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RESEARCH ARTICLE

REVIEW ON DETERMINANTS OF SUSTAINABLE RURAL LIVELIHOOD DIVERSIFICATION OF SMALL HOLDER FARMERS IN ETHIOPIA.

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Abstract

Diversification is a norm in every economy, particularly in rural Africa, where farming alone rarely provides sufficient income. The diversity of rural livelihoods in low income developing countries is receiving increased attention in discussions about rural poverty reduction, since the late 1990s. There are several determinants to successful sustainable livelihood diversification operate at different levels i.e. macro, meso and micro levels. There had been many studies conducted to identify determinants of livelihood diversification in Ethiopia in different region, but there is limitation of summarization on current state of understanding on livelihood diversification determinants. There is a general agreement in the literature that the driving forces of diversification operate at different levels. Determinants based on individuals and households response to incentives of livelihood diversification fall into two broad categories: “push” versus “pull” factors and different socio-economic factors influence household’s sustainable livelihood diversification. A number of studies have analyses through Empirical models to determinants of livelihood diversification, but compared to other model the double-hurdle model help gives good estimate of determinants.

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Introduction

Ethiopia is a country endowed with favorable natural environment for production of various crops and livestock. In spite of favorable environment for agricultural production there is limitation in environmental sustainable agricultural production through diversification (Badege, 2001) which, lead rural populations in Africa to suffer from poverty and environmental degradation (Miyuki Iiyama, 2006). Moreover, in rural areas with favorable endowments or opportunities, some households are better off in terms of welfare, while others remain trapped in structural poverty (Losch et al., 2012). When agricultural activities are seasonal and environments are full of uncertainty, like in many parts of SSA, rural households tend to reduce risk by diversifying into activities with lower covariate risk in order to make consumption and incomes less volatile (Barrett et al., 2001; Dercon, 2002; Ellis, 2000b; Matlon, 1991). Since their land is no longer able to meet the requirements of food due to this risk prone production for the family and of fodder for their cattle, rural households are forced to look towards alternative sources of income (Hiremath, 2007). This results in switching of people from the farm sources of income to non-farm activities for secure and sustainable livelihood (Davis et al., 2007). Diversification is a norm in every economy, particularly in rural Africa, where farming alone rarely provides sufficient income.

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Since the late 1990s, Livelihood diversification has received much attention from researchers and policy-makers to mitigate risks inherent in unpredictable agro climatic and politico-economic circumstances (Miyuki Iiyama, 2006). Livelihood diversification is defined as a process by which household members construct a diverse portfolio of activities and social support capabilities in their struggle for survival and in order to improve their standards of living (Ellis, 1998). Diversification can also refer to attempts undertaken by an individual or a household to find new ways of survival to raise income and endure shocks such as disasters and disease outbreaks (Khatun and Roy 2012). A comprehensive definition of the concept of livelihood has been developed, in connection to sustainability. Chambers & Conway (1992) stated that a livelihood comprises the capabilities, assets (including tangible and intangible resources) and activities required for a means of living. "A livelihood is sustainable when it can cope with and recover from stresses and shocks, and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base". Diversification is therefore associated with both livelihood survival and distress under deteriorating conditions, as well as with livelihood security under improving economic conditions (Niehof, 2004). It is aimed at securing better living standards by reducing risk, vulnerability and poverty, increasing income, enhancing security and increasing wealth (Yaro, 2006). In order to use livelihood diversification to secure better living standards, rural households have to be able to generate cash, build assets and diversify across farm and nonfarm activities (Ellis & Freeman, 2004).

Sustainable Livelihood diversification is an important survival strategy for the rural households in the developing countries. When a rural household has diverse sources of income earning activities, its chances of survival financially are better than those of a household which has only one source (Ellis 1996). However, there are several determinants to successful sustainable livelihood diversification operate at different levels i.e. macro, meso and micro levels (Davis, 2004; Warren, 2002; Haggblade, 2006).

There were many studies conducted to identify determinants of livelihood diversification in Ethiopia in different region (Prowse, M., 2015; Yishak G., et al., 2014; Tinsaye T., 2016; Adugna E., 2012 ;Yenesew S., et al, 2015; Adugna L., 2006), but there is limitation of summarization of current state of understanding on determinants of livelihood diversification or previously published studies on topic. Review of determinants for a particular agro-ecological region is crucial for future policy formulation. This study has identified some of the socio-economic, technological, institutional and policy constraints to livelihood diversification. These constraints have been found to vary across regions as well as across livelihood groups.

Methodology:-

Data collection in review article is undertaken document analysis through in-depth review of related literature from different source (Albore A., 2018). In the same manner, in this article data were obtained from review of related literature on Internet of Published articles, books, reports from government and non-government organizations.

Literature Review:-

Determinants of Rural Livelihood Diversification:-

There is a general agreement in the literature that the driving forces of diversification operate at different levels i.e. macro (trade policies, exchange rate, fiscal and monetary policies, market and infrastructures policies and research and extension policies.), meso (environment (regional or local agro-ecology, topography, soil quality, rainfall etc) population, infrastructure and markets) and micro levels (household asset basis & characteristics (such as land, livestock, savings, education, labor, age, gender, dependency ratio)) (Davis, 2004; Warren, 2002; Haggblade, 2006). Trade policy, for instance "directly affects diversification through inputs availability and prices, and production opportunities for export and for domestic consumption as well as through availability and price of goods for consumption" (Crole-Rees, 2002:19). More densely populated areas, for instance "may induce land pressure, which is most often the case, and hence, force household members to seek income outside the crop sector to secure food" (Crole-Rees, 2002:20).

Determinants Based On Individuals and Households Response to Incentives:-

Determinants of livelihood diversification fall into two broad categories: "push" versus "pull" factors. Diversification may occur either as a deliberate household strategy or as an involuntary response to a crisis (Ellis 1998). According to Sarah Aloblo Loison, 2015 individuals and households may diversify their assets, incomes and activities in response to incentives that may be classified as push and pull factors. It is simple push–distress vs. Pull–accumulation dichotomy offers a useful way of grouping these motivations (Barrett et al. 2001). However, the

processes and outcomes of push and pull factors are different in dynamic and in marginalized or stagnant regions (Haggblade et al., 2007).

Push Factors:-

Push factors are negative factors that may force farm households to seek additional livelihood activities within or outside the farm (Sarah Aloba Loison, 2015). Push factors tend to dominate in high-risk and low-potential agricultural environments, subject to drought, flooding and environmental degradation (Haggblade et al., 2007). According to Sarah Aloba Loison, 2015 push factor is Survival-led diversification which occurs when poorer rural households engage in low-return nonfarm activities by necessity to ensure survival, to reduce vulnerability or to avoid falling deeper into poverty. They are pushed towards diversifying their income sources to manage risks or cope with shocks, such as declines or stagnation in agriculture, differentiated labour markets, credit market imperfections, demographic pressures and land constraints (Barrett et al., 2001; Lay et al., 2008; Reardon et al., 2006).

The most common push factors are related to different forms of risk, such as seasonality and climatic uncertainty (Ellis, 1998, 2000b). Others include land constraints driven by population pressure and fragmented land holdings, missing or incomplete factor markets, and market access problems due to poor infrastructure and high transaction costs (Barrett et al., 2001).

Pull Factors:-

Pull factors are positive and these may attract farm households to pursue additional livelihood activities to improve their living standards (Sarah Aloba Loison, 2015). It is Opportunity-led diversification occurs when wealthier rural households engage in high-return nonfarm activities, with accumulation objectives, in order to increase household income by maximizing returns from their assets (Sarah Aloba Loison, 2015). They are able to diversify their income activities in more favorable labour markets or take advantage of off-farm opportunities created by technological advances, new market possibilities, proximity to urban centres or improved infrastructure (Lay et al., 2008; Losch et al., 2012). High returns to nonfarm activities may emerge from increased demand for nonfarm goods and services or off-farm opportunities created by growth motors in different rural sectors such as agriculture, mining or tourism (Reardon et al., 2006). Better-off households are those with high endowments of assets such as land, livestock and buildings (Ellis & Freeman, 2004), and are more likely to engage in diverse high-return nonfarm activities, some of which have similar or higher returns than farming (Barrett et al., 2001; Lay et al., 2008). In this way some better-off households are capable of accumulating capital by combining commercial farming and nonfarm activities while still relying more on commercial agriculture (Andersson Djurfeldt, 2013; Barrett et al., 2001; Ellis & Freeman, 2004).

These factors provide incentives for people to expand their range of income activities outside farming by increasing the returns from nonfarm activities. Such factors tend to dominate in less risky, more dynamic agricultural environments (Haggblade et al., 2007). Diversification becomes a deliberate strategy for an individual or household in order to generate assets for accumulation and reinvestment (Ellis, 1998, 2000b). Pull factors include the commercialization of agriculture and the emergence of improved nonfarm labour market opportunities linked to better market access, improved infrastructure, and proximity to urban areas (Losch et al., 2012; Winters et al., 2009). Other pull drivers of diversification are supply factors, such as improved technology, expansion of education, increased demand for non-food goods and services driven by higher per capita incomes (Reardon, 1997).

Determinants Based on Socioeconomic Characteristics of Household:-

According to (Miyuki Iiyama, 2006), socioeconomic variables differentiating livelihood diversification patterns among households share similar agro ecological (in terms of climate) and physical (in terms of access to regional markets, etc.) conditions are Variables representing household characters (age, gender, education years of the head, years in involvement in farmers' group, experience of having stayed and migrated to the current location, minute distance to a local training centre, the number of family members in Adult Equivalent), and those indicating involvement in particular crop-livestock activities, i.e., the size of land dedicated to particular crop types and the number of livestock holding in the Total Livestock Unit (TLU). Socio-economic factors influence household's sustainable livelihood diversification. In this review, socio-economic factors that determine diversification include age, access and level of education, size of the family, dependency ratio, access and availability of land, assets, access and availability of irrigation facility (Khatun and Roy 2012).

Demographic Variables Determine Livelihood Diversification Patterns:-

According to Yenesew S., et al, 2015 all demographic characteristics explained as human capital (sex, age, extension contact, education level, and dependency ratio of the household heads). On the age of household Previous studies show mixed results on the relationship between household age and farm income diversification. For example, Breman (1996) in India found younger households found to be more livelihood diversifier than old age counter parts. Kimhi and Lee (1996) reported that age of the farm household first increases and declines with the livelihood diversification, suggesting a nonlinear relationship. On the other hand, Barrett, Bezuneh et al. (2001), and Block and Webb (2001) argued that aged household heads have a larger family size and are likely to have extra and unemployed labour, helps them to allocate outside the agricultural sector. Despite inconsistency result on different study, as they grow older and gain more skills they have a better chance of diversifying into other livelihoods.

Access and Level of Education is the key to literacy. Regarding education level of the household head, the more educated household heads are engaged in non-farm and off-farm diversification strategies (Yenesew S., et al, 2015; Prowse, M., 2015; Yishak G., et.al.). This is because the better educated households are capable of calculating the costs and benefits of income generating activities and hence, enable them to engage in non/off-farm activities. Likewise, Kimhi and Lee (1996) and Barrett, Bezuneh et al. (2001) found similar results in that educational level of the farm household has a positive impact on livelihood diversification. If an individual is able to read and write they have a higher chance of choosing an appropriate field of work or further skills training in order to advance their livelihoods. Most of the information for skills and application that can sustain and offer technological advances in livelihoods are in writing and if one is not able to read and write the chances of advancing are low. Literacy opens channels that can help access credit and loans that can be used as start-up capital and or extra capital to advance a particular livelihood.

Sex of the household head is also significant across livelihood diversification strategies (Adugna E., 2012). Majority female headed are engaged in non/off-farm activities other than farming activities. This is attributed that females have easy access to participate into non/off-farm activities in the study area.

A big family size needs more resources for sustenance than a small family. People with big families will venture into as many ways as possible to gain the required resources to support their families. Family size is usually considered as an indicator of labor availability (Tegegne, 2000, and Demssie & Workneh, N., 2004) and households with abundant labour supply are believed more likely to engage in livelihood diversification or have a higher participation in non-agricultural activities. Labour-rich households feel less constraint to send some of their members to non-farm activity.

Dependency ratio is measures the pressure on the productive population. Dependency ratio measures the population of dependants (people younger than 15 and those older than 64) against the productive population (ages 15–64). In a household dependency ratio measures the ability of the household to sustain and meet their needs. This indicates that with increase in dependency ratio the ability to meet subsistence needs declines and the dependency problems make it necessary to diversify their income source (Holden, et al, 2004 ;Warren, 2002). An increased dependency ratio will push the household into diversifying into other activities that can bring more income to the household (Khatun and Roy2012).

Economic Variables Determine Livelihood Diversification Patterns:-

Availability of Land is apart from human capital also fundamental in rural livelihoods (Barbier and Hochard, 2014). Land, being a natural capital is a valuable asset for the rural poor. People need the land for agriculture, to build homes and as a base for their small-scale businesses and non-farm activities. Land size is significantly and negatively related to on-farm plus non-farm, on-farm plus off-farm, and on-farm plus non-farm plus off-farm livelihood diversification strategies(Yenesew S., et al, 2015). This mean that the households with large land size are participated less in non/off-farm livelihood diversification strategies and participated more on on-farm only livelihood strategy. Similarly, Adugna E. (2008) and Fikru (2008) stated that farmers with smaller land size are involved in off-farm diversification activities because of shortage of land to support their livelihood.

Availability of assets in a household increases the chances of investing into new markets and activities that will enhance the economy of the household. Previous studies suggest that the determinants of diversification in rural Ethiopia vary according to wealth status. For example, Demisse and Workneh (2004) in their study of diversification

in south Ethiopia, indicate that asset ownership, especially livestock, plays a major role in influencing households' decisions to diversify into non-farm activities. Livestock holding in TLU is negatively and significantly related to livelihood diversification strategy (Yenesew S., et al, 2015). Similarly Adugna E (2008) and Yisehak et al. (2014) found livestock holding has negative and significant relation with non/off-farm livelihood diversification strategies. On the contrary to this result, Amare and Belaineh (2012) found that livestock holding significantly and positively influence participation in wage activities at 5% level of significance. Households with more livestock holding do have the capacity to participate in lucrative non/off-farm employment activities than those households with no or small size livestock holding. Availability of assets allows for collateral that can be used to obtain loans and credit that can be used to boost capital and start up new businesses and income generating activities. A poor asset base limits a household's ability to diversify and/or acquire loans or credit.

Institutional Factor Determine Livelihood Diversification:-

Institutional factors also play a significant role in creating opportunities or constraints to the improvement of rural livelihoods. In some regions, institutional factors such as regressive tax systems at local level tend to discourage rather than foster livelihood diversification (Ellis & Freeman, 2004).

Access to credit and ability to borrow has been reported to stimulate livelihood diversification (Khatun and Roy 2012). It is believed that access to credit promotes the use of risky activities through relaxation of the liquidity constraint as well as through the boosting of a household's risk-bearing ability (Simtowe & Zeller, 2006). With an option of borrowing, a household can do away with inefficient risk reducing income diversification strategies and concentrate on more risky but also more efficient investments (Simtowe & Zeller, 2006). However, access to credit has been found to be gender biased in some countries where female-headed households are discriminated against by credit institutions, and as such are unable to finance yield-raising technologies, leading to low adoption rates (Muzari et al., 2012). There is therefore a need for policy makers to improve current smallholder credit systems to ensure that a wider spectrum of smallholders are able to have access to credit, more especially female-headed households (Simtowe & Zeller, 2006). This may, in certain cases, necessitate designing credit packages that are tailored to meet the needs of specific target groups (Muzari et al., 2013). For instance in Kenya, the government has started a program that offers free interest loans to youths and women (UWEZO fund). This will help to empower women and enable them to adopt agricultural technologies, hence enhancing economic growth.

Distance from town is institutional factor determine livelihood diversification (Reardon et al. 1998; Barrett et al. 2001). Rural populations that are closer to a town are able to source markets for their produce and also have a chance to access facilities and infrastructure such as markets, banks, credit facilities and health facilities that can further develop their livelihood. Based on previous study of (Prowse, M., 2015) distance to markets and towns and availability of electricity are consider as location variables determinants of Non-Farm Income Diversification in Rural Ethiopia. According to Belayneh L (2013) study shows that market distance positively influenced livelihood diversification in Ethiopia. Contrary to this result, Yenesew et al. (2015) and Adugna E. (2012) found negative correlation between market distance and livelihood diversification.

Many authors have reported a positive relationship between extension services and livelihood diversification (Lanjouw and Lanjouw, 1995; Adugna Eneyew and Wagayehu Bekele, 2012). In fact, the influence of extension agents can counter balance the negative effect of lack of formal education in the overall decision to adopt some technologies (Bonabana-Wabbi, 2002).

Social Factor Determine Livelihood Diversification:-

Social factors such as social positions, networks, associations, religion and culture are important drivers of diversification (Ellis, 1998). Membership to social groups within the community is one way of creating social networks. These networks are beneficial in obtaining knowledge that can be used to further livelihoods. Social clubs have also been used in developing countries as ways of obtaining credit loans and as training grounds in skills that are necessary in livelihood diversification and improvement for communities in rural areas. Labour market opportunities may be restricted by gender, class or social inequalities (Oya, 2007; Start & Johnson, 2004). In terms of gender, rural women are often constrained in accessing land and other productive assets (Gladwin, Thomson, Peterson, & Anderson, 2001). Therefore, they often adopt multiple livelihood strategies (Andersson Djurfeldt, Djurfeldt, & Lodin, 2013).

Biophysical Factors Determine Livelihood Diversification:-

Climatic dispositions can pose challenges in livelihood diversification. Areas that are associated with harsh climates may avert investors.

Agro-ecology has a negative and significant correlation with the likelihood of choosing agriculture plus off farm plus nonfarm. This increases as we go from high lands to midland (Adugna E. and Wagayehu B., 2012) reported the influence of agro-ecology and spatial variation as determinants of livelihood diversification. This might be due to differences in the quality and size of land, the amount and distribution of rainfall and population densities that influence between highlands and midlands. Agro-ecological factors show statistically significant association with the probability of diversification, and the probability was higher in midland and highland areas compared to the lowlands (Yishak G., et al. 2014).

Empirical Models to Determinants Of Livelihood Diversification:-

A number of studies have come up in Ethiopia and also at the international level that analyses factors affecting the decision and level of livelihood diversification. The study conducted by (Geremew W.K., et al, 2017) employed the logit model to investigate the probability that a farm household participates in non-agricultural income diversification activities. Then, he applied the seemingly unrelated regression (SUR) model to a system of equations consisting of on-farm, off-farm and non-farm income equations. On other hand the result of Baharu Gebreyesus (2016) used to Composite Entropy Index (C.E.I.) for dependant variable then multiple linear regression function for determinants. Moreover the study conducted (Fikru Tesfaye, 2008) A Case Study Of Non-Farm Rural Livelihood Diversification on Ethiopia use both multiple linear regression for non-farm income as diversification and logistic regression for involvement on non-farm income as diversification. (Birhanu N. D. & Getachew D. D., 2016) on their part applied Simpson index of diversification then Multinomial Logistic Regression Model. Moreover, Ibrahim et al.(2009) employed multiple linear regression model and identified that age and education of the household heads, extension visits, availability of tractor hiring, income from crop and road access to be the significant determinants of crop diversification in Nigeria. The multinomial logistic regression model (MLRM) result indicated that age, access to credit and regional location affected the crop diversification in Ghana (Aneani et al., 2011).

A number of studies have analyses factors affecting the decision and level of crop diversification. Pitipunya (1995) used Logit model and identified the man-land ratio, education, trade experience and level of information as most important factors that influenced the cropping pattern, in Thailand. Moreover, Kimhi and Chiwele (2000), used Heckman-Two-Stage model and detected household demographics, the status of rural road construction, market access and the size of yield of maize are influenced Zambian maize diversification. Besides Rehima M. et.al (2013) employed Heckman two stage model to estimate the diversification decisions and the level of diversification separately on factors affecting farmers' crops diversification.

In sum, the Heckman two stage models help to estimate separately the farmers' decisions and level of diversification provides a better estimate by separating participation of farmers and level of participation with compared to any other model.

Conclusions:-

Ethiopia is a country endowed with favorable natural environment for production of various crops and livestock. In spite of favorable environment for agricultural production there is limitation in environmental sustainable agricultural production through diversification. A livelihood is sustainable when it can cope with and recover from stresses and shocks, and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base". Diversification is a norm in every economy, particularly in rural Africa, where farming alone rarely provides sufficient income. However, there are several determinants to successful sustainable livelihood diversification operate at different levels i.e. macro, meso and micro levels. There had been many studies conducted to identify determinants of livelihood diversification in Ethiopia in different region, but there is limitation of summarization on current state of understanding on livelihood diversification determinants.

There is a general agreement in the literature that the driving forces of diversification operate at different levels i.e. macro (trade policies, exchange rate, fiscal and monetary policies, market and infrastructures policies and research and extension policies.), meso (environment (regional or local agro-ecology, topography, soil quality, rainfall etc) population, infrastructure and markets) and micro levels (such as land, livestock, savings, education, labor, age, gender, dependency ratio)

Determinants based on individuals and households response to incentives of livelihood diversification fall into two broad categories: “push” versus “pull” factors. Socio-economic factors influence household’s sustainable livelihood diversification include age, access and level of education, size of the family, dependency ratio, access and availability of land, other assets, access and availability of irrigation facility, Access to credit and ability to borrow, Distance from town, extension services, social positions, networks, associations, religion and culture, climate and agr-ecology.

A number of studies have analyses through Empirical models to determinants of livelihood diversification, but compared to other model the double-hurdle model help to identify the major factors that influence non-farm income diversification and provides a better estimate by separating factors that affect participation from those that determine the level of non-farm income.

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