Sectorial Transition Dilemma of Smallholder Farmers to Light Manufacturing Industry in Jimma Zone, Oromia Region, Ethiopia; Evidence from Khat Farmers.

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Abstract

This research was designed to assess willingness, ability, motive, preference and determinants of smallholder Khat farmer's transition dilemma to light manufacturing industry in Jimma Zone, Oromia Region, Ethiopia. The participants of the study were selected using two stage non probabilistic, purposive sampling and, two stage stratified sampling. First, we selected purposely four Woredas for Khat farmers. Then, we selected top five Kebelles in each Woreda purposely based on farmer's relative product production variation. Then, we prepared sample frame from each Kebeles that fall in our selection pool. Finally, 399 household heads (farmers) were selected using stratified sampling. Then, primary data were collected via structured questionnaire which was analysed descriptively and in binary logistic regression model. Accordingly, majority (94 per cent) of smallholder khat farmers prefer to stay on their current crop farming. Thus, increasing these products' productivity and price is one possible means of intervention to improve the smallholder farmer's livelihood. The remaining 6 percent of khat farmers need to transform their current farming livelihood to other sector in general. Majority of smallholder Khat farmer's transition preference (for those who prefer transition) was to the services sector. Therefore, any means of intervention need to help transformation in the area can be successful if they consider mainly skill, infrastructure, and market needed the service sectors. Khat farmer's ability for transition (33 per cent) dominates their willingness (29 percent). For Khat small holder farmers, who need to transit to light manufacturing "wood products" is their number one choice. Consequently, the concern of transition intervention shall target wood product if the concern is Khat farmers. Age of smallholder khat farmer was one of the determinants of transition to light manufacturing industry. Young smallholder farmers are more likely to transit to light manufacturing industry. The aged are less likely transit to light manufacturing industry. Owning higher capital, having land access, accessing skilled labour, accessing credit service, awareness about the industry, having more family size, and accessing energy services were factors that positively determined farmer's transition need to light manufacturing industry.

Keyword: *Structural transformation, Transition Dilemma, Light Manufacturing, Logit, Smallholder farmers, Jimma, Ethiopia.*

1. Introduction

Structural transformation is the defining characteristic of the development process both as its cause and consequence. Structural transformation is characterised by a shift of predominant share of agriculture to manufacturing activities and a moderate to high level of increase in the share of services both for the national product and the work force. This pattern has not only

been observed historically, but also holds across the countries with different levels of development (Święcki, 2013).

According to Lewis (1958), the economic transition from the backward agriculture to industrialization is considered as economic development. The transition process is associated with the expansion of the modern manufacturing sector and, the shrinkage of the traditional agricultural sector. In the process the backward rural sector is the supplier of cheap labour to the advanced industrial sector. Then the industry sector is believed to be profitable through rapid capital accumulation and investing further, the sector drives growth depends on savings.

Commonly, light manufacturing industries are apparel products, leather products, agribusiness products, wood products, and metal products. In the entire category context, Ethiopia has many natural resources that can provide valuable inputs for light manufacturing industries which can serve both domestic and export markets.

Tocco et al, (2013) had done working paper on, determinants to leave agriculture and change occupational sector: Evidence from an Enlarged EU. They have stated the case by separating the determinant in term of pool and push factor. Their result suggested that, younger individuals are more likely to leave farming activities. The largest outflows of agricultural labour are mainly associated with the retirement of people. Self-employed and family workers are generally less likely to leave agriculture. Those with low levels of educations are found to be significantly constrained in entering the non-farm economy. Moreover, labour market conditions at the regional level do matter for switching occupational sector.

Jimma industrial parking centre is one of the industrial parks in the country designed to bring industrialization and transformation. The purpose was to capacitate industrial transformation agenda in the area. In other way realization of this economic transformation plan in Jimma area and in Ethiopian is implemented with this good aim. Frequently difficulty of firms and consumer future behaviour limits the expected best policies outcome. Again, unless agents behave and react accordingly the government strategy by itself is not the guaranty of implementing any plan. The world economic context is dynamic. Means of production, mode of transaction and consumption decisions of agents are changing over time.

To examine this context this research paper was designed to investigate possibility of local smallholder farmer's participation on light manufacturing industry development. Will they remain producing and supplying Khat to the market or go for other alternative or change their occupation to light manufacturing industry. In the investigation process farmer's transition dilemma to light manufacturing industry, willingness, ability, motive, preference and determinants were addressed.

Khat is the second major cash crop product in Jimma Zone next to coffee. Its multiplier effect on livelihood of the people, and on other part of the country people is significant. We considered four Woredas (Districts) that have relative higher potential of producing Khat. Accordingly, Mana, Dedoo, Seka Chokorisa and Karsa Woreda were selected. According to CSA (2007) total number of household were estimated to be 161,961, for these Woredas.

With this in mind this paper was conducted with the major objective of investigating sectorial transition dilemma of smallholder Khat farmers to light manufacturing industry in Jimma Zone, Oromia Region, Ethiopia by taking the above woredas as case studies.

2. LITERATURE REVIEW

The path of economic development is historically associated with structural transformations. It is characterized by patterns of changing shares of different sectors in the national income and labour force. The transition of economy from agriculture to industrialization is characterized by dualism. In the larger agricultural sector, the modes of production are more primitive and outdated. Whereas, in the smaller manufacturing sector the modes of production are modern and advanced. Labour in the manufacturing sector is comprised of relatively well-paid and skilled urban workers. In the agriculture sector, however, they are poorly paid and are unskilled rural workers. (Lewis, 1958).

For Kuznet, growth is associated with changes in sectoral composition which is due to demand and supply side factors.

On the demand side, Fisher and Clark argued that since income elasticity of demand for agricultural products is low, with rising levels of income, the demand for agricultural products relatively declines. While on the other hand income elasticity for industrial sector is high. And for services, it is still higher. As a result, the demand for industrial goods increases and, after reaching reasonably high levels of income, demands for services increases sharply.

On the supply side, since agriculture mainly depends on a fixed factor of production, i.e., land, it faces a limit on its growth due to operation of the law of diminishing returns. Industry on the other hand, offers large scope for use of capital and technology, thus augmenting its productivity. Although the constriction in labour supply can curtail the expansion of industry as well, yet it is possible to overcome it by introducing laboursaving technological changes. The same applies to services where application of technologies seems to offer much larger scope. Clark agreed that final demand will increasingly shift to services, but shift of labour force takes place due to high productivity of manufactured goods and low productivity of services. Kuznets (1955) also saw income elasticity of demand as the primary reason for changes in economic structure, but recognized that other factors like, technological and institutional also play an important role in accelerating these changes.

Again sector-biased technological progress is one source of structural change. According to this theory if productivity growth in a sector is slow relative to other sectors then the relative price of the sluggish sector increases over time. With sectoral outputs being gross complements in consumption, expenditures and labor shift towards sectors with relatively slow productivity growth (Baumol, 1967). The other classic explanation of structural change relies instead on non-homothetic preferences. In their explanation as incomes rise, households spend relatively less on agricultural goods and more on services.

Structural transformation is shifts in the allocation of labor and expenditure across broad sectors of agriculture, manufacturing and services. Tomas (2013) asked which of the multiple mechanisms suggested in the literature are quantitatively important for understanding the process of structural transformations on his work on determinants of structural change. He built a model combining sector-biased technological progress, non-homothetic tastes, and international trade and changing wages between factor costs across sectors.

In Ethiopia, Kindeye Fenta (2014) explored the formulation and implementation of industrial policy under the successive regimes of Ethiopia and the sectors inter-regional and intra-regional distribution. He found that the large and medium manufacturing industries are not equally distributed across regions. The developed regions achieved an increasing share of industrial development while the peripheral regions lagged behind. Notwithstanding its

dominance in major industrial establishments, the share of Addis Ababa City Administrations is decreasing over years though still serve as industrial hub of the country.

There are striking differences among urban areas of the same regions. Cities that are the seat of the regional governments and their surrounding environs serve as centres of industrialization for their own respective region. Again he showed, presence of significant disparities among and within regions in the number of people engaged in the sector, wages and salaries paid to workers, the fixed assets possessed by the sector and, the sector`s contribution to national income account and capital expenditure. This difference is primarily driven by difference in the productivity of the private sector in each region.
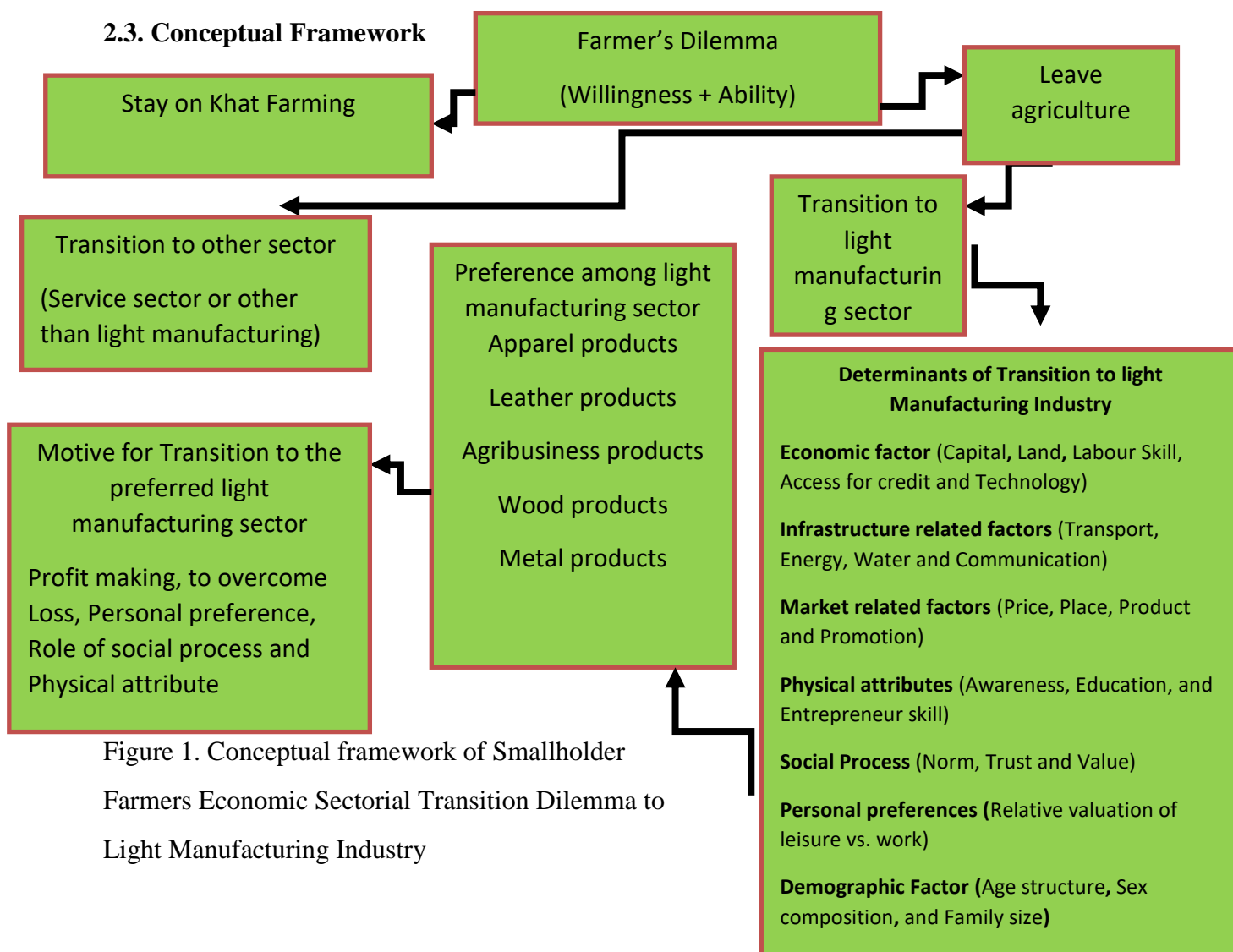
2.3. Conceptual Framework

Figure 1. Conceptual framework of Smallholder Farmers Economic Sectorial Transition Dilemma to Light Manufacturing Industry

3. RESEARCH DESIGN AND METHODOLOGY

3.1. THE STUDY AREA

The study was conducted in Jimma Zone, Oromia region, Ethiopia. According to Jimma Zone agriculture office, the zone is divided into 21 Woredas (Districts). The major cash crop is coffee. Khat is the other main source of income for many smallholder farmers. The total population of the zone is estimated to be over 2.2 million. The Zones agro-ecological setting

is mainly dominated by midlands (67%), low-lands (18%) and highlands (15%). Maize, "teff", sorghum, barley, pulses, beans and peas are the other crops grow in the zone. The area receives good rain, ranging from 1200-2800 mm per annum.

The target population for this study were smallholder Khat farmers in the zone. We took four Woredas (Districts) that have relatively higher potential of farming Khat namely *Mana, Dedo, Seka Chokorisa and Karsa*. The total number of households for the selected four Woredas (Districts) was 161, 961(CSA, 2007).

3.2. Research Approach
The approach employed in this research is quantitative based on the primary data. The quantitative instrument is planned to capture the measurement of quantitative figure.

3.3. Data source, and Collection Techniques
The data for the accomplishment of the study was collected from primary data source. Probabilistic and non-probabilistic sampling techniques were used to identify the representative sample. Then, the data was collected using structured questionnaire.

3.4. Population, Sampling Method, and Sampling Element
The target population of the study was smallholder Khat farmer households in the four Woredas (Districts). Both non probabilistic and probabilistic sampling techniques were employed. Two stage purposive sampling was used. Woredas (Districts) that have great potential of farming Khat were selected purposively in the first stage. Kebelles within each selected Woreda(District) with their great potential of farming Khat were purposively selected in the second stage of the purposive sampling.

From probabilistic we applied again two stage stratified sampling. We formulated four strata (the four Woredas) in the first stage and in the second stage; we formulated clusters at Kebele level within each Woreda according to their potential of farming Khat. From the total Kebeles in each Woreda, we formulated up to sixty five clusters, based on each Woreda's agriculture office response.

To select the last element, household, the study determined sample size first. Second, proportionally allocated sample for each Woredas. Then, sample frame was formed for each Woredas. The formation of sample frame contains each Woredas top five (5) Kebelles known in intensive production Khat.

Finally, the study element, household head, was selected randomly, from the Kebelles clusters sample frame.

For the study, sample size was determined using the following formula (Yamane, 1967).

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

Where,

   n = sample size,

   N = Household size and

   e = acceptable sampling error (.05).

From the determined total sample size we draw sample from each stratum based on the following proportionate sampling procedure:

$$n_j = (N_j/N)X_n \;\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \text{(2)}$$

Where,

n_j = Size of sample from j th stratum,

N_j = Household size in j th stratum,

N = total household size and

n = total sample size.

3.4.1. Study Population and Sample Size of the study

Therefore, sample size of the study is given by:

$$n = \frac{161961}{1+161961(0.05)^2} = \frac{161961}{1+161961(0.0025)} = 399$$

and the sample proportion in each woreda is given in the following table (Table 3.1)

Table 3.1 Proportion of Woredas Sample

Woreda	Total Household in the Woreda, N_j (2007)	Total Population of the study, **N**	**n**	$n_j =(N_j/N) X_n$
Mana	29,848	**161,961**	**399**	74
Dedo	57,311			141
Seka chokorisa	41,844			103
Karsa	32,958			81
Total	**161,961**			**399**

Source: Compiled by authors.

3.5. Method of Data Analysis

The analysis of the data contains both descriptive and econometric techniques. Willingness, ability, preferences, and motive of smallholder farmer's transition to light manufacturing industry were discussed descriptively. Smallholder farmer's transition dilemma to light manufacturing industry and the determinant factors was analysed using binary logit model.

3.6. Model Specification of the study
We specified the following model based on the economic theory and empirical scholars vis a vis Todaro & Smith (2009), Lewis (1954), Key (2005), Lewis, (1958), Haiduk et al. (2004), Kuznets (1955), (Baumol, 1967), and Matsuyama (2009), Barbara, Alastair, and Sophia (2013), Kotler et al. (2010), Pinki (2014), and Robert, 2014).

Based on the empirical and theoretical evidences mentioned above, the functional relationship of 'Decision to Transit to light manufacturing sector or to remain in agriculture sector' (the dependent variable) and independent variables was specified as follow:

KFTD = f (*Age, Sex, Family size, Capital, Land, Labour Skill, Access for credit service , Price expectation, Place, Technology, Promotion, Awareness, Education, Norm, Trust, Entrepreneur skill, Transport, Energy, Water, Communication*).

Where;

KFTD = 'Khat' Farmer's Transition Decision = the dependent variable.

3.7. Specification of the Binary Logit Model

In this study, the dependent variable is a dummy. It takes a value of one (1), if 'response' is yes, for the question of whether the smallholder farmer needs to transit to light manufacturing industry or not; or zero (0) otherwise. The independent variables are mix of both continuous and discrete variables.

There are several methods to analyse the data involving binary outcomes. If the independent variables are normally distributed the discriminant-analysis estimator, which follows ordinary least square procedures (OLS) is the true maximum likelihood estimator (MLE). Thus, it will therefore be asymptotically more efficient than the logit model. However, if the independent variables are not normal in their distribution, the discriminant-analysis estimator will not be consistent. In this case, the logit MLE is consistent and therefore more robust (Woodlridge, 2009). For this particular study, therefore, logit model was selected over discriminant and linear probability models.

To estimate the transition dilemma of smallholder farmers to light manufacturing sector and identify the determinants, Logit model was specified as follow;

$$P_i = 1 / (1 + e^{Z_i}) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3)$$

$$Z_i = \beta_0 + \beta_1 X_{ii} + \beta_2 X_{2i} + \dots\dots + \beta_n X_{ni} \dots\dots\dots\dots\dots\dots\dots (4)$$

$$P_i = 1 / (1 + e^{(\beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots\dots + \beta_n X_{ni})} \dots\dots\dots\dots\dots\dots\dots\dots (5)$$

$$Logit (Z_i) = ln (P_i / (1-P_i)) = Z_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \text{-------}\beta_n X_n + U_n \dots (6)$$

P_i = Probability of Transit to light manufacturing industry in relation with explanatory variables.

e^{z_i} = is 'e' to the power of zi.

Z_i = A function of explanatory n variables.

β_s = parameters.

3.8. Diagnostic Checking Method of the Model

To confirm the result of the model, the study used diagnostic tests of binary logistic model. The tests include fitness of the logistic model for estimation, test for parameter association with an explanatory variable, test of multi-co linearity, test exact or perfect association among explanatory variables and test of how well the explanatory variable explains the dependant variable (Gujarati, 2003). To be accepted, the model should pass all these tests.

3.9. Variables definition and expected outcome

In this study, the following independent variables are considered. Their codes, definitions, scale measurements and expected signs were summarized in Table 3.2.

Table 3.2: Definition of Variables and their expected signs

Code	Definition	Scale measurement	Type	Expected sign
A	Age	In year	Continuous	-
S	Sex	Male = 1, female = 0	Dummy	+/-
C	Capital	In Cash	Continuous	+
FSIZE	Family size	In number	Continuous	+/-
LA	Land for Manufacturing	Access = 1, No access = 0	Dummy	+
LS	Labour Skill Access	Access = 1, No access = 0	Dummy	+
AccCrSe	Access for credit service	Access = 1,No access = 0	Dummy	+
PrEX	Product Price Expectation	In Birr	Continuous	+
Place	Place	Distance from market in Kms.	Continuous	-
Tech	Technology	Technique of production	Dummy	+
Awar	Awareness	Yes = 1, No = 0	Dummy	+
Edu.	Education level	In School Years	Continuous	+
Nor.	Norm	Yes = 1 No = 0,	Dummy	+
Tru.	Trust	Yes =1 No = 0,	Dummy	+
Value	Value	Yes =1 No = 0,	Dummy	+
EntrSkl	Entrepreneur skill	Yes =1 No = 0,	Dummy	+
Trns	Transport	Distance in Kms.	Continuous	-
Enrgy	Energy	Yes =1 No = 0,	Dummy	+
Wtr	Water	Yes = 1 No = 0,	Dummy	+
Commu.	Communication	Yes =1No = 0,	Dummy	+

Source: Compiled by authors

4. RESULTS AND DISCUSSIONS

4.0. Introduction

The study used structured primary data collected from three hundred ninety-nine selected sample respondent household heads of the four selected woredas (*Mana, Dedo, Seka Chokorisa and Karsa)* to conduct the analysis. The analysis has two parts: descriptive and econometric.

4.1. Smallholder Khat Farmer's Transition Dilemma

The farmers were asked whether they need to remain in Khat farming or need to transform to other sectors like light manufacturing industry or service sector or any other sector/industry.

Their responses are summarized in the following table, Table 4.1.

Table 4.1. Response of Smallholder Khat Farmers whether they want to transit or stay on Khat farming

Response	Frequency	Percentage (%)
Stay on Khat farming	376	94.24
Need to transform	23	5.76
Total	399	100

Source; - Own survey

Only twenty-three (6%) of the sample Khat farmers want to transform their current livelihood to other sectors. Three hundred seventy-six (94%) of the sample Khat farmers want to remain in their Khat farming. Many explanations can be given for the dominance of stay on Khat farming, the first being the emotional attachment between Khat Product and Khat farmers in Jimma. Due to the historical persistence to Khat farming culture, the farmers in the study area have for long specialized in the production and consumption of khat. There is high demand for khat and this makes it is a very reliable source of income for the khat farmers. Then, why they transit?

4.2. Preferences of Smallholder Khat Farmer's Transition.

Preference of smallholder transition was taken from the entire sample respondent. They were asked to show their preferred sector to transit to *if they wanted to.* The result of their responses is as presented in the following table, Table 4.2.

Table 4.2. Preferred sectors of Smallholder Khat Farmer's transition, if they wanted to transit

Response	Frequency	Percentage (%)
Service sector	206	51.63
Light manufacturing industry	117	29.32
Other	76	19.05
Total	**399**	**100**

Source; - Own survey

Two hundred six (52%) of the sample respondents prefer to transit to the service sector, while one hundred seventeen (29%) of them want to transit to light manufacturing and seventeen six (19%) of them wanted to transit to other sectors.

The primary preference for sectorial transformation of the smallholder Khat farmers is the service sector. The plausible explanation for this is the suitability of the existing infrastructure which is enough to start a service business, availability of role models to follow; the relatively simple skill required for this sector, the relatively lower budget needed in this sector, and the easy profitability in this sector.

The second most preferred sector for transformation of the Khat farmers in the study area is the light manufacturing industry. The light skill required, the low budget needed and the large dependency of the sector on agricultural outputs could be the reason. The remaining 19.05 percent of the sample Khat farmers preferred to transform to other sectors. This is because of profitability, need of industrialization, education expansion and a good working environment created following stimulated economy among others.

4.3. Willingness of Smallholder Khat Farmer's Transition to Light Manufacturing Industry

Whether the khat farmers in the study area are willing to transform, specifically, to light manufacturing sectors or not was also analysed. One hundred seventeen (29%) of the sample respondents are willing to transform to light manufacturing industry while the remaining two hundred eighty-two (71%) of them were not willing to transform to the light manufacturing industry. This shows the age-old rigidity of the Ethiopian farmers not to change in general and manufacturing sector in particular. This in turn is because of fear of the unknown where technology is more required in the light manufacturing sector. This rigidity can also be explained from the farmers' desire to keep their comparative advantage and also maintain the existing labour division and specialization, doing what they are best at rather than trying something they don't know.

Table 4.3 Willingness of Smallholder Khat Farmer's Transition to Light   Manufacturing

Industry

Response	Frequency	Percentage (%)
Yes	117	29.32
No	282	70.68
Total	399	100

Source; - Own survey

The remaining one hundred seventeen (117) or 29.32 percent are willing to transform to light manufacturing sector. This can be explained either by search for profitability or lack of farm land (push factor). There may also be pull factors in the light manufacturing industry like perceived expected seemingly good factors in the light manufacturing sector like infrastructure and so on. However willingness alone does not guarantee the smooth and successful sectoral transformation to light manufacturing sector. It should be supplemented with other capabilities like technical, financial and infrastructural.

4.4. Ability of Smallholder Khat Farmer's Transition to Light Manufacturing Industry

Whether the sample respondent khat farmers have the financial capabilities for the transformation if they wanted was analysed. Their responses are summarized in the Table 4.4 below.

Table 4.4. Ability of Khat Farmer's Transition to Light Manufacturing Industry.

Response	Frequency	Percentage (%)
Yes	131	32.83
No	268	67.17
Total	399	100

      Source; - Own survey

Two-hundred sixty-eight (67%) of them do not have the financial ability needed for transformation. One hundred thirty-one (33%) of them replied that they have the required financial ability to transform to light manufacturing industry.

There is coincidence in the responses of willingness to transform and financial ability to transform. This indicates that, the willingness to transform is a associated with the existing financial ability to transform. Having the financial ability, however, is not a guarantee for their decision to choose the light manufacturing industry. They may prefer other less risky and highly profitable sector for transformation like the service sector.

4.5. Preferences of Smallholder Khat Farmer's among Light Manufacturing Industry

The sample respondents have made their choices of light manufacturing types revealed in the following, Table 4.5.

Table 4.5. Preferences of Khat Farmer's among light manufacturing industry.

Response	Frequency	Percentage (%)
Apparel products	08	2.00
Leather products	06	1.50
Agribusiness products	88	22.06
Wood products	294	73.68
Metal products	03	0.75
Total	399	100.00

      Source; - Own survey

Wood products industry has got two hundred ninety-four likes (74%) followed by the agribusiness products industry with eighty-eight likes (22%) among the list of types of light manufacturing.

Wood products industry is highly preferred because of the existing of abundant forests and other related natural resources in Jimma. The same is true for their second preference, agribusiness products. That is, availability of agricultural land, relatively better rain and surface water is good justification for Khat farmer's agribusiness product preference among the light manufacturing alternatives. The available agricultural resources serve as inputs for the agro processing industries.

4.6. Smallholder Khat Farmer's Motive for Transition to the preferred light Manufacturing industry

The summary of the responses to the question of (what motivates the smallholder Khat farmers transition, if any) is given in the table below, Table 4.6.

Table 4.6. Smallholder Khat Farmer's Motive for Transition to the Preferred Light Manufacturing Industry

Motive	Number	Percent (%)
Profit making	349	87.47
To overcome Loss	14	3.51
Personal preference	33	8.27
Role of social process	01	0.25
Physical attribute	02	0.50
Total	399	100

Source; - Own survey

The primary motivating factor for transformation to the light manufacturing industry is profit making motive. Higher productivity in the light manufacturing industry as compared to Khat farming could be the reason for profit motive of Khat farmers. The light manufacturing industry has advantages over khat farming like requiring less land size for operation, less number of workers and time-wise flexibility of production. These will make the cost of production relatively lower. Besides the light manufacturing industry has high and ever-increasing demand. These factors will add up to the profitability motive of the transformation. Personal preference and overcoming loss are the second and third motives, respectively, for transformation to light manufacturing industry. The underlying justification could be miss match of available agricultural land and increasing labour force in rural. In this case agents could adjust their relative valuation of leisure and work effort mainly to overcome underemployment.

Weather (seasonality) dependence of Khat farming could be the reason motivating Khat farmers to select overcoming loss as second motive for transformation to the light manufacturing industry. The other two alternative motives presented to respondents, physical attributes and role of social process, got two (02) and one (01) smallholder Khat farmers respectively.

4.7. DETERMINANTS OF SMALLHOLDER KHAT FARMER'S TRANSITION DILEMMA TO LIGHT MANUFACTURING INDUSTRY

Results and Discussions

The study checked for the presence of multi-collinearity among the independent variables in the model. From the result of the multi-collinearity test, we concluded that there is no perfect or exact linear relationship among the independent variables of the model. Correlation coefficients in the correlation matrix of predictor variables are less than unit.

The Hesmer – Lemeshow test confirmed that all independent variables of the model have strong association with the dependent variable. Thus, proving the model's goodness of fit. Other tests of goodness of fit of the model like inferential goodness-of-fit, the H–L statistic that yielded a χ2, have become significant at 1% (one per cent) level of significance.

This shows the overall fitness of the binary logistic regression model used for the estimation of the determinants of smallholder Khat farmer's transition dilemma to light manufacturing industry. The output of the logistic regression is presented in Table 4.8.

The econometric analysis/regression results are given in the following two tables. The model is fit and as indicated by the pseudo R^2, 29% of the variation in the dependent variable (the decision to transit to light manufacturing of small holder khat farmers) is explained by the explanatory variables included in the model.

Table 4.8. Logistic regression output

logistic KFTD A S C FS LA LS ACS PPE Place Tech Awar Edu Nor Tru EntrSkl Trns Energy Wtr Commu VAlue					
Logistic regression				*Number of obs = 399*	
				LR chi2(20) = 126.42	
				Prob > chi2 = 0.0000	
Log likelihood = -156.94663				*Pseudo R2 = 0.2871*	
KFTD	**Odds Ratio**	**Std. Err.**	**Z**	**p>|z|**	**[95% Conf. Interval]**
A	0.953	0.111	-4.04	0.000**	0.93 .0.99
C	1.000	1.93	6.11	0.00**	1 1
LA	2.147	0.726	2.26	0.024**	1.11 4.16
LS	2.069	0.682	2.2	0.027**	1.09 3.95
ACS	2.221	0.686	2.58	0.010**	1.21 4.07
Awar	2.749	0.815	3.41	0.001**	1.54 4.92
Energy	2.711	0.869	3.11	0.002**	1.45 5.08
_Cons	0.108	0.126	-1.91	0.056	0.11 1.05

Source; own computation based on survey

NB. Only statistically significant variables are kept in the table to save pages!

The overall relation in the model between the dependent variable and independent variables was explained in pseudo-R-square. Accordingly, nearly 29% of the decision to transform to light manufacturing industry or not was explained by the independent variables of the model.

Based on the regression result, the model of the determinants of the transition dilemma can be presented in the following equation, Equation (7);

Logit (KFTD) =-0.108 +2.71Enrgy +2.75Awar +2.22ACS +2.07LS +2.15LA +1.00C -0.95A …………………………………………………………………………………… (7)

Owning higher capital **(C)**, having land access **(LA)**, accessing skilled labour **(LS)**, accessing credit service **(ACS)**, having awareness about the industry **(Awar)**, and accessing energy services **(Enrgy)** are the variables that positively determine Khat farmer's transition decision to light manufacturing industry.

Age of smallholder khat farmers is negatively related to probability of transition need to light manufacturing industry. Hence, younger smallholder Khat farmers are more likely transit to light manufacturing industry. Aged smallholder khat farmers are less likely transit to light manufacturing industry by 0.95. As age of smallholder Khat farmers increase by one year likelihood of transition to light manufacturing industry decreases by 0.95 factor. Hence, participation in light manufacturing industry development in the area is badly expected from the young smallholder farmers. And, again any means designed to intervene to enhance farmers participation in the industry will be effective if they target the young smallholder khat farmers. Again, Smallholder khat farmer's ownership of cash capital is positively related to the probability of transition to light manufacturing industry. Farmers with more cash capital are more likely transit to light manufacturing industry as compared to those having less cash capital by 1.00 factor. Further, smallholder coffee farmers who has skilled labour access, and land access for light manufacturing industry has higher likelihood of transition to light manufacturing industry by 2.07, and 2.15 factors respectively. Additionally, as farmers access to credit increases by one, likelihood of transition to light manufacturing industry increases by 2.22 factor. Moreover, awareness is positively related to probability of transition to light manufacturing industry. More aware smallholder coffee farmers are more likely transit to light manufacturing industry as compared to unaware farmers by 2.75 factor. Access to energy sources also positively affects the probability of transition to light manufacturing industry compared to those who have less access by 2.71 factor. From these determining factors we can deduce that, the intervention ways to help smallholder coffee farmer's participation on lights manufacturing industry development in the area shall target; younger farmer, those who have access for skilled labour, those who have access to credit facility and energy sources. Additionally, those who has land access for light manufacturing industry, higher financial capital and awareness about light manufacturing industry should be focussed for faster transition to light manufacturing industry.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusion
Khat is a commercial agricultural product in Ethiopia in general and in Jimma in particular. From the descriptive survey analysis of this study, we can conclude that the smallholder khat farmers want to stay on cultivating and selling khat than transit to light manufacturing industry. Even if they want to transfer, it is not to light manufacturing, rather to the services

sector. But, if they were to transit to light manufacturing industry their preferred industry was wood works followed by agro-business processing industries.

From the binary logistic regression model, we found out that age affects the transit decision negatively, which means younger are likely to transit to light manufacturing industry. Other factors like access to energy and credit facilities, having awareness and skill, having access to cash capital and land affects the probability of transit positively.

5.2. Recommendation

Transiting is a must do activity for every farm household. It is recommended to remain farmers forever. The healthy developmental process is transiting from agriculture to manufacturing and then to services sector. Thus, the government has to intervene in such areas as increasing awareness, providing credit facilities, providing land, availing energy sources, guiding the young to smoothly transit, etc.

References

Barbara T., Alastair B., & Sophia D. (2013). *Determinants to Leave Agriculture and Change Occupational Sector: Evidence from an Enlarged EU*. Available for free downloading from the Factor Markets (www.factormarkets.eu) and CEPS (www.ceps.eu) websites.

Barkley, A.P. (1990). *The Determinants of the Migration of Labor out of Agriculture in the United States, 1940-85*. American Journal of Agricultural Economics, Vol. 72, No. 3, pp. 567-573.

Baumol, W. (1967). *Macroeconomics of unbalanced growth: the anatomy of urban crisis*. The American Economic Review, 57, 415–426.

Buera, F. J. & J. P. Kaboski (2009). *Can Traditional Theories of Structural Change Fit The Data?* Journal of the European Economic Association, 7, 469–477.

CSA (2007). *Population and Household census of Ethiopia*. Addis Ababa, Ethiopia.

Dechassa, L. (2000). United Nations Development Programme (UNDP). *Jimma Zone Field Assessment Report*. Jimma Zone, Oromia, Ethiopia.

Feige, E.L. & Dean, J.W. (2004). *Dollarization and Euroization in Transition Countries: Currency Substitution, Asset Substitution, Network Externalities, and Irreversibility.* Monetary Unions and Hard Pegs: *Oxford Scholarship Online Monograph*, March 2004: 303–321.

George Rapsomanikis. (2015). *The economic lives of smallholder farmers. An analysis based on household data from nine countries*. Food and Agriculture Organization of the United Nations, Rome.

GfK, P. (2013). *Analysis of sample size in consumer surveys*. Poland

Haiduk, K., Herr, H., Lintovskaya, T., Parchevskaya, S., & Priewe, J. &. (2004). *The Belarusian Economy at a Crossroads.* Moscow: Actav.

Harlow Pearson Education Limited.

Hinh T. Dinh, Vincent P., Vandana C., & Frances Cossar. (2012). *Light Manufacturing in Africa. Targeted Policies to Enhance Private Investment and Create Jobs*. African Development Forum.

Iromaka, C. (2006). *Entrepreneurship in small business firms.* Ikeja: G-Mag. Investments Ltd, (Educational Publishers), 49-56.Iwoye, August 27.

James W., Tim S., & Leulsegged K. (2015). *Woreda-Level Crop Production Rankings in Ethiopia: A Pooled Data Approach.* International Food Policy Research Institute (IFPRI) Addis Ababa, Ethiopia.

Jimma Zone Administration. (2017). *Jimma Zone Agriculture Office*. Jimma, Ethiopia

Kenichi O. (2009). *Ethiopia: Political Regime and Development Policies*. Tokyo,Japan

Key, N. (2005). *How Much Do Farmers Value Their Independence?* Agricultural Economics, Vol. 33, pp. 117-126.

Kindeye Fenta (2014). *Industry and Industrialization in Ethiopia: Policy Dynamics and Spatial Distributions.* European Journal of Business and Management. College of Development Studies, Addis Ababa University, PO box 1176, Addis Ababa, Ethiopia. ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online) Vol.6, No.34.

Kotler P., Armstrong G., Saunders J. & Wong V. (2001). *Principal of Marketing, (3rd ed.)*

Kuznets, S. (1955). Economic Growth and Income Inequality. *American Economic Review 45, no. 1* , 1-28 .

Lewis W. A. (1954). *Economic Development with Unlimited Supplies of Labour*. Manchester School, vol 22, no 2, pp 139191.

Lewis, W. A. (1958). Employment Policy in an Underdeveloped Area. *Study Conference On Economic Development In Underdeveloped Countries* (pp. 42-54). West Indies: Sir Arthur Lewis Institute of Social and Economic Studies, University of West Indies.

Linz, J.J. (2000).*Totalitarian and Authoritarian Regimes*. Boulder, CO: Lynne Riener Publisher

Matsuyama, K. (2009). *Structural Change in an Interdependent World: A Global View of* Manufacturing *Decline*. Journal of the European Economic Association, 7, 478–486.

Ministry of Finance and Economic Development (2013). *Annual Progress Report for F.Y. 2011/12 Growth and Transformation Plan*. Addis Ababa

Mulu G. (2013). *Industrial Policy and Development in Ethiopia: Evolution and Current Performance.* Helsinki, Finland

Pinki Rani, (2014). *Factor influencing consumer behaviour*. Institute of Law Kurukshetra, University Kurukshetra, India.

Rapsomanikis., G. (2015). *The economic lives of smallholder farmers: An analysis based on household data from nine countries.* Rome.: Food and Agriculture Organization of the United Nations.

Robert H. Frank. (2014). *Microeconomics and Behaviour*. 9th ed. Mcgraw-hill/Irwin Series in Economies.