Determinants of Market Outlet Choice of Coffee Producing Farmers: the case of Barbare woreda, Oromia, Ethiopia

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Abstract
This study aimed to assess the determinants of market outlet choice of coffee producing farmers in Barbere woreda of Bale zone, Oromia region. Cross-sectional data were collected from 321 randomly selected rural households of Barbere woredas and multivariate probit regression model was used. Multivariate probit model results confirm that sex of household head, age, education year, cooperative membership, land allocated to coffee, family size, quantity produced, distance to the nearest market, getting market information, access to credit, number of extension visits, amount of farm income and livestock owned were an essential factor that affects the probability of choosing market outlet choices. The study suggested strengthening the existing crop production system through improved coffee seeds and, adopting agro-ecologically based high-yielding coffee varieties in the area, targeted credit and establishing research and development institutions. In addition, the district should establish the coffee market nearest to the farmer’s residence or production area.

Key Words: Coffee, Market outlet choice, Multivariate probit, Farmers, Ethiopia

Introduction
In an effort to intervene to stimulate farmers’ participation in markets, it is important to identify factors influencing the farmers’ choice of marketing channels. An increase in market participation in turn makes it easy for farmers to shift into commercial farming, in turn increasing economic growth (Jari and Fraser, 2009).

Facilitating market participation of households as well as developing chain competitiveness and efficiency is valuable preconditions to improve livelihoods (Lundy et al., 2004; Padulosi et al. 2004). Improving market infrastructure by providing more and better markets and making it easier for farmers to access them is also deemed necessary for increasing the level of commercialization, especially in developing countries (Shilpi & Umali-Deininger, 2008). The lack of market participation that many agricultural households face is considered to be a major constraint to combating or fighting poverty (Best et al., 2005).

Though efficient agricultural marketing is a tool to improve farmers income and
livelihood, farmers faced barriers such as insufficient and inadequate physical infrastructure, lack of basic education and marketing knowledge, lack of organizational support and institutional barriers in marketing (Kherallah a and Kirsten, 2002).

Coffee producers in Beberere district were widely characterized by limited marketing linkage which emanates from limited infrastructure. This results them inability to force local collectors and traders’ price setting and exploitation at farm gate level. Although farmers of the district were prominent coffee producers, literature regarding determinants of farmers’ coffee market outlet preference for the study area was limited.

Various studies on coffee producers’ market outlet choices (Asefa, 2016; Degaga et al., 2017; Diro et al., 2017; Medeksa, 2014; ’Yesho, 2020) were conducted in different parts of the country. However, past studies conducted on different regions of Ethiopia, did not address the market outlet choice decision of coffee producers in the study area. In addition they are highly focused on market price information and marketing constraints. They do not say much about statistical assumptions and validity of models before practical application of employed methodologies. Therefore, given the potential of Berbere District for coffee production, the results of this study was of real importance as they shed light on factors determining the choice of appropriate market outlets. Hence, this study has aimed to identify the determinants of market outlet choice decision of coffee producers in the study area.

Materials and Methods

This study was conducted in Berbere Woreda of Bale zone, Oromia Regional State, Ethiopia. The Berbere woreda was selected purposively out of the 11 districts in Bale Zone due to adequate data availability and that it has the largest area under coffee production in the study zone. All kebeles in the woreda produce coffee under similar agro-ecological zone. But, the amount of production was different among the kebeles in the woreda. Thus, out of 15 coffee producing kebeles of berbere woreda, 3 coffee producing kebeles (Harawa, Goro Burco, and Burkitu) were randomly selected. There were 690, 549, and 709 coffee producers in Harawa, Goro Burco, and Weltai-Burkitu kebele administration, respectively. From each kebele based on proportions to the population sample households 321 representative sample were selected. Personal interviews, guided by a structured questionnaire, were conducted to collect primary data from the farmers.

The market outlets have been categorized into five groups: wholesaler, collectors, retailers, farmers and cooperatives. Each farmer can use one or more marketing outlets or several combinations of different outlets which maximize the expected utility and due to this there is some overlapping and many farmers sell on more than one market outlet. This is to mean that farmers do not sell coffee permanently to the particular market outlet and use the available market outlets alternatively in the absence or presence of the possible choices. Since farmers may market their coffee via multiple outlets, the multinomial logit model would be infeasible due to the resultant very large number of possible choices.

The relative risk of selecting one outlet can be affected by the relative risk of the selecting the other and violate the Hausman assumption of Independence of Irrelevant Alternatives (IIA) in multinomial logit model. If simultaneity in decision-making exists, this approach yields biased, inefficient and inconsistent estimates (Greene, 2003; Maddala, 1983). Thus, the decision of choosing market outlets is inherently multivariate and attempting univariate modeling excludes useful economic information contained in interdependent and simultaneous choice decisions. Failure to capture unobserved factors and inter-relationships among choice decisions regarding different market outlets will lead to bias and inefficient estimates.

The multivariate probit model takes into account the potential interdependence in market outlet choices and the possible correlation in the choice of alternative outlets. The probability of preferring of any particular market outlet is estimated conditional on the choice of any other related
outlet. The multivariate probit model assumes that each subject has distinct binary responses, and a matrix of covariates that can be any mixture of discrete and continuous variables. The multivariate probit model assumes that given a set of explanatory variables the multivariate response is an indicator of the event that some unobserved latent variable falls within a certain interval. This model simultaneously incorporate a set of explanatory variables on choice of market outlets, while allowing for the potential correlations between unobserved disturbances as well as the relationship between the choices of deferent market outlets (Belderbos et al., 2004). The multivariate probit is an extension of the probit model (Greene, 2003) and is used to estimate several correlated binary dependent variables jointly. In the study area, small holder coffee producers face different choices of market outlets like: wholesalers, collectors, retailers, cooperatives and farmers. Thus, in this study since coffee is one of the cash crops that enable producers to choose more than one outlet that are not mutually exclusive to get better price. Considering the possibility of simultaneous choices of outlets and the potential correlations among these market outlet choice decisions multivariate probit model is appropriate and is applied to capture household variation in the choice of market outlets and to estimate several correlated binary outcomes jointly. The observed outcome of market outlet choice can be modelled by the following random utility formulation.

\[ Y_m = X_m \beta_m + \epsilon_m, Y_m = 1 \text{ if } Y_m > 0, 0 \text{ otherwise,} \quad (1) \]

\[ m = 1, ..., m \]

In a multivariate model, where the choice of several market outlets is possible, the error terms jointly follow a multivariate normal distribution with zero conditional mean and variance normalized to unity

\[ E[\epsilon_m / X_1, ..., X_m] = 0, \quad (2) \]

\[ Var[\epsilon_m / X_1, ..., X_m] = 1, \quad (3) \]

\[ Cov[\epsilon_m / X_1, ..., X_m] = \rho_{jm}, \quad (4) \]

The joint probabilities of the observed events; \[ Y_{i1}, Y_{i2}, ..., Y_{im} / X_{i1}, X_{i2}, X_{im}, i = 1, ..., n, \] that form the basis for the log-likelihood function are the m-variate normal probabilities,

\[ L_i = \phi_m \left[ q_{i1} X_{i1} \beta_1, ..., q_{im} X_{im} \beta_m, R^* \right], \quad (5) \]

were, \[ q_{im} = 2yim - 1, R_{jm} = q_{ij} q_{im} \rho_{ij} \]

Result and Discussion

Coffee producers in the study had five major types of market outlets via which to sell their coffee beans. A multivariate probit model was used to analyze producers’ channel choice. The Wald test was used to test the model fits, the data is statistically significant at 1% significance level, which implied that the subsets of coefficient are jointly significant and the independent variable include in the model is acceptable. The p-value of Wald \( \chi^2 \) (75) 153.73, \( \text{Prob} > \chi^2 \) = 0.0000*** is strongly significance at1% probability level, thus, the multivariate probit model fits the data reasonably. The simulated maximum likelihood estimation result \( \chi^2 \) (10) = 39.8757 \( \text{Prob} > \chi^2 \) = 0.0000 of the null hypothesis of independence between the market outlets decision (Likelihood ratio test of rho21 = rho31 = rho41 = rho51 = rho32 = rho42 = rho52 = rho43 = rho53 = rho54 = 0) is significant at 1% significance level. Therefore, the null hypothesis that all the \( \rho \) (Rho) values are jointly equal to 0 is rejected, this indicate the goodness-of fit of the model and supporting the use of mvprobit model over individual probit model. This proves that separate estimation of choice decision of these outlets is biased, and the decisions to choose the five coffee marketing outlets are interdependent.

The significance of the off diagonal elements of the covariance matrix shows that there are unobserved heterogeneities that influence the choice decisions on the different market outlets. The correlation coefficients among the error terms are significant indicating that the decision to choose one market outlet affects the decision of choosing the other. The \( \rho_{14} \) (correlation between the choice for farmer and wholesaler market outlet) and \( \rho_{52} \) (correlation between the choice for cooperative and collector market outlet) are both negative and statistically significant at the 1% and 10% significance level respectively (Table 1). The study revealed that farmers...
delivering to the farmer market outlet are less likely to deliver to wholesaler (p41). Equally, farmers who involved in collector market outlet are less likely to send their coffee to the cooperative (p52).

Moreover, the Simulated maximum likelihood estimation results suggested that there was positive and significant interdependence between farmers selection of market outlet of retailer and collector which implied that the p32 (correlation between choice for retailer and collector), p53 (correlation between cooperative and retailer) and p54 (correlation between cooperative and farmer) are positively and statistically significant at 5%, 5% and 1% level respectively. This implies that farmer and wholesaler market outlet, cooperative and collector market outlets are competitive to each other in the study areas. However, correlation between retailer market outlet and collector outlet, cooperative and retailer outlet, cooperative and farmer market outlet indicates complementary relationship (Table 1).

The marginal success probability for each equation (market channel decision) is reported below. The likelihood of choosing cooperative is relatively low (4%) as compared to the probability of selecting wholesale market channel (68%), selecting collector market channel (72%), selecting retailer market channel (25%) and selecting farmer market channel (23%). (Table 1), out of fifteen explanatory variables, seven, five, four, two and one variables significantly affected wholesalers, collectors, retailers, farmers and cooperatives outlet respectively.

If coffee farmers chose all five market channels, their joint probabilities of choosing these market channels would be only 0.47%. This indicates that the possibility of choosing the joint market outlet is very low. It was unlikely for farmers to choose all five market channels simultaneously. This was justified either by the fact that simultaneous choice of all market channels was unaffordable for the smallholders coffee farmers, or that all five market channels were not simultaneously accessible in the study areas. However, their joint probability of not choosing all five market channels was 2.8%, implying that the households were more unlikely to fail. This evidence suggests that choosing the right mix of market channels is determined by different factors for each market channels.

Table 1: Multivariate probit estimations for determinants of market outlet choices of coffee producers

<table>
<thead>
<tr>
<th>Variables</th>
<th>Wholesaler(1)</th>
<th>Collector(2)</th>
<th>Retailer(3)</th>
<th>farmer(4)</th>
<th>cooperative(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SexHH</td>
<td>1.207***</td>
<td>-0.0001</td>
<td>0.385</td>
<td>-1.105*</td>
<td>0.575</td>
</tr>
<tr>
<td>AgeHH</td>
<td>0.018*</td>
<td>0.008</td>
<td>0.02**</td>
<td>0.01</td>
<td>-0.01</td>
</tr>
<tr>
<td>EdHH</td>
<td>0.088***</td>
<td>-0.026</td>
<td>0.023</td>
<td>0.018</td>
<td>0.03</td>
</tr>
<tr>
<td>Comship</td>
<td>0.324</td>
<td>0.174</td>
<td>-0.426**</td>
<td>0.217</td>
<td>-0.335</td>
</tr>
<tr>
<td>Lndaltcoff</td>
<td>-0.129</td>
<td>0.263*</td>
<td>-0.012</td>
<td>0.14</td>
<td>-0.074</td>
</tr>
<tr>
<td>HHFamsiz</td>
<td>-0.114</td>
<td>0.072</td>
<td>-0.014**</td>
<td>-0.006</td>
<td>-0.002</td>
</tr>
<tr>
<td>FarmExp</td>
<td>-0.017</td>
<td>-0.019</td>
<td>0.004</td>
<td>0.021</td>
<td>-0.014</td>
</tr>
<tr>
<td>Quanprod</td>
<td>0.017**</td>
<td>0.016</td>
<td>0.004</td>
<td>0.025</td>
<td>-0.032</td>
</tr>
<tr>
<td>Vemkptfrh</td>
<td>0.0186</td>
<td>0.040</td>
<td>-0.009</td>
<td>-0.007</td>
<td>0.006</td>
</tr>
<tr>
<td>Hvwotrsfsl</td>
<td>-0.046</td>
<td>0.176</td>
<td>-0.148</td>
<td>0.184</td>
<td>-0.184</td>
</tr>
<tr>
<td>Gtmktinf</td>
<td>0.6594*</td>
<td>-0.011</td>
<td>-0.132</td>
<td>-0.424</td>
<td>-0.363</td>
</tr>
<tr>
<td>Acctcrdt</td>
<td>1.158*</td>
<td>0.065</td>
<td>0.448</td>
<td>-0.371</td>
<td>-0.626</td>
</tr>
<tr>
<td>Noexteivist</td>
<td>-0.004</td>
<td>-0.032</td>
<td>-0.013</td>
<td>-0.007</td>
<td>-0.028</td>
</tr>
<tr>
<td>Amoffrmin</td>
<td>-0.0439</td>
<td>0.0133</td>
<td>-0.005</td>
<td>0.025</td>
<td>-0.002</td>
</tr>
<tr>
<td>TLU</td>
<td>0.053*</td>
<td>0.028</td>
<td>0.026</td>
<td>0.026</td>
<td>-0.0219</td>
</tr>
<tr>
<td>Cons</td>
<td>-0.454</td>
<td>-0.102</td>
<td>0.469</td>
<td>-0.484</td>
<td>-0.437</td>
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</tbody>
</table>

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<table>
<thead>
<tr>
<th>Predicted Probability</th>
<th>1.372***</th>
<th>2.11***</th>
<th>2.66***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint probability of success</td>
<td>0.68</td>
<td>0.72</td>
<td>0.25</td>
</tr>
<tr>
<td>Joint probability of failure</td>
<td>0.0047</td>
<td>0.28</td>
<td></td>
</tr>
</tbody>
</table>

Multivariate probit (SML, # draws = 5)

Number of obs. 321
Wald chi2(75) 153.73
Log likelihood -666.43527
Prob > chi2 0.0000***

Estimated correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>ρ1</th>
<th>ρ2</th>
<th>ρ3</th>
<th>ρ4</th>
<th>ρ5</th>
</tr>
</thead>
<tbody>
<tr>
<td>ρ₁</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ρ₂</td>
<td>-.187(.113)</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ρ₃</td>
<td>.09(.102)</td>
<td>.23** (.114)</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ρ₄</td>
<td>-.327*** (.094)</td>
<td>-.113(.111)</td>
<td>.086(.105)</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>ρ₅</td>
<td>.12(.168)</td>
<td>-.298* (.16)</td>
<td>.334** (.163)</td>
<td>.397*** (.141)</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Likelihood ratio test of ρ₂₁ = ρ₃₁ = ρ₄₁ = ρ₅₁ = ρ₂₂ = ρ₃₂ = ρ₄₂ = ρ₅₂ = ρ₂₃ = ρ₃₃ = ρ₄₃ = ρ₅₃ = ρ₂₄ = ρ₃₄ = ρ₄₄ = ρ₅₄ = 0

χ² (10) = 39.8757  Prob > χ² = 0.0000

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Sex of the household heads (SexHH): Sex of the household head had positively influenced the likelihood of choosing a wholesaler and negatively influenced the choice of farmer at 1% and 10% levels of significance, respectively. This implies that males have more time to sell and also hold large amount of coffee bean to sell, and consequently search for wholesalers even if the market place is far from their home. The finding is in line with that of (Morrison et al., 2007), who found that female farmers are faced with gender specific constraints like a time burden that limit them from accessing the best market for their output. Similarly, (Diro et al., 2017) demonstrated that male farmers have more resources available for transportation and time to sell their coffee product to far away markets. The logic behind this could be male farmers have more resource for transportation and time to sell their coffee product to markets even when the markets are far away from their residence. However, female farmers prefer to sell their products to farm gates markets to immediately serve their family needs.

Age of household head(AgeHH): Age of household head was found to have a positively and significantly effect in choosing wholesaler and retailer market outlet at 10% and 5% significance level respectively. This implies that as the age of household increases by a year, the probability of farmers to sell their product to the wholesaler and retailer market outlet increase by 1.87%, and 2% ceteris paribus respectively. The results indicate that, as age of household head increases the probability of choosing retailer market outlet increase. This implies that, older farmers may take their decision to choose better market outlet which gives higher price more easily than the young farmers, because older people might have marketing experience, accumulated capital or a long term relationship with their clients or might have preferential access to credit due to their age, availability of land, or family size. This is in line with (Melese et al., 2018) who found that age of household positively and significantly influenced choice of retailer market outlet.

Education Years of household head (EdHH): The educational year of the household head was significantly and positively related to the choice of wholesaler market channel, 1% levels of significance. This implies that as the education year of household increase by a year, the probability of farmers to sell their product to the wholesaler increase by 8.8%ceteris paribus .This is due to the fact that most of the educated farmers make decisions with regard to the choice of market outlet based on the marketing margin and marketing cost. This finding is consistent with (Degaga et al., 2017; Medeksa, 2014) who reported that educational level provides positive predictive power, whether or not the household chooses a cooperative as the market outlet for their coffee and The educational level of the household head was significantly and positively related to the choice of cooperatives and wholesalers market channels, and significantly and negatively related to the choice of agent middle-men. This could be explained by the fact that as farmers become more educated, he/she has good skill and knowledge of agricultural marketing, which makes them to sell their produce through more profitable channels.

Cooperatives membership (Comship): This significantly and positively affected cooperative channel choice at a 10% significant level whereas, significantly and negatively affected retailers channel. The reason is that members are required to supply their coffee as the norm of cooperatives. Additionally, cooperatives provide input and training to their members and provide a share dividend at the end of each year. They were motivated to supply more quantity of coffee with the expectation future benefit from profit dividend than non-members. Farmers in groups have a strong bargaining power when marketing their products and in turn receive better returns for their produce. The result is in line with (Gashaw et al., 2015) who indicated that being a member in coffee cooperative increase marketed surplus positively and significantly. The finding is also consistent with (Yesho et al., 2020) who showed that cooperative membership has a
significant and positive relationship with the likelihood of choosing a cooperative to sell to. **Land size under coffee production (Lndnaltcoff):** The land sizes that can be allotted for coffee production was found to have a positive and significant relation with the likelihood of choosing collector market outlet at 10% significance level, ceteris paribus. The result of this study revealed that, as the land size allotted for coffee production increases by 1 hectare, the probability of farmers to sell their produce to the collector market outlet increases by 26.4%, ceteris paribus. This indicates that those households who allotted large size of land for coffee production would produce more output and farmers would more likely to sell their produce to collector market outlet. This means that farmers receive higher price from collector market outlet as compared to other market outlet from the sale of coffee product. This result is consistent with (Tefera, 2014) who found that households with larger land size increase the probability of choosing consumer market outlet.

**Family size of the household (HHFamsiz):** Family size is positively and significantly associated with selling coffee to retailers and collectors at 5% and 10% significance level respectively. This result shows that those households with large family size are more likely to choose retailer and collector outlets. This may imply large household size is an indicator of requires larger amounts for consumption which enables farmers to sell small amount to retailers.

**Quantity of coffee produced (Quanprod):** Quantity of coffee produced by coffee producers was found to have a positive and significance relationship with the likelihood of choosing wholesaler and negative and significant relationship with likelihood of choosing collector outlet at 1% and 5% significance level, respectively. This result indicated that the quantity of coffee produced by a farmer increases by a quintal, the likelihood of choosing wholesaler market outlet increases by 17% ceteris paribus, and likelihood of choosing collectors market outlet decrease by 14% ceteris paribus, respectively. This implies that for a household who produce more coffee products, farm households are more likely to choose wholesaler and less to collector market outlets. This result is in line with (Medeksa, 2014) who found that the quantity of coffee sold to market agents increases, by the probability of farm households choosing trader market outlets also increases. This result also consistent with (Honja et al., 2017) who found that quantity of coffee produced increases, probability of selling to the wholesalers is increasing. This is because wholesalers purchase high quantity of coffee at once. This means that the farmers who have more yields have more opportunities of selling their produce at the market places than those with the little produce.

**Distance to nearest market (Vemkptfrh):** The result revealed that, distance to the nearest was positively and significantly associated with the likelihood of choosing collector outlet at 10% significance level. Household whose residences are far from the nearest markets are more likely to sell their product to collector outlet. This is because most of collectors buy coffee been at farm gate. This result is supported by the findings of (Getahun et al., 2020) that distance from the nearest market is negatively and significantly associated with likelihood of farmers selling to wholesalers and cooperatives outlet; and positively associated with likelihood of selling to consumer and collectors. The implication of this finding is that households located far away from the nearest market faces difficulty in delivering coffee produce to wholesaler and cooperative outlet and the farmers sold to consumers and collectors outlet due to reduce transaction cost of delivering coffee produce to the market. **Access to market information (Gtmktinf):** A positive relationship was found to exist between access to market information and choice of wholesalers’ market outlet at a 1% significance level, and a negative relationship was found to exist between access to market information and farmers market outlet at a 1% significance level. The rationale behind this could be that access to market information might encourage farmers to sell to a better market and thereby increase their
profit. The result of the study is in line with (Honja et al., 2017) who demonstrated that access to coffee market information affected the choice of collector outlet negatively and significantly.

**Access to credit (Acctcrdtd):** The variable was negatively and significantly associated with the retailers’ outlet choice at 10% significance level. The negative and significance result implies that the house hold who gets credit less likely to deliver coffee to the retailers outlet. The study by (Dessie et al., 2018) similar with this result that access to credit services affect negatively the choice of wholesaler channel.

**Off-farm income (Amoffrmin):** Access to non-farm income determined the probability of choosing retailer outlet negatively at 10% level of significance. This is due to this, farmers who have been engaged in non-farm activities like trading have more knowledge in economic value of selling coffee in formal market and they know as farm gate price diminishes their benefit from selling of coffee. In other case, they can derive income from non-farm activities which enable them to sell coffee at formal market. This result is in line with (Dessie et al., 2018) who reported that off-farm income negatively affected the choice of retailer and consumer channel.

**Livestock owned (TLU):** The study result shows that owning livestock in tlu determines the likelihood of coffee producers to choose wholesaler positively and significantly at 10% significance level; while negatively and significantly associated to collector outlet choice at 5% significance level. Putting all other determinants unvaried, an increase in livestock own in tlur for coffee growing farmers decreases the likelihood of choosing collector by 7% and increase the likelihood of choosing wholesaler by 5% ceteris paribus. This shows that the availability of livestock would increase the ability of the households in covering transportation cost or to buy transport animals, offering greater depth in marketing choices.

**Conclusion and Recommendations**
The main objective of the study was to analyze the determinant of market outlet choice by smallholder coffee farmers in Berbere district. Multivariate Probit Model was employed to analyze factors determine choice of coffee market outlet in the study areas. Multivariate probit model results confirm that sex of household head, age ,education year, cooperative membership, land allocated to coffee, family size, quantity produced, distance to nearest market, getting market information, access to credit, number of extension visit, amount off-farm income and livestock owned were an important factor that affects the probability of choosing market outlet choices.

The study suggested strengthening the existing crop production system through improved coffee seed and, adopting agro-ecologically based high-yielding coffee verities in the area, targeted credit and establishes research and development. In addition the district should establish the coffee market nearest to the farmer’s residence or production area. Moreover policies and strategies should place more emphasis on strengthening rural telecom and rural urban infrastructure development of the study areas.

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**References**


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Degaga, J., Melka, T., Angasu, B., Gosa, A., Zewdu, A., Ameyu, M. Constraints and Opportunities of Coffee Production in Arsi Zone: The Case of Chole and Gololcha
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