



Determinants of choice of coffee marketing channel among cooperative members of the central union of agricultural cooperatives (UCCAO) in the west region of Cameroon: A need for policy reform

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Abstract

This study investigates why cooperative members are not effectively using the cooperatives marketing channels to market coffee in the West Region. Based on random sampling, data was collected from 400 cooperative members of the cooperative for analysis which was both qualitative and quantitative. The qualitative method used the SWOT framework to analyze strengths, weaknesses, opportunities and strengths that affect the UCCAO Group in their marketing functions while the quantitative method used the Logit Model to analyze factors affecting cooperative members' choice of market channel. The results show that the UCCAO Group Cooperatives are internally strong, and they are quite apt to use their strengths to minimize the possible negative effect of the internal weakness. However their current strategy does not respond adequately in exploiting opportunities available to them to minimize the possible negative effects of the threats in their production and marketing functions. The results further indicate educational level of members, payment system, average price of coffee, access to inputs, proximity and access to financial services and extension services to cooperative members as the main determinants of the choice of cooperative members' choice of coffee marketing channel. To gain more market share there is need to review the group policy - improve on the payment system by making timely payments to their clientele and re-instate their input services; maintain and if possible increase the average price of coffee paid to farmers.

Keywords: Coffee; Marketing; Cooperatives; Marketing Channel; Licensed Buying Agents

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1. Introduction

In the mid-80s, Cameroon experienced a crisis linked to a decline in foreign trade subsequent to the unfavourable terms of trade for export produce (especially for coffee and cocoa) and a difficult international economic environment marked by falling oil prices. This was exacerbated by increased international competition due to the rapid development of plantations in South-East Asia (Michael, N. and José, S. 2017). Since further support for coffee and cocoa producer prices was not possible, a donor-driven reform package was undertaken involving restructuring measures across the board including: winding-up of the National Marketing Office for Primary Commodities (NMOPC) in 1991, creation of the National Cocoa and Coffee Board (NCCB) and establishment of the Inter-professional Cocoa and Coffee Council (ICCC), liberalization and deregulation of marketing (ICO Coffee Profile, 2017) leading to the discontinuation of stabilization measures and easing of conditions of access to the export trade and privatization of the quality control of exports. This resulted into inadequate national norms that follow the developments in the international market; and producers little knowledge of quality control and liquoring.

The liberalization policies in the early 1990s exposed farmers to various market malpractices (faulty measuring scale, buying by estimates and prices differentials) and a lot of information asymmetries. In these circumstances, the Group UCCAO that enjoyed a state-granted monopoly lost this position and faced competition from an increasing number of licensed buying agents (LBAs) that entered the regional and national coffee markets. Henceforth, the cooperatives started losing their market shares as farmers entered into market transactions with the LBAs who engaged in door-to-door purchasing.

In Cameroon, before the advent of market liberalization, agricultural marketing cooperatives had the practice of combining agricultural input supply and output marketing services. Such a comprehensive approach of marketing cooperatives was critical in meeting small farmers' production and marketing requirements and ensuring adherence to the latter. But the advent of liberalization policies and fierce competition, has forced agricultural cooperatives to drop out input supply from the service package and productivity in some cooperatives has been negatively affected. The liberalization policies have been so severe on the group UCCAO and other Agricultural Marketing Cooperative Societies (AMCS) to an extent that they cannot more satisfy their customers as before. This has limited the quantity and quality of coffee supplied by farmers directly to Group UCCAO to zero exportation of green coffee from 2015 till present date (UCCAO, 2018). Unfortunately, low coffee prices and the withdrawal of the State over the past three decades have deprived farmers of all the advantages that made the sector so attractive, bringing about a gradual decline in the activity. This situation has gradually undermined interest in this crop that provides work for the populations of whole regions, causing a virtually irreversible loss of dynamism despite the considerable efforts that have been increasingly made since the structural adjustment point was reached.

The strength of a cooperative depends, in part, upon its ability to mobilize its resources and members not only in gaining market share and achieving economic growth, but also in maintaining members' commitment, satisfaction and retaining them. Satisfied and highly committed members are more likely to support their cooperative by participating in all cooperative activities. It is evident that members' goals, what they desire from their cooperatives are critically related to why they joined the cooperative in the first place. These goals

also affect member satisfaction with the cooperative, their commitment to it, and their participation in its activities. Satisfaction influences the desire to continue as a cooperative member and thus the survival of the cooperative as a functioning organization (Hernández-Espallardo et al., 2013). However, the financial and internal problems of the cooperative association may have a negative impact on farmers' perception of the cooperatives, and may therefore hinder farmers to join and participate in their cooperatives activities. From 1988 to 2018, membership in the Group UCCAO has dropped by about 20% and member farmers are deviating gradually from the cooperatives and selling their produce to LBA. Furthermore, another social constraint affecting cooperatives especially in the neo liberal era is the disconnection between the central cooperatives and the farmers. Most of the cooperatives lacked the means to meet up with their social responsibilities towards the farmers and this made the latter feel excluded from cooperative activities leading to decrease membership (Albert et al., 2015). This is fast resulting into a decline in the market share of the AMCS (Nigusie, 2013; Queen, 2015) in many developing countries including Cameroon (UCCAO, 2017) and reduction in the production and quality of coffee produce. In view of the dysfunctions from Liberalization and deregulation of the national coffee sector, the Cameroon Government developed a Coffee Sector Development Strategy 2010 - 2015 to overcome these challenges but this strategy is yet to produce concrete results

The recurrent or overarching question today is why are members of AMCS selling their produce to other agents in the coffee marketing chain? Are AMCS ineffective/inefficient in the marketing channel of agricultural produce or what could be the underlying causes of this increasing phenomenon in the coffee subsector in developing countries including Cameroon? What are the bottlenecks hindering cooperatives from offering better services to farmers? The purpose of this study is therefore; to investigate why coffee farmers (cooperative members) prefer one marketing channel to the other.

Previous studies on AMCS in developing countries (Mhando and Mbeyale, 2010; Mwashikumbulu, 2011; Nigusie, 2013) have concentrated on analyzing the impact of liberalization policies on market performance, market inefficiencies and market participation. Few studies that have examined the factors influencing the choice of coffee marketing channel through AMCS and LBAs failed to understand that producers' choice of marketing channels at some point is also guided by the services they receive from the channel and profit gotten from the given channel. Nonetheless, a lot of deficiencies ranging from market structure, conduct and market performances have been observed in the marketing of coffee in many developing countries. The performance of cooperatives in their marketing functions have received very little or no attention in literature. It is purported that the internal and external environments of the cooperatives are responsible for the dysfunctions of the marketing. It is not surprising that empirical and anecdotal evidence seem to suggest that the reasons why cooperative farmers boycott cooperative marketing channels to sale their produce to LBAs has not been sufficiently explored in current literature. The objective of this paper is to shade more light on the determinants of cooperative members' choice of coffee marketing channel in the West region of Cameroon. The study also analyses the strengths, weaknesses, opportunities and threats that may affect the UCCAO Group in satisfying the needs of the cooperative farmers in the West Region of Cameroon.

2. Materials and methods

The study makes use of a combination of qualitative and quantitative methods to provide adequate answers to the problem posed. The qualitative method uses the SWOT framework to analyze the strengths, weaknesses, opportunities and threats in the marketing functions that may affect the UCCAO Group in satisfying cooperative members' needs. The quantitative method makes use of the Logit Model to analyze factors affecting cooperative members' choice of market channel after liberalization of the coffee market.

2.1. Sampling techniques and sample size

The choice of the study area is justified by the fact that it is in this zone where cooperatives have survived the turbulence of liberalization meanwhile others in the same country have failed (Albert et al., 2015). Respondents were coffee farmers randomly selected from six primary cooperative (CAPLAME, CAPLABAM, CAPLANOUN, CAPLAMI, CAPLAHN and CAPLANDE) that make up UCCAO. Furthermore, Taro Yamane formula (Yamane, 1973) was used to determine the sample size of the study. Taro Yamane states that $N = \frac{n}{1+n(e^2)}$

Where; N = Sample size, n = Population, I = constant, e = error margin/limit (e = 0.05)

By applying this formula the total sample size was 398.2. These results were rounded up to 400 to avoid decimals since there is no half-member, therefore the sample size is 400. However, in order to determine the sample of each primary cooperative society, the Chi square formula was used: Chi square formula = $Q = A \times \frac{n}{N1}$

Where; Q = Interviewees or respondent per cooperative, A = total sample size, N = Total members (88350), I = Constant, n = Total number per cooperative. From calculations the sample size of each primary cooperative which also represents the number of questionnaires distributed is presented on the table 1. The questionnaires were distributed randomly to the cooperative members (coffee farmers).

Table 1. Distribution of respondents of cooperatives

Cooperative	Membership	Sample size
CAPLAME	26 000	118
CAPLABAM	12 646	57
CAPLANOUN	20 000	91
CAPLAMI	20 704	93
CAPLAHN	5 000	23
CAPLANDE	4 000	18
TOTAL	88 350	400

Questionnaires were design in two sets. First set for the various cooperative officials and the other set for the coffee farmers who are members of the cooperative. The first set of questionnaires was designed to cooperative officials to obtain information on cooperative strengths, weaknesses, opportunities and traits. The second set was to cooperative members (coffee farmers) to obtain information on pull and push factors to choose a channel to market their coffee.

2.2. Data collection

Data were collected from primary sources through structured questionnaires and interview guides. These data were collected from coffee growers who are members of different primary cooperatives and also from cooperative officials. Data were collected specifically on socio-economic aspects of the sampled coffee farmers, coffee production and marketing during the 2017/2018 coffee seasons.

2.3. Data analysis

2.3.1. SWOT analysis

The SWOT analysis provides a general characterization of the current state of the UCCAO Group and defines the internal and external operational environment. The analysis helps to identify and evaluate the strengths and weaknesses in the internal environment and opportunities and threats in the external environment of the system. The analysis is based upon the comparison of the internal features of the system (advantages and shortcomings), which can be controlled within the system with those coming from the external environment, upon which the system does not have a control (Afuah, 2009). This helps to bring out a strategic management approaches in decision-making processes to help the organization adopt best practices to meet set goals.

2.3.2. Choice of logistic regression model

In the existing literature different approaches have been used to evaluate factors that influence the membership decision on marketing. Cooperative members' decision on the choice of marketing channel is a discrete choice phenomenon, which is a dependent variable with a binary response of 1 or 0. According to Aldrich (1987), the most commonly used approaches in the estimate of such a model are the linear probability model, logit model, and probit model.

2.3.3. Model specification

The Logit model was used to analyze the factors influencing members' decision on the choice of marketing channel. As such, the dependent variable is a discrete dummy variable (cooperative = 1; LBAs or private buyer = 0). β is the set of parameters to be estimated, which reflect the impact of changes in X on the probability of choosing cooperative or private buyer and ϵ is the independently distributed error term assumed to be normal with zero mean and constant variance. In the logistic regression model, the regression predicts the logit, that

is, the natural log of the odds of having made one decision or the other. Hence the mathematical formulation of Logit model is:

$$\ln(\text{odds}) = \ln\left(\frac{\hat{Y}}{1 - \hat{Y}}\right) = \alpha + \beta X$$

where; \hat{Y} is the predicted probability of the event for example cooperative, $1 - \hat{Y}$ is the predicted probability of the other decision for example LBAs and X is the independent variable. Based on the theoretical framework and on past empirical work on market participation, a number of relevant and appropriate independent variables likely to affect decision to sell as well as the choice of marketing channel, were identified and used in the logit analysis. They included volume of production, age, gender, marital status, education level, household size, coffee price, and contract agreement, distance to the market and off farm employment. In summary, the model was specified as follows:

$$\text{Logit}(Y_i) = \ln(Y_i / 1 - Y_i) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + \beta_{12} X_{12} + \beta_{13} X_{13} + e$$

Where:

$\ln(Y_i / 1 - Y_i)$ = logit for the choice of market channel

Y_i = Cooperatives

$1 - Y_i$ = LBAs

X_i = independent variables

β_i = parameters to be estimated

e = error term.

Dependent Variable

Decision on the choice of marketing channel
(Dependent variable)

1= Cooperative

0 = Private buyer or LBA

Explanatory Variables

Table 2. Description of the independent variables used in binomial logistic model

Variables	Definition	Expected sign
X_1 = Gender of household head	1= male, 0= female	+/-
X_2 = Age of house hold	Years	+
X_3 = Marital status of household head	1= yes, 0= no	+
X_4 = Level of education	1= secondary, 0= primary	+
X_5 = Household size	1= large, 0= small	-

X ₆ = Coffee production	Quantity of coffee produced in kilograms	+
X ₇ = Access to inputs	1=yes, 0= no	-
X ₈ = Proximity	1= near, 0= far	+
X ₉ = System of payment	1=instantly, 0= afterwards	+
X ₁₀ = Extension services	1=yes, 0=no	+
X ₁₁ = Credit access	1=yes, 0=no	+
X ₁₂ = Trust	1=yes, 0=no	+
X ₁₃ = Off farm income of the household	1=yes, 0=no	+
X ₁₄ = Average prices	1=yes, 0=no	+

2.4. Limitation of the study

The study was limited to the West region and also coffee marketing cooperatives. Hence, the results obtained may not hold for all the marketing cooperatives in the country. There was difficulty during the data collection process given the bad nature of the roads leading to the area where the farmers were to be met. Much time was therefore sacrificed for the data collection as use of motor bikes or trekking enabled appointments to be respected where ever the respondent indicated. This same research can be carried out on other marketing cooperatives in the Cameroon e.g. NWCA.

3. Results and discussions

3.1. Demographic characteristics of respondents

The demographic characteristics of coffee farmers retained in this study included gender, age, marital status and level of education which were analyzed and discussed in relation to their influence on the producers' choice of marketing channels. These are important, because the main activities are coordinated by the household head and the head's decisions are more likely to be influenced by such demographic characteristics (Makhura, 2001).

3.1.1. Gender of the respondents

The sex of the household head is an important characteristic in household decision making, as males often take decisions on behalf of the entire household. Gender was analyzed by checking the number of male and female household heads. Table 3 shows the distribution of respondents according to gender.

Results in table 3 show that a large majority (96%) of the respondents were males; indicating that the industry is dominated by males. The results confirm the study by Montshwe (2006), who pointed out that agricultural activities are mostly dominated by males especially the cultivation of cash crop. This is because the household heads are men, and women have very little say on most issues pertaining to coffee except for provision of labour in the whole process of coffee farming.

Table 3. Distribution of respondent according to gender

Gender	Frequency	Percentage
Female	14	4
Male	386	96
Total	400	100

3.1.2. Age of the respondents

According to Mukwenda (2005), age is one among the important variables in deciding which market channel to use. The older the respondent, the more likely he/she will choose cooperative and this is supported by Muthyalu (2013), who noted that age is one among the factors which influence participation of the farmer members in the agricultural input and output marketing. Table 4 indicates the age distribution of surveyed coffee farmers in the West Region of Cameroon.

Table 4. Distribution of respondents according to age

Age (Years)	Frequency	Percentage
20-40	52	13
41-60	116	29
>61	232	58
Total	400	100

Fifty eight percent of the respondents are above 60 years of age (table 4), 13% of the coffee farmers interviewed are within the age range of 20 and 40 and 29% fall within the age range of 41 and 60 constituting. This categorization was done to help determine the age distribution of the farmers since older farmers take their decision to choose better market outlet which gives higher price more easily than the young farmers (Melese et al., 2018).

The low rate of respondents in the age categories of 40 years (youth) or below is remarkable. The reason for the low representation of young people could be due to lack of affordable land in the area. Many young people are also migrating from rural areas for greener pastures or involved in short term revenue return activities like bike riding and daily paid jobs

3.1.3. Marital status of respondents

The marital status of household heads is usually used to determine the stability of the household in African families. It is normally believed that married household heads tend to stay long in farming activities than the unmarried (Jari and Fraiser, 2009). If this assertion is true, the marital status of a farmer will affect agricultural production and hence, marketing. Table 5 provides information on the distribution of respondents according to their marital status

Table 5. Distribution of respondents according to their marital status

Status	Frequency	Percentage
Single	16	4.0
Married	374	93.5
Divorce	1	0.3
Widow/ Widower	9	2.2
Total	400	100.0

The results in table 5 indicate that 93.3% are married, with only 4.0% being single. Farmers who are married have additional family labour, since the couples can easily come together to render services when the need arises. In the case of marketing channels choice, farmers who are married can access distant marketing channels when it requires them to carry the produce to the buying centre, as compared to the singles and others who will have no additional labour force.

3.1.4. Educational level

The level of education of the respondents was examined by looking at the levels of school education attained by the farmers. Farmers were categorized into three groups which include; farmers who have basic, secondary and higher or university education. Table 6 presents the distribution of respondents according to their educational level.

Table 6. Distribution of surveyed coffee farmers according to their level of education

Level of education	Frequency	Percentage
Primary	317	79.2
Secondary	71	17.8
Higher	12	3.0
Total	400	100.0

The results in table 6 reveal that 79.2% attended at least primary school, 17.8% attended secondary school and finally 3.0% attended university or higher education. This may be because coffee farmers reside in rural areas where school enrolment is low.

3.2. Analyzes of the operational environment of UCCAO group cooperative

The SWOT analyzes conducted in this paper reveals that's the UCCAO- Group cooperatives exist in two environments – one being internal (strengths and weaknesses in functional areas) and the other being the external (opportunities and threats in functional areas). The study used the internal and external factors evaluation matrix to summarize the information gained from the UCCAO –Group Cooperatives' external and internal operational environments to build the internal and external factor evaluation matrices as presented in Table 3.

From Table 7, it is observed that the total weighted score of the internal factor evaluation is 2.68, which is above the average score of 2.5. This implies that the cooperatives are internally strong, that is they are quite apt to use their internal strengths to minimize the possible negative effect of the internal weakness.

The strengths of the UCCAO Group co-operative in the development of coffee marketing are analyzed under four categories: type of coffee produced, members' commitment to their co-operatives, storage facilities, coffee processing plant and export license. With regards to type of coffee produced, Cameroon coffee has an intrinsic quality, which is appreciated, in the world market, particularly in Europe (www.encyclopedia). This is also supported by the medal of honour won by the UCCAO- Group Cooperative at the Agency for the Valorisation of Agricultural Product (AVPA) Paris coffee competition in 2017 on the brand *Café Force II* and *Café Delice* (AVPA – Paris 2017).

Table 7. Summary Internal Factor Evaluation Matrix

Internal factors	Weight	Rating	Weighted score
Strengths			
Type of coffee produced	0.13	4	0.52
Members commitment	0.12	4	0.48
Storage facilities	0.10	4	0.40
Coffee processing plant	0.10	3	0.30
Export licence	0.10	3	0.30
Total	0.5		2.00
Weaknesses			
Age of coffee trees	0.13	2	0.27
Quantity supplied	0.12	1	0.12
Operational capital	0.10	1	0.10
Extension services	0.10	2	0.20
Total	0.5		0.68
Total weighted score	1.0		2.68

The medal of honour is attributed to the quality and uses of the coffee that is, this type of coffee accounts for the good performance, profitability, consumption and sustainability of the cooperatives in West Region.

Concerning members' commitment to their cooperative, it was noted that 68.5% of the Cooperative members sell their coffee to co-operatives while only 31.5% sell their coffee to private trader. This high level

of commitment is explained by the long tradition of coffee growing and technical-know-how of co-operatives. Furthermore on the strengths, the UCCAO Group cooperatives have enough storage facilities (warehouse) to store coffee. They collect coffee from members and non-members and also from LBAs in smaller quantities and store in their warehouses while looking for market and the best prices. In the same vein, the UCCAO Group Cooperatives have processing plants to process dry coffee, grade and package it into various grades or categories ready for export hence meeting their internal and external demands. With export licenses, the UCCAO Group Cooperatives sell directly to external markets and this fetches them higher returns than selling nationally.

The weaknesses affecting development of coffee marketing includes aging of the coffee trees, inadequate extension services, inadequate running capital and production inputs (Table 3). With regards to ageing of coffee trees the analysis indicates that only 23.5 % of members have planted new coffee trees within the past ten years while 76.5% have not planted new coffee trees. This shows that most of the farmers have very old trees more than 25 years old on their farms. An important weakness is that AMCS have not been providing coffee farmers with extension services. Five years back coffee farmers depend solely on their experience in coffee farming. The lack of extension services in coffee production has been caused by insufficient capital to finance extension services. The lack of extension services has led into improper use of coffee inputs and adoption of improper agronomic practices resulting to an increase in diseases and pests, hence reduced productivity and quality of the coffee. Primary cooperatives do not have enough funds to purchase coffee from farmers and as such LBAs coming in to buy from farmers who are in dire need of cash.

Table 8. Summary of External Factor Evaluation Matrix

External factors	Weight	Rating	Weighted score
Opportunities			
Trade contract	0.14	1	0.12
Government support	0.11	3	0.33
ICT	0.10	3	0.30
Bank (Micro-finance)	0.10	1	0.10
Diversification	0.10	3	0.33
Total	0.55		1.18
Threats			
Price fluctuation	0.14	2	0.28
Competition	0.09	2	0.18
Cost of production	0.09	2	0.18
Insecurity	0.08	2	0.16
Climate change	0.05	2	0.10
Total	0.45		0.90
Total weighted score	1.00		2.08

The summary of the external evaluation matrix, which help to visualize and prioritize opportunities, and threats that the UCCAO Group Cooperatives are facing are presented in Table 8.

From Table 8, it can be observed that the total weighted score of the external analysis is 2.08 and this is below the average score of 2.5. This means the cooperatives current strategies do not respond well to making

use of the opportunities to minimize the possible negative effects of the threats. There are numerous opportunities through which the cooperatives societies in West Region of Cameroon can enjoy, hence improving and sustaining their existence in the current free trade and trade globalization where price, demand, quality is the norm. Such opportunities include: contract marketing; and government support (subsidies to coffee farmers through their cooperatives).

3.3. Cooperative members' decision on the choice of their coffee marketing channel

There are principally two marketing channels (cooperatives and LBAs) available to farmers. Farmers can choose to use a single channel or a combination of the two marketing channels to sell their produce. Results indicate that the most patronized marketing channel is the direct sales to the cooperatives as it recorded 68.5% of farmers compared with LBAs that recorded 32.5%. The choice of market channel depends on a certain number of attributes of factors, which have been analyzed in this paper using the binomial logistic regression model.

3.3.1. Factors affecting the choice of marketing channel

Table 9 show results of the logistic regression model analyzing the factors influencing cooperative members' choice of marketing channel. The overall goodness-of-fit measured by the significance of the Chi-square statistic in the Omnibus tests of model coefficients is high ($\chi^2=313.555$, significant at 1% level). The percentage of model's correct prediction is good (73.3%). The Hosmer and Lemeshow test shows that the model adequately fits the data. However, most of the explanatory variables opposed the expected signs.

The estimated coefficient for gender of household head was not significant and negatively influences the choice of coffee marketing channel, opposing the predicted sign for male household head (Table 9). The negative sign indicates that female household heads are more likely to choose cooperatives as compared with male household heads. Furthermore, households headed by men are 1.698 times (Table 9) less likely to choose cooperatives as compared to household headed by women. This is also contrary to Eboutou (2010) and Jagoret et al. (2008), men are physically strong enough thus are more powerful to carry or manage heavy and voluminous/bulky fruits harvested from the agro-forests. This could perhaps be explained by the fact that male household head are well informed about cooperatives' misconducts hence are reluctant to sell their coffee through cooperative. Moreover, male household heads have high probability of selling their produce to the farm gate buyers – LBAs and this corroborates the findings of Girma and Abebaw(2012).

The estimated coefficient for age of household head was significant at 1% level and positively influenced coffee producer's choice decision as predicted (Table 9). The positive sign implied that, age of household head influences him/her to sell coffee to cooperatives against LBAs. The odd ratio (OR) of this age variable is 198.192 which implies that, respondents above 45 years are 198.192 times more likely to choose cooperatives to market their coffee as respondents below 45 years. Gilbert and Adam(2017) confirm that age positively influenced coffee producer's choice decision towards cooperative against village buyers. This could be explained by the fact that aged farmers master the role and concept of cooperative more than the young as cooperative concepts are generally learnt in the field rather than in class rooms. Furthermore older household

heads appear not to trust the prices of licensed buying agents and prefer cooperatives due to long-term relationship.

Table 9. Logistic regression model

Explanatory variables	B	Exp(β)	1/Exp(β)
Gender of household head	-.529	.589	1.698
Age of household head	5.182***	198.192	//
Marital status household head	-.138	.871	1.148
Educational level of household	.198	1.219	//
Household size	-1.690	.185	5.405
Payment system	-.539	.598	1.672
Quantity of coffee produce	6.651***	773.467	//
Access to input	.205	1.300	//
Proximity (availability)	-3.289***	.037	27.027
Extension visits	5.264***	193.198	//
Access to credit	-3.895***	.020	50.000
Trust to channel actors	2.798*	16.408	//
Householdhead off-farm income	5.454***	233.605	//
Average coffee prices	8.459***	4715.915	//

***: Significant at 1% ; **: Significant at 5 % ; *: Significant at 10 % ; -2 Log likelihood=227.931; Nagelkerke $R^2=0.543$; Percentage of correct prediction=73.3%; Omnibus Test of Model Coefficients: $\chi^2=313.555$ ***;

The estimated coefficient for level of education was not significant and positively influenced coffee producer's choice decision to market their coffee as predicted (Table 9). This indicates that, educated farmers are more likely to sell their coffee to cooperatives as compared to the non-educated farmers. For this variable (level of education), the model suggests an odd ratio of 1.219 which indicates that farmers with higher level of education are 1.219 times more likely to choose cooperatives to market their coffee as compared with farmers with lower level of education. Mathew (2017) in a similar study contends that the literate farmers are more likely to use cooperative rather than other channels to market their coffee as compared with less or illiterate farmers. 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.

Following the same scenario, household size was not significant but negatively influenced farmers' decision on the choice of coffee marketing channel, which is contrary to what was predicted (Table 9). This negative sign implied that the odds of larger household size are less favoured to choose cooperatives to market their produce as compared with smaller household sizes. In other words smaller household sizes are more likely to choose cooperatives than larger household sizes. The odd ratio of household size variable is 0.185 (less than one), which implies that, for an increase in household size from small to large, the probability of not choosing the cooperative is 5.405 (Table 9). The findings of Angula, (2010) revealed that the availability of labour has an influence on the producers' choice of marketing channel. This could be explained that, larger household implies high dependency ratio consequently they prefer LBAs who buy and pay instantly as compared to cooperatives that buy and pay afterwards.

Payment system was not significant and negatively influenced farmers' decision on the choice to market their coffee (Table 9). The negative sign indicates that members or farmers who are highly in need of money (instant payment) would likely not choose cooperatives to market their produce. For this variable (payment system), the model suggests an odd ratio of 1.672 which indicates that, farmers that need instant payment are 1.672 (Table 5) times likely not to choose cooperatives to market their coffee as compared to those that can be paid afterwards. Similar results were revealed by Ogunleye and Oladeji, (2007) where they stated that delays in payment discourage farmers from selling their produce to some particular marketing channel even though those marketing channels may be offering a higher price for the produce.

Access to input was not significant and positively influenced the choice of coffee market channel as the predicted. The positive sign implied that, farmers that have access to inputs are more likely to choose cooperatives to market their coffee as compared with those that do not receive inputs. For this variable, the model suggests an odd ratio of 1.300, which indicates that, farmers that receive inputs are at a 1.300 greater probability of choosing than with those farmers that do not receive inputs. Alternatively, this can be interpreted as indicating that, farmers that receive inputs increases the odds of choosing cooperative by a factor of 1.300 (Table 9).

The average price was significant at 1% level and positively influenced the market channel choice as expected (Table 5). This implies respondents are more likely to choose cooperatives to market their produce as cooperatives pay higher prices than LBAs. For this variable (average prices), the model suggests an odd ratio of 4715.915 which indicates that, higher prices are likely to influence respondent to choose cooperative to market their coffee by 4715.915 times compared with LBAs that offer lower prices. This result is consistent with the findings of Tsougiannis et al. (2008) who indicated that the choice of marketing channels is heavily depended on the price offered by the marketing channel and not any other factor. Also, Chalwe, (2011) reported that high price provides an incentive for farmers to use a marketing channel since that guarantees them higher profits. This could be explained as cooperatives are non-profit making enterprises that are there to ameliorate the living conditions of its members. Furthermore farmers are rational producers hence they are likely to choose the marketing channel with relatively higher prices so as to maximize net returns or profit.

Extension services were significant and positively influenced the market channel choice as expected (Table 9). This implies increase in the number of extension visits would increase the likelihood of choosing

cooperatives as compared to LBAs. For this variable, the model suggests an odd ratio of 193.198 which indicates that, respondents that benefit from extension services are 193.198 (Table 9) times more likely to choose cooperatives to market their coffee compared with those that have not benefit. This result was consistent with Jaza (2015) who indicated that farmers who are regularly sensitized by extension agents are more likely to adopt compost as compared to those receiving none compost advertisement. This is similar as farmers who are regularly sensitized by extension agents are more likely to choose cooperatives as opposed to those receiving none extension services. This can be explained by the fact that extension visits increase the bond between the farmer and the cooperatives thereby increasing ability to choose cooperatives for their coffee marketing. Moreover, Girma and Abebaw, (2012) reported that extensions have a positive and significant effect on the probability of selling directly to the consumers than selling at the farm gate. Farmers' frequent contact with the extension agents is expected to increase the farmers' ability to acquire important market information as well as other related agricultural information which in turn help the farmers in choosing the best marketing channel for marketing of their produce.

Trust was significant at 10% level and positively influenced the decision of choice of market channel as expected (Table 9). This implies that, increase in the level of trust of cooperative officials or staff would increase the likelihood of choosing cooperatives as compared with LBAs. For this variable (trust), the model suggested an odd ratio of 16.408 which indicates that, respondents that trust are 16.41 (Table 9) time to choose cooperatives compared to respondent that do not trust. This could perhaps be explained by the fact that, cooperative market conduct especially buying by weighing and pricing mechanism are more efficient. Moreover the duration or existence of cooperatives has urged farmers to develop long-term trust, selling to cooperatives becomes a routine.

Estimated coefficient for access to credit was significant at 1% level and negatively not influenced farmers' decision on the choice of coffee marketing channel. This is contrary to what was predicted as access to influenced farmers' decision on the choice of coffee marketing channel positively. The negative sign implied that the odd of respondents who have access to credit are less favourable to choose cooperatives to market their coffee compared with those have access to credit. In other words farmers receiving credits would likely choose cooperatives compared to those who did not received. The odd ratio of access to credit variable is 0.02 (less than one) implies that, for an additional unit of access to credit to respondents, the probability of not choosing cooperative to market their coffee increases by 50 (Table 9). This could be explained by the fact that, the conditions of the credit's repayments are negotiated before credit is granted.

In the similar case, estimated coefficient for off farm income was significant at 1% level and positively influenced farmers' decision on the choice of coffee marketing channel as predicted. This indicated that farmers who have other revenue not from the farm are more likely to use cooperative marketing channel. For this variable the model suggests an OR 233.61 indicating that the respondents with off farm income are 233.61 times (Table 9) more likely to choose cooperatives compared with respondents without non-farm income. This could be explained by the fact that, farmers used off farm income to finance their daily activities while waiting for the delay or late payment of cooperatives.

Finally, proximity was significant at 1% and negatively influenced farmers' decision on the choice of coffee marketing channel as predicted. This indicated that increase in the level of proximity (number of buying points, increase the time of buying) by LBAs would reduce the likelihood of choosing cooperatives by .037 (Table 9) times. The OR of this variable (proximity) is 0.037 (that is, less than one) which implies that, for each additional point and timely collection available by LBAs, the probability of choosing cooperative would increase $1/0.037=27.03$ (Table 9). This could be explained by the fact that, transporting coffee to sale points or collecting points entails cost and also the unavailability of cooperatives' collecting agents.

4. Conclusion and policy implications

This study contends that the post-liberalization period, which we are still witnessing, has completely reversed the pre-1990 stability in all UCCAO Group Cooperatives. Nevertheless, an analysis of operational marketing environment of the UCCAO Group indicates that the cooperatives are internally strong, and apt to use their strengths to minimize the possible negative effect of the internal weakness, their current strategy in making use of existing opportunities to minimize the possible negative effects of the threats is inadequate. The findings of the binomial Logistic regression model, indicates that the main determinants of cooperative members' choice of coffee marketing channel include among others the following: educational level of member, payment system, average price of coffee, access to inputs, proximity and access to financial services and extension services to cooperative members. In order to remain competitive in the global coffee market, the UCCAO Group Cooperatives should develop better management strategies (using their strengths and opportunities to offset weaknesses and threats) for coffee production and marketing to cope with the current competition in the national and international coffee market. The UCCAO Group in an effort to gain more market share should (i) improve the payment system by making timely payments to their clientele to avoid selling to the LBAs (ii) reinstate their input services including extension and advisory services to attract more farmers to sell produce to the cooperative; (iii) maintain and if possible increase the average price of coffee paid to farmers and (iv) build on trust by ensuring staff demonstrate a sense of trustworthiness vis-à-vis the farmers. For overall improvement in the marketing chain, the government should streamline internal marketing and professionalize the operators of the sector to achieve the Coffee Sector Development Strategy.

References

- Afuah, A. (2009), Strategic innovation- New game strategies for competitive advantage, Routledge, New York.
- Albert, J., Timothy, M.O. and Henri, Y. (2015), "Cooperative Movements in the Western Highlands of Cameroon Constraints and Adaptation Strategies", In *Journal of Alpine Research, Revue de géographie alpine*, 103-1- 2015 (Systèmes coopératives dans les régions de montagne)
- Aldrich, J.H. (1987), Linear probability, logit and probit models, Sage publications Beverly Hills, California.

- Angula, M.N. (2010), Determinants of sustainable coffee marketing channel choice and supply response among organic and UTZ certified smallholder farmers: evidence from Uganda. MSc, Thesis, Michigan State University
- Chalwe, S. (2011), "Factors influencing beans producers choice of marketing channels" in Zambia, an unpublished thesis, University of Zambia.
- Eboutou, L.Y. (2010), Rentabilité financière des agroforêts à base de cacao enrichies par des arbres domestiqués: cas du bassin de production du Centre-Sud au Cameroun. Mémoire de Fin d'Etudes. Faculté d'Agronomie et des Sciences Agricoles, Université de Dschang, Cameroun.
- Gilbert, J.N. and Adam, M.A. (2017), "Factors influencing choice decision for marketing channels by coffee farmers" in Karagwe district, Tanzania. *Global institute for research and education*. Vol. 6 No. 2, pp. 1-10.
- Girma, M. and Abebaw, D. (2012), "Patterns and Determinants of Livestock Farmers Choice of Marketing Channels", Micro-Level Evidence. Working Paper No. 1/2012 Ethiopian Economics Association/ Ethiopian Economic Policy Research Institute (EEA/EEPRI).
- Hernández-Espallardo, M., Arcas-Lario, N. and Marcos-Matás, G. (2013), "Farmers' satisfaction and intention to continue membership in agricultural marketing cooperatives: neoclassical versus transaction cost considerations", *European Review of Agricultural Economics*, Vol. 40. No. 2, pp. 239-260.
- ICO Coffee Profile, (2017), International Coffee Organization: Country Coffee Profile Cameroon
- Jagoret, P., Bouambi, E., Menimo, T., Domkam, I. and Batomen, F. (2008), "Analyse de la diversité des systèmes de pratiques en cacaoculture: cas du Centre Cameroun", *BiotechnolAgronSoc Environ* Vol. 12 No. 4, pp. 367-377.
- Jari, B. and Fraiser, G.C.G. (2009), "An analysis of institutional and technical factors influencing agricultural marketing amongst smallholder farmers in Kat River Valley Eastern Cape Province, South Africa", *Journal of Agricultural Research*, Vol. 4 No. 11, pp. 1129-1137.
- Jaza, F.J.A. (2015), "The determinants for the adoption of compost from household waste for crop production by farmers living nearby Yaoundé, Cameroon: descriptive and logit model approaches of analysis", *International Journal of Biological and Chemical Sciences*, Vol. 9 No. 1, pp. 308-328.
- Makhura, M.T. (2001), "Overcoming Transaction Costs Barriers to Market Participation of Smallholder Farmers", in the Northern Province of South Africa. Unpublished PhD Thesis, University of Pretoria, Pretoria
- Mathew, J.M. (2017), Cooperative members' decisions on coffee marketing channels and factors influencing their choices in Rombo district, Tanzania. A dissertation submitted in partial fulfilment of the requirements for the Master Degree of Science in Agricultural and Applied Economics of Sokoine University of Agriculture, Morogoro, Tanzania.
- Melese, T., Goshu, D. and Tilahun, A. (2018), "Determinants of outlet choices by smallholder onion farmers in Fogera district Amhara Region, Northwestern Ethiopia", *J Horti For*. Vol. 10. No. 3, pp. 27-35.
- Mhando, D.G. and Mbeyale, G. (2010), "An Analysis of the Coffee Value Chain" in the Kilimanjaro Region, Tanzania. NCCRN North-South Dialogue 27, NCCR North-South: Bern, Switzerland
- Michael, N. and José, S. (2017), International Coffee Organization (ICO), Cameroon coffee profile.

Montshwe, B.D. (2006), Factors affecting participation in mainstream cattle markets by small scale cattle farmers in South Africa. Unpublished MSc. Agric, Thesis, University of Free State, Bloemfontein.

Mukwenda, E.B.J. (2005), Potential for using the warehouse receipt system in financing maize marketing in Tanzania under market liberalization: Case study of Mbozi and Babati Districts. Dissertation for Award of MSc Degree of Sokoine University of Agriculture, Morogoro, Tanzania. pp150.

Muthyalu, M. (2013), "The factors that influence the participation of co-operative members in the agricultural input and output marketing: a case study of Adwa district, Ethiopia", *Journal of Business Management and Social Sciences Research*, Vol. 2 No. 4, pp. 121-130.

Mwashikumbulu, P.A. (2011), Liberalization of coffee market and its implication on poverty reduction to smallholder coffee farmers in Mbozi district in Mbeya. A Dissertation submitted in partial fulfilment of the requirements for the M.A. Degree in Rural Development of Sokoine University of Agriculture. Morogoro, Tanzania. 93pp.

Nigussie, Z. (2013), Performance Evaluation of Coffee Marketing Cooperatives Union: The case of ChercherOdaBalttom Cooperative Union, West Haraghe, Oromia Region, Ethiopia, Maters Thesis, Department of Cooperative Studies, Makelle University, Ethiopia

Ogunleye, K.Y. and Oladeji, J.O. (2007), "Choice of Cocoa Market Channels among CocoaFarmers in ILA Local Government Area of Osun State,Nigeria", *Middle-East Journal of Scientific Research*, Vol. 2 No. 1, pp. 14-20.

Queen, I. (2015), Rombo hints, coffee societies face financial doldrums, [<http://www.dailynews.co.tz/index.php/local-news/43768-rombo-coffeesocieties-face-financial-doldrums>] site visited on 8/6/ 2015.

Tsourgiannis, L., Edison, J. and Warren, M. (2008), "Factors Affecting the Marketing Channel Choice of Sheep and Goat Farmers in the Region of East Macedonia in Greece Regarding the Distribution of Their Milk Production", *Small Ruminant Research*, Vol. 79 No. 1, pp. 87-97.

UCCAO, 2017.Annual report. UCCAO Cameroon.

UCCAO, 2018.Annual report. UCCAO Cameroon.