

DETERMINANTS FOR RECORD KEEPING AMONG FARMERS IN TUBAH SUB DIVISION, NORTH WEST REGION OF CAMEROON

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ABSTRACT :

Purpose: Record keeping is important as it enables farmers to document their farm operations. Apart from providing some useful insights into the types of records kept, it facilitates understand the problems connected with record keeping by farmers, and so enable us to suggest solutions that lead to effective record keeping. Information obtained can further enhance agricultural development, for instance by facilitating farmers' access to credits.

Methodology: Data was collected using the purposively sampling method (160 farmers) from the villages of Bambili, Bambui, Kedjom-keku (Big Babanki) and Kedjom-ketingoh (Small Babanki) all in Tubah division in the North West region of Cameroon, using a structured questionnaire. The data was entered and analyzed using SPSS (Statistical Package for Social Science), version 20.0. Both descriptive statistics and regression analysis were performed, adopting a 5% significance level.

Findings: All 160 respondents indicated that record keeping is very important, and 67.5% of them were found to keep any kind of records. Binary logistic regression was applied to identify the factors that affect record keeping decisions among farmers. Marital status, type of farming system practice, number of plots and formal training showed positive contributions towards record keeping. However, only the marital status, farming practice, number of plots and formal training (educational level) significantly influenced farmers' decisions to keep records ($p=0.000$).

Unique Contribution: Our contribution dwells on a relevant topic, namely record keeping, which is largely neglected in the topic research, especially in Sub-Saharan Africa. The results allow us to recommended that famers should endeavor to keep and constantly update records as records can attract benefits such as access to credit, and/or grants acquired through project writing. Also, if production, input and sales records are prevalent, governments and scholars can use them for statistical purposes, or as a catalyst to grant certification to famers who keep records which would enhance traceability, market niche and fair trade..

KEYWORDS: Record Keeping, Determinants, Farmers, Binary Logistic Regression, Tubah-Sub Division

I. INTRODUCTION

Agriculture plays a prominent role in the economy and society in every country. About 75 percent of the population in sub Saharan Africa (SSA) is directly or indirectly involved in agriculture or related agribusiness (Moyo, 2016; 2014). Most countries in the region have the natural and human resources needed for strong and sustainable agricultural development and African governments generally put agriculture at the top of their development priorities. Yet agriculture in SSA is widely seen as underperforming (Balgah et al., 2023, World Bank ,2007, InterAcademy Council, 2004).

Agricultural development is widely considered to be a critical driver of social and economic transformation in Africa. Economies within the continent largely depend on the agricultural sector to generate jobs, trade prospects and food for their growing populations. Improved agricultural performance is needed for raising incomes for rural poor, by improving standards of living, eradicating poverty, and promoting food security (Kuteesa, 2019). In spite of the potential, Sub-Saharan African agricultural sector is plagued with many problems. Some of these problems include inadequate supply of farm inputs (often leading to low productivity), the dominance of smallholder subsistence farming systems, low capacity building and negative effects from changing climatic conditions (Balgah et al, 2016). The importance of records in making farm decisions cannot be overemphasized. Farm records can support farmers in identifying insolvent farm units as well as profitable (financially sustainable) ones. Such information can influence farm investment decisions, enabling farmers to keep lucrative farm units and disinvesting in less lucrative ones (Kuteesa, 2019).

Low levels of record keeping and data management has been frequently attributed to high levels of illiteracy and low numeracy in most African farming communities (Minae et al, 2003). Many farmers, literate or not, acknowledge that basic record keeping can improve farm decisions, even under subsistence agriculture (Dudafa, 2013).

According to the World Development Indicators database (2016), the average literacy rate of the adult population in Sub-Saharan Africa (SSA) was 60% in 2011, up from 18% in 2006. The implication is that about 40% of SSA lacks the basic literacy and numeracy skills required for everyday life. Women who are the majority of farmers in Africa account for more than 60% of the region's total illiterate population.

The question naturally arises: why don't many farmers (and not all of them) regularly keep records? Strangely, this crucially important issue has not been the subject of many research works, especially in Cameroon. In addition, the numerous agriculture-related projects operational in Cameroon (e.g. LIFIDEP, ACEFA, PACA, Pea Jeunes, etc) practically integrate record keeping in their extension and training packages (Kimengsi *et al.*, 2020).

As such, understanding the factors influencing farmers' decisions to keep records or not seems very important not only for research, but also to modernize agricultural production in Cameroon, as embedded in the objectives of the second generation agriculture (Oumar et al, 2017). This thesis contributes to this knowledge gap, by attempting to understand which records are kept or not, why or why not, by farmers in Tubah subdivision, in the Northwest Region of Cameroon.

1.2 Problem Statement

Smallholder farms in sub-Saharan Africa number around 33 million, represent 80% of all farms in the region, and contribute up to 90% of food production in some sub-Saharan African countries. (Wiggins et al, 2013) farmers who make up a majority of the population in this area thus, the farmers have a limited educational background and use a variety of agricultural practices (Wiggins et al, 2013). The main activity of Tubah Sub division is farming with maize (*Zea mays*) dominant, and the main food consumed. Horticulture is also carried out which involves the cultivation of Tomatoes, Cabbage, Huckleberry being dominant and animal production were cattle, goats and sheep are being reared. Moreover, poultry and fish farming are practiced (PNDP, 2012)

Currently farm data systems in sub-Saharan Africa comprise fragmented and disjointed multi-source systems that display serious data gaps and poor coordination in data collection, analysis, utilization and dissemination. The array of institutions involved in farm data tends to maintain individual data sets and there are very limited efforts to set up common data frames or to harmonize data sets, field methodologies and analysis or data storage facilities. There is poor synthesis and presentation of data in formats that could be easily accessed and utilized by small-scale farmers. Farm data that is available from the public sector include incomplete national statistics from various sources such as periodic agricultural census (5-10 years) and different types of agricultural surveys on crops and livestock, marketing and integrated household surveys (Minae et al, 2008).

Apart from providing information to farmers, good records and data can enhance access to agricultural credit which remains a major challenge for many farmers in Africa (Denkyirah et al., 2016; Tham-Agyekum, 2010). Thus, the farming practices is quite mixed, ranging from pure subsistence farming to commercial agriculture, more so, the advent of the Higher Educational institutions creates an automatic market (Balgah et al, 2019) Record keeping should therefore be an important activity, given the advantages to the farmer. In addition, the Tubah Sub Divisional delegation of agriculture and rural development includes record keeping in many of its extension packages. Yet, most farmers do not seem to keep any type of records in Tubah Sub Division, in the North West region of Cameroon.

1.2 Research Objectives

The overall objective of this study is therefore to identify the factors influencing record keeping decisions among farmers of Tubah Sub-Division.

The Specific objectives are as follows

- (1) To characterize farmers and farming systems prevailing in Tubah Sub-Division
- (2) To identify the type of records kept (or not) by farmers in Tubah Sub-Division
- (3) To assess the problems associated with record keeping by farmers in Tubah Sub-Division
- (4) Assess the factors influencing farmers' decision to keep records (or not)

II. LITERATURE REVIEW

2.1 Characteristics of Farmers and Farming Systems

Farming systems is a decision making unit comprising the farm household, cropping and livestock systems that transform land, capital and labor into useful products that can be consumed or sold (Fresco et al, 1988).

2.1.1 Crop and Animal production

The five biggest crops contribute more than 45% of total crop production value, with maize being the single most important staple crop. Rice is an important staple in Eastern and Western Africa, and other important staples include potatoes (Eastern and Central Africa), sweet potatoes (Eastern Africa), cassava (Western and Eastern Africa) and plantains (Eastern and Central Africa). In Southern Africa, the strong share of fruits and vegetables in total value of production is due to South Africa's export oriented horticultural production. (Oecd, 2016)

The livestock production mix exhibits similar diversity, not only in its contribution to the total value of agricultural output, but also to the relative importance of the different livestock subsectors. Poultry contributes a substantial share of livestock production value across the region, ranging from 12% in Eastern Africa to 45% in Central Africa and Southern Africa (Oecd, 2016)

2.1.2 Subsistence Agriculture

Subsistence farming or smallholder agriculture is when one family grows only enough to feed themselves. There is not usually much harvest to sell or trade, and what surplus there is tends to be stored to last the family until the next harvest. This is the most widely used method of agricultural farming in sub-Saharan Africa, and the majority of the rural poor depend on it for survival (Kimengsi et al., 2020). It's a method that has appeal to rural farmers because it allows food to be produced (with very little cost) in the rural areas, it lessens their need to find transportation to a city, and it creates opportunity to continue living in a village (where housing and land are much more affordable). It also means the family is self-sufficient in terms of food. Ideally, nothing needs to be purchased or borrowed from another source. (African Development Promise, 2014)

2.1.3 Commercial Agriculture

The objective function of the commercial farmer is profit maximization while that of the subsistence farmer is producing food for the family. That of the semi-commercial farmer is profit maximization subject to withholding enough resources for use in subsistence production. Farmers are known to be supply responsive and are, therefore, expected to adopt commercial agriculture, but many smallholders have continued in their semi-commercial and subsistence modes (Nyikai, 2003). Farmers choose the production level where their net marginal costs equal the net marginal benefits. Unlike for many other economic sectors, this rule is difficult to apply *ex ante* in agriculture due to natural and human factors. For example, droughts and floods negatively affect production and production costs, and make it difficult to plan for the optimal situation. Human causes include government interventions and market imperfections that make it difficult to control production costs and particularly revenues (Arntzen et al, 2004)

2.2 Types of Records Kept by Farmers.

According to Karen *et al* (2008) three kinds of records are widely kept by farmers: Labor records, Crop production records, Animal production records

1. Labor records.

Labor records show the number of workers, their job titles, their salaries or wages, how much days they are absent because they are sick or on leave and any amounts of money that may be taken from their salaries repay loans or for other expenses (Karen *et al*, 2008).

2. Crop production Records

Crop production records shows the different crops that are grown and how much land is used for each crop. Field operations such as planting, seeds, fertilizers, weeding and pest and diseases control are also recorded. When crops are harvested, the harvesting dates, harvesting methods and how much you harvest are recorded. Crop records may also include the cost of various items such as tools or mulch, and the amount of money you get when the crops are sold, if you use machinery, you may keep records of the machines used, fuel cost and how much it cost to look after and fix them (Karen *et al*, 2008).

3. Animal Production records

There are many different types of animals in farming the records that you keep will depend on the enterprise. Some animal production involves many different operations, so more records needed. For example, in a dairy farm you may keep more records than on a farm where sheep are allowed to graze in the veld (Karen *et al*, 2008).

2.3 Problems Associated with Record Keeping by Farmers.

2.3.1 Literacy Rate

Farm record keeping is often seen as a mundane task by farmers (Poggio, 2006). Obviously, farmers are faced with constraints which cause their inability to keep farm records. (Minae *et al*,2008) noted that the lack of keeping farm records is more pronounced due to the high levels of illiteracy and low numeracy levels in lowest resource African farming communities.

2.3.2 Time Constraint

Another constraint faced by African farmers is that, most of them engage in several enterprises and mixed farming systems; thus farm record keeping requires much of their time. Another constraint is the time demand imposed by record keeping. The nature of farming systems by households in Africa is complex and diverse (Kuteesa, 2019). Many households carry out more than one enterprise simultaneously making record taking cumbersome and time consuming. Record keeping at this level often does not capture the complex nature of resource allocation and production structures of agriculture. They are therefore faced with time constraints which hinder them from keeping farm records (Johl et al 2001).

2.3.3 Lack of Sensitization

Minae (2001) noted that lack of sensitization on the importance of farm record keeping on the performance of farm businesses by extension agents or enumerators is a constraint. Johl&Kapur (2001) further stated that sufficient numbers of trained specialists in farm management are not available who could help farmers maintain records of their business. Poor record keeping by farmers is also blamed on the informal nature of farming practiced in many parts of the continent thus providing no incentives for farmers to keep records. (Kuteesa *et al*, 2019)

2.3.4 Lack of Appreciation

There is a general lack of appreciation of the importance of records among farmers in Africa majority of whom remain in subsistence agriculture and whose low returns provide no incentives for record keeping. The small sizes of landholdings with limited knowledge and means to intensify further discourage the practice. (Kuteesa *et al*, 2019).

2.4 Factors Influencing Farmers' Decision to Keep Records (or not)

This would depend on the importance of keeping records to the farmer, Farm record keeping is a key practice used by very successful farmers. Essentially, accurate written farm records are very helpful. Soludo (2002) stated that a farmer who has a well-kept farm record is in a more favorable position to access credit facility from financial institution than one who has no farm records. According to Johl et al (2001), when farmers keep records, they continuously give the needed information for state and national farm policies such as land and price policies.

III. METHODOLOGY

Tubah subdivision is found in the North West Region of Cameroon, located about 15km from Bamenda, the Regional capital. It consists of four main villages Bambili, Bambui, Kedjom-keku (Big Babanki) and Kedjom-ketingoh (Small Babanki), and it is located between latitude 4°50' - 5°20'N and longitude 10°35' - 11°59'E with a total population of about 52635 inhabitants. The altitude ranges between 950-1500 m above sea level, with flat woody lowland in some areas. Its forested area is located in the northern part of the Sub-Division. (PNDP, 2012)

Bambili and Bambui villages were purposively selected, as they (1) have the highest concentration of farmers in Tubah sub-division; and (2) are relatively safe for data collection. A list of farmers was obtained from the Sub Divisional Delegation of Agriculture and Rural Development (SDDA)Tubah Sub-Division. A sample of size 200 was selected but however questionnaires were administered to 160 farmers, amongst these farmers,120 farmers

cooperate with the SDDA, (60 farmers from Bambili and 60 others from Bambui), Farmers who don't work in collaboration with the Sub Divisional Delegation of Agriculture and Rural Development would be sampled using the Snowball sampling technique thus 40 farmers, (20 farmers from Bambili and 20 others from Bambui giving a total of 160 farmers thus, finally giving a total of 160 farmers. the other farmers from the same villages in which SDDA farmers were located to control for extraneous variables.

3.1 Ethical issues: A set of questionnaire was drafted and pretested on five respondents, to check its strength, weight and to improve on its format and quality. It was made up of a cover letter which is explaining the reason and importance of the research work and confidentiality of the information that is provided by each respondent.

For ethical concerns, this research did not disclose the identities (names, personal issues) of respondents. Data was collected and presented on a strict basis following the standards provided by the authorities for this research. During the analyses the results were not altered so as to give a clear and practical view of what is going on in the field.

IV. DATA ANALYSES/FINDINGS

In this study, the binary logistic regression was adopted and employed to identify the factors that affect record keeping among farmers in Tubah Sub Division. The dependent variable (record keeping) took 1 for farmer who keeps records and 0 for farmer who does not keep farm records. Fifteen explanatory variables (Sex, Marital status, Household size, Farm size, Age of farmer, Educational level, Main type of farming system, Total annual income, Experience on farming, Main objective of farming, Area of land owned, Number of plots, collaborate with SDDA, collaborate with any other NGO, received any formal training) were used in the analysis.

4.1 Problems Associated with Record Keeping in the research area

In this study, farmers were asked to provide scores (from 0-4) for the different problems they face with respect to recordkeeping. The summary of the scores is presented on table 8.

Table 1: Problem Limiting Record Keeping Ability of Farmers

Problem	Sample size	Mean score	Std. Deviation	Rank
Sensitization on record keeping	160	1.60	1.280	3 rd
Low levels of education	160	1.02	1.113	7 th
Do not have enough time	160	1.63	1.142	2 nd
Do not know the importance of farm records	160	1.27	1.268	5 th
Information is not used by institutions	160	.93	1.163	8 th
I have multiple enterprises	160	1.16	1.057	6 th
Agriculture is only a part time job	160	1.37	1.216	4 th
Do not see the need to use farm records to take decisions	160	1.98	1.383	1 st
Farm is not a business	160	.89	1.252	9 th

Source: Field work, 2020

As summarized on table 1, the main reason why farmers don't keep records is because they do not see the need to use farm records to take farm decisions (with a mean score of 1.98/4). This was second by the fact that most of the farms don't have enough time (time constraint) to be recording every activity or expenditure incurred during production (a score of 1.63/4). Johl et al (2001) discussed that another constraint faced by African farmers is that, most of them engage in several enterprises and mixed farming systems; thus farm record keeping requires much of their time. They are therefore faced with time constraints which hinder them from keeping farm records. In addition to these, sensitization on record keeping had a score of 1.6/4. Minae et al(2008) noted that lack of sensitization on the importance of farm record keeping on the performance of farm businesses by extension agents or enumerators is

a constraint. Johl et al (2001) further stated that sufficient numbers of trained specialists in farm management are not available who could help farmers maintain records of their business, the fact that agriculture is just a part time activity (a score of 1.37/4) this is because most of the farming system is mixed and the fact that most farmers do not know the importance of farm records (a score of 1.27/4). Kuteesa *et al* (2019) conclude on lack of appreciation as there is a general lack of appreciation of the importance of records among farmers in Africa majority of whom remain in subsistence agriculture and whose low returns provide no incentives for record keeping.

4.2 Factors Affecting Record Keeping

Table 2: Factors Affecting Record Keeping

Variable	Beta	S.E.	Wald	Df	Sig.	Exp(B)
Sex of farmer	.057	.479	.014	14	.905	1.059
Marital status of farmer	1.535	.506	9.203	14	.002	4.639
Household size	-.111	.116	.910	14	.340	.895
Farm size	.004	.003	1.705	14	.192	1.004
Age of farmer	.018	.045	.155	14	.694	1.018
Educational level of farmer	.179	.203	.775	14	.379	1.196
Main type of farming system	.979	.325	9.104	14	.003	2.662
Total annual income	.000	.000	6.430	14	.011	1.000
Experience on farming	.024	.046	.274	14	.601	1.025
Main objective of farming	-.060	.559	.012	14	.914	.942
Area of land owned	-.002	.006	.143	14	.705	.998
Number of plots cultivated	.767	.357	4.627	14	.031	2.153
Collaborate with SDDA	-.508	.821	.382	14	.536	.602
Collaborate with any other NGO	-1.004	.732	1.883	14	.170	.367
Received any formal training	3.336	.778	18.367	14	.000	28.104
Constant	-7.706	2.610	8.718	14	.003	.000

Source: Field work, 2020

The results of the regression analysis as presented on table 2 shows that 9 of the 15 variables were positive towards record keeping while 5 variables showed negative relationships with record keeping. The results show that the sex of the farmer, marital status, farm size, age of farmer, educational level, farming system, farming experience, number of plots cultivated and if the farmer had received training before showed positive contributions towards record keeping. On the other hand, the household size of the farmer, main objective of farming, area of land owned, and collaboration with SDDA and other NGOs showed negative relationship with record keeping. The annual income of the farmer was found to have no effect on the record keeping decision of the farmers in Tubah sub division ($B = 0.000$) because the farming system dominated by mixed farming which happens to be subsistent. In this study, of significant contribution towards record keeping is the marital status of the farmer ($B = 1.535$, $p = 0.002$) that is, the married correspondent may need to meet to the family demands and labour is required to increase output, thus the need for records, type of farming Practice (0.979 , $p = 0.003$), Balgah et al, (2016) Some of these problems include

inadequate supply of farm inputs (often leading to low productivity), the dominance of smallholder subsistence farming systems, low capacity building and negative effects from changing climatic conditions. number of plots cultivated ($B = 767$, $p = 0.031$), due to the land tenure system is thus area, the farmers are prone to have multiple plots, record keeping decision would act as an indicator to either rent or buy additional plots to improve on productivity and meet to the market demand and if the farmer had received training before ($B = 3.336$, $p = 0.000$) thus, according to the World Development Indicators database (2016), the average literacy rate of the adult population in Sub-Saharan Africa (SSA) was 60% in 2011, up from 18% in 2006. The implication is that about 40% of SSA lacks the basic literacy and numeracy skills required for everyday life. More so, Low levels of record keeping and data management has been frequently attributed to high levels of illiteracy and low numeracy in most African farming communities (Minae et al, 2003).

V. CONCLUSION

From the research on Determinants for Record Keeping among Farmers in Tubah Sub Division on Marital status, type of farming system practice, number of plots and formal training showed positive contributions towards record keeping in Tubah Sub Division. However, only the married, farming practice, number of plots and formal training educational level of farmer were found to significantly influence farmers' decisions to keep records with formal training. More so, the farmers did not have any push factor which encouraged them to keep records, this was also influenced by the fact that the farming system practice in this area is subsistence agriculture.

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