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FARM ACCOUNTING RECORD KEEPING AND ITS IMPACT ON THE PROFITABILITY OF FARM BUSINESS

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ABSTRACT

This work examined record-keeping culture in the agricultural sector and its impact on farm business enterprises. It evaluated in particular, the Farm Accounting Record Keeping (FARK) system among peasant farmers in farm settlements to determine their concerns, the importance attached to it, skills possessed, operational performance displayed, and its impacts on the profitability of the farming business in public, private or commercial practices.

The study focused on two of the agricultural sub-sectors: crop and livestock farming. It's descriptive survey research in which structured questionnaires, interviews, and source documents were used to elicit information from 120 farmers in farm settlements in Oyo State. Pearson's Chi-Square, Bonferonni correction test, and Z-test statistics were used to analyze the data. The result revealed that X2calculated is greater than X2critical (22.35>16.92), hence the difference between the observed and expected distribution is statistically significant, thus all the null hypotheses were rejected. That is farmers in small-scale public, private, or commercial farming businesses do not keep or are uninterested in farm record keeping. They do not also have professional skills in farm accounting records due to various farm activities/operations they are seriously engaged with. It was also established that FARK is significantly related to farm resources, and can enhance farm performance and profitability of the farm if well-documented and monitored.

The paper concluded that contemporary farming businesses should cultivate the habit of keeping farm records in a standard, computerized and accurate manner (regardless of what drag them to farming) to pave the way for the preparation of the financial statement, tax returns, business development, and another essential decision making of the farm from time to time. Farm Business Managers should align him/herself with modern and sophisticated technologies and equipment for the various farm operations; explore the opportunity of government incentives, international agencies, SMEDAN, FAO, etc of loan facilities to improve this lucrative farming business and to bring about high-level performance, productivity, and profitability.

Keywords: Record Keeping, Farm Accounting Record Keeping (FARK), Profitability, Farm Settlements, Crop and Livestock Farming.

1.0 BACKGROUND OF THE STUDY

Agriculture occupies a prominent position in the Nigerian economy. It is a very important source of income and livelihood for the people at the grassroots both in terms of food production and providing millions of job. Mutually exclusives, the global farming environment are a dynamic one that faces changes and challenges in technology, prices, climate, and institutions, limited adoption of research findings and technologies (material content) as well as record keeping and archival, referrals or retrieval. These challenges affect the performance of most Agro-business Enterprises.

Since the advent of Operation Feed the Nation (OFN) introduced by the military juntas {President (General) Olusegun Obasanjo –Rtd} and the economic crisis (Structural Adjustment Programme –SAP) in Nigeria most farming activities had been engaged in as mere going to the land to farm. As reported by the FAO, agriculture/farming activities remains the foundation of the Nigerian economy. Along with crude oil, Nigeria relies on the agricultural products its exports to generate most of its national revenue. It is recognized that the four (4) main Agricultural sub-sectors in which Nigerian are engaged in without any thinking back on rising and unrecorded population explosion are: crop production, livestock, forestry and fishing. The rising unemployment situation in the country (40.9 percent in Q1, 2023 – KPMG Report) also contributed to graduates, workers, young and old "going back to the land" without adequate record keeping to evaluate whether the venture is profitable or not. The importance of Farm Record and Accounting cannot therefore be overemphasized. Normally, farmers dislike paperwork, but always busy with their farm work. And where to keep their record may even be another problem, this apart many people in the past associate farming with mere getting back to the land for subsistence farming even without necessary infrastructures such as electricity, running water, the media system (information and communication technology), a central heating system and good record keeping.

Many new farming businesses are daunted by mere idea of book-keeping and accounting. Onaolapo and Adegbite (2014) opined that in reality, both are pretty simple. It should be kept in mind that the idea of book-keeping and accounting share two basic goals: to keep track of income and expenses, which improves chances of making a profit and to collect the financial information necessary for filing various tax returns.

Today's agricultural operations are much more modern and business-oriented. To be successful, farmers need to be good producers, financial managers by keeping accurate farm records, establishing and maintaining a proven farm record and financial planning systems to track all farm business activities. Many other benefits accrue for keeping accurate farm record, for legal requirements, obtaining credit loans, as a management tool etc. It is however surprising to see that the number of farms in virtually all farm settlements in Oyo State have little or no record keeping system. Reasons given include "inter alia" literate level, "I don't have time" or "I don't need to bother", etc.

Some farmers simply save up all their expenses receipts and at the end of the year carry it all to their accountant. Therefore, there is no accurate measure of profitability or production cost until months after the fiscal year ends when the accountant prepares financial statements. Most farmers do keep records but primarily for the first two reasons stated above and not as a management tool.

2.0 STATEMENT OF THE PROBLEM

The importance of keeping farm records and accounts cannot be overemphasized, although it involves much time and effort on the part of the farmer. Notwithstanding, keeping farm records and accounts permit the farmer to find out the size of the income or to evaluate past performance of the farming business, allows him to estimate the total value of the farm business or provide a financial picture of the present situation. Farm accounts provide for him the indispensable tools for farm management and serve as a planning guide for future decisions. Keeping farm records and accounts is the only way to reveal the weak spots, detect loss or theft of cash or stock and ways to provide necessary data (in case of income tax assessment), obtain expenses for the work done by others and for final statement of accounts which will reveal the profitability of the farming business.

With these, it is imperative to evaluate the status of the practice of Farm Record Keeping and Accounting in recent time, apart from its being a challenging and stimulating work, a source of income in rural areas, helping to develop younger generations, and the environment to thrive. Normally, farmers dislike paperwork, but always busy with their farm work. And where to keep their record may even be another problem, as one cannot expect that an office or a desk would be available on the average farm. Therefore, farm accounting should be kept as very simple, portable as possible. In fact, if all records are kept in just one book, the better or rather the Ministry of Agriculture make a Farm Accounting Book available for farmers incorporating all types of farm records such as daily activity logs, farm implements and equipment inventory book, agricultural input log, livestock and livestock products, inventory document, animal feed log, farm use log, sales record, dead stock register etc. the better they are properly kept.

Farm Record Keeping in contemporary agricultural development programmes is unfortunately, noticeable by its absence. This general omission connect to a lack of confidence of planners in farm, family literacy and numeracy levels, a lack of awareness of the range of performance that exists at village or farm settlement levels and the propensity of planners to work either on average or more recently on focus group appraisals that mask both the true concerns and real successes within communities.

Mutually exclusive is the fact that the various training programmes lined up and put in place by Agricultural Development Agencies were thwarted by “money power” in the country as well as ethnic and social influences here and there. For instance, groundnut, millet, kolanut, beans, maize, sorghum, and livestock (cow rearing) which are predominant in Northern Nigeria are supported by classic irrigation system and fertilizers by people of the region in power. Hence there is little or no room for neither farm recording nor accounting. In Southern Nigeria, the predominant types of farming are crop farming such as cassava, cocoa, guinea corn, maize and yam. Household family businesses here takes up to 70% of crop farming, but are not socially supported. (en.m.wikipedia.org).

According to the result of a survey conducted in 2019, and reported by Sasu (2022) agricultural activities in Nigeria were more widespread in the North than in the South. Especially 83.6% of households living in the North East of the country declared to practice crop farming. Similarly, 68.6% of households in the same region owned or raised livestock. On the other hand the South Western part of Nigeria recorded the lowest percentage of household farming participating in agricultural activities. On the average, crop farming was practice by 70% of Nigeria households.

Despite all the above, Farm Recording and Accounting in these zones in Nigeria are developing agriculture's missing links to efficient modern systems.

The questions to be answered by this study are therefore to determine whether farmers do keep records of their farm activities. What importance do farmers attach to farm record keeping or any justification for keeping farm record? Can farm record keeping and accounting be kept by contemporarily farming systems in Nigeria considering the literate levels of the farmers? Is there any relationship between farm record keeping and performance of the relative types of farming, or can farm record keeping significantly affect farm productivity or profitability? All these are going to be answered through this work.

3.0 OBJECTIVES OF THE STUDY

The aim of this study is to examine the impact of farm record keeping and accounting on the profitability of farm business. The aim of the study shall be achieved through the following specific objectives as technically indicated in the statement of the problem:

i) To evaluate farm record keeping status among peasant farmers in farm settlements or commercial farms.
ii) To access the skills in the use of farm accounting records.
iii) To examine the influence of the use farm accounting records on the profitability of farm business

4.0 SCOPE OF THE STUDY

As this study focuses on the impact of farm record keeping, skills, commitment and expected consistency towards keeping farm accounting records, evaluation of the effect of the use of accounting records on the profitability of farm business; the scope is limited to farmers, managers, and other employees in farm settlements as they are the main subjects of this study. The scope is also limited to the types of farming in the settlement. Two main farm businesses can be commonly recongnised: crop farming and livestock farming. The sub-types under each shall be randomly used for this study. The study is also limited to size or acreage of farm or pens size, compliance with Agricultural laws and other weather conditions or any other environmental factors such as COVID -19, Disasters, Terrorism etc.

5.0 LITERATURE REVIEW

(i) Record Keeping Concept and its Characteristics

Record Keeping is the activity of organizing and storing all the documents, files, invoices, resources, etc. relating to a company's or organisation's activities. Complaints about poor record keeping and alleged abuse have built for more than a decade. What is most important in record keeping is how detailed or careful it is being kept, where being kept, its purpose or kept for financial, medical or official reasons and its requirements/systems/practices (Cambridge Dictionary) 2023 edition.

Records are essential in any management operation. A good record keeping system will allow managers to monitor and evaluate the performance of their production system. It will help

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managers identify problem area in the production plan to make the necessary corrective measures. Complete records are useful to the manager and technical advisors in assessing any problems and in determining factors that contribute to these problems and in deciding what to do to control these problems.

A good record keeping system should therefore take into account the business needs, abilities and limitations. The business manager needs to understand the purpose for keeping the records and when the purpose is known it will help to decide which records are useful and need to be kept. Equally important is the fact that records been kept should be as simple as possible to satisfy the need. Keeping overly detailed records might lead to confusion, frustration and failure. Keep only the information necessary to accomplish the purpose and when it is started make it simple, gradually it may become more complex as the handlers become more familiar with record-keeping system and as at when making wise management decision and increasing profitability or otherwise of the business (Massey, et al, 1992).

In essence, Ademola, et al (2012) opined that record keeping is essential to business management. Record keeping involves identification, classification, storage and protection, receipt and transmission, retention and disposal of records for preparation of financial statements. He also concluded that in record keeping, policies, systems, procedures, operations and personnel are required to administer the records.

Laughlin and Gray (1999) pointed out that the following are the most important reasons to set up a good record management:

a) To control the creation and growth of records to reduce operating costs;
b) Improve efficiency and productivity;
c) To assimilate new records management technologies and;
d) To ensure regulatory compliance.

Accounting records in particular which includes entries from day to day transactions of a business, receipts and expenditure, ledgers, opening and closing balances etc are very vital in any business enterprise. Records may also include a list of organisational assets and liabilities. This helps the enterprise to evaluate their performance in a particular period of time usually at the end of a financial period (Onaolapo and Adegbite, 2014).

(ii) Farm Records

Farm Records is an account of the various activities carried out on the farm on a regular basis. Such activities include farm purchases, utilization of farm inputs, number of livestock kept and equipment procured. It also includes crop cultivated, seed planted, cultural activities carried out, quantity harvested etc. Farm records are written document showing major activities going on in the farming business. And to enable farmer to manage his farm very well, he must keep some records.

There are two things a farmer needs to have for a proper farm management either in crop farming or livestock farming: farm records and farm accounts especially for private or commercial farmer owners. Keeping both farm records and farm accounts are vital if one is going to be successful in the farming business.

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Farm record and accounting provides figures for farm planning and budgeting like any other business, a farmer need to update his accounting records in order to have adequate financial information to be able to plan, modify any farming activities, know what yield can be expected from crops and livestock and what are the cost implications and the expected revenue.

Further, on the farm, there are two specific types of records: Financial and Production Records. Financial Record relate specifically to money or the financial transactions/interactions of the farm, its justify farm income or expense transactions/items such as product sales, operating expenses, equipment purchased, account receivables, account payable, depreciation records, inventories, loan balances, owing or payment in advance, and price information are all examples of financial records, while Production Records are the items that relates to quantities of inputs and level of production by the farm and or by resource type. They consist of crop yields, plant population, pound of muck (poultry waste or manure) produce, weaning weights, calve born, death loss, etc. Both financial and production records are important to the efficient management of today's farm business. When such information is accurately maintained, classified and categorized it can be used to prepare farm accounting which will be useful for accurate decision making and automatically enhance farm performance and profitability.

Farm business decisions that are not based on accurate farm records and accounting may lead to less profit. The accounting process allows a farm manager to make informed decisions based on actual farm performance. However, farm accounting cannot take place without first keeping farm records. Therefore, establishing, maintaining and using an effective farm record-keeping system for an ongoing farm activities helps in farm planning, budgeting, setting standards, informed decisions making and analysis of both production and financial records.

Farm accounting plays an essential role in the success of the agricultural sector productivity in general. The absence of accounting practices in the farming enterprises is one of the major constraint facing the farmers and farm manager's ability to take advantage of farm management tools to maximize productivity and enhance profitability. Farm accounting is a branch of accounting pertaining to agricultural activities in which the three areas of accounting apply: financial accounting where the farmers/farm managers should create ratio analysis, trend analysis etc. cost accounting where he/she should keep cost analysis, process costing sheet and management accounting where he is to make decision by using it to maintain the budgetary accounting, standard accounting, marginal accounting, stock analysis which include Activity Based Costing (ABC). Farm/Agricultural accounting is known as a specialist area in the agricultural sector, which recorded primarily financial and monetary transactions in agricultural activities, and classifies these transactions by type, as it is interested in estimating production costs that have been incurred for agricultural products, and then prepare financial reports by summarizing these financial and monetary transactions (Yaaghubi et al, 2009).

(iii) Accounting Record Keeping, Procedure, Storage and Retrieval

Record keeping cycle involves a process that is followed by Accountants and book keeping staff in processing raw financial data into output information. William et al (2008) described record keeping cycle as a process which ranges from creation of business transactions, analyse and record the transactions in the journal by account name, post information from journals to ledgers, preparation of closing trial balance to preparation of financial statement.

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These procedures will provide an accurate thorough picture of operating results, permit a quick comparison of current data with prior year, reveals employees' fraud, theft, waste and record keeping errors. The financial statement presented will automatically be used by the business manager, prospective creditors for prompts filling of tax returns and business protection or failure.

Accounting records are important as they are sources of information and thus they must be numbered and stored properly for the purpose of record retrieval. Crane (1997) defined record storage as the housing of records when whether semi – active or inactive must be retained. He also pointed out that records should be stored in a well-built record centre, the archive, the commercial storage and the basement.

Onaolapo and Adegbile (2014) also quoting Reed (2010) described record retrieval as a system of removing records from their storage places. He emphasized that file arrangement should support the retrieval of records by either arranging them numerically or alphabetically so as to ease retrieval. Crane (1997) added that retrieval should be done by authorized personnel in a record unit of the business.

Best practices for successful record retention and retrieval programmes in any business set-up include; training and education, check lists to ensure inclusions of all required documentation prior to closing a file, paying attention to detail documentation, pertinent information relative to the last transaction, providing and obtaining instruction in writing, record keeping maintenance habits and adherence to standard operating procedures of record keeping storage and retrieval. Above all these is the use of computer storage hardware in contemporary farm record keeping activities.

Historically, many farm managers have found keeping and analyzing financial records a challenge. However, a number of challenges have been addressed through computerized record-keeping systems. The advantages of using such a system depend on the expectations of the accounting system, the amount of time available to keep records, attitude towards initial investment costs, literacy level and availability of computer hardware to work with.

A computerized record-keeping system will not necessarily save time; its real advantage is in storage and record analysis. Once the information is posted in the computer software, reports and analyses can be created, changed and printed. Computerized system quickly and accurately sort and report a great deal of information. They can also provide monthly or annual summaries for identifying strength, weaknesses, threat and opportunity of the farm business operations.

If a hand system can provide detailed information required by the farm manager to make quality farm decisions it may be the best choice. However, if a hand system does not give the desired level of financial information, a computerized system should be considered as it save time and can even be done while other farm activities are on simultaneously.

Once a farm record-keeping has been established, analyzing the record can begin. Decision-making can be greatly enhanced by analyzing both production and financial records and their impact can be measured accordingly.

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A number of financial analysis tools can be used when accurate and complete farm records are available. These tools include the balance sheet, income statement and project monthly cash flow statement (including family living expenses). These three financial statements provide information for making short and long term financial decisions.

Table 1 below shows the details of financial statement and list of required farm records selected from farm accounting system model.

Table 1. Financial Statements and List of Required Records

Statement	Records Required
Balance Sheet	Farm Assets Cost & Value
	Farm & Personal Asset Changes Livestock, Crop
	& Other Product Inventories
	Loan Balances
Cash Flow	Farm Income and Expenses
	Non-Farm Income & Expenses
	Debt Payments
Enterprise Analysis	Farm Income and Expenses
	Livestock & Crop Yields
Income Statement	Farm Income & Expenses
	Interest Payments
	Livestock & Grain Inventories
	Accounts Payable & Receivable
Income Taxes	Farm Income & Expenses
	Non-Farm Income & Expenses
	Interest Payments
	Depreciation Schedule

Source: Trace PB 1540 Publication, 2015

Having described the importance or essence of a computerized record-keeping system, it is desirable to first describe Record Keeping Methods and then the Accounting System Model which will support the above system.

(iv) Record-Keeping Methods and Farm Accounting Business Model

Traditional practices of financial record keeping have largely been informal, simple and vary from the "Generally Accepted Accounting Principles" (GAAP) which have long been used in other businesses. A primary reason for collecting and organizing records was for satisfaction of Internal Revenue Service (IRS), tax reporting requirement (Vanderlin, 2021).

An accounting method is a set of rules used to determine when and how income and expenses are reported. A farmer's accounting method includes not only overall method of accounting but also the accounting treatment used for any material item. Basically, there are two primary methods of accounting record keeping. They are:

(i) Cash method: All items received during the year are included in the gross income and expenses are deducted in the tax year they are paid.

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(ii) Accrual method: Income is generally reported in the year it is produced or earned and expenses which are deducted or capitalized in the year they were incurred not necessarily in the year received or paid.

The accrual method is recommended because it provides inventory reconciliation and computation for "actual" net income, thus it is helpful in making managerial decisions.

Other methods that can be used in farm business accounting are:

(iii) Special methods of accounting for certain items of income and expenses

(iv) Combination (hybrid) method using elements of two or more of the above.

Most farmers utilize cash basis accounting to report income (revenues) and expenses (costs) when cash is exchanged through the above listed financial analysis and tools. Cash accounting method is an acceptable method for reporting taxable farm income. However, additional information may be needed for informed management experts and decision-making.

Valendin (2021) summarized therefore that farm business records are important for tax planning but are also utilized to generate management reports that will enhance the long-term profitability of the farm business, financial management does not mean the producer has to use an accrual accounting system, but it does mean accrual adjustments must be made in order to achieve financial statements (required on an accrual basis) for financial management (i.e. determining financial performance). Overall management includes both financial management (accrual basis) and tax management (cash basis). Both management approaches need to be understood and reconciled. For this understanding and reconciliation the below Farm Business Financial Management Model could be adopted.

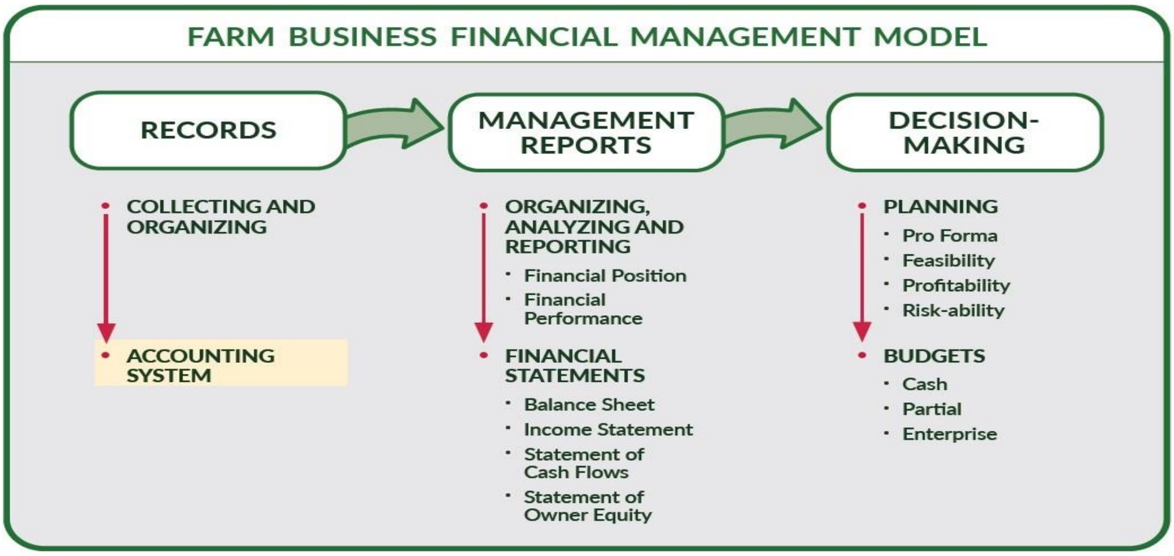

Figure 1: Source: Jenny Vanderlin (2021) - Accounting System – https://farms.extension.wisc.edu/articles/accounting.system

(v) Keeping Farm Records

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Hanson, J. C. et al (1991) emphasized that records are important to the financial health of the farm. Good records do not ensure the farm will be successful; however, success is unlikely without them. Farm records are like report cards students receive in school. With a farm report card, you can tell how well farm operations compared are being managed with other co-producers in the same "class". The strengths and weaknesses of the farm operation can also be evaluated.

Besides its use as a management tool, farm records are essential for preparing income tax reports. Also, most banks require extensive records from farmers to formulate credit ratings. Finally, records are important in establishing eligibility for participation in government programs, determining the proper level of insurance coverage, and negotiating lease arrangements.

There are three basic types of farm records: (1) resource inventories, (2) production accounts of livestock and crop operations, and (3) income and expense records. As a farmer, resources such as land, labor, machinery (including farm structures, pen construction, tractor etc) breeding stock, management and financial capital are used. Values are assigned to these resources and maintain current inventories so that the farmer knows the foundation from which operation took off. From this resource base, the farmer produces food and fiber. The production accounts of livestock and crops show how this resource base is combined with other inputs to yield physical output.

Consequently, production records, such as the relationship of feed to weight gain, cow to number of calves, pullets to broilers/layers and quantity of eggs lay per day, fertilizer to crop yield, or land to total production, are most critical to the farm's profits.

Due to the fact that farmers interact in a market economy, the cost of the feed and revenue from the market log, or the cost of the fertilizer and the price of grain, are equally important. These income and expense records are related to each other and translate production accounts into naira and kobo (Figure 2).

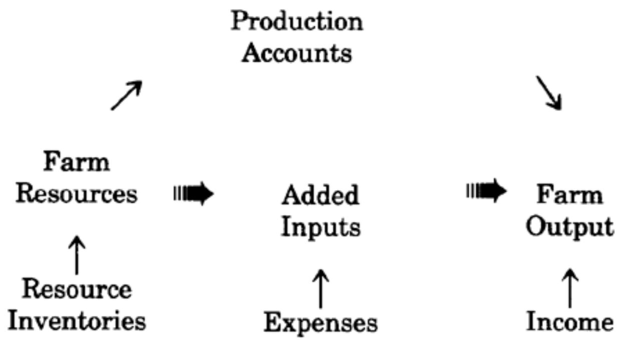

Figure 2: Types of Farm Records

(v) Design and Types of Farm Records and Farm Accounts

Farm record is an accounts of the various activities carried out on the farm on a regular basis. Such activities include farm purchases, utilization of farm inputs, number of livestock kept and

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equipment procured. It also includes crop cultivated seed planted, cultural activities carried out, quantity harvested etc.

Effiong, et al (2014) opined that there is no hard and fast rule on farm record; neither do we have a widely acceptable design for farm record. The most important features in farm record design should be those of simplicity, specificity, ease of accessing information, comprehensible to another user, among others. They listed the various types of farm records such as:

i) Farm inventory record which contains the list of assets owned by the farm. Examples include crop and livestock inventory records
ii) Production Record
iii) Farm Diary and
iv) Sales Record

Others are (v) Agricultural Input Log (vi) Animal Feeds Log (vii) Farm expenditure record (viii) Dead stock register etc. Their uses vary depending on the type of farm and each one is important.

From the submissions of Hanson,et al (1991) and Effiong, et al (2014), apart from farm inventories, the two most important types of farm records are **production accounts of livestock and crop operations, and income and expense records.**

Resource inventories are not a "flow" concept, but a "stock" measurement. It included and not limited to Assets and Liabilities and is useful for computing noncash expenses, such as depreciation. Depreciation is an accounting method. It spreads the expense of capital items, such as machinery and buildings, over their useful life.

(a) Production Accounts

Production accounts are used to measure the performance of crop and livestock produce on the farm. Some production information can be derived from income and expense records, for example, where total bushels sold or pounds of fertilizer purchased might be noted. This information, while useful, usually is not specific or complete enough. More detailed production accounts can and should be kept, usually classified as crop, livestock or labor records.

Often included under crop records are farm maps. Farm maps are used to describe soil conditions, cropping patterns, field layouts and building locations. Other written crop records show crop rotations, varieties, yields, fertilizer rates and pesticide applications. This information can be summarized and will indicate the efficiency of production.

Livestock and Poultry records usually include subsections for mortality, breeding, performance and feed information. Mortality records, list the number of livestock and track disease problems. Breeding records ensure that only superior individuals or groups of individuals are used to parent offspring with desired characteristics.

Performance records for livestock are divided between birth and production information. Birth records indicate date of birth, important dates in the animal's life, parental evaluation and

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weaning information. Production records refer more directly to herd size, rate of gain, and hundred weight sold and purchased.

Finally, feed records are important in evaluating overall production efficiency. Feed normally constitutes at least 50 percent of the total cost of raising an animal for meat. The type of feed ration, its formulation and the rate of feeding should be monitored closely.

Another major category of production recordkeeping is labor. Labor records are important particularly when labor shortages are a problem. By knowing the amount and timing of labor required per operation of an enterprise, the farmer can better plan what enterprises are feasible when faced with labor constraints on the farm.

(b) Income and Expense Records

A transactions journal and general ledger are useful for recording income and expense records. In the transactions journal, the farmer should record financial transactions as they happen. In the general ledger, organise the farm records into a meaningful format. Important uses of the transactions journal and general ledger are to provide information for the income statement and cash flow statement. With the income statement, calculate farm profit. The cash-flow statement is a summary of the timing and flow of Naira in and out of the farm business. It helps the farmer to meet cash obligations. Remember that information recorded in the transactions journal and general ledger should be complete and accurate.

(vi) Farm Accounting

Commercial farming involves many transactions and book keeping. Books of Account are records of business transactions. Accounting systems should be designed to provide information efficiently and quickly at least cost as well as capable of offering protection to the business by exposing theft or fraud.

Some farm accounts that could be kept by a farm manager include:

(a) Balance Sheet: It can also be called the network statement. It shows the value of farm assets that would remain if the farm business is liquidated. It is the total asset minus total liability. It is divided into: (i) Assets (ii) Liability (iii) Net Worth.

(i) Assets: Anything of tangible value owned by the farm business. It comprises of current (or liquid), working and fixed assets

(ii) Liability: It refers to legitimate claims that can be made against the business. It is classified into current, intermediate and long-term liabilities

(iii) Net Worth: It reflects the absolute equity or the amount by which assets in the business exceed its outstanding liabilities.

(b) Net Income Statement: It is referred to as the difference between the gross receipt and total cost of production. It is also described as the surplus resulting from business operations which could be withdrawn without reducing the future scale of the business.

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(vii) Assessing and Improving Farm Profitability

The questions farm managers think about often is whether the farm is making money or not. To stay in the business, the farm must generate a profit, at least in the long run. One of several important management tasks for farm managers, therefore, is assessing and improving farm profitability. It is therefore necessary in this paper to explain the distinction between profit and profitability. Also the idea of how the farm can improve its performance as well as the use of income statement in analyzing profit and profitability.

The Farm Profit

Profit is the financial benefit realized when revenue generated from a business activity exceeds the expenses costs and taxes involved in sustaining the activity. Any profit a company generates that goes to its owners, who may choose to distribute the money to shareholders as income (dividends) or allocate it back into the business to finance further company growth. The method of calculating profit is simple: subtract a business's expenses from its total revenue over a fixed period of time. The three primary levels of Profit are: Gross Profit (subtracts only the direct cost of producing goods from the total revenue), Operating Profit (that which takes into account both the cost of goods sold and operating expenses such as selling, general and administrative costs) and Net Profit (or the bottom line is the money left over after subtracting all expenses from the total revenue). Net Profit can refer to earnings before or after tax. Revenue is the total amount of sales generated by a business for its goods and services. And Profit is the earnings left over after expenses have been deducted.

A farm that grows 500 acres of corn would generate income from the corn. To calculate profit, we normally subtract the operating costs of seed, fertilizer, pesticides, fuel, interest, hired labor, others, from the year's income. Growing corn also requires machinery and sometimes buildings, which add to the costs of the farm. But since these items last for several years, you do not subtract the entire cost for use of equipment and buildings the year they are purchased. Instead, the farmer depreciates their value; that is, prorate their cost over the useful life of the machinery and buildings so charge only part of the cost against each year's income. When the operating costs and depreciation is subtracted from the annual farm income, the result is commonly called net farm profit. Mutually exclusives, is the fact that when the livestock farmer procures 500 pullets, the cost of feeding (ground mash, mash, pellet and crumble), water, energy, wood shavings, charcoal, hired labour etc are subtracted from year's income after growing to maturity, sold or are egg-laying. The cost of putting up the pen, farm structures, cages etc also add to the cost of the livestock farm here. Ditto all these also depreciate with time and are prorated as in crop farming.

Common definition of profit:

	Income
minus	Operating costs
minus	Depreciation
equals	Net farm profit

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There are other costs associated with the farmland, labor and management that ought to be considered.

Profitability

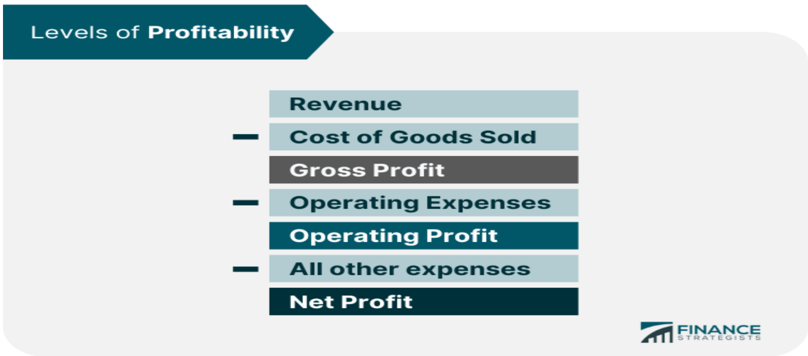
Profitability is a measure of an organization's profit relative to its expenses. It arises when the aggregates amount of revenue is greater than the aggregates of expenses incurred in a reporting period. It also refers to an entity's ability to turn in a profit.

Inclusive here is the Levels of Profitability which are encroached in the basic primary levels of Profit as shown in Figure 3 below.

Revenue minus Cost of Goods Sold equals Gross Profit

Gross Profit minus Operating Expenses equals Operating Profit

Operating Profit minus All other Expenses equals Net Profit



Profit is related to opportunity costs through the concept of profitability. "Profit" and "Profitability" are not the same. When discussing profitability, we consider the relationship of net farm profit to the farmland, and the labor and management skills that are invested in the farm business. For example, if the farm generated a net profit of N400,000 last year, what does this say about the farm performance? To many smaller farms with a single owner or operator, a net income of N400,000 might be considered a good profit, but to larger farms with more than one owner or operator, N400,000 might be a poor one showing for the year.

When comparing different sizes and types of farms to assess the farm's performance, we use profitability measurements such as: operator labor, and management earnings, rate of return on equity or net worth, and rate of return on investment.

Improving Farm Profitability

Generating profits and increasing profitability are underlying concepts that should influence the decisions as a farm manager. Many other things do affect the level of profit. This, in turn, determines the standard of living and the growth potential of the farm business. A good farm manager should ask himself or herself the following questions often:

- Am I making the most profitable use of my land and building resources with crop and livestock enterprises I have chosen?

- Are my operating inputs at the optimal level?
- Is my equipment the proper size for my farm?
- Do I acquire the most favorable terms on borrowed money?
- Does my borrowed money earn a rate of return greater than the interest rate I pay?
- Are my field operations timely?
- Do I plan and carry out good marketing strategies?
- Do I make good use of my time and hired labor?
- Do I take advantage of new technologies?
- Are there custom field work or off-farm employment opportunities that could augment my farm income?
- Do I maintain good business relations with others?
- Do I manage my taxes to increase after tax income?
- Are my family living allowances reasonable?
- Am I allowing my farm operation to grow by put ting back some of my profits into the business?

Answering these questions correctly could make him accomplish profitability of the farm business as it will allow the business to grow, develop new product or enter new market and increase his entrepreneurial competencies. Therefore, there is no one clear path to improving profits and profitability. Rather, profitability is a state of mind in which a farm manager carefully controls every aspect of the operation to make the most profitable use of the resources available to the farm business.

Generally, factors that can impact a business venture's profitability are: Demand, Competition, Size, Productivity, Direct Expenses, Overhead and Advertising. Others are the Use of Key Performance Indicators (KPIs), Assessment of Business Costs, Identifying Business Waste, Focusing on Existing Customers and Researching New Opportunities.

(viii) Farm Accounting Record and Performance

Empirically, performance of business refers to the ability of the business to meet the required standards, increased market share, improved facilities, ensuring returns on profitability and there is reduction in wastages, it is then believed to be performing effectively. (Fitzgerald et al, 2006).

Performance refers to an ongoing process that involves managing the criteria for which an institution, agency or project can be held accountable (Duranti and Dhibodeau, 2001).

Fitzgerald et al (2006) argue further that business enterprises must improve production if they are to effectively compete in this era of rapid economic and technical change. Improved productivity in farm business requires alignment with weather changes, workforce that has the flexibility to acquire new skills for newly created farm activities/job resulting from technological innovation and structural changes in the economy and capital investment. For instance, a new technology in the area of computer and solar power system is changing most farm businesses. We have in Nigeria newly manufactured machines and equipment that can plough large hectare of land, cultivate, plant, process yields or output to consumption level.

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Also sophisticated solar equipment are now available for livestock farming (poultry for instance) with ease. Such machine can process poultry feeds, feed the fowls on moving tray provide portable water with or without necessary drugs and can also pick and pack eggs in crates without cracks, all powered by solar systems.

Bititei et al (2001) also asserted that performance is a result of worker's provision of strongest linkage to strategic goals of the business enterprises, customer satisfaction and economic contribution that affects the business, hence it addresses the mode in which an activity is accomplished in particular and level of standards to which a task is carried out within the working environment he concluded.

According to Ikechukwu (1993), keeping records is crucial for the successful performance of a business. A comprehensive record keeping system makes it possible for entrepreneurs to develop accurate and timely financial reports that show the progress and current condition of the business. With the financial report generated from a good recordkeeping system, performance during one period of time (month, quarter or year) with another period can be compared. An accurate record of the business' financial performance is vehicle to monitor performance in specific areas. Accounting records provide a basis for complete and accurate income tax computation, a basis for sound planning for the future and basis for discussion with partners, potential investors, and lenders all these are important aspects which enhance performance of the business. Business also depends on correct accounting records to make good decisions about the firm. Decision such as expansion, drop or maintain decisions of product lines, make or buy decisions, about size of debtors. Therefore if proper records are kept they will facilitate efficient, proper timely decision making and enhance performance in any small scale industry.

6.0 FARM ACCOUNTING RECORD KEEPING IN FARM SETTLEMENTS IN NIGERIA – AN EMPIRICAL OVERVIEW

The history of farm settlement in Nigeria dates back to 1905 in the three major geographical regions: Igbo, Hausa and Yoruba. Major pre-occupation was mainly subsistence farming wherein family members plants crops (maize, cassava, yam, beans, rice, groundnut, cocoa etc. and rear local livestock such as hen, goat, cows/cattle or herds for their family. After the World War II in 1945, the regions shifted to large scale farming in the area of Arable Farming, Fishing and Livestock, Poultry Farming, Permanent Crops such as Cocoa, Palm Tree etc. to the extent that each family helps one another in return. This led to farm settlement system as introduced specifically in the old western region by the then Western State Ministry of Agriculture and Natural Resources.

The current farm settlements in Oyo State for instance are seven (7):

i) Akufo (Ido) Farm settlement

ii) Eruw/Lanlate Farm settlement

iii) Ijaiye/Olosun Farm settlement

iv) Ilora Farm settlement

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v) Iresaadu Farm settlement

vi) Iseyin/Fasola Farm settlement and

vii) Ogbomoso Farm settlement

All these Farm Settlements are focused on:

(i) Large Scale Poultry and Livestock Rearing

(ii) Large Scale Industrialized Cash Crop and Food Production

(iii) Irrigation Technology Expertise

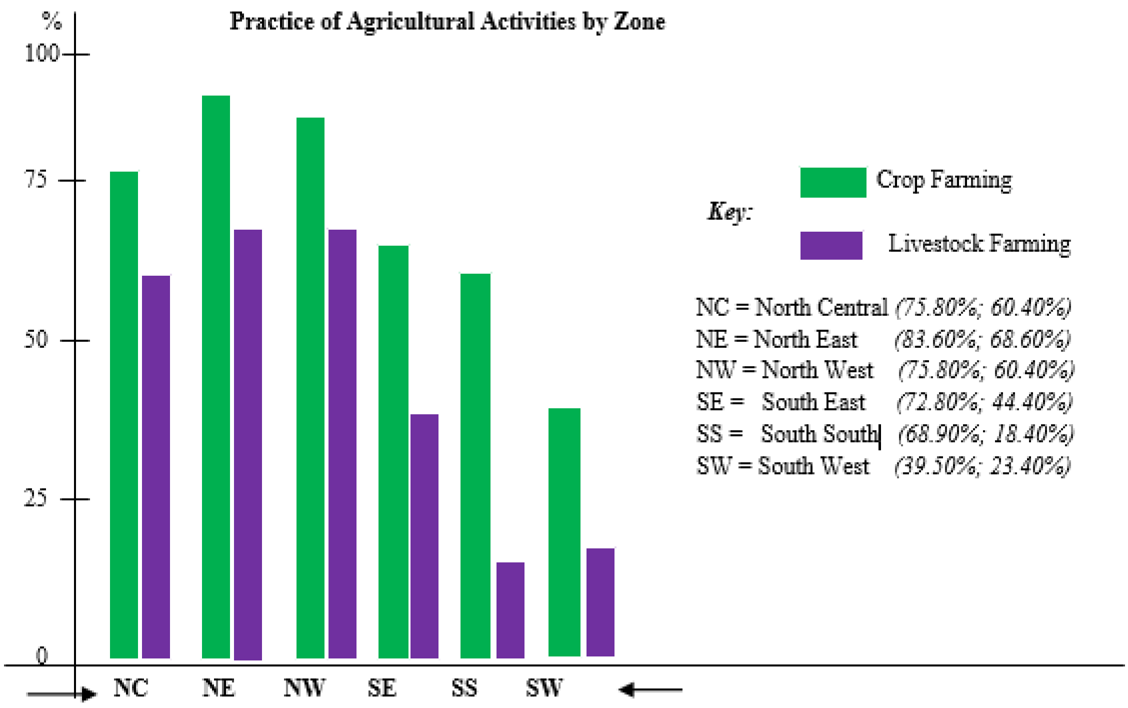
(iv) Post Harvest Storage Processing

(v) Industrial Aquaculture

(vi) Dairy Farming and Beef Feedlots

(vii) Fruit Juice and Cashew Nut Processing etc.

However, the contemporary Agricultural practice in Nigeria has the share of household participation in Agricultural activities in Nigeria as at 2019 by geo-political zone. This is shown in the below Figure 4. The two major Agricultural Activities being Crop Farming and Livestock Farming (Sasu, 2022).



{Six (6) Geo-Political Zones in Nigeria}

Figure 4 Source: Sasu @ Statistic.com (2022)

In spite of all the above, it is seen that no farm accounting records are kept in any of the settlements or where agricultural activities take place. Mainly due to lack of monitoring by Ministry of Agriculture and Natural Resources or due to individualistic take up of farm land in such settlement. Those one that are even owned by government are not well supervised and "produce" could not be recorded nor accounted for. It used to be rated as "whether profit/sales/proceed come or not, the servant would always receive their pay".

The above, notwithstanding, in a study of 148 respondents in Nigeria (Enugu), Okoli (2011) links proper record keeping and profitability of small scale enterprises and assert that due to inadequate record keeping, the small scale farm operators could not assess their performance effectively. He argued that in order to enhance the profitability of a small scale farm business enterprises and their continuity there is need for adequate record keeping which will help the farm owners to keep track of the performance of their enterprises. This will not only resolve issues related to unemployment but activate the inactions of government to be focused on "food matter"

Mensah et al (2007) also states that a significant number of enterprises in their survey kept no records pertaining to operations, finance, audited accounts, tax returns and so on. And whereas Aryeetey et al (1994) while assessing the financial statements of small scale farm enterprises claims the existence of practical problems of deriving records and figures that make up the statements. They evaluated that in most enterprises, the farmers keep all the records in memory, thus lack of records of all kinds – output, sales, accounting credit borrowing from lending institutions – SMEDAN, NDE, FAO, and WTO etc. employees costs assets valuation, owners emoluments etc. Owners of most farm settlement under SMEs do not keep proper records and thus they are not able to provide data nor financial statements about their entities.

6.0 METHODOLOGY

As earlier stated in the objectives of this study, the below Null Hypotheses were set to be tested. The population and sample size, the research design, method of data collection and analysis are described below:

6.1 Hypothesis

Ho1 - Farmers in small scale commercial farm settlement do keep farm record of their farming operations.

Ho2: There is no significant relationship between Farm Accounting Record Keeping (FARK) and Farm Resources.

Ho3: Farm Accounting Records Keeping (FARK) by farmers in farm settlement does not contribute to their performance and profitability of their small scale farm business.

6.2 Population and Sample Size

The population consist of all public, private and commercial farmers in Akufo Farm Settlement in Oyo State who are either involved in crop farming or livestock farming. Five (5) crop farmers and Seven (7) livestock farmers were selected due to their respective population predominance in their respective type of farming. Ten (10) each were respectively and randomly selected for this study based on hectares of land occupied by the duo. Thus, making a total of 120 respondents. The choice of Akufo Farm Settlement is on the basis of predominance of availability of all farming activities there. Other settlements have restricted types of farming.

6.3 Research Design and Statistics

The study is a field survey and the research design is descriptive to depict the data in succinct ways so as to compute all measures of central tendency and dispersion as well as coefficient of variation and relationship. The Pearson's Chi-Square, Bonferroni Correction Test and the Z-test statistics were used for analysis.

6.4 Method of Data Collection

To achieve the objectives of the study and as earlier mentioned, a descriptive field survey was carried out to elicit information from all the respondents. Oral interview, questionnaire and other performance evidences (Direct observation, Farm Product Records, Farm Products, and Uncertified Reflective Journal etc.), government gazette, books, magazines, etc. were used to collect both primary and secondary data for the study.

6.5 Data Analysis Techniques

Data collected were analyzed using both the quantitative and qualitative methods. The analytical tools used in analyzing the data collected for the study include descriptive statistics, the Chi-Square, and Pearson's (This was used to establish the relationship between the two categorical variables accounting record keeping and profitability of the farm business and to test the hypothesis formulated through the use of interactive alternative STATA version software or manual computation. Within this software, dissemination of user-written record will continuously grow and comparative reports of year by year farm activities can be explored. Since the record data generated on the farm cannot be as complex as with the use of SPSS, a Five-Point Likert Scale was adopted.

The Pearson's statistic along with the Bonferroni correction for a chi-square analysis for group comparisons was computed and used to evaluate/establish the relationship between the response (dependent) variable (record keeping) and explanatory independent variable (farm business profitability) among groups of five farming activities in the settlement. The Z-test was also used to evaluate whether the sample means are different when variances are known since the sample size is large. Z Test determines if there is a significant difference between sample and population means. Z Test normally was used for dealing with problems relating to large samples. For this study the farming activities are: Livestock (Poultry, Fishing, Piggery, and Cow/Sheep Rearing) and Arable farming (Crop-Maize, Cassava, Garden Eggs, Yam, Tomatoes, Pepper, Okro, etc. and Palm Trees/Plantain / Fruit Annual Breeding/Trees (Orange, Berry etc.)

The Chi-Square statistic and the Likert Scale adopted are shown below:

Chi-Square Formula

Where X2 = Chi-Square Value

C = Degree of Freedom

Oi = Observed Frequency

Ei = Expected Frequency

Σ = Summation

Five-Point Likert Scale Used

Code Meaning Value

SD Strongly Disagree 1

D Disagree 2

UD/N Undecided/Neutral 3

A Agree 4

SA Strongly Agree 5

6.7 Presentation and Analysis of Data

Below are the responses of farmers within crop farming and livestock farming systems available at the Akufo Farm Settlement?

Table 2: Distribution of Responses on the effect of Farm Accounting Records Keeping (FARK) on the Performance and Profitability of Farm Business in Farm Settlement.

S/N	Question Item Description	SD	D	UD/N	A	SA	Total
1.	I do not keep any record because it waste a lot of activity or operation time although it is essential in any enterprise	12 (10)	17 (14)	0 (0)	61 (51)	30 (25)	120 (100)%
2.	Aggressive farm operations and activities make peasant farmers uninterested in Farm Record.	8 (7)	10 (8)	7 (9)	50 (42)	45 (38)	120 (100)%
3.	Farm Record Keeping reduces operating costs, improves efficiency and high productivity	10 (8)	8 (7)	12 (10)	70 (58)	20 (17)	120 (100)%
4.	Farm Accounting Record Keeping increases chances of farm business operation and success achievement.	13 (11)	10 (8)	6 (5)	49 (41)	42 (35)	120 (100)%
5.	Farm Accounting Records are hardly kept in line with accounting standards and procedures for preparation of financial statement.	15 (13)	18 (15)	10 (8)	50 (42)	27 (23)	120 (100)%
6.	Peasant farmers in farm settlement lack professional and operational skills in keeping farm accounting records	10 (8)	10 (8)	0 (0)	57 (48)	43 (36)	120 (100)%
7.	Farm Accounting Record Keeping provides figure for farm production planning and financial statement, budgeting and auditing.	18 (15)	17 (14)	15 (13)	40 (33)	30 (25)	120 (100)%
8.	Farm Accounting Records assist in resource and input allocation, productivity-performance-planning (PPP)	15 (13)	10 (8)	10 (8)	48 (40)	37 (31)	120 (100)%
9.	Farm Accounting Record Keeping provide information that enables the farmers to control product wastages, theft, natural loss, etc. maximize output and therefore increase productivity in farm business.	9 (8)	11 (9)	5 (4)	55 (46)	40 (33)	120 (100)%
10.	Farm Accounting Record Keeping help check balances, reveal weak spots and strengthen alignment with weather changes, flexible workforce, technological changes and innovation that could enabled improved performance.	11 (9)	9 (8)	0 (0)	40 (33)	60 (50)	120 (100)%

Source: Author's Field Survey Data and Computation, 2023

By applying the Chi-Square formula, it is found that

$X^2_{calculated} = 22.35$

and with the Degree of freedom (df) being (10-1)(2-1) = 9

$X^2_{critical} = 16.92$

From the above, $X^2_{calculated}$ is greater than $X^2_{critical}$ (22.35>16.92)

Then, the difference between the observed and expected distribution is statistically significant. We therefore reject the null hypotheses respectively and accept all the alternatives in the first instance from the distribution Table 2 above, 25% of the respondents strongly agree that they do not keep record of their farm work, although it was realized that it is an essential document for an enterprise of this nature, while 51% of them agreed totally. 14% disagree while 10% strongly disagree. This indicates that majority of the peasant farmers in the farm settlement realized they do not keep farm record, but squarely face their farm activities/operation. This goes to corroborate the questionnaire item 2 where 80% of them were uninterested in farm record keeping.

Further, 75% of the farmers also realized and agreed that farm record keeping reduces operating costs, improves efficiency of farm operations and therefore high productivity, while 10% of them maintain a neutral position. In particular, majority agreed that farm accounting record keeping could also increase the chances of farm business operation and record success achievement if productivity is highly monitored. The higher the productivity and performance levels, the higher the successful achievement, although 19% of them disagree with this view.

The application of Generally Accepted Accounting Practice (GAAP) has no place in their accounting farm record keeping, because 65% of the respondents agreed that they lack the professional skills to combine farm operation with accounting farm records due to their high aggression in sustaining their farm activities, while 71% of the respondents agreed that farm accounting record keeping could enhance farm production performance hence through proper planning and preparation of financial statement, there is every probability that resource allocation could be improved for better productivity.

In any farm business, it was observed that activities or farm operation always occupy the serious farmers and their employee's time, notwithstanding, cases of theft, fraud, disaster etc cannot be ruled out. In effect, this may affect output, performance, productivity and profitability. This is why 79% - 83% of the respondents agreed that farm accounting record should be well kept against all odds including weather changes and introduction of technological innovations. This day, mechanized farming is prominent and iPhone/solar-powered mechanically–operated system of poultry farming as developed and manufactured by National Agency for Science and Engineering Infrastructure (NASENI) is now in use. This reduces manpower or employees to be catered for and cases of theft.

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A further test of the hypotheses and confirmation to rule out Type 1 Error was carried out. The author subjected all the items in the questionnaire to Bonferroni correction test. The test was adopted to reduce instance of false positive results with multiple pair items using 5% error rate from the above data. Thus five (5) multiple comparisons test yield an error rate of 0.01.

Table 3: Bonferroni Corrections/Adjustments on the five comparisons and their corresponding alpha values:

S/N	Items Comparison	Descriptions	α value	Remark
1	**Q_1 vs Q_2**	Interest and importance in keeping record to enhance operational activities and performance of any enterprise	**0.16**	Significant
2	**Q_3 vs Q_4**	FARK improves efficiency, reduces operational cost and therefore contribute to success of farm business enterprise	**0.28**	Significant
3	**Q_5 vs Q_6**	FARK are kept in line with Accounting Standard if employee are trained, competent, interested and has professional/operational skills	**0.47**	Significant
4	**Q_7 vs Q_8**	FARK provides the basis for financial statement, production planning, improved productivity and performance.	**0.36**	Significant
5	**Q_9 vs Q_{10}**	FARK helps to control production wastages, fraud, theft, natural loss/disaster, check and balances with flexible workforce, technological innovation for improved performance and profitability.	**0.23**	Significant

Source: Author's Field Survey Data and Computation, 2023 (Note: FARK = Farm Accounting Record Keeping)

It could be seen from the above Table 3 that all the items are also statistically significant.

The author also employed the Z-test to determine whether two samples means are different when variances are known and the sample is large or more than 30units.

Mathematically z-test formula is represented as:

$$\textbf{Z Test} = \frac{\bar{x} - \mu}{\frac{\sigma}{\sqrt{n}}}$$

where X = Mean of Sample = 27.46

μ = Mean of Population = 18.45

σ = Standard Deviation of Population = 15

n = Number of Observations = 12 (7Livestock Farmers; 5 Crop Farmers)

Thus the calculated Z-value is

$$Z = \frac{27.46 - 18.45}{15/\sqrt{12}} = 2.08$$

$Z_{cal.} = 2.08$

p value = 0.04

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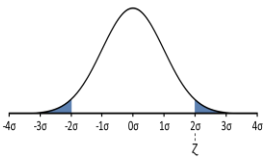
Since the p value, is less than Z_{cal}, or it does not exceed 0.05, we reject the null hypothesis (H_o) at the significance level 0.05, and



Conclude that farmers in small scale public, private and commercial farm settlement do not keep farm record of their farm operations. Although, it has been established that the relationship between Farm Record Keeping and Farm Resources (human, infrastructure, accounting, materials etc) are significant, it is seen as having relative impact on the performance and profitability of the small scale farm business entity in most farm settlements.

7.0 SUMMARY AND CONCLUSION

The researcher adopted qualitative and quantitative techniques in collecting data. This study reveals that majority of the farmers in farm settlement do not keep record. Albeit, farm accounting record is relatively important and are not also kept to standard. They only keep record on cash basis, sales purchases, creditors and debtors. Receipts invoices, payment vouchers are supposed to be used as record keeping documents. They will help to reduce operating costs, improves efficiency, productivity and therefore profitability. Farm Accounting Record Keeping is not predominant among peasant farmers, but recent development of the state of unemployment where graduates find themselves in farm business had made it necessary to keep records especially with the use of new technologies (Computer, Android Phone, Palm top etc. and other farm electro-mechanical operated equipment).

The study also revealed that, there is significant relationship between FARK and farming operations. It was also established that FARK increases farm performance operation, efficiency with skilled workers, hence their profitability. Whereas Profitability is widely used as a measure of financial performance, workers provide the strongest linkage to successful farm business performance hence; they should be enticed as much as the duo (farm performance and profitability) is concerned so that theft cases will be eliminated. It also increases if information about daily farm activities and monitoring are well managed. Standards farm accounting record book is also recommended as could be provided by State or Federal Ministries of Agriculture and Rural Development especially in both crop and livestock farming.

The contemporary activities in small scale farming should explore the open-ended loans from Central Bank of Nigeria (CBN), Food and Agricultural Organisation (FAO), Small and Medium Entrepreneurship Development Agency (SMEDAN) etc to keep pace with farming business, up-to-date information and modern infrastructures. In as much as farming business is stably in place to support livelihoods through food production, habitat and jobs, provision of raw materials for other sector, training and re-training concerns about farm business and record keeping should be articulated from time to time to improve performance and productivity, since it does not matter by qualification who goes into farming.

8.0 RECOMMENDATIONS

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Based on the above findings, farm business operator or manager either in public farm settlement or private farms set-up for either crop or livestock farming are recommended the following for optimum farm operation performance and profitability.

1. Farmers should cultivate the habit of keeping records.

2. Farm Business Operator units should ensure complete, standard and accurate farm records are kept for essential decision making from time to time or based on weather variation. Orientation or refresher course training on record keeping could be organized if and when hiring knowledgeable and skilled worker.

3. Small or Private Farm Business Enterprises should also embrace proper accounting record keeping practices in order to be successful and for effective financial performance.

4. Farm Business Operator/Manager should also align themselves with modern technologies in farm operations as properly kept accounting records can influence future agricultural endeavours. This is important since farm business is now made easy with modern and mini sophisticated mechanical devices to plough, plant, weed, harvest and turn harvested crop into many uses.

Mutually exclusive, mechanically-operated devices are equally available at low cost for hatching eggs into pullets, feed and developing broiler, layers and their feeds without stress.

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