

# Concepts for Livestock Financial Profitability Analysis

Al-Amin HEED  
(<https://alaminheed.com/>)  
Dept. of Agricultural Economics



Image courtesy: [https://mamatabd.org/program\\_project\\_details.php?id=20](https://mamatabd.org/program_project_details.php?id=20)

## Short run:

The short run is a period of time during which one or more productive inputs is fixed and cannot be changed. E.g.

Symbolically,  $Y = f(X_1 \mid X_2, \dots, X_n)$

where,

$Y$  = Output

$X_1$  = Variable factor

$X_2, \dots, X_n$  = Fixed factors

Here, the law of diminishing return is applicable.

For example, at the beginning of the planting season, it may be too late to increase or decrease the amount of crop land owned or rented. The current crop production cycle would be a short-run period because the amount of available land is fixed.

Depending on which input is fixed, the short run may be anywhere from several days to several years. One year or one crop or livestock production cycle are common short-run periods in agriculture.

## **Long run:**

The long run is a period of time during which the quantity of all necessary productive inputs can be changed.

Thus, there is no distinction between fixed and variable factors in the long run, as all factors become variable factors.

Symbolically,  $Y = f(X_1, X_2, \dots, X_n)$

Where, Y is the quantity of output and  $X_1, X_2, \dots, X_n$  are the quantities of factors.

Here, the laws of returns to scale are applicable.

For example, over a longer period of time, land may be purchased, sold or leased. The amount of land available may be increased or decreased.

## **Opportunity cost**

The opportunity cost of anything is just the next best alternative forgone in the use of productive resources.

For example, a farmer who is producing wheat can also produce potatoes with the same factors. Therefore, the opportunity cost of a quintal of wheat is the amount of output of potatoes given up.

In another way, the opportunity cost of a resource is the income that could be received from the best alternative use of that resource.

For example, the opportunity cost of a farm operator's labour (and perhaps that of other unpaid family labour) would be what that labour would earn in its next best alternative use. That alternative use could be nonfarm employment, or employment on someone else's farm.

Opportunity cost can be defined in one of two ways:

1. The value of the product not produced because an input was used for another purpose; or
2. The income that would have been received if the input had been used in its most profitable alternative use.

## **Variable costs:**

Variable costs are those costs which rise when output expands and fall when output contracts. When output is nil, they are reduced to zero.

For instance, feed, seed, fertilizers, chemicals, fuel, and livestock health expenses all of which are directly related to the level of output from the enterprise.

## **Fixed costs/Overhead costs:**

Fixed costs are those costs which remain constant irrespective of the level of output. Fixed costs are incurred even if the input is not used.

Fixed costs exist only in the short run and equal to zero in the long run.

For instance, depreciation, insurance, taxes (property taxes, not income taxes), permanent labour, and interest on machinery, equipment, and livestock.

## **Depreciation:**

Depreciation means loss of value of capital goods due to wear and tear or obsolescence.

Depreciation Methods

- (A) Straight Line Method
- (B) Diminishing Balance Method/Reducing Balance Method
- (C) Revaluation Method
- (D) Sum-of-The Years'-Digits Method/Sum of Digits Method
- (E) Production Output Method/Units of Production Method

Straight-line depreciation is the simplest and most often used method

The depreciation during each period is the same.

Annual Depreciation = ((Cost of fixed asset – Salvage value)/ Useful life)

## **Useful life:**

Is the number of years the item is expected to be owned.

## **Salvage value:**

Is also known as scrap value or residual value or junk value.

Salvage value is its expected value at the end of that useful life.

The salvage value is an estimate of the value of the asset at the time it will be sold or disposed of; it may be zero or even negative.

## **Inventory:**

Generally, inventory refers a complete list of items such as property, goods in stock, or the contents of a building.

As an accounting term, inventory is a current asset and refers to all stock in the various production stages. The verb “inventory” refers to the act of counting or listing items.

## **Opening stock:**

The stock held by an organization at the beginning of an accounting period as raw materials, work in progress, or finished goods. The closing stocks of one period become the opening stocks of the succeeding period.

Opening Stock is the initial quantity of any product/ goods held by an organization during the start of any financial year or accounting period.

It is equal to the closing stock of the previous accounting period, valued based on suitable accounting norms depending on the nature of the business.

## **Closing stock:**

Closing stock is the amount of inventory that a business still has on hand at the end of a reporting period. This is the inventory that is left after all the sales done by the business. This closing stock has various names– Raw materials, Work-in-progress, or also known as the finished goods.

## **Gross margin:**

The gross margin for the enterprise is gross output minus variable costs. No overhead costs (i.e., fixed costs) are taken into account when gross margins are constructed.

$$GM = GR - TVC$$

where, GM = Gross margin; GR = Gross return; and TVC = Total variable costs

## **Net return:**

The net return for the enterprise is gross output minus total costs. The total of is the summation of total variable costs and total fixed costs.

$$NR = GR - TC = GR - (TVC + TFC)$$

where, NR = Net return; GR = Gross return; and TC = Total costs; TFC = Total fixed costs.

## **Benefit Cost Ratio (BCR):**

It is the ratio between discounted present worth of gross benefit and present worth of gross cost.

Mathematically,  $BCR = \text{Present worth of gross benefit} / \text{Present worth of gross cost}$   
 $= PWGB / PWGC$

If,

$BCR > 1$  the project will be acceptable;

$BCR = 1$  project acceptance decision is neutral; and

$BCR < 1$  the project will not be acceptable.

## **Man-days:**

One person's working time for a day, or the equivalent, used as a measure of how much work or labour is required or consumed to perform some tasks.

## **Quintal:**

A quintal is a unit of mass and that is equal to 100 kilograms.

A unit of weight equal to 100 kilograms (about 220 pounds).

## **Measures of project evaluation:**

There are broadly two types of measures for project evaluation:

1. Undiscounted measures and
2. Discounted measures.

## **Undiscounted measures:**

Undiscounted measures do not consider time value of money.

In case of long-term project, it is not suitable.

The following undiscounted measures are found:

- i) Ranking by inspection;
- ii) Payback period;
- iii) Proceeds per unit of outlay;
- iv) Average annual proceeds per unit of outlay; and
- v) Average income on book value of the investment.

## Discounted measures:

Discounted cash flows are cash flows adjusted to incorporate the time value of money.

Cash flows are discounted using a discount rate to arrive at a present value estimate, which is used to evaluate the potential for investment.

Discounting: Discounting looks backward from the future to the present. The interest rate assumed for discounting is the “discount rate”.

The basic formula is:  $(1/(1 + r)^n)$

Where,  $r$  = Interest rate

$n$  = number of year

Discounted measures:

- a) Benefit Cost Ratio (BCR)
- b) Net Present Value (NPV)
- c) Internal Rate of Return (IRR)

## References:

Farm Management (Fifth Edition) by Ronald D. Kay, William M. Edwards, and Patricia A. Duffy.

Applied Farm Management (Second Edition) by Jonathan Turner and Martin Taylor

Farm Management Principles and Strategies by Kent D. Olson

Internet Sources:

<https://www.netsuite.com/portal/resource/articles/inventory-management/inventory.shtml>

<https://www.oxfordreference.com/display/10.1093/oi/authority.20110803100251182>

<https://www.wallstreetmojo.com/opening-stock/#h-what-is-an-opening-stock>

<https://www.accountingtools.com/articles/what-is-closing-stock.html>

<https://www.vedantu.com/commerce/closing-stock-formula>

<https://en.wiktionary.org/wiki/man-day>

<https://byjus.com/question-answer/one-quintal-is-equal-to-how-many-kgs/>

<https://www.merriam-webster.com/dictionary/quintal>

## About the Author:

**A. K. M. Abdullah Al-Amin**

Assistant Professor

Department of Agricultural Economics

Bangladesh Agricultural University

Mymensingh – 2202

Email: [abdullah.amin@bau.edu.bd](mailto:abdullah.amin@bau.edu.bd)

Personal lab portfolio: <https://alaminheed.com/>

LinkedIn: <https://www.linkedin.com/in/a-k-m-abdullah-al-amin-427957a1/>

Twitter: [https://twitter.com/alamins\\_heed](https://twitter.com/alamins_heed)