AEM 302: PRINCIPLES OF FARM MANAGEMENT

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Reference Texts:

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1. DEFINITION, SCOPE AND IMPORTANCE OF FARM MANAGEMENT

Farm Management

It is the science of organizing and combining people, natural and material resources for the purpose of crop and livestock production in order to maximize profit while optimizing input use.

Such resources include land, labour, management skill, specialist knowledge, capital (financial and equipment), sunlight, irrigation, plants and animals, livestock feed, fertilizer, agrochemical, time, etc.

Farm management is best examined and understood under the whole farm situation. This include a study of the

a) Human elements
b) Technical elements
c) Economic, financial, growth and investment aspect
d) Risk and uncertainty

Economics is the core of farm management, since the key task of farm management is making choice between two or more alternatives.

Important Questions a Farm Manager Must Ask

A farmer should be able to answer the following key questions for the farm business to grow:

a) What is likely to be the return on all the capital invested in the business, as it currently operates? This is also known as the efficiency, or productivity, of the resources invested in the business.

b) What is likely to be the return on our own capital invested in the business, as it currently operates?

c) How much is our net worth likely to grow?

d) How might we improve the most likely future return on the capital invested in the business?

e) Of the alternative means of improving the productivity of the resources in the business, which means are likely to be best?

f) What combination of our own and other people's capital is the business likely to be able to service?

g) What combination of our own and other people's capital are likely to enable our own capital (net worth or equity) to grow at a satisfactory rate?

h) What will be the best means of acquiring the services of land, and what should we pay?

i) What will be the best means of acquiring the services of a particular piece of machinery or equipment?

j) Should we add capital to the existing land resources that are under our control in order to improve productivity of the whole farm resources?

k) How will we set the business up to cope with the reality that yields and quality of product will fluctuate considerably from year to year because of climatic variability, and prices will fluctuate considerably because of market volatility?

2. PROBLEM AND METHOD OF COLLECTING FARM MANAGEMENT INFORMATION

Data Gathering Methods in Farm Management:

Data Sources: There are two main types of data sources in this respect and these are:

a) Primary data gathering technique: Collection of unprocessed data through the use of survey instruments such as questionnaire, interview guide, checklist, etc.

b) Secondary data gathering technique: Collection of processed data from data generating agencies such as FAO statistics, UNESCO, National Bureau of Statistics, Central Bank etc.

Method of Data Collection:

Generally, data collection could be through:

1. Interview
2. Simulation
3. Observation

Data Collection through Sampling

This is divided into probability and non-probability sampling

Probability:

a) Simple random sampling: The advantages include those of easy procedure, representativeness and objectivity. Disadvantages include its expensive nature, may not be applicable where many specific groups are in the population

b) Systematic random sampling: It is convenient. It can be adopted to ensure representativeness at different sampling points in a location.

c) Stratified random sampling: It is a useful technique to combat heterogeneity in the sample

d) Cluster sampling technique: It is applicable for samples where differentiation exists within samples.

Non-Probability:

a) Snowball: It is convenient. However, it is seldom representative

b) Purposive: It is used when the sample population is sparse. It may not be fully representative especially where the farm manager/researcher cannot compass the study location effectively.

3.   FARM RECORDS AND ACCOUNTING

Farm record 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.

Advantage of record keeping: Records provide information for proper farm planning, useful for sourcing credit, monitoring farm performance, provide basis for conducting research, useful for decision making, etc.

Design of Farm Records

There is no widely acceptable design for farm record. The most important features should be those of simplicity, specificity, ease of accessing information, comprehensible to another user, among others.

Types of Farm records:

Some of the common types of farm record are:

a) Farm inventory record, which contains list of assets owned by the farm. Examples include crop and livestock inventory records

b) Production record

c) Farm diary

d) Sales record

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.

Types of Farm Accounts

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

1. **Balance Sheet**

It is also called the net worth 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:

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

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

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

2. **Net Income Statement**

It is referred to as the difference between the gross receipt and total cost of production. It is also explained as the surplus resulting from business operations which could be withdrawn without reducing the future scale of the business.

It is divided into:

a) Gross receipt: Also called the total value product; the total output multiplied by price per unit of produce

b) Total cost: amount incurred in the use of inputs (fixed and variable) in the production process. It is subdivided into:

   a. Fixed cost: Costs that do not vary with production in the short run period (e.g. depreciation on machinery and building, as well as breeding stock in livestock enterprises)

   b. Variable cost: Also known as operating cost. That is costs that vary with different levels of production. It also the cost applicable in the long-run period (e.g. cost of hired labour, machinery and equipment repairs and maintenance cost, etc)

c) Net farm income: This is the difference between total revenue (gross receipt) and total cost. It measures the return to unpaid family labour, land, capital and management

3. Gross Margin Analysis

Gross margin is the difference between the gross farm income and total variable cost. That is: TR-TVC where TR= Total revenue and TVC = Total variable cost.

It involves evaluating the efficiency of an individual enterprise in order to make comparison between enterprises and different farm plans. It is applicable in situations where fixed capital is a negligible portion of the farming enterprise, e.g. in subsistence agriculture. It is useful as a budgeting tool to compare the profitability of one enterprise with another.

4   FARM BUSINESS AND ENTERPRISE MANAGEMENT ANALYSIS

Agriculture is important as a source of employment and a means of survival especially in developing countries. Majority of those engaged in agriculture are members of smallholder households. This has implication on the growth of agriculture in these areas.

Farm business success depends on ability of farmers to manage four main core areas which are finance, personnel, production and marketing. Financial management includes obtaining funds, ordering inputs to best advantage, keeping assets in good working order, ensuring adequate cash flow for current activities and, in longer term, obtaining capital growth. Personnel management

is important because labour is an important factor determining success of the farm business. Good staff control will keep adequate work force and raise their efficiency. Production management is concerned with having the right materials, machinery, labour and supervision available in the right amounts, in the right place and at the best time. Business success in farming depends largely on management of an efficient production system. Marketing management involves matching production to market needs. It involves decision on selecting market outlets, advertising, packaging, choices of marketing outlets.

Farm Business Organisation

The common types of business organization are:

Subsistence Farming: This is also known as peasant farming. A subsistent farmer is someone whose major objective is to feed himself and his dependants with his farm produce. He sells surplus produce in a good season with the surplus obtained to pay children school fees, tax and other commodities (or food) not produced on the farm. The main features of subsistence farming among others, are diversified production of each farm, dominance of consumption and survival aims over commercial ones, a restricted farming system with little external bought inputs (e.g. fertilizer and agrochemical), and little difference between the farm-firm and the household; between producers and consumers.

Commercial Farming: This is more business oriented. The main objective of this farm business type is profit maximization. Output is produced in large quantity and mostly sold. It uses hired labour use is more dominant. Most investment options of commercial farming centre on building, equipment and expansion of farm business. Examples of commercial farming business are:

Cooperative Farming: Group of people come together to produce crop or livestock under mutual arrangement for mutual benefit. Co-operators pool their resources to explore better farming technique and take advantage of economies of scale. Cooperative farming seems to succeed only where members are more interested in working for the common goods than for themselves.

Public Enterprises: These include government farms, collective farms and public corporations. Public corporations usually run plantation agriculture and it is more prominent in developed countries.

Private Enterprises: These include sole farming, partnership and joint stock farming.

Sole Farming Business: This is the oldest farming business form. It is a one-man farming business. He makes his own decision and changes his as often as he wishes. He provides all or most of his capital and the business assets form part of his estate. He has lack of limited liability to the full extent of his wealth. He has access to low level of cash for farm expansion and the business may fold after his death. Hence, majority of the subsistent farmers fall into this category of farm business.

Partnership Farming: This is a farming business owned by two or more people who share both risk and profit. Partners may contribute capital and or skill into the business. The sleeping partner is usually a wealthy person who, having been convinced of the viability of the business provides the needed capital without taking part in management of the business. Partners promote larger and more efficient business than the sole farming business. Partners are jointly and separately liable for the business performance.

Public Corporation: This is a form of farming business operated by companies. It is financed through the sales of shares as the main capital source. It is a separate legal entity with a distinct identity and separate existence from their owners (shareholders) or the directors. There are more private than public limited liability farming businesses as they are cheaper and easier to establish and operated. A shareholder who wants to withdraw from his business simply sells off his shares without affecting the operation and continuity of the business.

5.   VALUATION AND DEPRECIATION

Meaning of Valuation

Attaching prices to given assets like buildings, vehicles, growing crops, and stored products at the end of an accounting or at the time of sale period for a particular farm to show the price worth at the given period.

Methods of Valuation and Consistency in Using Named Method

- ▪ Valuation at cost
- ▪ Valuation at market price
- ▪ Valuation at net selling price
- ▪ Valuation at cost less depreciation
- ▪ Valuation at reproductive value or replacement cost

Consistency in choosing same method of valuation is required as the method affects the profit or loss derived on a given farm.

Depreciation

- Depreciation involves the spreading of the cost of an asset over its useful life,
- It is considered an annual expense and as such is regarded as a variable cost.
- Cost less depreciation is an important factor in valuation.

Methods for Estimating Depreciation

- The straight line or fixed instalment method
- The declining balance method
- Sum of the year digit method
- The Annuity Method
- Use Adjusted Methods
- Revaluation

6.   FARM PLANNING AND ORGANIZATION

Farm Planning: Definition and Importance

- The Preparation of an operational program for a farm which will ensure the conservation of land and other resources and the efficient use of production factors thereby increasing the net income and satisfaction of the farmer.

- Farm plans are particularly required when there are limiting factors such as land, labour and capital, the aim being the maximization of returns to the limiting factors.

Methods of Planning

- Budgeting

- Complete budgeting

- Partial budgeting

- Break-Even budgeting

Situations when Complete Budgeting Used

- When plan for a 'new farm' or new farmer needed.

- When a large, basic change is being considered that would affect most, perhaps all the farm costs and receipts e.g. conversion of a dairy farm into a piggery unit or a change from tobacco into beef and maize.

Typical Complete Budget

- When there is a marginal change in farming system and there is the interest to know changes in costs and receipts and thus net farm income.

- When there is a change in the combination of enterprises (product substitution).

- When there is a change in production method.

Typical Partial Budget

b.   Linear Programming

i.   Introduction

- Linear Programming as a resources allocation tool

- Linear Programming for Enterprise combination for maximum net income.

- Linear Programming model components.

- Linear representation of the goal or objective of the system.

- Linear representation of the restrictions or limitations imposed upon the system.

- Typical mathematical forms of a linear programming problem.

- Assumptions

ii.   Linear Programming – Graphical Solutions

- Applicability for only linear programming problem with two unknowns or decision variables.

- Ability to deal with maximization and minimization problem

- Ability to deal with limitation of the 'greater than or equal to ($\geq$)' type, and the 'less than or equal to ($\leq$)' type.

- Ability to deal with any number of limitations. For large number however, the graph is made more complex and difficult.

iii.   Typical Graphical Linear Programming Problem Solution

iv.   Introduction to the Simplex Solution to Linear Programming Problem with three or more unknowns.

7.   RISK AND UNCERTAINTIES IN AGRICULTURE

- **Uncertainty Defined:**

  It is a situation where an action has a set of possible outcomes the probability of which is completely unknown.

- **Risk Defined:**

  It is a situation where each action leads to one of a set of possible outcomes, each outcome occurring with known probability.

- For this in agriculture, the willingness of investors is to put their money in industrial sector in preference to the agricultural sector.

Factors Responsible for Risks and Uncertainties in Agriculture

- Weather
- Government policies
- New changes in technologies

Methods of Reducing the Effects of Risks and Uncertainties in Farming;

- Diversification
- Flexibility in farm organization and production methods.
- Cost flexibility
- Inventory management
- Contract for prices and costs
- Guaranteed minimum prices.