-schedule was pre-tested before actual data collection and necessary corrections were effected in the final version. Five enumerators were recruited based on their proficiency in local language, educational background and prior exposure to data collection. Training was given to enumerators on the content of the interview schedule and procedures to follow while conducting interview. The survey team gathered data on socioeconomic, individual and firm related, institutional and linkage related factors. Secondary data were collected from *Wolaita* Zone trade and industry promotional department, Micro finance institution, Journals, and Central Statistical Authority (CSA) publications, published and unpublished documents of national, regional and zonal offices.

e) Method of Data Analysis

i. *Model Specification*

The general hypothesis of the modeling approach is to check whether the business firm is linked directly to the firms' decisions on diversification choices of product. In product development, users make their decisions on product diversification choices in the context of their own strategies or rules, which affect the decision of the firms from the expansion of existing/new business product to another as well as the preservation of existing product in its current condition. The general structure of the regression equations is expressed in a simple form by

$$\mathrm{Di} = \mathrm{b_i} + \mathrm{Xc_i} + \varepsilon_i \quad \text{..... (2)}$$

Where, $D_i$represents the Entropy index of richness, X represents a vector of business firms affecting factors, $\varepsilon_i$stands for unobserved factors,b and c are the parameters to be estimated. With a view to assess the degree of diversification in the business sector, the entropy index is constructed as:

$$\mathrm{D_i} = \sum_j^i \mathrm{P}\ (\ln \tfrac{1}{p}) \quad \mathrm{D} \geq 0 \quad \text{..... (3)}$$

Where, the index is 0 when the business firm hasno product diversification (diversification is absent).The assumption in that given x_i as sales group of business firm i then i…. n, there is the total sales$\sum_j^i \mathrm{x} = \mathrm{X}$ and$P = \frac{x}{X}$ where, P is the quota of the sales.

Several estimation problems will be encountered in estimating inter specific diversification strategies. First, a sample selection problem occur because the diversification index for business firm i exist only when the business firms expand or adds related product for more revenue. Second, a large proportion of business firms that not expand or add related product (without diversification) so that richness indicate to censor at zero. To overcome the sample selection bias arising from estimations out of observed variable in the sample, Heckman (1979) proposed a two-step estimation method. Application of Heckman's two-step

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procedure used a Probit in the first stage (probability of diversification decision). In the second step, the level of product diversification or diversification equation (Entropy index) was analyzed. The Inverse of Mills Ratio (IMR) is as regressors in this function in order to correct selection bias. Based on these specifications, Heckman specified:

Step 1: First, a probit model for diversification decision or selection equation was estimated.

The dependent variable in this application assumes either a value of 1 or 0 depending on whether a firm has decided to diversify or not. A probit model was used in estimation given the binary nature of the dependent variable. The binary probit is suitable to deal with latent (or unobservable) dependent variable and usually is expressed as a linear function of a set of explanatory variables as follows:

Probability equation:

$$P_i^* = \beta_i X_i + \varepsilon_i = \beta X' + \varepsilon_i ; \quad \varepsilon_i \sim N(0, 1) \ldots \ldots \ldots \quad (4)$$

$$\text{Threshold index equation: } Di = Di^* \begin{cases} \text{if } Pi = 1 \text{----------} \\ 0 \quad \text{if } Pi = 0 \end{cases} \quad (5)$$

Where: P* is a latent index variable that denotes binary censoring, X_{1i} is a vector of variables that affect diversification decision, $\boldsymbol{\varepsilon_i}$ is an error term, Piis a binary variable (1 if diversification is observed; and zero otherwise), representing the diversification decision (propensity to diversify). To be specific, it takes 1 if an enterprise produces multiple products and the diversification richness index (MI index) is positive; and it is zero otherwise. In other ways

$$P[P^* \geq 0] = P[P^* = 1] = \phi(Z_I) \ldots \ldots \ldots \quad (6)$$

Where is a column vector of realizations on an explanatory variables including a constant for business firm i; and β is a column vector of i unknown parameters. The values of the latent dependent variable are measured on the real line and in this case reflect the underlying propensity of MSEs to have diversification decision. The error term is assumed normally distributed with a mean of zero and a constant varianceσ^2. A threshold (assumed zero in this case) is used to delineate whether the firm has diversification choice or not. The probability of the event occurring can be linked to the latent dependent variable as follows:

Where P* is the dichotomous realization of the latent dependent variable: with decision: Diversification (Value 1) and No diversification (Value 0). In this study ø (·) denotes the cumulative distribution function operator for the standard normal distribution, and for identification purposes it is conventional to normalize σ =1.

The log-likelihood function is defined as

$$L = \sum_{i=1}^{n} P \ln[\phi(x'_i \beta)] + (1 - P_i) \ln[1 - \phi(x' \beta)] \ldots \ldots \ldots \quad (7)$$

The parameters are estimated using conventional nonlinear optimization algorithms. The efficient score tests suggested by Chesher and Irish (1987) are undertaken to diversification choice of the reported specifications in terms of homoscedastic errors, and a normal distribution of the generalized residuals. The estimated probit coefficients can be interpreted by reference to their effect on the standardized probit index but it is generally more convenient to translate them into marginal and impact effects. The marginal effects are denoted for continuous variables as ø(z)β, where ø(·) denotes the probability distribution (or density) function for the standard normal

$$\phi(z + \partial) - \delta(z) \ldots \ldots \ldots \quad (8)$$

distribution, β is the estimated probit coefficient for the corresponding k^{th} continuous variable, and is the standardized probit index computed at the sample mean values of the characteristics. The impact effects are computed as

Where δ_j is the corresponding probit coefficient for the j^{th} dummy variable and the remainder is as defined above. The asymptotic sampling variances for the marginal and impact effects are computed using the delta method. Now the second stage decision, the intensity of diversification, can be represented as follows:

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Step2: Intensity of diversification (outcome equation):

$$\text{Entropy index equation:} \quad D_i^* = \beta_2 X_{2i} + \upsilon_j \upsilon_i \sim N(0, \sigma^2) \text{ ----------} \quad (9)$$

D_i^* indicates the unobserved latent value, the level of diversification and X_{2i} is a vector of variables that explain the levels of diversification, and υi are the error terms.

$$D_i = \text{Dif} \quad P_i = 1 \text{ ----------}$$
$$0 \quad \text{if} \quad P_i = 0 \quad (10)$$

In this specification, separate sets of factors are assumed to influence the decisions to participate in business diversification versus the positive entropy index of richness (D_i). Hence, X_{1i} and X_{2i} are vectors of explanatory variables that affect equation (4) and equation (9), respectively. Both variables are also assumed to be uncorrelated with their respective error terms, μ_i and ν_i assumed to have a correlation rho (ρ) and their joint distribution is normal bivariate. The β_1 and β_2 are the corresponding vectors of parameters. P_i is the observed value representing the individual's firm participation decision (i.e., if 1, it means the respondent is reporting a positive amount of entropy index of richness ($P^*_i > 0$), else 0). Hence, the actual observed D_i equals the unobserved latent value D_i^* only when a positive entropy index of richness is reported; otherwise, it takes the value of 0.

In this specification, the error terms are assumed to be normally and independently distributed in equating (4) and (9), implying that there is no dependence between the diversification participation and level of diversification (i.e., the two decisions are made independently). Assuming that the error terms in (4) and (9) were independent with mean zero, that $\mu \sim N(0,1)$, and that $\nu_i \sim N(0, \sigma^2)$, and that corr($\mu$, ν) = ρ, the stochastic specification in (12) can be written as:

$$\begin{pmatrix}\mu_i \\ \nu_i\end{pmatrix} \sim N \left\{ \begin{pmatrix}0 \\ 0\end{pmatrix} \begin{pmatrix}1 & 0 \\ 0 & \sigma^2\end{pmatrix} \right\} \text{.....} \quad (11)$$

If only the households who participate in business diversification are included in the second step, the IMR will be computed as follows:

$$\lambda = \left(\frac{\Phi(X_{1,\alpha})}{\Phi(X_{1,\alpha})}\right) \text{.....} \quad (12)$$

Where λ denotes IMR, ϕ is the normal probability density function (PDF), Φ (.) is the standard normal cumulative density function (CDF), $X_1$is a vector of factors known to influence a business firm decision to participate. A significant coefficient of the λindicates that the selection model must be used to avo.id inconsistency. Then, the new λ is used in Equation (12) as an explanatory variable. If ρ = 0, then there is no evidence of the selection bias and the regression reverts to 2SLS. When ρ≠0, standard regression techniques applied to the first equation (4) correlated with X_1, yield biased results, which is corrected by including IMR in the second regression. It can be shown that the expected value of D_i^* when D is observed which is given by Equation (13).

The new equation for the second stage regression (level of business diversification degree) equation is then given by:

$$E(Di \backslash X_1, Pi = 1) = \beta X2 + \rho \lambda (\delta X1) + \upsilon j \quad (13)$$

Where, E is the expectation operator, D_i is the extent (continuous) of diversification (entropy index of richness), X_2 is a vector of independent variables that affect D_i and β is the vector of the corresponding coefficients to be estimated, ρis the correlation between unobserved determinants of probability to diversify *u* and unobserved determinants of level of diversification υ, δ is a vector of unknown parameters. Equation (13) gives the expected level of diversification D_i, given vectors of observable factors $X_2$and given that the household has already made the decision to diversify. This can be explained by vector of observable characteristics X_2 and the IMR evaluated at λ (δX_1). To the extent that λ (δX_1) is correlated with X_2, the regression equation (9) resulting estimates is biased unless ρ = 0.

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Table 2: Independent Variables description and their Expected sign (Product Diversification)

Variable Code	Description, Type of Data and Operational Measurement	Expected sign (+/ -)
AGE	Age of Promoters in years	-
INCAP	Amount of start-up capital in Birr	+
MARKAC	Market access dummy (1= if accessed and 0 otherwise)	+
PWEXP	Previous work experience in years	+
BUSPL	Business plan-dummy (1= if MSE promoters owned business plan and 0 otherwise)	+
MTRIAD	Duration of skill training provided in months	+
FOPP	Opportunities employed by firms created by economic agents, dummy(1= have employed opportunity(information or market) and 0 otherwise)	+
LOC	Location of the MSEs (1= if in commercial area and 0 otherwise)	+
OWNCON	Ownership concentrated market- dummy (1= if MSEs ownership concentrated, 0= otherwise)	-
FASIZE	The family size of the MSEs owners in number	-
STRHHA	Diversifying product strengthening household assets base Dummy-(= diversifying product that strengthens household asset and 0=otherwise	+
FWELTH	Enterprise Capital size dummy(1 = increased, 0 = decreased)	+
CAICT	ICT Investmentcost in Birr	+
RISKMT	Proper Risk management Dummy-(1= managing risks and 0, otherwise).	+

III. Results and Discussions

a) Descriptive Analysis

The study was conducted to identify determinants of product diversification among MSEs at*Wolaita* Zone in Ethiopia. Out of the 14 explanatory variables 10 variables were significant determined diversification decision. These variables were household size, age enterprises, start-up capital, access to market, promoters training, own concentration, business plan, information, communication technology, risk management, enterprises opportunities and strategic location that are discussed below in detail.

Promoters Age and Diversification: Comparing diversified and non-diversified MSEs, the average age of diversified and non-diversified MSEs promoters were 34 and 32 years respectively. The result showed that diversified and non- diversified MSEs were found to be young. This implies that younger MSEs promoters are expected to be more adventurous, accept technologies, less risk averse than the older ones and possess comparative advantage with respect diversification and product innovation. The t- test results revealed significant relationship between enterprises age and diversification choice of enterprises at less than five per cent significant level (t =4.91, P=0.027).

Enterprise Opportunities and Diversification: Product diversification can be a matter of business choice for improving living standards and accumulating wealth of the promoters (Ellis, 2000). As shown in Table 2, within diversified enterprises,23 per cent of the MSEs promoters employed business opportunities created by economic agents such as flow of market information; government projects and other business related information that facilitated product diversification while the rest 77 per cent did not employ business opportunities. Similarly, from non-diversified MSEs promoters, 14 per cent had employed business opportunities created by economic agents whereas the rest 86 per cent did not employed business opportunities. Chi-square results revealed significant relationship between MSEs opportunities and diversification choice of enterprises at less than five per cent significant level ($\chi 2 = 4.099$, P=0.043).

Risk Maagement and Diversification: MSEs promoter semploy past work experience of market failure (both supply and demand driven) and decide to diversify as risk mitigation. In general, from diversified MSEs promoters, 66 per cent foreseen/experienced market risk and suitably managed it while the rest 34 per cent did not face market failure. Similarly, from non-diversified MSEs promoters, 82 per cent foreseen/experienced market risk and suitably managed it whereas the rest 18 per cent did not face market failure. This also implies that product diversification by MSEs promotes by perceived or real market risk. Chi-square result revealed significant relationship between risk management and diversification choice of enterprises at less than one per cent significant level ($\chi 2 = 8.363$, P=0.001).

Market Concentration and Diversification: The market concentration is one of the major structural market characteristics. Market concentration was used as a measure of competitiveness in the market. Market concentration in MSEs referred to the direct involvement of the entrepreneur in the market effectively ensure market share. As shown in Table 2, within diversified MSEs promoters only 41 per cent followed market concentration approach. This implies that about41 per cent of MSE promoters followed the strategy of price or

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quality control rather than diversifications stay competitive. However, 59 per cent of MSEs did not follow market concentration approach. Similarly, from non-diversified MSEs promoter 30 per cent followed market concentration approach whereas 70 per cent did not follow this approach. This implies that MSEs prefers product diversification to market concentration as approach to mitigate risks (Fikirte and Enderias, 2013; Kale, 2005).Chi-square results revealed significant relationship between market concentration and diversification choice of enterprises at less than five per significant level ($\chi 2 = 4.95$, p= 026).

Start-Up Capital and Diversification: The average startup capital for diversified enterprises was 19,473Birr whereas for non- diversified enterprises was 21,448 Birr. MSE operators have been starting MSEs businesses by raising financial capital as low as below 25,000 Birr (though this is totally negligible amount these days). This implies that majority of the operators are 'Necessity' promoters (pushed to start enterprises out of sheer poverty/economic necessity) rather than 'Opportunity' promoters. In order to remit the problems of micro financing in study area hence, the shortage of financial resources, the government should exert extra efforts to encourage and effectively attract private MFIs to the market and offer sufficient micro finance for MSEs. The t-test results revealed significant relationship between start-up capital and diversification choice of enterprises at less than one per significant level (t = 23.98, p= 0.000).

Investment in ICT and Diversification: The technology particularly Information Technology (IT) increases the resource use in diversifying of any business. Comparing diversified and non-diversified MSEs, average invested capital in ICT gadgets/instruments were about Birr 4,349 and 6,603 respectively. This implies wider gap prevailing among enterprises in harnessing ICT to its full potential. Hence, MSEs could use computers for book keeping, documentation like files maintenances, and networking, communication, etc. The t-test revealed that average invested capital utilization on ICT significant relationship between diversified and not diversified enterprises at less than one per cent level (t-test =27.66, p= 0.000).

Strategic location and Diversification: Location affects diversification of the MSEs product by determining demand for goods and services (Gebreeyesus, 2009 and Belay, 2012). Enterprise location decides cost of raw materials and marketing of finished goods thereby affecting competitiveness (Belay, 2012).In the study, within diversified MSEs promoters, about 71 per centlocated proximity to commercial area makes the enterprises prosper whereas 29 per cent located outside of commercial area. Similarly, non- diversified enterprises found that about 62 per cent investigated were located at commercial sites and 38 per cent outside of commercial site. The chi-square test revealed significantrelationship between diversification choice and strategic location of enterprises at less than five per cent level ($\chi 2 = 3.35$, p= 0.042).

Business plan and Diversification: practice of business plan among MSEs promoters was found to affect diversification decision and level of diversification. Regular and updated records enable MSE promoters to track the cash inflow and outflow, thereby minimizing the operational risks and optimizing the profit. In the study, within diversified MSEs promoters, about 96 per cent had business plan whereas 4 per cent follow without business plans. Similarly, non- diversified enterprises found that about 88 per cent investigated had a business planwhereas22 per cent follow without business plan. However, the plans so prepared were sketchy, had improper business projections behind them and consequently were unacceptable to formal financial institution for getting the credit. Hence, Planning practice and record keeping ensures diversification and profitability of MSEs (MUCD, 2013).Chi-square result revealed significant relationship between business plan and diversification choice of enterprises at less than 5 per significant level ($\chi 2 = 6.57$, p= 0.037).

Work Experience and Diversification: Previous work experience would provide knowledge of organizational routines and necessary skills enabling the promoters to apply them to the current business (Delmar and Shane, 2006; Belay, 2012). As presented in Table 3, comparing diversified and non-diversified MSEs, the average work experience of diversified and non-diversified MSEs were 3.48 and 2.64 years respectively. The result showed that business experience gives a person the required technical skill necessary to start and run the current business efficiently. The t-test revealed significant relationship between diversification choice and previous work experienceat less than 5 per cent significant level (t =19.98, p= 0.000).

Family size and Diversification (FASIZE): Comparing diversified and non-diversified MSEs, the average sampled respondents were4.57 and 4.43 respectively. The results showed that average size of the sampled household was comparable with the national average (4.8). This justifies managing a large family requires a substantial financial commitment and in times of economic hardship this may make business owners with more households more risk averse and less likely to choose diversification. However, different studies identified that household size positively affected product diversification. This could imply that diversification of the households was to meet different needs of the family (Weiss and Briglauer, 2000; Benin *et al.*, 2004; Rehima*et al*, 2015).The t-test revealed significant relationship between diversification choice and family size at less than one per cent significant level (t =45.78, p= 0.000).

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Table 3: Diversification patterns of Micro and Small Enterprises (n=352)

Variable	Category	Micro(n=265)		Small(n= 85)		Both MSEs		χ2/ t-value
		Diversify	Not Diversify	Diversify	Not Diversify	Diversify(n=136)	Not Diversify(n=216)	
Age of the promoters	Average	34 (7.3)	32 (6.3)	33 (6.6)	32 (6.2)	34 (6.8)	32 (6.2)	4.27**
Work experience	Average	3.25 (2.6)	2.68 (2.4)	3.53 (3.0)	2.42 (2.3)	3.48 (3.1)	2.64 (2.4)	19.98***
Family size	Average	4.48 (1.2)	4.45 (1.2)	4.49 (1.6)	4.3 (1.6)	4.57 (1.6)	4.43 (1.6)	45.78***
ICT investment	Average	4517 (2147)	4925 (3532)	6090 (5396)	4784 (3453)	5050 (3691)	4815 (3080)	27.67***
Start-up capital	Average	18,749 (13,623)	19,453 (14322)	26,584 (21,355)	26,987 (21,360)	19,473 (16,053)	21,448 (16,299)	23.98***
Enterprises opportunities	Yes	25	28	6	3	31(23)	31(14)	4.099*
	No	80	132	25	53	105(77)	185(86)	
Risk Management	Yes	68	129	22	48	90(66)	177(82)	8.363***
	No	37	31	9	8	46(34)	39(18)	
Market concentration	Yes	42	48	14	16	56(41)	64(30)	4.95*
	No	63	112	17	40	80(59)	152(70)	
Strategic location	Yes	77	100	20	34	97(71)	134(62)	3.35*
	No	28	60	11	22	39(29)	82(38)	
Business plan	Yes	101	139	29	51	130(96)	190(88)	6.57**
	No	4	21	2	5	6(4)	26(12)	

n= sample size, ***, ** and * indicate that statistically significant difference at less than 1%, 5% and 10% significant level, respectively. The figures in Parenthesisare percentages and standard deviation. Source; Computed from Field Survey data, 2015/16

b) Determinants of Diversification Decision and Level of Product DiversificationamongMSEs

Soundness of the model was established by Wald test. The chi-square of the model regression in the Zone indicated overall goodness of fit (showing a strong explanatory power) of the model with statistical significance at a probability of one per cent. The Wald test of the business enterprises χ^2 (14) = 131.49), χ^2 (14) = 121.98), and χ^2 (14) = 26.35), for both MSEs together, Micro and Small enterprises respectively confirmed that the coefficients of the level of diversification equation was significantly different from zero. As a result the model fulfilled conditions of good fit.

Table 3 presents the probit model's estimates underlying the Heckman-Two-Step estimation procedure. It clearly shows the binary dependent variable: one (1) if the business enterprises diversified and zero (0) otherwise. Ten variables significantly explained the probability of product diversification. These are market access (MARKAC), promoters age (AGE), opportunities (FOPPD), ownership concentration (OWNCON), RSKMGT (risk management), enterprises wealth (FWELTH), investment costin ICT(CAICT), Managerial training (MTRIAD), Strategic location (LOC) and business plan (BUSPL).The second stages of Heckman-Two-Stage model result are also presented in Table 4. The level of product diversification represented by Entropy Index, which was significantly determined byFOPP, OWNCON, CAICT, RISKMGT, LOC,BUSPL, FWELTH and INCAP

Age of the promoters (AGE): Age of the household head negatively affected the productdiversification decision at less than five per cent significance level. Keeping all others variables constant, one-yearincrease in age of enterprises promoters caused decrease in probability of product diversification decision of both MSEscategory by 0.5 per cent. From this, one would expect older promoters to be less likely to engage in related product diversification. This showed that older promoters might be less receptive to technology/adventurous/risk averse. This result concurred with those of Weiss and Briglauer's (2000); Fikirte and Endrias, (2013; MashimbaandKihll(2014).

Enterprises opportunities (FOPPD): Contrary to the expectation, this variable negatively affected

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diversification decision at less than 10 and 5 per cent significant level for both MSE category together and small enterprises category respectively. It also affected level of product diversification for both MSEs category together at less than ten per cent significant level. Empirically, the marginal effect indicted that a unit change in perception of promoter that employed opportunities created by economic agents would decrease the probability of related product diversification decision for both MSEs together and small enterprises category by 12.9 per cent and 42 per cent respectively while keeping others variables constant.It also decreases the level of product diversification for both MSEs together by 0.317. This implies that enterprises donot reap opportunities created by economic agents anddiversify the product. This further notifies that enterprises are less likely to apply opportunities created by government projects or market information by economic agents. Thus opportunities unfolding before them would have made them wary of diversification. Moreover, opportunities fostered specialization to make them competitive in the market offering specialized products. The study results were inline with those of Fikirte and Edrias, 2013; Santarelliand Tran, 2013.

Economic Size (FWELTH): As expected, the MSEs economic size / wealth positively affected the enterprises diversification decision and level of diversification at less than ten per cent significant levelsfor both MSEs together. Ceterius paribus condition, marginal effect indicted that a unit change in wealth would increase the probability of product diversification decision for both MSEscategory together by13per cent. Keeping others variables constant, aunit increase in MSEs wealth would increase the level of diversification for both MSEs together by 0.327. Obviously, MSEs possessing larger asset pool had higher ware withall (capacity) to invest in new machineries', technology, etc. and hence, were incentivized to diversify. Incidence of higher wealth favored product diversification. This implies that product diversification enables MSEs to allot their assets to multiple products in a way to minimize operational and market risks. Other studies confirming similar relationship between wealth and product diversification included those of Santarelli, and Tran, (2013); Iacobucci and Rosa, (2005);Fetien*et al.*, (2009; Rehima*et al.*, 2015).

Own Concentration (OWNCON): As expected, this variable negatively affected diversification decision at less than five per cent for both MSEs category together and at less than ten per cent significant level for micro and small enterprises categories.Ceterius paribus condition, direct involvement of managers or managerial team in the effective control of their own product or enterprises (quality and more quantity with price incentives) would declined the probability of product diversification decision for both MSEs altogether, micro and small enterprises category by 14.7 11.8 and 26.9 per cent respectively. While keeping all others variables constant, a unit increase in ownership concentration would decrease the level of product diversification by both MSEs together, micro and small enterprises category by 0.406, 0.297 and 0.833 respectively. This implies MSEsPromoters mighthave focused on price or quality aspects to maximize market margin rather than focusing on product diversification. Pope and Prescott (1980) found that firms large with diverseproduct mix, tended to specialize. Higher ownership concentration with quality andprice would be the essential ingredient of specialization. MSEs used diversification decision to mitigate risks (Fikirte and Enderias, 2013, Kale, 2005).

Business Plan (BUSPL): Contrary to the expectation, practice of business plan among the enterprise promoters affected diversification decision and level of product diversification negatively and significantly at less than one per cent level in both MSEs altogether and micro enterprises category. Assuming all other factors remainingconstant, marginal effect indicted that a unit change in formal business planning done by MSEs promoterswould decrease the probability of diversification decision for both MSEs together and micro-enterprises category by about25.1 and 36.6 per cent. It would decrease the level of product diversification by 0.692 and 0.978for both MSEs together and micro enterprises category at ceterius paribus.According to Fortune (2003) and Eshetu and Zeleke, (2008), MSEs often collapsed due to inefficiency in financial management caused by lack of business plans. In the study area,a sizeable proportion of MSEs do not have the ability to produce plans for taking advantage of institutional credit. Irregular and unorganized plan/ record keeping practice lead to weak risk monitoring and cash flow tracking on income and expenditure. This study was consonant with those of Eshetu and Zeleke, 2008: Belay, 2012.

RISK Management (RSKMGT): As expected, this variable positively affected diversification decision and level of product diversification at less than one per cent significant level in both MSEs together and micro enterprises category. The result indicated that, all other variables being constant, having risk management would increase the probability of diversification decision for both MSEs together and micro-enterprises category by about22.5 and 23.8 per cent. It would increase the level of diversification for both MSEs together and micro enterprises category by 0.635 and 0.670 respectively for having management while other variables are kept constant. The result indicated that risk management favored the probability of diversification decision in related product. Higher product diversification greater would be the risk mitigation. The tendency among the

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MSE promoters to mitigate risk would encourage them to diversify; after all they would not like to put all their eggs in one basket. This study result was in line with those of Fikirte and Enderias, (2013); Kale, 2005; Santarelli, and Tran, (2013).

Access to market (MARKAC): Access to market (indirectly measured in terms of walking time taken to reach market) positively affected diversification decision at less than ten per cent significant level for micro-enterprises. The result indicated thata one minute walk increase to the nearest market increased diversification decision for micro enterprises category about by 5.1 per cent, assuming all other variables remaining constant. This implies that MSEs incurred higher transaction costs (transport, market information, difficulty in searching new market, *etc.*) when getting to sell or to buy their product in far off market and that cost consequently could have served as a deterrent in diversification decision. The primary motive of MSEs perhaps would be risk mitigation rather than asset accumulation. Diversification entails higher frequency of interaction with market and MSEs would refrain from diversification in poor market access scenario. A business firm far away from a market was positively related to product diversification which entailed higher transaction costs leading to weak market integration (Joshi *et al.*, 2004;Alpízar, 2007). In addition, according to Admasu (2012), marketing problems included inadequacy of market, difficulty of searching new market, absence of market intelligence and of interaction with organization/association that conduct marketing research. MSEs spatially away from market would have limited market information, negatively affecting diversification decision (Alpízar, 2007;Rehima*et al*., 2015).

Information, Communication and Technology (CAICT): ICT ownership positively and significantly affected diversification decision at less than ten per cent significant level for both MSEs together and less than five per cent significant level for small enterprises. It also positively and significantly affected level of product diversification for small enterprises at less than five per cent significant level. The marginal effect indicted that a Birr increase investment in ICT would increase the probability of diversification decision for both MSEs together and small enterprises category by $5*10^{-5}$. It would increase level of diversification for small enterprises category by 0.640while assuming all other independent variables being constant. This implies that investment in ICT enables MSEs to enhance diversification decision and level of diversification. Investment in ICT also enables MSEs to manage price variation through enhanced access to information in product and input markets. Therefore, Additional investment in ICT could, thus, be expected to have a greater influence on diversification decision and level of diversification. This study was consonant with the study of Admassie and Matambalya, 2002; Radam*et al,* 2008.

Enterprises location (LOC): MSEs located far away from market place (outside of commercial area) negatively determined diversification decision at less than ten per cent significant level inmicro enterprises category and less than five per cent significant level in micro enterprises category. The result indicated that one minute increase in walking time from commercial site (indicative of the market distance and location) would decrease diversification decision by 13.4 per cent for micro enterprises category and would decrease level of product diversification for micro enterprises category by 0.142.This implies that location affects diversification of the enterprises as demand for goods and services depended on location (Gebreeyesus, 2009 and Belay, 2012). Enterprise location decides cost of raw materials and marketing of finished goods thereby affecting competitiveness (Belay, 2012). Competing enterprises concentrated on the close geographical area would face stiff competition to serve a given segment of clients and eventually realize lower profit. Distantly spaced enterprises would grow faster, enjoying the patronage of the clients with less competition. Similarly, proximity to commercial area makes the enterprises prosper. It further implies that MSEs located nearer to the commercial place (better market access) enjoys support services apart from incurring less transaction costs, and enhancing economies of scale and product diversification. Contrary to commercial area, MSEs located far away from the market (commercial center) were less inclined for diversification decision and level of diversification (Joshi *et al.*, 2004;Alpízar, 2007).

Promoters training (MTRIAD): As expected, promoters training positively and significantly affected diversification decision at less than ten per cent significant level in both MSEs together. The result indicated that one month increase in promoters' training would increase product diversification decision for both MSEs together by4.5per cent, assuming all other variables remaining unaltered. This implies that training opportunity minimized the risk of failure involved in related product diversification. The provision of training to entrepreneurs who wanted to start new businesses or related product gave businesses a better chance of expansion or product diversification. Training further enhances individual's access to information and technology thereby contributing to a wider array of businesses. Several studies identified importance of training in product diversification (Santarelli,. and Tran. 2013 and Ibrahim *et al.* 2009).

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Table 4: Determinants of Diversification Decision (Heckman Two-Stage estimates Probit)

Variables	Both MSE altogether		Micro-Enterprises Category		Small-Enterprise Category	
	Coef	Marginal	Coef	Marginal	Coef	Marginal
MARKAC	0.141 (0.172)	0.053 (0.065)	0.275* (0.217)	0.051 (0.082)	-0.101 (0.334)	0.030 -(0.120)
AGE	-0.013** (0.006)	-0.005 (0.004)	0.0135 (0.014)	-0.005 (0.005)	0.0181 (0.027)	0.006 (0.010)
PWEXP	-.092 (.257)	-0.034 (0.097)	-0.010 (0.301)	-0.003 (0.114)	-0.474 (0.584)	-0 .171 (0.210)
INTCAP	-5.07e-06 ($4.89e^{-06}$)	-1.92e-06 (1.84e-06)	-1.51e-06 (6.60e-06)	-5.74e-07 (2.52 e-06)	-9.31e-06 (9.05e-06)	-3.36e-06 (3.27e-06)
LOC	-0.208 (0.162)	-0.078 (0.061)	-0.352* (0.188)	-0.134 (0.071)	0.258 (0.378)	-0.093 (0.137)
MTRIAD	0.119* (0.06)	0.045 (0.023)	0.169 (0.212)	0.064 (0.080)	0.096 (0.407)	0.034 (0.147)
OWNCON	-0.390** (0.160)	-0.147 (0.060)	-0.310* (0.187)	-0.118 (0.071)	-0.745* (0.376)	-0.269 (0.135)
FOPPD	-0.341* (0.184)	-0.129 (0.069)	-0.226 (0.203)	-0.086 (0.077)	-1.16** (0.553)	-0.420 (0.200)
RSKMGT	0.595*** (0.167)	0.225 (0.063)	0.626*** (0.191)	0.238 (0.072)	0.519 (0.4009)	0.187 (0.145)
STHHAB	-0.551 (0.398)	-0.208 (0.150)	-0.456 (0.488)	-0.174 (0.186)	-1..049 (0.872)	-0.379 (0.311)
FWELTH	0.345* (0.209)	0.130 (0.079)	0.304 (0.237)	0.115 (0.090)	0.517 (0.549)	0.187 (0.198)
CAICT	0.00003* (0.00002)	0.00001 (8.00e-06)	-0.00002 (0.00004)	-7.84e-06 (0.00001)	0.00005** (0.00002)	0.00002 (0.0001)
FASIZE	-0.037 (0.051)	-0.014 (0.019)	-0.041 (0.061)	-0.015 (0.023)	-0.030 (0.112)	-0.010 (0.040)
BUSPL	-0.677*** (0.268)	-0.251 (0.101)	-0.963*** (0.348)	-0.366 (0.132)	-0.280 (0.558)	-0.101 (0.201)
CONS	1.26 (0.991)		1.63 (1.15)		2.85 (2.74)	
n=352, LR χ^2(14)= 40.85 Prob>(χ^2)= 0.000, Log likelihood= -214.42			n=265, LR χ^2(14)= 32.98 Prob>(χ^2)= 0.000 Log likelihood= -161.4		n=87, LR χ^2(14)= 19.90 Prob>(χ^2) = 0.1333 Log likelihood= -46.65	

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Table 5: Determinants of level of diversification: 2SLS estimates

Variables	Both-Enterprises		Micro-Enterprises		Small-Enterprises	
	Coef.	St. error	Coef.	St. error	Coef	St. errors
CONS	-0.288	0.526	-0.056	0.636	-1.260	1.110
LN(AGE)	-0.419	0.313	0.530	0.367	0.186	0.705
MARKACC	-0.153	0.161	- 0.254	0.205	-0.108	0.307
LOC	-0.191	0.161	-0.142**	0.114	0.123	0.361
LN(MTRIDA)	0.153	0.181	0.176 .	0.209	0.289	0.404
OWNCON	-0.406***	0.154	-0.297*	0.178	-0.833**	0.354
FOPPD	-0.317*	0.183	- 0.196	0.200	-0.922	0.514
RSKMGT	0.635***	0.168	0.670***	0.193	0.558	0.392
FWELTH	0.327*	0.206	0.322	0 .233	0.451	0.496
LN(INTCAP)	-0.092**	0.232	0.142	0.114	0.467**	0.197
LN(CAICT)	0.196	0.130	0.073	0 .158	0.640**	0.289
BUSPL	-0.692***	0.266	-0.978***	0.341	0.283	0.521
Number of obs= 352 ,			Number of obs= 265 ,		Number of obs= 87 ,	
Censored obs = 216			Censored obs = 160		Censored obs = 56	
Uncensored obs=136			Uncensored obs=105		Uncensored obs=31	
Wald chi^2 = 131.49			Wald chi^2 = 121.98		Wald chi^2 = 26.35	
Prob>F=0.000			Prob>F=0.000		Prob>F=0.0233	
Rho= 0.679			Rho= 0.898		Rho= 1.00	
Sigma= 0.225			Sigma= 0.225		Sigma= 0.438	
Lambda= 0.153			Lambda= 0.2023		Lambda= 0.438	

*Source: Field Survey, 2015/16: ***, ** and * indicate that statistically significant at less than 1%, 5% and 10% significant level, respectively. Instrumental variables PWEXPD, STRHHAB and FASIZE*

IV. Conclusion and Recommendation

The study was conducted to identify determinants of diversification decision and level of diversificationin micro and small enterprises at *Wolaita* Zone in Ethiopia. The result showed that participation in diversification and level of diversification in micro and small enterprises was significantly determined by start-up capital, market access, managerial training, age of promoters, enterprises opportunities, own concentration, economic size, business plan, risk management and ICT. Out of the 10 significant explanatory variables entrepreneurs' prior experience in risk management, enterprise economic size, and investment in ICT determined diversification decision and level of diversification positively and significantly. Promoter's age, business location, enterprises opportunities, business plan and enterprises own concentration determined diversification choice and level of diversification significantly and negatively. Access to market was negatively and significantly related with diversification decision while managerial training was related positively and significantly with level of product diversification. Based on the findings of product diversification the following policy recommendations were made.

Development practitioners should create awareness among members and encourage the use of family planning in order to limit household size. This can be achieved through integrated health and education services.

Businesses promoters who are participating in related product diversification invested considerably on ICT for coordination of inputs, industry knowledge, production skills, special technology and distribution channel. Therefore, government body and business promoters should promote for ICT infrastructure.

Age matters in diversification. Hence, the government should strengthen training system to train the older enterprises and entrepreneurs as they were found to have less inclination for diversification which is desirable for risk mitigation and sector stability. .Prior experience in business and enterprises wealth contributed to higher product diversification through reinvestment of higher income generated out of the MSEs. Again better enterprise training would compensate for lack of experience among budding entrepreneurs.

Access to start-up capital has significant and negative effect on level of product diversification. Moreover, the functionality of MSEs promoter is also constrained by shortage of start-up capital. An effective and sustainable MSEs movement requires overcoming major start-up capital constraints. It is imperative that the government should provide support with respect to timely and adequate supply of affordable and timely start-up credit facilities for Micro and Small enterprises significantly to make them become competitive in the local, regional as well as national market. Banks should allocate some resources and develop innovative ways of lending to small businesses and enterprises by following

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the successful example of the Grameen Bank of Bangladesh.

Product diversification helps MSEs to mitigate production, income and price risks because of spreading their investments in different related products. Thus, policies need to foster product diversification. Hassle free loan and enterprise training are among those interventions that would go a long way in promoting diversified product by MSEs in the country.

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