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DETERMINANTS OF RURAL WOMEN ECONOMIC EMPOWERMENT IN AGRICULTURAL ACTIVITIES: EVIDENCE FROM NUNU KUMBA DISTRICT OF EAST WOLLEGA ZONE, ETHIOPIA

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Abstract:
This study was aimed at investigating the determinants of rural women economic empowerment in agricultural activities of Nunu Kumba district of Oromia Regional State, Ethiopia. The study can be useful to reduce women discrimination, ministry of child and women's affairs in its effort to formulate and implement gender policies. A multistage sampling procedure was used to take sample of 342 women household respondents using random sampling technique from selected rural Kebeles. For the study both primary and secondary sources of data were conducted. Primary data was collected through structured questionnaires, key informant interviews and focus group discussions. The collected data was analyzed using both descriptive and logistic regression model. Descriptive analysis was conducted to discuss the behavior of rural women economic empowerment in agricultural activities and performed using frequencies, percentage, means, standard deviation, maximum and minimum values. The logistic regression result reveals that out of thirteen explanatory variables eleven variables age, size of family, educational status, farm income, off-farm income, access to credit, access to and control of economic resources, access to information, rural women participation in community affairs, lack of gender awareness and domestic violence were statistically significant. The findings of the study recommended that the policy makers effectively implement the rights of the significant number of marginalized rural women for full participation in all levels of human activity. This will play a paramount role in eradicating poverty and hastening economic growth of Ethiopia.

Keywords:
Economic empowerment, Women, Child, Logistic Regression, growth, Ethiopia

1. Introduction
A major overlooked feature of LDCs and particularly in Africa is the women's crucial role in agricultural activity. In sub-Saharan Africa where subsistence farming is predominant and shifting cultivation remains important nearly all tasks of subsistence food production are performed around 70 to 80 by rural women (Desai, 2010). Agriculture is the back bone of Ethiopian economy where the vast majority of the population of the country depends on it as a source of livelihood and shares substantial proportion of the total GDP of the country. Rural development in Ethiopia cannot be imagined without the active participation of women (CSA , 2014/15). The sector is more dominated by mixed farming where crops and livestock play major roles in serving dual purposes for domestic consumption and foreign currency earnings. The sector contributes about 50% of the Gross Domestic Product (GDP) and 90% of the national export earnings. Although it is the leading source of foreign exchange earnings, the sector is dominated by traditional subsistence and cultural perception of abundant human labor.

Empowerment of rural women is the implication of expanding women's rights and capabilities to participate in negotiate, influence, control and hold accountable of the institutions that affect their lives (FAO, 2015). Rural

women empowerment in agriculture is generally defined as women's ability to make decisions on matters related to agriculture as well as their access to the material and social resources needed to carry out those decisions. In agriculture rural women are now considered as the main actors of the nation starts developing faster and more widely (Alkire et al, 2013). Women empowerment means giving power to women in all aspects including finance and productive resources. It brings economic change and results in poverty reduction, influence decisions on economic activity, increased self-confidence and better living standards (Firafis .et.al, 2016). Empowerment of rural women increases women's real power over economic decisions and having the power to make major household decision that influence their lives and priorities in society. It refers women control over economic resources, others opportunities equally with men and the elimination of structural gender inequalities in the labor market including a better sharing of unpaid care work (SIDA, 2018). Among other determinants of economic development, women Empowerment is identified as a one of the most significant aspect of development (World Bank, 2011). Then, by doing so, it is possible to make women independent of income from their husband and then their family members can be financially benefited (UNDP, 2014).

Women empowerment can be achieved through women equally participating with men on every activity such as self-dependent, household decision, family expenditure, giving them freedom of mobility, access to economic opportunities and formal education (Iqbal, 2015). It is one of the key drivers in promoting their abilities, rights and well-being which subsequently reduces poverty and increases economic growth, productivity and efficiency (Golla et al., 2011). Empowerment is necessary for poor as whole and marginalized women more to improve their ability to manage their lives in all aspects. Therefore, empowerment of rural women is about strengthening of their innate vitality which should enable the women to realize their full right and power in all spheres of life and also ensure their equal participation with men in the development process. There are different types of women empowerment which targets for the development of women in different aspects like social, economic, political, legal and educational. However, women economic empowerment is a key determinant for overall women empowerment (Shabbeer, 2016). Rural women help in carrying out all other farm operations such as compost making, sowing, weeding, application of fertilizer and manure, application of irrigation, protection from birds, harvesting, threshing, winnowing, drying, stacking and carrying (Moa, 2018).

Oromia regional state in general and the study area in particular, the power of rural women to control over economic resources remains low due to women are still backward in education, social status, economic background, political matters. Most of rural women have no power to make household decision. This is due to the fact that information to resist men's dominance, social bias and traditional norms. In rural area women are responsible for most of the household activities this limits women's capacity to engage in income-earning activities and later they dependent on their husband's income. Therefore, this study conducted to assess the determinants of rural women economic empowerment in agricultural activities in the study area.

2. Statement of the problem

Women around the world suffer from discrimination, violence and lack of recognition of basic human rights, and do not fully and effectively participate at all levels of decision-making. Rural women in particular confront a serious burden as they are faced with discrimination based on socio-economic conditions, and gender making them victims of inequalities and violence both inside and outside their communities. They are frequently prevented from playing an active role in political activities and participating on major household decision (FAO, 2016). However, their main roles have not always been recognized by societies. In Ethiopia unequal participation of women with men in political, economic, social rules and regulations prevent women from enjoying the fruits of their labor. Without providing equal opportunities rural women cannot compete with men in all fields of self-advancement. For eradicating gender inequality in all aspect's active participation of rural women in the society is required for bigger decision-making process (Ayferam, 2015). Ethiopian rural women are marginalized from economic, social and political empowerments due to multifaceted reasons. Most of the time they have limited to control over economic resources and their productivity remains low relative to their potential. In addition, the dominance of men in various income generating activities particularly affects the economic empowerment of rural women. Even though women are doing a great job in Production, reproduction and community management, yet they do not have the right to make decision on economic resources. They earn low wage in agriculture and limited land inheritance. Women in

rural area facing lack of land for farming, access to information, credit facilities, skill training and education. They play significant role in agriculture but their major contributions in agriculture are not acknowledged (Messay, 2012).
Women enjoy a little freedom and equality in all dimensions due to lack of awareness in our society, women's role has not been recognized. They are suffering from economic poverty, social discrimination, political disenfranchisement, and cultural subjugation and even some times considered as non-citizens. They are still facing negative treatment from their family, community, and even from their similar sex partners. In Ethiopia where rural women are facing political, social and cultural challenges that undermine their human worth, dignity and right (Helina, 2015). Women also provide most of the unpaid labor with heavy workload due to their high responsibility in caring for the family, fetching water and firewood while handling other productive and responsibilities in the community (FAO, 2019). Rural women are not treated equal to men due to they have limited household decision-making, limited access to and control over household resources, heavy domestic workloads, restricted mobility, inadequate knowledge and skills that leading to women's vulnerability.
According to their study of Sado et al. (2014), reveals that women's participation in household decision-making is the principal indicator of women's economic empowerment. Women empowerment is recognized as one of the building blocks to combat poverty and achieve sustainable improvement in Ethiopia (Ogato, 2013). However, still, the presence of traditional attitudes, cultural values in community, high illiteracy, low commitments from concerned government bodies are some of the factors that hinder the full-fledged women's empowerment in Ethiopia. The achievement of women empowerment in Ethiopia is mainly affected by policies that lack effectiveness (Tefera, 2017). The government of Ethiopia has made a number of efforts towards effective and smooth implementation of women economic empowerment (Wakitole, 2013). However, most rural women are disempowered and facing discrimination. The study conducted by Ogato (2013) in Ethiopia indicates, most governing bodies are dominated by men. Therefore, there are significant gap between policy advancements and actual practice at the community level. As far varies study conducted in Ethiopia but limited empirical literature on determinants of rural women economic empowerment. Therefore, this study was conducted to investigate the determinants of rural women economic empowerment in agricultural activities in the study area.

3. Literature Review

3.1. Theoretical Literature Review

In the new global economy women's empowerment has become a central issue for every country to be able to achieve development goals such as economic growth, poverty eradication, health, education and welfare (Golla et al., 2011). Women Empowerment is an active multidimensional process which should enable women to realize their full rights and powers in all spheres of life. It would consist in providing greater access to knowledge and resources, greater autonomy in decision making, greater ability to plan their lives, greater control over the circumstances that influence their lives (Shabbeer, 2016). This is also fundamental to the achievement of gender equality in which women with economic power is referred as control of income, key economic resources, gain more equality and control over their own lives (Babita, 2010). Women's empowerment has been considered as a driving force in ensuring improved maternal healthcare (Sado, et al. 2014). Achieving women's empowerment is one of the key drivers in promoting their abilities in politics, social and economic rights, and well-being which subsequently expect to eradicate poverty, enhance economic growth, productivity and efficiency. Recently, it has become a central issue for countries to be able to achieve development goals such as economic growth and social welfare (Golla et al., 2011). To empower rural women government initiatives alone are not enough however, society must take initiative to create awareness in order to solve gender discrimination, promote opportunities of self-decision making and participating in social, political and economic life of the country with a sense of equality (Rajeshwari & Shettar, 2015).
Women economic empowerment is a capacity of women to participate in contribute to and benefit from economic growth and development in ways that identify the value of their contributions respect their dignity and make it possible to negotiate a fairer distribution of the benefits of economic growth. The primary factor of women economic empowerment is the ability of women to involve into employment, self-employment, access to education, access to credit, and control over economic resources. Women economic empowerment can be realized via an increase in women's control of household resources and an increase in women's access to borrowing in the financial markets (Bassam. et al , 2015). It gives them the freedom to choose the way they live and how to influence the

society. This process of empowerment is contingent upon the availability of resources and the ability to use access to economic opportunities and control over economic benefits. Empowering women economically will reduce the impacts of the economic crisis and will lead to economic growth (Bassam. et al , 2015). Majority of women particularly in developing countries are below the poverty line and are very often in situations of extreme poverty, household and social discrimination. National policies and poverty eradication programs will address the needs of women and effectively work to solve these problems. There will be implementation of program which are already women oriented with special targets for economic empowerment of women. Among this, microfinance and bank have the responsibility of mobilizing poor women by offering them economic opportunity to enhance their capabilities. In order to enhance women's access to credit, the establishment of new and strengthening of existing micro-credit is enhanced (Shabbeer, 2016). The development of microfinance increases rural women's income and create a positive change in their perception of health and education.

3.2 Empirical Literature Review

The study conducted by Ayevbuomwan, et al. (2016) on the Analysis of Women Empowerment in Rural Nigeria using logistic regression reveals that there is a positive relationship between age of women and the probability of being empowered. This is confirmed by the findings of Qurra, et al.(2015), where their finding revealed an increase in empowerment status of women in India as their ages increase. The study of Aregu et al. (2017) employed Binary logit model to examine the impact of microfinance on woman's empowerment. Their finding indicates, age was statistically significant and positively affects economic empowerment of women. According to the study of (Didana, 2018), using Binary Logistic Regression, age has positive influence on rural women economic empowerment. The study conducted by (Didana, 2018) employed Binary Logistic Regression to investigate determinants of rural women economic empowerment. According his finding reveals that, family size has negative influence on rural women economic empowerment. According to the study conducted by Ayevbuomwan, et al. (2016) on the Analysis of Women Empowerment in Rural Nigeria using logistic regression model, household size is statistically significant and negatively affects women economic empowerment. The study conducted by Didana (2018) and Wakitole (2013) reveals that, education has positive influence on rural women economic empowerment. The study of Margaret (2015) employed correlation coefficient to examine determinants of economic empowerment of women in nyeri municipality, nyeri, Kenya. The study finding of Margaret reveals education is statistically significant and positively affects women economic empowerment. The studies done by (Samari & Pebley, 2015) shows that among all other factors, education proved to be a very strong factor in making women empowered not only at household level but also in whole society and who concluded that education is one of the strong determinants of women empowerment. (Ashar and Hussain, 2016), empirically investigated in Pakistan using Binary Logistic Regression and they found that education is statistically significant and positively affects women economic empowerment.

The study of Zhera (2014) applied Tobit model to investigate women economic empowerment through agricultural extension services the case of Meskan woreda in SNNPRS of Ethiopia indicates that the household farm size is direct determinant of women economic empowerment. Khan et al. (2015) conducted a research on determinants of women's empowerment and poverty reduction: a case study of rural Faisalabad, Punjab. Their finding revealed that income of household is statistically significant and has positive effect on women empowerment. The study conducted by Aregu et al, 2017 indicates that the household income is statistically significant and positive influence on economic empowerment of rural women. (Didana, 2018) employed Binary Logistic Regression. According his finding household income is statistically significant and has positive influence on economic empowerment of rural women. The study of Didana (2018) reveals, off-farm income is statistically significant and has positive influence on economic empowerment of rural women. Income obtained from non- farm activity is the most important for improving the living standards of rural women. Access to credit is a crucial factor and plays a significant role to determine the empowerment of rural women. According to the study of Wakitole (2013), access to credit is statistically significant and positively affects rural women economic empowerment. (Wakitole, 2013), employed OLS to investigate Determinants of Rural Women Economic Empowerment the Case of Guduru District. His finding reveals that access and control over economic resources is statistically significant and positively affects rural women economic empowerment. Access represents the right to use a resource and control represents the right to make decisions about the use of a resource or benefit.

The study of Margaret (2015) indicates that there is a positive relationship between control of economic resources and women economic empowerment. (Ashar and Hussain, 2016), employed Binary Logistic Regression, their finding

shows that control over economic resources has positive influence on women economic empowerment. Empirical results imply that extension contact has a fundamental influence on farm households' adoption of new technology (Huria, 2014). The model result of Huria shows that, extension service is statistically significant and has positive influence on women empowerment. (Ibidapo and Oso, 2015), employed Binary Logistic Regression and empirically investigated Determinants of Rural Women Economic Empowerment in Ondo State, Nigeria. Their study implied that self-esteem is statistically significant and positively affects women economic empowerment. The study of Rathiranee (2013) argued that decision making power of women at household level is one of the most crucial factors in women's empowerment and has positive relationship with women empowerment. In several studies; Samarakoon & Parinduri, 2015), decision-making power of women is considered as the main indicator of empowerment. The study of (Margaret, 2015) identified that there is a positive relationship between employment and economic empowerment. Level of employment facilitates economic empowerment of rural women. (Ashar and Hussain, 2016), empirically investigated in Pakistan using Binary Logistic Regression. Their finding shows that employment is statistically significant and has positive association with women empowerment.

Access to information is the window to the world that can play a significant role in acquainting the women about their rights and updating them in accordance with the present dynamic world. Consequently, rural women access information is a key to get the supply of input production and to sell their product in the market. The study conducted by Didana (2018), empirically investigated in Damot Gale woreda using Binary Logistic Regression reveals that access to information is statistically significant and has positive influence on economic empowerment of rural women. The study of (Wakitole, 2013) also identified access to information is statistically significant and positive influence on rural women economic empowerment. Rural women participation in community affairs increases their democratic rights and direct beneficiaries from the development activities. The study conducted by Didana (2018) and Wakitole (2013) implies that participation in community affairs is statistically significant and has positive influence on economic empowerment of rural women. According to Adegoroye (2008) harmful cultural practices prevent rural women economic empowerment. The study conducted by Wakitole (2013) reveals, traditional harmful practices negatively affect rural women economic empowerment. Lack of gender awareness refers to lack of woman's ability to express her opinion with regard to existing gender inequality and discrimination against women in the society. So that rural women lack of gender awareness is a serious problem in achieving women empowerment.

4. Methodology

4.1 Description of the Study Area

The study was conducted in Nunu Kumba Woreda, East Wollega Zone, Oromia Region of Ethiopia. Nunu Kumba Woreda is one of 180 woredas in the Oromia region of Ethiopia, located at 232km at west of Addis Ababa and 66km at north of Nekemte. The latitude and longitude of the woreda is 8° 39' 59.99" N and 36° 44' 59.99" E respectively. In 2017, the total population of this Woreda was 84,048 of whom 41,132 were men and 42,916 were women. The estimated area of 607.19 square kilometers of the Woreda has an estimated population density of 104 people per square kilometer, this is greater than the Zone average of 81.4. The total land size of the Woreda is 60,719 hectares. A survey of the land in this Woreda shows that 75.9% is cultivable out of this 32.4% under annual crops, 10.9% pasture, 4.9% forest, and the remaining 8.3% is considered swampy, mountainous or otherwise unusable. The altitude of this woreda ranges from 1500 to 2664 meters above sea level. The annual rainfall of woreda ranges from 800 to 1000 mm. Woreda status of weather condition lowest is 15°C, medium 25°C, and highest 30°C. Agriculture is the main economic activity though the area is potentially productive of food crops, cash crops and livestock. In terms of total consumption cereal crop production is the dominant means of livelihood. Therefore, the Woreda is characterized by mixed farming system.

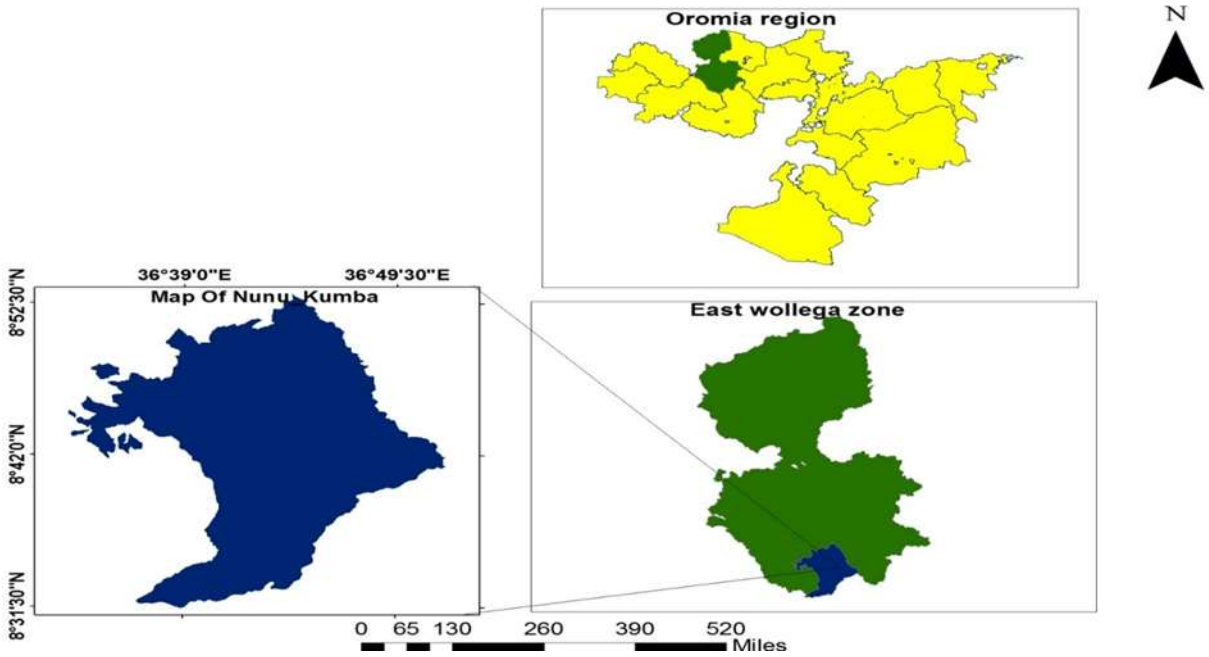

Figure 1: Geographical map of Nunu Kumba woreda

4.2 Types and Sources of Data

This study was used both qualitative and quantitative method of primary data sources. The study was used both primary and secondary data sources. To get the required primary data different methodological approaches such as questionnaires, key informant interviews and focus group discussion were employed. To address a specific objective of the study, the study was used structured questionnaire prepared with open and close ended as the main tool of data collection from the respondents targeted on the demographic and socio-economic factors. The questionnaire was prepared in English and translated to local language Afan Oromo the language spoken by the population in the study area. Secondary data were obtained from different sources including journals, statistical reports broachers, annual reports, office of the study area, and related literatures. Secondary data was used in this study as supplementary.

4.3. Sampling Techniques and Sample Size

Multistage sampling methods were employed to select sample respondents for the study. Purposive sampling techniques were applied to select Nunu Kumba Woreda from all Woredas of East Wollega Zone. In the first stage, the research was randomly selected four rural Kebeles (Dila koye, Harko Gudatu, Jamo and Bildima) of Nunu Kumba Woreda based on population density, farming system, location, elevation range and homogeneity of the living condition of population. In the second stage, 342 total rural women respondents were calculated using simple random sampling as a representative sample for the study. The research was used (Yamane, 1967) formula to get sample size. n = N/1 + N (e) 2 = 2383/1+2383(0.0025) = 342. Hence, to select the proportional number of households from each Kebele, population proportional size (PPS) sampling technique was employed and systematic sampling method was used to select individual respondent in each Kebele. In the third stage, sample size from each Kebeles were determined. To determine sample size from each Kebeles, the sample size determination formula of (Israel, 1992) was applied. That is ns= (Nh/Ns) *n, Where: ns = sample size from each stratum, Nh = total population in each stratum, Ns =Total population of the sum of strata for study and n = total sample size of population from the study. It was briefly explained in the following table 1:

Table 1: Sample Frame and Sample Size

Kebeles	Sample Frame	ns= (Nh/Ns) *n	Sample size
Dila koye	375	375/2383) *342	54
Harko Gudatu	1350	(1350/2383) *342	194
Jamo	331	(331/2383) *342	47
Bildima	327	(327/2383) *342	47
Total	2383	(2383/2383) *342	342

4.4 Method of Data Analysis

Data analysis has been done after all the relevant data have been gathered from the respondents. Data analysis was carried out using descriptive statistics and logistic regression model. To measure the empirical relationship between dependent variable and independent variables, the research was applied Binary Logistic Regression Model because the dependent variable was rural women economic empowerment is binary take the value 1 if rural women empowered and 0 if disempowered. A logit model was used to identify the factors that determine rural women economic empowerment in agricultural activities.

4.5 Model Specification

The research was reviewed different literatures to identify the appropriate model for logit and probit models are almost the same and choice of the model is arbitrary. Therefore, the statistical similarities between the two models make the choice between them difficult. However, logit model has certain advantages over the others and it provides a meaningful interpretation. In addition to this even though the result of logit and probit model is identical, the logit model is easier in estimation.

4.5.1 The Logit Model

Based on the above evidence the research was used logit model to investigate the determinants of rural women economic empowerment in agricultural activities. The model provides consistent, efficient, asymptotically normal estimates, yield very similar prediction results in an empirical work, assume that the error term ei normally and logically distributed. Logistic regression analysis is statistical technique examines the influence of various factors on a dichotomous outcome by estimating the probability of the event's occurrence. It describes the relationship between a dichotomous response variable and a set of explanatory variables. Binary Logistic Regression Model used when the dependent variable was rural women economic empowerment is binary. In binary choice models, it is implicitly assumed that the dependent variable is binary in nature, taking 1 or 0 values. The mathematical formulation of the logit model is as follows:

$$Pi = \frac{e^{Zi}}{1+e^{zi}} \quad \text{……..} \quad (1)$$

Where: Pi represents the probability that represents an individual "i" is economically empowered and it ranges from 0 to 1. e represents the base of natural logarithms. Zi=is a function of n-explanatory variables which is also expressed as:

$$Zi = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \cdots \beta 13X13 \quad \text{…….....……....……} \quad (2)$$

Where: β is column vector of parameters (Coefficients) to be estimated (i.e. β1, β2, β3 … β13) and β0 is the intercept term, constant. The probability that rural women belongs to disempowered is:

$$1 - Pi = \frac{1}{1 + e^{zi}} = \text{……..……..…….....…….. } (3)$$

The odds ratio is simply the ratio of the probability of being empowered (Pi) to the probability of disempowered (1-Pi). Therefore, the odds ratio becomes:

$$\frac{Pi}{1-Pi} = \frac{1+e^{zi}}{1 + e^{-zi}} = e^{Zi} \quad \text{……..…..……} \quad (4)$$

Now $\frac{Pi}{1-Pi}$ is simply the ratio of the probability of being empowered (Pi) to the probability of disempowered (1-Pi).

Finally, by taking the natural log of equation 2 the log of odds ratio can be written as follow:

$$Zi = Ln(\frac{Pi}{1-Pi}) = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \cdots \beta 13X13 \quad \ldots\ldots\ldots\ldots\ldots\ldots (5)$$

As P goes from 0 to 1, the logit goes from -∞ to ∞. By adding disturbance error term on equation 2, the logit model becomes:

$$Zi = \beta 0 + \sum_{i..1}^{13} \beta iXi + Ui \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6)$$

Where i = 1, 2, 3, ⋯, 13, βo=intercept, βi = regression coefficient to be estimated or logit parameter, U = a disturbance term, Xi = column vector of independent variables, β1, β2 +. B13X13 = slope of the equation in the model, and Zi=Rural women economic empowerment.

4.6 Summary of Definitions and hypothesis of Explanatory Variables

The dependent variable was rural women economic empowerment which is dummy indicating 1 for empowered and 0 for disempowered. Socioeconomic and demographic factors were explanatory variables influences rural women economic empowerment. Explanatory variables are continuous, binary and Categorical in their nature.

Table 1: Summary of definitions and hypothesis of explanatory variables

S.NO	Variable name	Variable type	Variable description and its measurement	Expected sign
	Dependent variable			
	Economic Empowerment of Rural Women	Binary	1 if women economically empowered, 0 if economically disempowered	
	Explanatory variable			
1	Age	Continuous	In years	+
2	Educational level	Categorical	In years of education schooling	+
3	Household size	Continuous	In numbers	+
4	Household farm income	Continuous	ETB	+
5	Off-farm income	Continuous	Income earned from off-farm activities	+
6	Land/farm size	Continuous	Hectares	+
7	Access to and Control over economic resources	Dummy	1=yes, 0=No	+
8	Access to information	Dummy	1 if rural women access to Information, and 0 otherwise	+
9	Participation in community affairs	Dummy	1 if rural women Participate in community affairs and 0 otherwise	+
10	Access to credit	Dummy	1 if rural women lack gender awareness, 0 otherwise	+
11	Lack of gender awareness	Dummy	1 if rural women lack gender awareness, 0 otherwise	-
12	Domestic Violence	Dummy	1 if domestic violence is there at household level, 0 otherwise	-
13	Extension service	Dummy	1 if rural women access to extension service, 0 otherwise	+

Source: Own construct 2020

5. Results and Discussions

5.1 Descriptive Analysis

The descriptive analysis discusses basic information about the demographic and socio-economic characteristics of respondents using descriptive statistics such as mean, standard deviation, frequency and percentage of distribution. The section also describes the outcomes achieved and compares the outcomes of empowered and disempowered rural women using with the relevant statistical tests such as t-test and χ2- value. Chi-square and t-test were used to test the statistical significance for both dummy and continuous variables respectively.

Table 3: Descriptive Statistics of Sample Respondents for Continuous Variables

Variables	Respondents (342)	Disempowered (159)	Empowered (183)	Mean difference	T- value
	Mean (Std.dev)	Mean (Std.dev)	Mean (Std.dev)		
AGE	47.75731 (8.5057)	48.1635 (8.81660)	47.4043 (8.234235)	.7592	0.8228
FSZE	6.02924 (1.3105)	6.4088 (1.29367)	5.6994 (1.236954)	.7094	5.1779***
FRMSZE	1.468567 (.78400)	1.2814 (.643087)	1.6311 (.8575856)	-.3497	-4.2141***
HFRMINC	11238.01 (5484.9)	8915.723 (1515.09)	13255.74 (6750.52)	-4340.014	-7.9337***
OFRMINC	5378.327 (1131.5)	4832.075 (1087.33)	5852.94 (940.9706)	-1020.864	-9.3081***

Source: Computed from Survey Data 2020; *** Significant at 1% probability level.

Table 3 showed that the Mean age of the empowered rural women is lower than that of the disempowered and the difference was statistically insignificant at (t=0.8228) level. However, compared to older rural women, younger rural women were economically empowered. There was a significant mean difference of family size between empowered and disempowered women at 1% probability level. The significance mean difference of the family size implies that small family size was more empowered than disempowered women. The mean farm size for the empowered was 1.6311ha and 1.2814ha for disempowered. There was a significant mean difference of farm size between empowered and disempowered women at 1% probability level. This shows that empowered women have more farm size than disempowered women. There was a significant means farm income and off-farm income difference between empowered and disempowered rural women at 1% probability level. The significance means difference of the computed farm income and off-farm income implies that empowered rural women have more farm income and off-farm income than disempowered women. The mean differences between the empowered and disempowered women were significantly differ in ages, family size, farm size, farm income and off-farm income. The result of the t-test depicted that the mean difference of family size, farm size, farm income and off-farm income between empowered and disempowered rural women was statistically significant at 1% significance level in the study area.

Table 4: Descriptive Analysis of Both Categorical and Dummy Variables

Variables	Response	Disempowered		Empowered		χ2- value
		Frequency	Percent	Frequency	Percent	
Education	Illiterate	144	90.56	69	37.7	
	1-4 class	10	6.3	64	35	
	5-8class	4	2.51	43	23.5	101.4912***
	9-12class	1	0.63	7	3.8	

Access to credit	No	71	44.65	25	13.7	
	Yes	88	55.35	158	86.3	40.4755***
Access to and Control over economic resources	No	112	70.44	23	12.56	
	Yes	47	29.56	160	87.44	119.2632***
Access to information	No	130	81.76	66	36	
	Yes	29	18.24	117	64	72.6124***
Participation in community affairs	No	136	85.54	38	20.77	
	Yes	23	14.46	145	79.23	142.8097***
Lack of gender awareness	No	55	34.6	72	39.4	
	Yes	104	65.4	111	60.6	0.8233
Domestic violence	No	30	18.8	137	74.87	
	Yes	129	81.2	46	25.13	106.7642***
Extension service	No	26	16.35	15	8.2	
	Yes	133	83.65	168	91.8	5.3632**

Source: Computed from Survey Data 2020; *** & ** means significant at 1% and 5% probability level respectively

Table 4 indicates that the proportion of educated respondents was greater in empowered women than that of disempowered. The chi-square result ($\chi 2$ =101.4912) shows that existence of statistically significant between empowered and disempowered rural women at 1% probability level. Disempowered rural women were more illiterate than empowered rural women. In terms of respondent's access to credit empowered rural women were more access to credit than disempowered women. Regarding access to and control over economic resources, access to information, participation in community affairs and domestic violence empowered rural women were better than disempowered women. According to extension service of respondents, 83.65% of disempowered rural women were access extension service and 91.8% of empowered women were access extension service. This revealed that empowered rural women were more access to extension service than disempowered women. However, lack of gender awareness was statistically insignificant between empowered and disempowered rural women. Results of $\chi 2$ value revealed that educational level, access to credit, access to and control over economic resources, access to information, participation in community affairs, domestic violence and extension service were statistically significant in the study area.

5.2 Test for Multicollinearity and Heteroscedasticity

Before running logit model Variance Inflation Factor (VIF) was applied to test for the presence of multicollinearity problem among the continuous explanatory variables. Variance inflated factor (VIF) = 6.51 which is less than 10. This indicates, there is no problem of Multicollinearity. For all discrete variables, their values are less than 0.75. Heteroscedasticity was detected by using Breusch- Pagen test (hettest) in STATA. This test resulted the existence of heteroscedasticity hypothesis as (p= 0.0456) and there was need to make the standard error robust. Using robust standard error, the problem of heteroscedasticity was corrected since the robust standard errors of all explanatory variables were less than 3.

5.3 Estimation Results of logit Model

The chi-square is used to statistically test whether including a variable reduces badness-of-fit measure. If chi-square is significant, the variable is considered to be a significant predictor in the equation. To assess how well a logistic model fits the data for the study used log-likelihood method. Whereas the linear regression parameters are estimated using the least-squares method the logistic regression model parameters are estimated using the Maximum-likelihood method. So that, the value of Log likelihood is -84.495431 this indicates that as much as possible small value of log

likelihood is a goodness of fit indicator that is large numbers mean poor fit of the model to the data; similar in idea to a large residual sum of squares statistic for a linear model. The value of Pseudo R^2 in the model used to measure by how much percent the independent variables explained the dependent variable. However, this measure of fit is not directly comparable to the R^2 computed for linear regression models. So that, as observed from the table 5 below Pseudo R^2 indicates that about 64.23% of change on dependent variable is explained by independent variables incorporated in the model. The remaining 35.77% determined by outside the model. Thus, one concluded that these variables collectively good determinants.

Table 5: Results of Logit Model for Explanatory Variables

Variables		Coefficient	Standard error	Z	P-Values	Marginal effect
Age		.0736333	.0304117	2.42	0.015**	.0054627
Family size		-.3011635	.177465	1.78	0.090*	-.0223429
Education	1-4 class	1.04366	.5862605	1.78	0.075*	.0920883
	5-8class	1.559769	.8155587	1.91	0.056*	.1384479
	9-12class	1.514016	2.581681	0.59	0.558	.1343135
Farm size		.2659151	.3702892	0.72	0.473	.0197279
Household farm income		.0002682	.0001298	2.07	0.039**	.0000522
Off-farm income		.000703	.0002093	3.36	0.001***	.0000522
Access to credit		1.044682	.4876697	2.14	0.032**	.0775034
Access to and Control over economic resources		.8877473	.454374	1.95	0.051*	.0658607
Access to information		1.010168	.4467327	2.26	0.024**	.0749429
Participation in community affairs		2.060995	.5222492	3.95	0.000***	.1529023
Lack of gender awareness		-1.799728	.4786829	-3.76	0.000***	-.1335193
Extension service		.2803998	.9123933	0.31	0.759	.0208025
Domestic Violence		-1.094135	.436237	-2.51	0.012**	-.0811723
Constant		-9.908883	2.414557	-4.10	0.000***	

Source: Computed from Survey Data 2020; Number of observations=342; LR chi (13) = 303.44; Prob>chi2=0.000; Pseudo R^2= 0.6423; Log likelihood = -84.495431: ***, ** and * are represents of statistically significance at 1%, 5% and 10% respectively

Therefore, the logit model of Rural Women Economic Empowerment shown as:

Zi = -9.908+0.073AGE - 0.301HHSZE+1.043EDU1+1.559EDU2+1.514EDU3+0.265FRMSZE
+0.0002HFRMINC+0.0007OFRMINC+1.044ACSSCDT+0.887ACCOER+1.010ACCINF
+2.060PCMAFR-1.799LGDRAWR+0.280EXTNSRC-1.094DMCVLE

5.4 Determinants of Rural Women Economic Empowerment

The logistic regression results in table 5 above shown that out of thirteen explanatory variables eleven variables were statistically significant and the remaining two variables were statistically insignificant. The main factors identified were age, family size, educational level, household farm income, off-farm income, access to credit, access to and control of economic resources, access to information, rural women participation in community affairs, lack of gender awareness and domestic violence were significantly influencing rural women economic empowerment.

Age: The result of logit model revealed that age has positive influence on rural women economic empowerment and statistically significant at 5% probability level. The marginal effect showed that as age of women increases by

additional one year on average, the probability of women to become economically empowered increases by 0.5% marginal change ceterus paribus. This result is consistent with the result of Didana, (2018), Khan, et al. 2015, Ayevbuomwan, et al. (2016), and Qurra et al. (2015), but inconsistent with the result of Aregu, et al. (2017) which indicates that age is negatively affect economic empowerment of women.

Family size: The logit model showed that family size has negative influence on dependent variable and statistically significant at 10% probability level. This implied that the large household sizes reduce the empowerment of rural women. This inverse relation implied that the more increase in the household size, the narrower opportunity to be rural women economically empowered. Large family size can be exposed rural women to provide extra expenses and puts more pressure on consumption and expenditure in the family. The marginal effect of the logit model implied as number of household size increases by additional one, the probability of women to become economically empowered decreases by 2.2 % marginal change holding all other factors constant. This means having more family resulted to more expenditure for household in the study area. This result is consistent with the findings of Didana, (2018), Ayevbuomwan, et al. (2016).

Educational level: The result identified the education level of rural women have a positive effect on the rural women economic empowerment but the significant level was different with different levels of education. Here, from education category illiterate was taken as the base category. Accordingly, there was a statistically significant difference between illiterate rural women and those who have attended 1-4 class at 10% probability level. The result of marginal effect implied that rural women who have acquired 1-4 educational level are more economically empowered than illiterate women by 9.2%. Similarly, the finding result indicated that there was a statistically significant difference between illiterate rural women and those who have attended 5-8 education level regarding rural women economic empowerment at 10% probability level. The result of marginal effect implied that rural women who have acquired 5-8 educational level are more economically empowered than illiterate women by 13.8%. The result of this study is consistent with the findings of Didana, (2018); Ashar and Hussain (2016) and Aregu, et al. (2017). But this result is inconsistent with the result of Zhera, (2014) which indicates that no definite conclusion can be drawn about the relationship between education and economic empowerment of women.

Farm size: The result of logit model revealed that no association found between farm size and women economic empowerment. So that no conclusion or interpretation is given for this variable. The result of this study is similar with the finding of (Didana, 2018). But this finding of the study is inconsistent with result of (Tadele et.al., 2017).

Household farm income: The result of the logit model has showed that household farm income has positive influence over the dependent variable and statistically significant at 5% probability level. The marginal effect of the model showed that as income of household increases by additional one birr on average, the probability of rural women to become economically empowered increases by 0.001% marginal change ceterus paribus. This result of the study is consistent with results of studies done by Didana, (2018), Aregu et al (2017).

0ff-farm income: The result of the binary logit regression model indicated that off-farm income has positive relationship with rural women economic empowerment and statistically significant at 1% probability level. The marginal effect of the model result revealed that as off- farm income of rural women increases by additional one birr on average, the probability of rural women to become economically empowered increases by 0.005% marginal change ceterus paribus. This result is consistent with results of studies done by Didana, (2018) and Aregu et al (2017).

Access to credit: The result of the logit model indicated that access to credit has positive influence over the dependent variable and statistically significant at 5% probability level. The marginal effect of the model showed that rural women who access to credit are more economically empowered than rural women who do not access to credit by 7.7% marginal change ceterus paribus. This result is consistent with findings of (Didana, (2018) and Margaret (2015) but inconsistent with the result of Zhera (2014).

Access to and Control over economic resource: The result of logit model showed that control over economic resource is positively influence economic empowerment of rural women and statistically significant at 10% probability level. The marginal effect of the model showed that rural women who have the power and ability to access and control over economic resources are more empowered than rural women who have no power and ability to access and control over economic resources by 6.5% marginal change ceterus paribus. This result is consistent with findings of Didana, (2018) and Margaret (2015).

Access to information: Information can play a significant role in empowering women with the present dynamic world. The result of the logit model revealed that access to information has positive influence over rural women economic empowerment and statistically significant at 5% probability level. The marginal effect of the model showed that rural women who access to information are more empowered than women who do not access to information by 7.4% marginal change ceterus paribus. This finding is consistent with results of studies done by Didana, (2018), Margaret (2015), and (Wakitole, 2013).

Participation in community affairs: The result of the logit model indicated that participation in community affairs has positively influence over rural women economic empowerment and statistically significant at 1% probability level. The marginal effect of the model has showed that rural women who participate in community affairs are more empowered than rural women who do not participate in community affairs by 15.2% marginal change ceterus paribus. This result is consistent with the findings of studies done by Didana, (2018), Zhera (2014) and (Wakitole, 2013).

Lack of gender awareness: Lack of gender awareness can be obstacle to empower rural women economically. As expected, the result of the logit model indicated that lack of gender awareness is negatively affected rural women economic empowerment and statistically significant at 1% probability level. The marginal effect of the model showed that the rural women who have gender awareness are more empowered than rural women who have no gender awareness by 13.3% marginal change ceterus paribus.

Domestic Violence: As expected, the result of the logit model indicated that the domestic violence negatively affects rural women economic empowerment and statistically significant at 5% probability level. The marginal effect of the model showed that the rural women who exposed for domestic violence are less economically empowered than those who are not by 8.1% marginal change ceterus paribus. This finding is consistent with the finding of (Wakitole, 2013).

Extension service: The result of logit model indicated that there is no association found between extension service and dependent variable in the study area but possibly significant in other study area. So that there is no conclusion or interpretation is given for this variable. The result of this study is similar with the result of (Didana, A.C, 2018). However, this result is inconsistent with the finding of (Huria, 2014). Huria finding revealed extension service has positive influence on women empowerment.

5.5 The Role of Women in Agricultural Activities

The foundation of agriculture and agricultural development in Ethiopia is rural development, without it all efforts at agricultural development will be useless. Women play a pivotal role in advancing agricultural development and indispensable role in agriculture. According to the result of this study, all respondents identified the active role of women in agriculture like clearing, preparation of farm land, compost making, sowing, weeding, application of fertilizer and manure, application of irrigation, protection of crops from birds and monkey, harvesting, preparing the threshing grounds, winnowing, drying, stacking and carrying. Particularly, there are highly witnessed weeding in which women participate in cooperation with their neighbors as the type of tasks they do at field work. As paid activities they participate in employment, trade and marketing. In addition to this, they also perform various unspecified and miscellaneous tasks as unpaid activities related to home management such as collecting and carrying fuel from distance, fetching water for cooking and drinking and caring for family members. Indeed, the roles of rural women agriculture are the bridge that progress from poverty to prosperity. Without the support of women, the role of men alone gives non-sense in agriculture. Therefore, the role of women in agricultural activity should be recognized at global level.

6. Conclusion and Recommendations

6.1. Conclusion

This study has focused on investigating the determinants of rural women economic empowerment in Nunu Kumba Woreda of East Wollega Zone, Oromia National Region State of Ethiopia. The objective of the study was to identify determinants of rural women economic empowerment in agricultural activities. The study was used primary and secondary data sources. Primary data were collected from interview questionnaires, key informant interviews and focused group discussion. Total sample of 342 were selected using simple random sampling. Descriptive and logit model were applied as methods of data analysis. Descriptive analysis was used to compare the demographic and

socio-economic characteristics of the empowered and disempowered rural women. Logit model was used to identify the factors that affect rural women economic empowerment in agricultural activities. The result of logit model indicated that among 13 explanatory variables, eleven variables age, educational level, household farm income, off-farm income, access to credit, access to information, control over economic resources, participation in community affairs were positively and significantly influenced rural women economic empowerment while family size, lack of gender awareness and domestic violence are negatively influenced rural women economic empowerment in the study area. Consequently, their empowerment is mandatory as it enables them to fully use their potential, creativity, and talent, which are instrumental for the economic development of the country.

6.2. Recommendations

As observed from the study education level has a positive influence on rural women economic empowerment. Even if rural women are unable to attend due to domestic activities, it's better if woreda education office encourages rural women as they acquire formal education particularly those who are illiterate. Consequently, the woreda education office should take the responsibility of offering formal education for rural women in order to reduce number of illiterates. However, teaching rural women is not sufficient to empower them but teaching both rural men and women is more productive. Indirectly, increased education may have an impact on changing gender roles. Its better if woreda highly work to increase farmer's income via giving awareness for farmers how they can be improving their farm income using fertilizer. If woreda provides training for farmers with the help of developmental agents, their agricultural productivity improved and rural women's income also increased. It's better if woreda gives awareness about the advantages of accessing information for rural women since information brings rural women to better understanding about their democratic right and women empowerment. Considering the growing numbers of community in rural areas of woreda, access to information is an encouraging result. Concerning rural women lack of gender awareness, it's essential if woreda office of woman's affairs undertakes training deeply on the issues of gender awareness for rural women. Effectively delivering training concerning gender awareness for rural women will play a paramount role to achieve rural women economic empowerment. In the study area rural women household decision making power was less than men. Accordingly, in the study area it's better to encourage rural women decision-making power at household level which is important for their economic and social empowerment. Women's participation in decision making can increase the overall status of women and is the key for their empowerment. To empower rural women beside government initiatives society must take initiative to create a climate in which there is no gender discrimination, women have full opportunities of self-decision making and participating in social, political and economic life of the country with a sense of equality.

References

Adegoroye, A. A. (2008). The Roles of Selected NGOs in Economic Empowerment of Rural Women in Ibadan Land. Journal of Gender and Behavior, 6 (2): 33-45.

Alkire et al. (2013). "The Women's Empowerment in Agriculture Index." World Development 52:71–91.

Aregu , A., Aster , K., & Mesert , T. (2017). The Impact of microfinance on Women's Empowerment in Bench Maji Zone: Double-Blind Peer Reviewed Refereed Open Access. International Journal and ISSN: 2249-0558 Impact Factor:7.119 Vol. 7.

Ashar Awan and Syed Kafait Hussain Naqvi. (2016). Determinants of Women Empowerment in Pakistan.Some New Evidences From PSLM (2011 -12).

Ayevbuomwan, O., Popoola, O., & Adeoti, A. (2016). Analysis of Women Empowerment in Rural Nigeria: A Multidimensional Approach. Global Journals Inc. (USA) , Online ISSN: 2249-460x & Print ISSN: 0975-587X.

Ayferam, G. (2015). "Assessment of the roles and constraints of women in economic development of Ethiopia: the case of Ambo town since 1991. Journal of Political Sciences & Public Affairs, 1 -11.

Babita. A. (2010). Economic Empowerment of Women: An Impact Study of Micro-Enterprises in Nuwakot District,Nepal.

CSA . (2014/15). National statistics population survey, Addis Ababa,.

CSA. (2017). Housing census of Ethiopia and 3007 population results for Oromia region, vol, 1 .

Desai, M. A. (2010). Women's empowerment and human development.".

Didana, A. C. (2018). Determinants of Rural Women Economic Empowerment in Agricultural Activities:-The Case of Damot Gale Woreda of Wolaita Zone, SNNPRS of Ethiopia; Lecturer, College of Business and Economics, Dilla University, Ethiopia.

FAO. (2015). Qualitative research onwomen's economic empowerment and social protection, Rome.

FAO. (2016). FAO's programme for gender equality in agriculture and rural development.

FAO of the United Nations. (2019). National gender profile of agriculture and rural livelihoods – Ethiopia. Country Gender Assessment Series, Addis Ababa.

Firafis .et.al. (2016). Constraints of rural women in Assessing Microfinance Services. Institute ofCooperative and Development Studies, Ambo University. International Journal of Recent Scientific ResearchVol. 7, Issue, 3, pp. 9514-9521.

Golla et al. (2011). Understanding and measuring women's economic empowerment: Definitions, framework and indicators; International Center for Research on Women (ICRW).

Helina, B. (2015). Final Report National Assessment: Ethiopia Gender Equality and The Knowledge Society https://owsd.net/sites/default/files/National%20Assessment%20on %20Gender%20and%20STI%20-%20Ethiopia.pdf.

Huria A.M. (2014). An Assessment of Women Farmers' Participation in Agricultural Extension An Assessment of Women Farmers' Participation in Agricultural Extension West Oromia. Master Thesis AAU. Addis Ababa, Ethiopia.

Iqbal. et al. (2015). Problems of the disabled children's mother in rural areas of Faisalabad. J. Glob. Innov. Agric. Soc. Sci., 2:133-137.

Ibidapo, I and Oso, O. P. (2015). Determinants Of Rural Women Economic Empowerment In Ondo State, Nigeria.

Khan, A. I et al. (2015). determinants of women's empowerment and poverty reduction: a case study of rural faisalabad, Punjab. Pak. J. Agri. Sci., Vol. 53(4), xxx-xxx; 2016, ISSN (Print) 0552-9034, ISSN(Online) 2076-0906.

Margaret Muthoni Njega. (2015). Determinants of economic empowerment of women in Nyeri municipality, Nyeri, Kenya. International Journal of Economics, Commerce and Management United Kingdom Vol. III, Issue 10, October 2015.

Messay, T. (2012). An Assessment on the Role of Women in Agriculture in Ethiopia. Indira Gandhi National Open University, India.

Moa, A. (2018). The role of women in agricultural economy in Ethiopia: the case of Aira Woreda in western Wollega Zone, Oromiya regional state.

Ogato. (2013). The quest for gender equality and women's empowerment in least developed countries: policy and strategy implications for achieving millennium development goals in Ethiopia. International Journal of Sociology and Anthropology , 5: 358–372.

Qurra et al. (2015). Measuring and modeling women's economic empower mentin Pakistan. Journal of Asia pacific Studies. Vol 34.

Rajeshwari , S., & Shettar, M. (2015). Associate Professor, Department of Commerce, Shri. Hurakadli Ajja Shikshan Samiti's Smt. K. S. Jigalur Arts and Dr. (Smt.) S. M. Sheshgiri Commerce College for Women, DHARWAD-8.

Rathiranee, Y. (2013). Women empowerment through decision making. Int. J. Econ. Bus. Res., 3:225-235.

Sado , L., Spaho, A., & Hotchkiss, D. R. (2014). The influence of women's empowerment on maternal health care utilization: Evidence from Albania. international journal of Social Science and Medicine, 114, 169-177.

Samarakoon and Parinduri. (2015). Does education empower women? Evidence from Indonesia. World Development, 66: 428–442.

Samari, G., & A, R. Pabley. (2015). Individual and Household Determinants of Women's Autonomy: Recent Evidence from Egypt.

Shabbeer, A. (2016). Socio-Economic Empowerment of Rural Women. International Journal of Social Impact.

SIDA. (2018). SupportingWomen's Economic Empowerment: Scope for Sida's Engagement, Department:InternationalOrganisations and Policy Support, Art.no.: SIDA61849.

Tadele Erena et.al. (2017). Determinants of rural households' participation in microfinance services: The case of Cheliya District,West Shoa Zone, Oromia National Regional State,Ethiopia.

UNDP. (2014). Gender and Poverty Reduction: The Real Wealth of Nations: Pathways to Human Development United Nations development program. New York.

Wakitole, D. (2013). Determinants of Rural Women Economic Empowerment the Case of Guduru District of Oromia Regional State, Ethiopia. International Journal of Research in Social Sciences.

World Bank. (2011). What is empowerment? Poverty Net. Available from: http://goworldbankorg/V45HD4P100 (Accessed 10 December 2014).

Yamane, Taro. (1967). Statistics, an Introductory Analysis, 2nd Ed., New York: Harper and Row.

Zhera, B. (2014). Assessment of women empowerment through public agricultural extension services:The case of MeskanWoreda in the Southern Nations, Nationalities and peoples' region of Ethiopia. Master thesis, Haramaya University. Harar, Ethiopia.