



KHAT PRODUCTION AND HOUSEHOLD WELFARE AMONG KHAT GROWERS ETHIOPIA

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Received: 12 June, 2020

Accepted: 29 July, 2020

Published: 10 Dec, 2020

Abstract:

The main objective of this study was to examine the welfare effects of khat production on households. Our finding shows that, khat production was found to be associated with better living conditions; this was not the case with regard to improvements in household income and housing quality. On the other hand, khat growers had generally better food consumption, which could be due to the immediate but seemingly temporary effect of increasing household income. Given the implications of these aspects of food consumption as key elements for food security at household or individual levels, our findings call for maximum caution as to what policy implications should be drawn since inferences from these findings may be misleading. That is, notwithstanding the positive effects in terms of food consumption and hence food security, khat production could have aggregate negative effect on aggregate through reducing crop production and it is trade-off between them.

Keywords:

Socio-economic, Khat Producer, Food security

1. Introduction

1.1. Background of the Study

Ethiopia is the world's largest producer of Khat which has recently become the fastest growing export commodity. The history of domestication and introduction of this crop in Ethiopia is not known. According to the folklore, it was first introduced in Harar, in the eastern part of Ethiopia, from where it spread to rest of the country. In Ethiopia, khat is commonly used for stimulation and social recreation (Ezekiel, 2010). Socially, khat chewers spend long hours on chewing and then even more for recovering from its immediate aftereffect; leading to a number of negative consequences such as absenteeism from work, a barrier to obtaining employment and lack of integration of khat-consuming communities (Workineh et al, 2010). At the household level, khat diverts household income – an income that could have otherwise been spent on nutritious food, home improvement, education or other family needs – towards the purchase of khat, which in turn is a likely cause for finance-related problems such as family disputes and even breakdown (Ishraq and Jiří, 2004).

Contemporary khat-users report that, khat chewing gives increased energy levels, alertness and confidence, a sense of happiness, better thinking capacity and creativity, facilitation of communication ability, enhanced imaginative ability and the capacity to associate ideas. For some, chewing khat is a means of increasing energy and elevating mood in order to improve work performance (Kalix, 1987).

Unlike the traditional use of Khat where consumption is simply for social function and relaxation, khat is playing a very considerable role in the economy of the producer countries such as Kenya, Eretria, and Ethiopia (Ezikel, 2010). A large number of people are involved in harvesting, packing, transporting and unloading of the product, which not only serves as a means of livelihood for millions farmers and traders but also enables them lead better lives (MoFED, 2011).

Despite the fact that, about 84% of Khat produced in Eastern Africa is consumed locally, Khat export is on a growth path (Feyisa and Aune, 2003). The increased production and the improved communication network have played a pivotal role in the realization of Khat as international commodity for export (Anderson *et al*, 2007). However, the growth of the number of the consumers of Khat in UK has raised much concern within the UK government wanting to find out the effects of Khat on the chewer. This is indicated in several commissions conducted by the National Drug Intelligence Unit (NDIU, 1990). The first report of its kind found no link between Khat and psychosis contrary to later scientific findings which confirm that Khat has adverse effects on health and social life (Baliant *et al*, 2009).

In Eastern Africa countries such as Kenya, Ethiopia and Somalia, Khat was traditionally used during Muslim religious ceremonies and when studying Koran, as a natural plant remedy with medical properties and for reducing fatigue while travelling or working (Odenwald, 2007). Within the Muslim countries like Yemen and Ethiopia, Khat consumption is high because all other drugs are forbidden by religious laws while Khat is regarded as a gift from God handed over to a monk to enable them pray overnight (Patel, 2008).

The total export value was 16.6 billion (\$211.5 million). Somalia was the main export destination with new market opportunities in Mozambique among others. Gebissa (2004) believes that the shrub Khat is misunderstood. A significant majority of Eastern African countries consider Khat to be an important cash crop. Unfortunately, many medical professionals in various countries, such as United States of America (U.S.A), do not share this view because it is a psychoactive shrub that produces a sense of euphoria when chewed in massive amounts. Gebissa (2004) conduct the study and clarify the perceptions regarding to the importance of khat and stated that, most of the people who chew Khat are farmers in Khat growing areas. They chew it for energy not simply for pleasure. for many people in the Eastern part of Ethiopia and Kenya, the chewing of Khat is a mark of identity. However in most other parts of the world, people chew Khat for Leisure (Patel, 2008).

The expansion of Khat production is not simply due to the result of growing international demand but population growth in Khat growing areas. Due to pressure on land and diminishing resources, in Khat growing countries such as Kenyan and Ethiopia, farmers in these countries are switching to growing of Khat as their chief cash crop (Gebissa, 2004). According to Feyisa and Aune (2003), one of the important reasons for expansion of Khat production in Ethiopia, is its profitability which is 2.7 times more than that of maize per hectare. Khat is also less risky to grow than cereals and coffee because; it is less vulnerable to drought.

In Kenya, Khat production boom has also caused marked changes in traditional agriculture and land use system as well as ecological problem. A good example is the exploitation of scarce water resources for irrigation. This has helped the farmers to become economically self- sufficient and improve their quality of life (World bank, 1999). This is supported by the cargo flights that carry Khat from three countries to places such as England, Rome, Toronto, Mogadishu and Melbourne (Fitzgerald, 2009). In addition, according to Hansen (2006), the value of Ethiopian Khat export to Somalia alone was estimated at, US \$ 80 million in 2005.

2. Motivation of the Study

The expansion of Khat production in the study area(country Ethiopia) bring considerable social and economic risks in the longer run as earnings totally depend as the plant is banned in many other countries. The previous studies indicate that, the consumption of this crop generates health problem and reduces the productivity in terms of work efficiency and number of working hours. The productions of khat have also an opportunity cost of losing amount of crop produced while producing khat, which also confirmed from this study result. Many scholars indicate that, the opportunity cost of losing amount of crop produced while producing of khat have negative impact for a country like Ethiopia where most of the societies are food insecure. These findings of the scholars were in agreement with this study results.

Khat consumption negatively affects the working capacity of people because they tend to be slow in work, show lethargy, less number of working hours, take frequent rests, spend time chewing the leaves, and are generally more careless and found loitering about aimlessly in the market. Development of withdrawal symptoms, comprising heavy and sinking sensation following habit of prolonged consumption of chat seems to surfacing among consumers. The frequency of lethargy, mild depression, slight trembling and recurrent bad dreams prompt them to have second thoughts about its consumption. A serious consideration is that, its use may endanger health, thereby resulting in anorexia leading to malnutrition with subsequent susceptibility to infectious diseases.

Despite the fact that khats have a significant role and contribution as a means of obtaining foreign currency and income for many households than crop productions and opportunity cost of losing amount of crop produced while producing khat and social and economic losses in the domestic consumers should have to be weighted and studied. Therefore, this study recognized those gaps and tried to find evidentiary information about the socio-economic impact of khat from consumer and producer side in order to be able to quantify the return from Khat in southwest Ethiopia, in the case of Jimma zone. Finally, this study adds some literature on the previous literatures depending on the findings of the study.

Indeed, the main objective of the study is investigating the positive and negative socio-economic impacts of Khat on producers, identifying the effects of khat on smallholder khat producer household's income, social life participations, consumption and children's learning effectiveness as well as impact on smallholder khat producer household's life standard. In conclusion, this study result can be served as source /input for policy makers to decide the direction (type) of policy they will implement regarding to khat cultivations in the study area as well as in Ethiopia.

3. Materials and Methods

3.1. Study Area

This study was conducted in Jimma Zone, South western part of Ethiopia. According to Jimma zone finance and economic development report (2016). Jimma zone composed to 18 woredas and hosting total populations of over 3 million. According to United Nations Development Programme (UNDP) field assessment program conducted and reported by Dechasa Lemesa august 2001: Jimma Zone is with an agro-ecological setting of highlands (15%), midlands (67%) and lowlands (18%). The zone is one of the major coffee growing areas of Oromia region well-endowed with natural resources contributing significantly to the national economy of the country. The Zone reliably receives good rains, ranging from 1200-2800 mm per annum. (Dechasa Lemesa, 2001).

3.2. Data Collection

Because of the nature of this study, mostly this study was used primary data collected by personal interview of the farmers/producers and consumers by using a structured questionnaire administered through interviewers from all of the study populations and secondary data was collected from Agricultural Development Offices at regional as well as national level, from websites online search and publications of the Central Statistical Authority (CSA, 2000) of Ethiopia and from other international journals related with our topic.

3.3. Sampling Methods and Sample Size Determination

This mega research project study was undertaken in Jimma zones of Oromiya Regional State. The participants of the study selected using multistage random sampling. First the district in each zone was categorized according to the types of crops they produce. Random samples of districts were then selected at the first stage. On the second stage, the peasant associations (PAs) grouped in the same way and sampled for the study. At the third stage, the villages were grouped in the same procedure and sampled randomly. Finally, the households (farmers) were selected using systematic random sampling procedure. The sampling frame was prepared by discussing with Peasant Association leaders and finally, 357 sample sizes were selected for this study by using the kothari 2004 formula.

3.4. Methods of Data Analysis

The main objective of this study was to assess the impact of producing Khat on smallholder khat producer households. To meet this objective, different comparisons were made between the producers and non-producers. This study defines producers as those who produce Khat. If the farmer produces Khat greater than 0.5 hectares, that household was considered as khat producer. To assess the impact of producing Khat on the educational status of the family, the researchers used the ratio of children in schools and those who have attended regular schools to the total number of school aged children in the family, expressed as percentage. The ability of the household to feed the family was also seen in terms of the frequency of feeding the children and the adult. The percentage of farmers having corrugated iron sheet roofed houses, the percentage of farmers having separate kitchens other than their living rooms for cooking and the percentage of farmers having separate structure for livestock other than the living room was used to assess the impact of agricultural export products on the housing conditions of the farmers. The strategy used by the farmers to finance the household expenditures at the times of food shortfalls and/or crop failure

was also another parameter to assess the impact on the food security of the farmers. With this respect, the percentage of farmers using food aid as one of the strategies or the only strategy in times of food shortfalls and crop failure were used.

There are different techniques used in assessing an impact. These include the mean test, regression analysis and partial budgeting. The partial budgeting technique is a planning and decision making frame work used to compare the costs and benefits of alternatives faced by a farm business (Dalsted and Gutierrez, 2004). The nature of the data used for this study, however, does not help us to compute costs and benefits. Thus, we used the mean test and regression analyses which are explained as follows.

Similarly, for a categorical data one of the analyses of interest is finding the proportion of elements belonging to each of the categories. We can also test the difference between two population proportions. The chi- square test of independence and the Z- test are used for this purpose. The Chi- square test is used to test a two- tailed alternative, but the Z- test can be used both for one tailed and two tailed alternatives. Most of the tests in this study evaluate whether one group is better than the other. Thus, the Z- test was used for all the tests concerning the differences between two populations' proportions.

3.4.1. The Regression Analysis

Also, the method of data analysis to measure the functional relationship between a quantitative dependent variable and one or more independent variables is the regression analysis. A logistic regression equation of the a dependent variable Y on k independent variables X1, X2, ..., Xk is given by:

Let Y_{ij} be the i^{th} khat producer households income, house improvement, living in better house and household consumption status (a binary outcome 1= the households have better income, house improved, living in better house and at better household consumption status, 0=otherwise) living in the j^{th} kebele. So, Y represents all explained variables above (household income, house improvement, household living in better house and household consumption status) and explained as follow:

$$Y_{ij} \sim Bernoulli(P_j)$$

$$\log \frac{P_j}{1-P_j} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k \dots \dots \dots (1)$$

Where, $\beta_1, \beta_2 \dots \beta_k$ are the parameter to be studied and (X's) are the explanatory variables

The explanatory variables that affect the economic status of the khat producer households are expressed both qualitatively and quantitatively. Where the dependent variable is dichotomous, many studies show that Probit and Logit models are appropriate. Since the Logit model is simpler in estimation than Probit model. So, Logistic regression model is preferred to the Probit model for this study. In addition, Logit model is a more realistic pattern of change in the probability compared to other qualitative dependent variable models like the Probit, for two main reasons. First, the odds ratio, which is a measure of the strength and direction of relationship between the two variables, has a special property of not requiring variables to be normally distributed. Second, mathematical transformation of the odds ratio is the Logit model. This mathematical transformation removes the problem of asymmetry existing in the odds ratio and in turn makes this a superior method (Peng et al, 2005).

For the construction of the asset index we employed the technique of Principal Component Analysis (PCA). The procedure was based on responses to asset ownership questions (yes-no, where yes=1 otherwise 0). Factor loadings were estimated and predicted factor loadings generated for each sample respondent. This was standardized so that the standardized values for the whole sample observations become distributed with zero mean and unit variance. Such values was gave indications of the status in terms of asset ownership, with larger and/or positive index values indicating rich households and smaller and/or negative values showing poor possession status.

3.4.2. Data Analysis

Data was analyzed using STATA software package version 14.0 (Stata Corp 4905 Lake way Drive College Station, Texas 77845 USA) for regression analysis. The empirical analysis of the study conducted using both descriptive statistics and logistic regression analysis. Various tables generated to describe characteristics of respondents. Household and individual-level comparison made in terms of socio-demographic and socio-economic characteristics between khat producer and non-producers.

4. Result and Discussion

4.1. Summary Statics of the Sample Respondents

More summary statistics on the characteristics of respondents and their households is provided in table 1. Accordingly, 52.1% of the respondents are from Dedo woreda, with majority (61.62%) of the total sample aged 25 – 38 years and 82.35% male. Close to 74% of the respondents were married, most of who belong to the Oromo ethnic group comprising 92.43% and the religion of Islam representing 94.4% of the sample. The mean household land area ownership among the sampled respondents was 4.13 ha of which 3.53 is covered by different crops. Nearly 55% of the respondents come from families who grow or produce khat as a cash crop. About 68.34% own living houses with a mean of 3 rooms.

Table 1. Summary Statistics of the Sample Respondents

Variable	Obs	Mean	Std. Dev.	Min	Max
Marital status (Married = 1)	357	0.739496	0.439526	0	1
Ethnicity (Oromo =1)	357	0.92437	0.264777	0	1
Religion (Muslim = 1)	357	0.943978	0.230288	0	1
Sex of the head (M = 1)	357	0.798319	0.401818	0	1
Education of head (none =1)	357	1.952381	0.707485	1	3
Livestock (TLU)	357	1.621485	1.082404	0	4.14
Participation in social life (Y=1)	357	0.672269	0.470045	0	1
Own house? (Y=1)	357	0.683473	0.465774	0	1
No. of rooms	357	2.817927	1.571485	0	5
Electricity (Y=1)	357	0.551821	0.498005	0	1
Land? (Y=1)	357	0.764706	0.424778	0	1
Total land area (ha)	273	4.131868	0.825274	3	5
Cropped land (ha)	273	3.534799	0.701677	3	5

Source: survey study, 2017

4.2. Khat Production and Housing Condition

To assess the possible relationship between khat production and socioeconomic status, we used housing condition. In particular, we used type of construction material used for house floor. As can be seen in table 2 below, the proportion of the respondents from non-khat growing households are more likely to own better housing (houses with cement floor) than their counterparts from khat growing families and the difference is highly statistically significant (Pearson $\chi^2(1) = 50.0976$ Pr = 0.000). The implication is that, khat production is negatively associated with wellbeing/living standard as measured by housing.

Table 2. Housing Conditions by Khat Growing Status

	Not cement floor		Cement floor		Total
	Number (No.)	Percent (%)	Number (No.)	Percent (%)	
Non producer	33	16.84	163	83.16	196
Khat producer	84	52.17	77	47.83	161

Total	117	32.77	240	67.23	357
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Source: survey study, 2017

On the other hand, khat growing households are more likely to have made housing improvement than non-growers during two years period prior to the survey (Table 3), with the difference being statistically significant at 1% level (Pearson chi2 (1) = 137.44 Pr = 0.000). This is probably due to the fact that the housing condition of khat growers is low might cause them invest in housing improvements induced by higher income from sale of khat. Which of the two (supposedly opposite forces/effects) would actually take effect cannot be known from the simple pair-wise analysis presented in here and needs to be determined through multivariate analysis in the next section (econometric analysis).

Table 3.Improvements in Housing Conditions by Khat Growing Status

	Improvement		No improvement		Total	
	No.	%	No.	%	No.	%
Khat producer	164	83.67	32	21.74	196	54.90
Not producer	35	16.33	126	78.26	161	45.10
Total	199	44.26	158	55.74	357	100

Source: Survey study, 2017

Similarly, khat growers are more likely to own houses with larger number of rooms (mean = 3.34 rooms) than non-growers (mean = 2.19 rooms), which is statistically significant at 1% (see Table 2, Pr(|T| > |t|) = 0.0000).

Table 4.Two-sample t test with equal variances on number house rooms by khat growing status

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
Not khat	161	2.186335	.1262223	1.601581	1.937059	2.435612
Kkat pro	196	3.336735	.0959373	1.343122	3.147527	3.525943
combined	357	2.817927	.0831718	1.571485	2.654357	2.981497
diff		=1.150399	.1558509		=1.456906	= .8438922

Source: survey study, 2017

4.3. Khat Production and Food Consumption

With the exception of chicken, growers are more likely to consume egg, milk and other meat based diet than their non-grower counterparts with statistically significant differences (Table 4).

Table 5. Differences in food consumption (dietary diversity) by khat grower status

Food item	Khat growers	Non-growers	Difference/chi2(1)	Test
Egg (%)	71.43	40.37	34.87***	Pearson chi2
Milk (%)	83.16	0	246***	
Chicken (%)	5.10	7.45	0.85	
Other meat (%)	58.16	24.84	40.00***	
Overall dietary diversity (No.)	3.18	1.73	-1.45***	t-test

*** P<0.01

Source: survey study, 2017

There is also a statistically significant difference between the two groups of respondents in terms of overall dietary diversity.

In summary, khat production has some positive impacts, while other negative impacts and these findings are only indicative and how exactly are the different factors interact to determine their effect on various outcomes could better be understood through a multivariate econometric approaches discussed in next section.

4.3 Results and Discussion from the Econometrics Analysis

4.3.1. The effect of Khat production on housing condition

As outlined in detail in the methodology part, the outcome variables selected to assess the effect of khat production was housing condition. Housing condition is one of the indicators of the status of the socio-economic status among households or individuals. For the purpose of this part of the study, we considered three different measures as indicators for housing condition in line with previous literature. These are: (1) the probability of spending or making housing improvements during the period of 12 months prior to the survey, (2) the probability of having or living in houses with corrugated iron sheet or cement floor, and (3) perceived improvement in household income during the last three years period. Thus, using these three variables as dependent/outcome variables, we fitted logistic models. The results are discussed below.

4.3.2. The Probability of having Housing Improvement

For the purpose of the regression analysis in this sub-section we constructed asset index using the technique of Principal Component Analysis (PCA) as outlined in the methodology part of the previous chapter. The procedure involved estimation of factor loadings generated based on responses to asset ownership questions (yes-no, where yes=1) generated for each sample respondent. These were standardized so that they are distributed with zero mean and unit variance. Finally, the resulting variable was used as explanatory variable in our regression models.

Table 6 presents the estimates of the logistic regression for assessing the effect of khat production on the probability of housing improvement. The results reveal that the probability of having invested in housing improvement decreases with age, while it higher for those who are married, who are khat producers, use credit and saving services, possess more livestock (measured in terms of TLU), and have higher income. The variables marital statuses, livestock, credit access, saving habit and income have a positive and statistically significant effect on the probability of housing improvement. More specifically, married couples are more likely to make housing improvement than their non-married counterparts (probability higher by 78.0%). Similarly, an additional 1 TLU of livestock possession is associated with 35.5% increase in the likelihood of housing improvement. Likewise, access to credit, monthly saving practice, and increased income would lead to an increased probability of housing improvement by respectively 47.7%, 290.5% and 398.9%. With the exception of livestock a variable, which is significant only at 10% level, the remaining variables were significant at 1% level. On the other, age has a negative effect on the probability of housing improvement. That is, another year of age is associated with a 94.2% lower probability of housing improvement. This result is significant at 1% level.

Table 6. Binary logistic estimates for the probability of housing improvement

	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]
Age	-0.94206	0.20964	-4.49	0.000***	-1.35295 -0.53117
Married (Y=1)	0.78026	0.290725	2.68	0.007***	0.210449 1.35007
Livestock possession (Y=1)	0.354516	0.2015	1.76	0.079*	-0.04042 0.74945
Save monthly? (Y =1)	2.904626	0.501802	5.79	0.000***	1.921112 3.88814
Access to credit (Y=1)	0.476673	0.529147	0.90	0.368	-0.56044 1.513782
Khat production (Y=1)	2.748189	0.411062	6.69	0.000***	1.942522 3.553856
Income	3.989001	1.086254	3.67	0.000***	1.859981 6.11802
Asset index	0.307103	0.702356	0.44	0.662	-1.06949 1.683696
Woreda (Dedo=1)	0.40371	0.328862	1.23	0.220	-0.24085 1.048268
Intercept	-3.23197	1.0125	-3.19	0.001***	-5.21643 -1.2475
Pseudo R2	0.5140				
Number of obs	357				

Note: ***, **, * refer to significance at 1%,5%, and 10% respectively; Log likelihood = -119.12351, LR chi2(11) = 251.94, $p > \chi^2 = 0.000$

Source: survey study, 2017

Most importantly, khat producers were found to be more likely to invest in housing improvement than non-producer (the former experiencing a higher probability than the latter by 274.8%) implying that there was significant relationship between khat production and housing improvement.

4.3.4. The Probability of having a better House

Table 7 presents the estimates of the logistic regression for examining the effect of khat production on the probability of owning a house with cement floor. The results indicated that age, livestock possession, saving, and access to credit had a negative and significant effect while khat production didn't have any significant effect on the probability of having better housing. Although the coefficient estimate is positive, there was no difference between khat producers and non-producers in terms of probability of owning a house with cement floor. This finding contradicts with that found in the descriptive analysis results discussed in previous section where we found a negative association between khat production and house floor quality. As the former descriptive method doesn't allow for controlling other factors that may affect the outcome variable (floor type) other than khat production status, the regression results are more reliable in this regards and thus we base our conclusion based on the regression estimates. Consequently, the implication is that khat production doesn't have any effect on housing status. The study result is in agreement with the study conducted by other scholars. For example the study conducted by Habtamu, (2007) stated that, a large number of people are involved in harvesting, packing, transporting and unloading of the product, which is not only the means of livelihood of the millions farmers and traders but also it enables them lead a better live than non- Khat growers. From this statement it is possible to conclude that, one indicators to evaluate the standard of live is house having better house. So households those are producing khat production have positive impact of having better house when compared to non-producers.

Table 7. Binary logistic estimates for the probability of having a better house (cement floor)

	Coef.	Std. Err.	Z	P>z	[95% Conf.	Interval]
Age	-2.75975	1.199683	-2.3	0.021**	-5.11109	-0.40842
Livestock possession (Y=1)	-2.76744	1.538327	-1.8	0.072*	-5.7825	0.24763
Married (Y=1)	-1.05124	2.18763	-0.48	0.631	-5.33892	3.236437
Save monthly? (Y =1)	-12.7382	3.924099	-3.25	0.001***	-20.4292	-5.04705
Access to credit (Y=1)	-8.41992	2.803401	-3	0.003***	-13.9145	-2.92536
Khat production (Y=1)	-2.99223	2.423653	-1.23	0.217	-7.7425	1.758041
Woreda (Dedo=1)	-6.67776	2.767586	-2.41	0.016**	-12.1021	-1.25339
Intercept	26.73143	8.789983	3.04	0.002***	9.503379	43.95948
Pseudo R2	95.63					
Number of obs	357					

Note: ***, **, * refer to significance at 1%,5%, and 10% respectively; Log likelihood =-9.857, LR chi2(7) = 431.93, p > chi2 = 0.000

Source: survey study, 2017

4.3.4. The Probability for Improvement in Household Income

With regard to improvement in household income during the last three years period, it would be recalled that the descriptive analysis in the previous section revealed that khat producers are more likely to experience improvements in household income during the last three years. However, after controlling for other factors affecting household income, this seemingly positive effect vanishes as can be seen from the estimated logistic regression results reported in table 8 below.

The study result is in agreement with some studies. For example, the study conducted by Becker *et al.*, (1973) stated that, as a matter of conclusion drawn from a significant great majority of researchers' findings came up with an assumption that, children have no bargain power in the house hold, and parents make decisions regarding their own interest. In this situation parents tend to invest more human capital in children who are deemed to be more intelligent and highly skilled. This is because; the cost of investing in human capital for a more able child is cheaper than that of less able child. More over parents anticipate that children with higher skill levels transfer resources to the siblings which decrease the average cost of parental investment. One indicator to evaluate a social impact is school attendances. So our study finding clearly shows that, khat producer household children/child school attendance was more likely high than non-producers.

The result of our finding was in agreement with the other finding. For example, regarding to production expansion conducted by Gebissa, (2004) stated, the expansion of Khat production is not simply due to the result of growing international demand but population growth in Khat growing areas. Due to pressure on land and diminishing resources, in Khat growing countries such as Kenyan and Ethiopia, farmers in these countries are switching to growing of Khat as their chief cash crop.

According to (Feyisa and Aune, 2003), one of the important reasons for expansion of Khat production in Ethiopia, is its profitability which is 2.7 times more than that of maize per hectare. Khat is also less risky to grow than cereals and coffee because; it is less vulnerable to drought. The stated result shows that, farmers are diverting from producing cash crop products to khat productions.

The study conducted by Gebissa (2008) stated, notes child labor as yet another social problem prompted by Khat growing in Kenya around Mount Kenya region and its surroundings. Children who fall within the school going age bracket form part of the labor in Khat industry, more so in harvesting. Even if the study analysis in separated case, some children do it voluntarily while others are compelled to do so by their parents. In conclusion, the study finding indicate that, households participated in khat production were more likely better in child labor exploitation when compared to non-producers.

Table 8. Binary logistic estimates for the probability of improvements in family income

	Coef.	Std. Err.	Z	P>z	[95% Conf.	Interval]
Age	-0.16757	0.472086	-0.35	0.723	-1.09284	0.757705
Livestock possession (Y=1)	0.012087	0.191623	0.06	0.950	-0.36349	0.387662
Married (Y=1)	-0.19043	0.46377	-0.41	0.681	-1.0994	0.718542
Save monthly? (Y =1)	2.864627	0.5355	5.35	0.000***	1.815067	3.914187
Access to credit (Y=1)	-2.1346	0.518911	-4.11	0.000***	-3.15164	-1.11755
Khat production (Y=1)	0.794096	0.918832	0.86	0.387	-1.00678	2.594974
Asset index	1.905177	0.725628	2.63	0.009***	0.482974	3.327381
Woreda	0.217454	0.303827	0.72	0.474	-0.37804	0.812945
Intercept	-1.28389	0.917762	-1.4	0.162	-3.08267	0.514888
Pseudo R2	0.4251					
Number of obs	357					

Note: ***, **, * refer to significance at 1%,5%, and 10% respectively; Log likelihood =-142.06885, LR chi2(8) = 210.14, p > chi2 = 0.000

Source: survey study, 2017

The implication is that, khat production may not be positively associated with income improvements among households in the study areas surveyed.

4.3.5. The effect of Khat Production on Social life (social participation)

With regard to the impact of khat production on social participation, the estimates from the logit regression model reported in table 8 below reveal that the probability of participation in social life doesn't vary with the status of khat production category after controlling for other relevant variables. This finding is in contradiction with what was reported in the descriptive analysis part. The conclusion is thus that khat production doesn't in any way seem to positively affect sociability in the study area.

Table 9. Binary logistic estimates for the probability of participation in social life

	Coef.	Std. Err.	Z	P>z	[95% Conf.	Interval]
Age	2.437861	1.338366	1.82	0.069**	-0.18529	5.06101
Livestock possession (Y=1)	2.767435	1.538327	1.8	0.072**	-0.24763	5.7825

Married (Y=1)	1.051239	2.18763	0.48	0.631	-3.23644	5.338915
Save monthly? (Y =1)	12.63808	3.863018	3.27	0.001**	5.066703	20.20945
Access to credit (Y=1)	8.318535	2.826642	2.94	0.003**	2.778418	13.85865
Khat production (Y=1)	1.684254	0.247649	6.8	0.000*	1.198872	2.169636
Woreda	6.74042	2.830612	2.38	0.017**	1.192521	12.28832
Intercept	-26.4374	8.782795	-3.01	0.003**	-43.6513	-9.22341
Pseudo R2	0.9300					
Number of obs	357					

Note: ***, **, * refer to significance at 1%,5%, and 10% respectively; Log likelihood =-142.06885, LR chi2(8) = 210.14, $p > \chi^2 = 0.000$

Source: survey study, 2017

5. Conclusion and Policy Implications

5.1. Conclusions

The main objective of this study was to examine the socioeconomic impact of khat on producers. The specific objectives of this sub-section are divided in to two main objectives, namely economic and social impact. To assess economic impact, we considered various indicators such as improvements in housing conditions, improvement of family income, living in better house and household consumption status. To evaluate social impact, we used social life participation as a proxy.

This result indicated that there was no clear cut inference that can be drawn regarding the effect of khat production on the various economic and social outcomes considered in the study. While khat production was found to be positively related to better living condition as measured by housing improvement, it was not the case with regard to improvements in household income and housing quality as measured by type of floor. However, khat producing households were generally found to be better in terms of food consumption (consumption of protein rich food items such as meat, egg and fish as well as in terms of overall dietary diversity. This could be due to the immediate but seemingly temporary effect in terms of increasing income on a temporary basis. Given the implication of these aspects of food consumption for food security at household or individual levels, care must be taken as to what policy implication should be drawn as inferences from these findings may be misleading. The reason for this is that despite the positive implication for food consumption and hence food security, khat production could have an aggregate effect of reducing crop production due to the inherent trade-off between khat and crop production. This could lead to fall in food availability at macro/national level, which is a key dimension for food security at national level. The net effect thus could well be negative at different levels including at household level and hence the inferences here should be seen from such perspective. Finally, the study found an evidence of better participation in social life among khat producers than non-producers.

5.2. Policy Implications

From empirical analysis of the study, it is to note that the socioeconomic impact of khat was positive impact on producers. From this study results it is possible to forward recommendations depending on the findings, which may be helps as inputs for policy makers. This is because of the fact; khat has two contradictory impacts as discussed under the results of the study. This means the controversial over the impact of khat were still not solved. Which means that, the study result indicated that, the number of households who producing khat by reducing land for crop production were increase overtime. This is very difficult for countries like Ethiopia, who are working still to satisfy their people food security. In another case household those are produce khat was living in better condition than non-producer. So, this controversial result over the socio-economic impacts of khat needs more attention than ever.

References

- Adam K. (2012). Socioeconomic Impact of Export oriented Agricultural Production on Farmers, in Eastern Ethiopia.
- Anderson, D. Klein, A. Beckerleg, S. Carrier, A. and Hailu, D. (2003). The khat: Nexus: Transnational consumption in global economy. Economic and Social Research Council. St Anthony's college, Oxford UK.
- Balint, E. E., Falkay, G., and Balint, G.A. (2009). Khat- a controversial plant. The Middle European Journal of Medicine
- Beckerleg, S.(2005). Special issue on Khat: Use, users and unresolved issues- Khat Special edition Introduction. Substance Use & Misuse
- Calcagnetti DJ, Schechter MD.(1992). Increases in locomotor activity of rats after intracerebral administration of cathinone. Brain-Res-Bull. 1992
- Carrier, N. (2005). Miraa is cool; the cultural importance of Miraa (Khat) for Tigania Igembe youth in Kenya. Journal of Africa cultural studies,17(2), 201-218.
- CSA (Central Statistical Authority) (2000) Statistical Abstract 1999. Central Statistical Authority, Addis Ababa, Ethiopia.
- Dechassa L (2001). Khat and its botany, distribution, cultivation, usage and economics in Ethiopia
- Elmi AS, Ahmed YH, Samatar MS (1987) Experience in the control of khat-chewing in Somalia. Bull Narc
- Ezekiel G. (2005). Leaf of Allah: Khat and Agricultural Transformation in Harerge, Ethiopia, 2005. African Studies Review 48.2 (2005)
- Ezekiel G.(2010). Khat in the Horn of Africa: Historical perspectives and current trends. Journal of Ethno pharmacology. 2010
- Feyisa, T. and Aune, J. (2003). Khat expansion in Ethiopia highlands. Effects on the farming Systems in Habro district. Mountain Research and Development, 23(2).
- Fitzgerald, J. (2009). Khat: a literature review. Louise Lawrence research culture ethnicity and health.
- Gainini, A. J. , Burge, H., Shaheen, J. M. & Pnce, W. A. (1986). Khat: another drug abuse? Journal of Psychoactive Drugs
- Gebissa, E. (2004). Leaf of Allah, Khat and agricultural transformation in Harerge Ethiopia 1875 1991. Oxford, Athens: James currency, Ohio university press.
- Gebissa E. (2008). Scourge of life or an economic lifeline? Public discourses on khat (*Catha edulis*), in Ethiopia. Substance Use & Misuse,
- Gesese D (2013). Is khat a social ill? Ethical arguments about 'stimulant' among learned Ethiopians, ASC Working Paper 108, 2013
- Guesh G (2012). Production and consumption trends of khat in Ethiopia: a big business or a bigworry, in Advances in Agriculture, Sciences and Engineering Research Science Education Development Institute, 2012
- Habtamu, E. (2007). Ethiopia's Khat Opportunity or Threat? Retrieved 10/06/2012, from <http://www.ezega.com/News/News/Details.aspx?Page=news and News id=1865>
- Halbach, H. (1972). Medical aspects of the chewing of Khat leaves. Bulletin of the World Health Organization,
- Hansen, P. (2006). Khat Sub-Cluster Report. UN/WB Somalia Joint Needs Assessment.
- Hassan, N.A.G.M., Gunaid, A.A. and Murray-Lyon, I.M. (2007).Khat (*Catha edulis*): health aspects of Khat chewing. Eastern Mediterranean Health Journal
- Kalix P. (1987). Khat: Scientific knowledge and policy issues. Br.J Addict 1987.
- Kandari et al (2014): Chat (*Catha edulis*): a socio economic crop in Harar Region, Eastern Ethiopia.SpringerPlus 2014
- Kebede D, Alem A, Mitike G, Enquselassie F, Berhane F, Abebe Y, et al.(2005). Khat and alcohol use and risky sex behavior among in-school and out-of-school youth in Ethiopia. BMC Public Health 2005
- Kebede Y (2002). Cigarette smoking and Khat chewing among college students in North West Ethiopia. Ethiop J Health Dev
- Klein, A. (2004).Khat in Streatham: Formulating a community Response. London: Streatham Town centre office.
- Measho G, Amsalu F, Tesfahun M., (2013). Psychoactive substances use and associated factors among Axum university students, Axum Town, North Ethiopia. BMC PublicHealth.2013

- MoFED, (2011).Annual report on Macroeconomic Development in Ethiopia EFY 1998,(2005/06) Retrieved 02/08/2012, from <http://www.mofed.Gov.et/English/Resources/Document/Macro%20economic%20annualEFY1998>
- Odenwald, M. (2007).Chronic khat use and psychotic disorder: A review of the literature and future prospects. *Sucht* 53 (2007)
- Pantelis C, Hindler CG, Taylor JC (2004) Use and abuse of Khat (*Catha edulis*): a review of the distribution, pharmacology, side effects and a description of psychosis attributed to khat chewing. *Psychol Med*.
- Patel, S.L. (2008). Attitudes to Khat use within the Somali Community in England. *Drugs: Education, prevention and policy*.
- Patel, S.L., Wrights, S. and Gammampila, A. (2005). Khat use among Somalis In four English Cities (Bd. Home office online Report 47/05): Home office
- Peng, C.J., Lee, K.L., and Ingersoll, G.M., (2002). *An Introduction to Logistic Regression Analysis and Reporting*. Indiana University- Bloomington.
- Rawlins M. (2005). Khat (Qat): Assessment of Risk to the Individual and Communities in the UK, advisory council on the misuse of drugs home office, Marsham Street, London SW1
- Roth, S. and Hyde, J. (2002). *Partial Budgeting for agricultural Businesses*, The Pennsylvania State University, College of Agriculture
- Workineh G, Teferi G, Fikru T., (2010). Regular Khat (*Catha edulis*) chewing is associated with elevated diastolic blood pressure among adults in Butajira, Ethiopia: A comparative study. *BMC Public Health*. 2010
- World Bank, (1999).Ground water legal and policy perspective; World Bank.Technical paper no. 456.Washington D.C; World Bank