



CHAPTER FOUR

Farm Records and Accounting

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4.1. Farm Record & Account

- ✓ Farm business analysis is computation & interpretation of a variety of efficiency measures for the farm under study.
- ✓ The subject of farm business analysis is dealt under different names, i.e. *farm records & accounts, farm accountancy or farm book keeping.*
- ✓ **Records** are statements of *fact or data concerning* a specific subject which may be specified in *physical, monetary, mathematical or statistical terms.*
- ✓ **Farm records** pertain to information recorded on the **day-to-day operation** of a particular *farm.*
- ✓ It is *systematic documentation of all activities taking* place in a farm enterprise over a given period of time.
- ✓ It is an **act of writing down every activity** engaged in on the farm in every production season and **at different stages of the production** process up to the final disposal of the goods and services to the ultimate consumer.

Basic information needed for farm record

- ✓ **Farm map:-location, size, soil type, land use.....**
- ✓ **Labor: - the amount of labor needed, by gender, either hired or family labor**
- ✓ **Supplies:-who are the supplier of inputs.....**
- ✓ **Output: - the amount that we produced.....**
- ✓ **Sales and marketing cost of farm product**
- ✓ **Prices**
- ✓ **Land tenure**
- ✓ **Cropping pattern**
- ✓ **Conversion ratio**
- ✓ **Livestocke and crop breed type**
- ✓ **.....**

Kinds of farm records

I. Physical Farm Records: - Non-monetary

- ✓ Essential to implement the financial records and financial decisions
- a) **Farm map**
- b) **Land utilization records**
- c) **Production and disposal record for crops livestock, poultry and others.**
- d) **Labor records**
 - ✓ Paid labor- hired - full- time, Part-time
 - ✓ Market wage rate is taken
 - ✓ Unpaid labor- operator (family) labor
 - ✓ Opportunity cost is calculated
 - ✓ NB labor days used on crops and livestock enterprises can be recorded separately on monthly basis.
- e) **Machinery use records**
- f) **Feed records**
- g) **Stock (goods ready to sale) and store register**

2. Financial Farm Records- expressed in monetary terms

- ✓ Important to provide information regarding the profitability of the whole farm business over a given period.
- ✓ All the cash incomes from the operation and expenditures to the operation are recorded Year day and month should be included
- ✓ Include the following

a. Farm inventory :-All kinds of goods purchased and consumed during the operation are recorded

- The ↑es (increases) and ↓es (decreases) in inventory also recorded

b. Farm cash or farm financial record

c. Classified farm cash accounts and annual business analysis (credit and debt accounts)

d. Capital asset and sale register

e. Cash sale register

f. Credit sale register

g. Wage register

h. Funds borrowed and repayment registers

i. Purchase register

j. Farm expenses paid in kind register

k. Non-farm income record.

3. Supplementary records:- Supplement the two records

- Include

a. Approval(agreement) register

b. Auction register

c. Hire register

d. Climate weather condition soil type agro - ecological condition etc

✓ The main *objectives of farm business analysis* are to answer such questions as:

- ❑ *How does the business perform at a certain time? = knowledge of past, current and future of the performance of the business*
- ❑ *Where are the weaknesses?*
- ❑ *What improvements are possible?*
- ❑ *Provide a financial picture of the present situation*
- ❑ *Serve as a planning guide for future decisions.*
- ❑ *providing background information:*
 - ✓ *for farm policies &*
 - ✓ *for getting credit facilities.*

The three major steps or stages of farm business analysis are:

- ❖ *Keeping proper recording of accounts & activities*
- ❖ *Analysis & interpretation of the results*
- ❖ *Presentation of results*

Advantages of farm records & accounts

1. It is a means to higher income.

- ✓ To obtain *higher income*, farmers must have good knowledge about *present & potential gross income & operating costs*.
- ✓ The best way to obtain such knowledge is to keep records & accounts.
- ✓ Keeping records & accounts would enable the farmer to:
 - *Know the financial status of his farm at a point in time;*
 - *Know the magnitude & sources of gains or losses over time;*
 - *Identify the better sources of income & items of costs;*
 - *Keep a check on unproductive expenditures*
 - *Examine comparative profitability of & costs involved for different enterprises; etc.*
- The combined knowledge of all these enables the farmer **increase his income.**

2. *It is a basis for diagnosis & planning.*

- ✓ Diagnosis of management problems is the prerequisite of sound planning.
- ✓ Records & accounts provide the basic information needed for identifying the sources of problems.

3. *It is a way to improve managerial ability.*

- ✓ The farmer *gets a better insight* into his business which helps him in finding out the defects, which can be set right by exercising better control & effective economies.
- ✓ In addition, farmers can avoid mistakes & losses that usually arise from dependence only on his memory of guidance.

4. **It guides to a better management & future decisions.**

- ✓ Analysis of farm records provides good guides for the allocation of resources b/n production improvement & immediate family welfare.

5. It is a basis for credit acquisition & management.

- ✓ it demonstrate & authenticate the production & income potentials & **credit worthiness of the farmer.**
- ✓ Thus, lending agencies can help the farmer in meeting his credit needs more readily & he/she can manage his/her credit utilization properly.

6. It is a basis for research.

- ✓ Research requires **precise & correct data** which is possible only if **proper records & accounts are maintained** on the farms included in the study.

7. It is a basis for policy formulation

- ✓ Records & accounts are inputs for understanding the facts and for examining & developing sound policies by state & national government.

Problems & difficulties in farm accounting

- ✓ Most of the Ethiopian farmers do not know how to maintain farm accounts due to **lack of**:-
 - ✓ **Education,**
 - ✓ **Business orientation &**
 - ✓ **Time required to do this job.**

Some specific difficulties include:

I. Subsistence nature of farming

- ✓ Farming as a business is *relatively a small size* operation in Ethiopia.
- ✓ Farmers *cannot employ a trained accountant or farm manager* for helping them in farm accounting.
- ✓ The *subsistence nature of farming does not produce enough incentive for keeping the records.*

2. Farming is a laborious work

- ✓ Farming requires a lot of physical labor, in addition to the mental work of the management.
- ✓ In the daily routine, a farmer usually gets exhausted in the evening & does not feel like sitting at the desk to complete the records & accounts.

3. Triple role of farmers

- ✓ Ethiopian farmers (the farm hhh) play a triple role in running their farm business i.e. a **manager**, a **financer** & a **laborer**.
- ✓ The farmer needs, therefore, to know his wage as a laborer, his returns to capital & to his management role.
- ✓ Such complex records which would give information are difficult to maintain.

4. Illiteracy & lack of business awareness

- The very low level of literacy among the Ethiopian farmers is one of the factors that hinder the development of the required level of business awareness on the part of the producers as they do not realize the need for records & accounts.

5. Complicated nature of agribusiness

- Agricultural business is a biological industry & is always subject to weather & other natural uncertainties.
- It requires an accounting system which can handle various complexities involved in the business of farming.
- Such complicated accounts are difficult to maintain.

6. Inadequate extension service

- Sufficient number of trained specialists in farm management who could help farmers maintain account of their business are not available.

7. Non-availability of suitable farm record books

- Lack of standardized, easy to understand & maintain account books also stand in the way of willingness of the producers or farmers to keep records.
- Standard farm record books need to be developed & they should be simple & easy to understand & available in local languages.

8. Fear of taxation

- Farmers are always afraid of taxes. They fear that if they maintain records & accounts & their incomes show up high, some sort of tax may be levied on them.

Farm inventory valuation / analysis

Farm inventory is a **list of all properties of a business along with their values at a specified date.**

- It is **the first step** in farm accounting.

The purposes of preparing farm inventory are the following:

- ✓ *To give a list of all the assets with their values*
- ✓ *To provide a basis for computing growth in net worth.*
- ✓ *To enable you to work out the measures of income.*
- ✓ *To enable you to determine the depreciation costs.*
- ✓ *To serve as a basis of income statement & balance sheet.*

Assets

- ✓ **Asset** is anything of value owned by a business.
- ✓ Assets have value for one or both of two reasons.
 - ✓ ***It can be sold to generate cash/income.***
 - ✓ ***It can be used to produce other goods*** which can be sold to provide cash income at some future time.

Types of assets

Liquid assets- that can *easily & quickly sold at their full market price* with out disrupting the future production activities.

Example: cash, receivables, bank balance, grain, feeder.

Illiquid/less liquid assets-assets owned *primarily to produce future income*. Selling them to generate cash to meet current obligations *would affect the farm`s ability to produce* future income. ***Example: machinery, breeding livestock, building, land.***

Assets can be classified **into three based on liquidity and useful life.**

i. Current assets-

- ☐ assets which will liquidate in normal operation of the business within the **accounting year.**
- ☐ They are used up or sold in the accounting year.
- ☐ **Their sale will not disrupt future production activities.**
- ☐ **Example:** cash on hand, readily marketable stocks & bonds, grain, feed, feeder livestock, prepaid expense, value of growing crop.

ii. Working /intermediate assets

- ☐ *Intermediate in liquidity & useful life.*
- ☐ *Have useful life b/n 1 & 10 years.*
- ☐ *Selling these assets affects the future income potential* of the business. **Example:** machineries, equipment, breeding

iii. **Fixed assets**

- ❑ *Are assets that are more difficult to convert them into cash easily to meet any current obligation.*
- ❑ *The least liquid assets.*
- ❑ *Assets which have useful life of greater than 10 years.*
- ❑ *Selling these assets would seriously affect the on going nature of the business.*
- ❑ *Example: real estate/ land permanent building and land.*

Methods of inventory/asset valuation

- ✓ The valuation of assets presents a **puzzling problem**. Because the **same method of valuation cannot be used for all assets**.
- ✓ **Some assets are held primarily for sale and their contribution to the business can be accurately measured.**
- ✓ **Others, such as working and fixed assets are not usually sold within the accounting period and their contribution to the income of the business must be measured by a less direct method.**

Commonly used valuation methods:

1. Net selling price –

- ✓ Used for those items that are held **primarily for sale**.
- ✓ It is given by **market price minus any marketing costs (selling costs)**. Example: grains, feeder livestock.

2. Cost less depreciation-

- ✓ Useful method to value those assets that **loss their value over time**.
- ✓ The **loss in value (depreciation allowance) will be deducted in subsequent years from its book value (remaining value)**.
- ✓ Commonly used for valuing **working assets** such as machineries & breeding livestock.

3. Cost or market price –

- ✓ We need to value the asset in its **current market price & its cost and take whichever is lower**.
- ✓ Commonly used for valuing **purchased farm supplies**.
- ✓ Example: fertilizer, seed, chemicals, feed etc.

4. Replacement cost minus depreciation-

- ✓ valuing the assets at what it would **cost to replace the assets at present price** & under current method of production **less any depreciation**.
- ✓ It is *used to value long-term assets such as buildings which are constructed a long time ago.*

5. Income capitalization-

used for those assets whose **contribution to the income of the business can be measured** & **w/c have long life**

- used to value long term assets (e.g. land).
- If the *time period is short*,

$$V = \frac{I_1}{1+r} + \frac{I_2}{(1+r)^2} + \dots + \frac{I_n}{(1+r)^n}$$

- If the **time period is infinitely large**:

$$V = \frac{I}{r}$$

where, v = the value of the asset per year

I = annual income over the useful life of the asset

r = interest rate

- Example: the contribution of the asset for three years is birr 2000 & the on going interest rate is 10%. The value of the asset per year will be:

$$V = \frac{2000}{1 + 0.1} + \frac{2000}{(1 + 0.1)^2} + \frac{2000}{(1 + 0.1)^3} = 4973.7 \text{ birr}$$

- However, in practice neither the annual income nor the interest rate can be known accurately.
- Therefore, this method is often used in combination with other methods such as the market price when land is valued.

Methods of Computing Depreciation

- ✓ It is the financial estimate of the **annual loss of value of capital equipment due to wear and tear over its useful life.**
- ✓ The original cost /purchase price of the asset is a prepaid expense.

Methods of computing depreciation

1. Straight line method

- ✓ It is easy, simple and usually very satisfactory for most purposes.
- ✓ This method assumes that **assets are used more or less to the same extent every year and, therefore, equal amount of costs on account of their use can be charged every year.**

Annual Depreciation (AD) =

$$\frac{\text{original cost}(C) - \text{salvage value}(S)}{\text{useful life}(n)}$$

- ✓ **Useful life**- is the **expected number of years the item will be used in the business.**
- ✓ **Salvage value**-is an **estimate of the item's /asset value at the end of its assigned useful life.**
- ✓ It is also known as **terminal value**, **scrap value** or **junk value.**
- ✓ Salvage value will be **zero**, if the **asset/item is owned until completely worn out.**
- ✓ Salvage value will be **positive**, if the **asset/item is sold before completely worn out.**

Example: a fixed equipment costs birr 1000 & expected to last for 5 years. The salvage value after 5 years is birr 50.

What is the total anticipated depreciation?

What is the annual depreciation cost of the asset?

Calculate the book value or remaining value of the asset for the five years.

Solution:

Total Depreciation = original cost - salvage value = 1000 - 50 = **birr 950**

- Annual Depreciation (AD) =
$$\frac{\text{original cost}(C) - \text{salvage value}(S)}{\text{useful life}(n)}$$

$$\frac{1000 - 50}{5}$$

birr 190

Table.

Year	Cost	Annual depreciation	Accumulated depreciation	Book value
1	1000	190	190	810
2	810	190	380	620
3	620	190		430
4	430	190		240
5	240	190		50

2. Declining balance method

In this case, a fixed rate of depreciation(R') is used for every year & applied to the value of the asset at the beginning of the year (book value).

There are several ways to determine a fixed rate(R') of depreciation.

It is most commonly estimated using a depreciation rate that double the straight line rate(R).

- **Annual Depreciation (AD) = (Book value at beginning of the year).R`**
- Where $R' = \text{two times straight line percentage rate} = 2R$
- The **percentage rate remains constant each year**, but **is multiplied by the book value, which declines each year by an amount equal to the previous year's depreciation.**
- **Example:** calculate the annual depreciation of the fixed equipment given in the above example by using diminishing balance method.
- **Solution:** $R' = 2R = 2 * 20\% = 40\% = 0.4$

Year	Cost(Book value beginning)	Annual depreciation	Book value(ending)
1	1000	400	600
2	600	240	360
3	360	144	216
4	216	86.4	129.6
5	129.6	51.84	77.76

- ✓ This method **overestimates** depreciation during the **earlier years** & **underestimates** depreciation during the **later years** of the useful life of the asset.

3. Sum-of-the-year`s-digits method

- Annual Depreciation (AD) =
$$\frac{RL}{SOYD} (\text{cost-salvage value})$$

Where RL=remaining years of useful life as of the beginning of the year for which depreciation is being computed.

SOYD = sum of all numbers from 1 through the estimated useful life.

Example: for 5 years useful life $SOYD = 1 + 2 + 3 + 4 + 5 = 15$

- A quick way to SOYD =
$$\frac{n(n+1)}{2}$$

where n=useful life.

Example: compute the annual depreciation of the fixed equipment given in the above example by using Sum-of-the-year`s-digits method.

Solution:

- **For year 1- Annual Depreciation (AD) = $(1000-50)*5/15$
=316.17**
- **year 2 -Annual Depreciation (AD) = $(1000-50)*4/15$
=253.33**
- **year 3- Annual Depreciation (AD) = $(1000-50)*3/15$ =190**
- **year 4 -Annual Depreciation (AD) = $(1000-50)*2/15$
=126.67**
- **year 5- Annual Depreciation (AD) = $(1000-50)*1/15$
=63.33**

Liability

- ✓ It is any obligation or debt that has to be paid to someone else.
- ✓ It represents an **outsider`s claim** against one or more of the business assets. **E.g.** debt, tax, interest, rent, salary.
- ✓ There are three types of liabilities depending on the length of loan.

1. **Current liabilities**-the financial obligation which will be due with one year or less from the date of balance sheet. **E.g.** pay roll obligation (salary), account payables, accrued tax/rent/interest, insurance.
2. **Intermediate liabilities**-loans used for purchase of working assets. Repayment is b/n 2 & 10 years. **E.g.** machinery, breeding livestock.
3. **Long term liabilities**- loans used to purchase long term assets. Repayment is more than 10 years.

Farm Financial Analysis

- ✓ **Financial analysis** involves maintaining & using records to measure the **financial performance of a business**.
- ✓ Farm financial analysis is a **statement that shows the financial conditions of the farm business at a particular point of time**.
- ✓ The most widely used financial statements are:
 - ✓ farm **balance sheet** (net worth statement) &
 - ✓ farm **income statement** (profit-loss statement).

Balance sheet & its analysis

- ✓ **Balance sheet** is a summary of the *assets & liabilities of the business*, together with a statement of the owner's equity or net worth at a given point in time.
- ✓ Anything of value owned by a business or individual is an **asset**.
- ✓ Any obligation or debt owed to some one else is called **liability**.
- ✓ Balance sheet also shows the **net worth** or **owner's equity** which is the difference b/n total assets & total liabilities.
- ✓ The primary use of the balance sheet is **to measure the financial strength & position of the business**.
- ✓ In other words, its primary function is to measure **risk bearing ability or financial solvency**

✓ it shows the margin by which debt obligations would be covered if the business was terminated & all assets sold.

✓ **Asset = liabilities + owner's equity**

Assets		Liabilities	
Current assets	x	Current liabilities	x
Intermediate assets	x	Intermediate liabilities	x
Fixed assets	<u>x</u>	Long term liabilities	<u>x</u>
Total assets	xx	Total liabilities	xx
		Net worth	<u>xx</u>
		Liabilities and net worth	xx

The general format of the balance sheet

- Several measures of financial strength & position of the business can be obtained from a balance sheet. These are:
 - **Solvency**-measures whether total assets are greater than total liabilities.
 - If not, the business is *insolvent or technically bankrupt*.
 - ✓ ***Measures the ability of the business to pay all obligations from the sale of the assets.***
 - **Liquidity** –measures the ability to generate cash needed to meet cash obligations without seriously disrupting the production activities of the business.
 - **Net worth or owner`s equity**-the amount of money remaining for the owner of the business after liquidating the business & paying all liabilities.

Ratio analysis

- Ratios provide a standard unit of measurement & also permit comparison overtime b/n firms of the same size.
- Major balance sheet ratios are: **net capital ratio, current ratio, working ratio & debt/equity ratio.**
- Example; consider the following balance sheet statement, on December, 31/2019.

Assets		Liabilities	
Current assets	55,000	Current liabilities	48,000
Intermediate assets	70,000	Intermediate liabilities	27,000
Fixed assets	<u>115,000</u>	Long term liabilities	<u>80,000</u>
Total assets	240,000	Total liabilities	155,000
		Net worth	<u><u>85,000</u></u>
		Liabilities and net worth	240,000

I. **Net capital ratio (NCR)** - measures the overall financial strength & solvency of the business.

$$\text{NCR} = \frac{\text{Total Assets}}{\text{Total liabilities}}$$

- ✓ *If $\text{NCR} > 1$; the business is safer & solvent.*
- ✓ *If $\text{NCR} = 1$; the business is just solvent but not safer.*
- ✓ *If $\text{NCR} < 1$; the business is insolvent.*

$$\text{Example: NCR} = \frac{240000}{155000} = 1.55$$

So the farm is solvent .

2. Current ratio (CR)-measures the liquidity of the business.

- ✓ It measures the **ability of the business to generate cash within the current year to meet cash payment on debts & other current obligations.**

$$CR = \frac{\text{Current Assets}}{\text{Current liabilities}}$$

- ✓ Higher ratios are preferred.
- ✓ If $CR > 1$; the business is liquid.
- ✓ If $CR < 1$; the business is illiquid.
- Example: $CR = \frac{55000}{48000} = 1.15$

3. Working ratio (WR)-an intermediate measure of both liquidity & solvency.

$$WR = \frac{\text{Current Assets} + \text{Intermediate Assets}}{\text{Current liabilities} + \text{Intermediate Liabilities}}$$

- ✓ *The higher the ratio the safer the business to be liquid & solvent in the intermediate period.*
- ✓ *The firm can be solvent but not liquid.*
- ✓ *In this case, the firm will borrow against intermediate & long term assets or sell these assets to pay current cash obligations.*

- Example: $WR = \frac{55000 + 70000}{48000 + 27000} = 125000 / 75000 = 1.67$

4. Debt/Equity Ratio (D/R)-measures of solvency which shows the relationship of owned capital to borrowed capital.

- The **smaller** the ratio indicates the **stronger** the financial position of the business.

$$D/R = \frac{\text{Total liabilities}}{\text{Owner's Equity}}$$

- *If $D/R=1$; liabilities equals net worth. The assets double liabilities.*
- *It indicates the stronger the financial position & solvency of the business.*
- In this case, $NCR=2$.

- Example: $D/R = \frac{155000}{85000} = 1.82$

Income Statement and its Analysis

- ✓ **Income statement** is a *summary of income/receipts & expenses over a given time period & shows the financial performance of a business.*
- ✓ It is also called **operating statement** or **profit & loss statement**.
- ✓ Its primary purpose is *to compute profit for a given time period.*
- ✓ It *reveals the success or failure of a farm business over time.*
- ✓ **Receipts**-are derived *from sale of products & miscellaneous sources.*
- ✓ Any farm products used in the home should be valued & included in the receipts.
- ✓ **Expenses**-all *expenses or costs involved in the operation of the business during the period covered.*
- ✓ All variable /operating & fixed expenses are entered.

- ✓ **Net income:-** the *net income or loss figures* are useful in the analysis of the business which can be divided into :
- ✓ **Net cash income-** cash receipts less cash expenses during the year covered by the income statement **excluding** purchases & sales of capital assets.
 - ✓ It provides an indication of the annual net cash flow of the business.
- ✓ **Net operating income-** is gross income less operating expenses.
 - ✓ It facilitates comparing operating income on the same farm over a period of years.
- ✓ **Net farm income-** net operating income less fixed costs.
 - ✓ Of the three measures of income, it is perhaps the most useful.

• Income statement, December, 31/2019.

1. Receipts(cash income)

Livestock sale-----Birr x

Crop sale-----Birr x

Other cash income----- Birr x

Gross income-----Birr xx

2. Variable/operating expenses

Livestock expenses-----Birr x

Crop expenses-----Birr x

Gasoline, fuel, oil-----Birr x

Labor-----Birr x

Others ----- Birr x

Total operating expenses----- Birr xx

3. Net operating income (1-2)-----Birr xx

4. Fixed expenses

Property tax-----Birr x

Insurance -----Birr x

Depreciation on buildings, machineries-----Birr x

Total fixed costs/expenses----- Birr xx

5. Net farm income (3-4)----- Birr xx

Financial ratio analysis of income statement

- Income statement ratios can be divided into two categories.
 - Those that relate **expenses** to **gross income**
 - Those that relate **income** to **capital investment**
- Expense to income ratios**- Measure the input-output efficiency of the business.
 - Operating ratio (OR)**-shows the percentage of gross income used to cover operating costs.

$$\text{OR} = \frac{\text{Total Operating Expenses}}{\text{Gross Income}}$$

- Fixed ratio (FR)** - shows the percentage of gross income used to cover fixed costs.

$$\text{FR} = \frac{\text{Fixed Expenses}}{\text{Gross Income}}$$

- Gross ratio (GR)** - shows the percentage of gross income used to cover total costs.

$$\text{GR} = \frac{\text{Total Expenses}}{\text{Gross Income}}$$

- **Income-to-investment ratios**-indicate the efficiency with which capital is being employed in the business.

a. Capital turnover-commonly used as a quick appraisal of efficiency of capital use.

- Capital turnover =
$$\frac{\text{Gross Income}}{\text{Average Capital Investment}}$$

where average capital investment is average of beginning & end of the year total assets.

b. Return to capital (return on investment)-measures profitability.

- Return to Capital =
$$\frac{\text{Return to Total Capital}}{\text{Total Farm Assets}}$$

- Rate of Return to Capital =
$$\frac{\text{Return to Total Capital}}{\text{Total Farm Assets}} * 100\%$$

- Adjusted net farm income=income farm income +interest paid

- ✓ Return to capital = adjusted net farm income – (opportunity cost of labor + opportunity cost of management)

c. Return to labor and management=adjusted net farm income-(opportunity cost of total capital)

- ✓ Return to labor =return to labor and management-opportunity cost of management
- ✓ Return to management =return to labor and management-opportunity cost of labor

d. Return to equity-the business owner may be more interested in the return to personal or equity capital invested in the business.

- ✓ Return to equity=net farm income-(opportunity cost of labor and management)