PRODUCTIVITY MEASUREMENT

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http://www.pu.edu.pk/faculty-descriptions.asp?faculty=66004

You can’t improve what you can’t measure

How to measure performance
• Productivity
• Efficiency
• Effectiveness

Productivity

Productivity = output/input

• Partial Productivity (measures of output against a specific input)
  Partial Productivity e.g. items made/employee

• Multifactor Productivity (ratio of output to a group of inputs such as labor and material)

• Total Productivity (includes all inputs in an organization i.e. labor, materials, overheads, capital)
  Total Productivity = Revenues, Profits/All inputs

Partial productivity

Labor Productivity Units of output per labor hour, Units of output per shift

Machine Units of output per machine hour, Output per unit machine.

Energy Productivity
Units of output per kilowatt-hour
Rupee value of output per kilowatt-hour

Partial prod. is concerned with efficiency of one particular characteristics

MFP is an index of output obtained from more than one of the resources used in prod/service.

Total prod. is the broadest measure of prod. & is concerned with the performance of entire plant/organization.

Partial productivity

Labor Productivity Units of output per labor hour, Units of output per shift

Machine Units of output per machine hour, Output per unit machine.

Energy Productivity
Units of output per kilowatt-hour
Rupee value of output per kilowatt-hour

Partial Productivity = Output / (Labor + Machine)

Multifactor Productivity = Output / (Labor + Machine + Energy)

Total Productivity = Goods/Services Produced (Their worth)

All inputs used to produce them
Question

Three employees work for five days (08 working hours a day) to produce 800 policies, calculate the labor hour productivity?

Labor hour prod. = \( \frac{800 \text{ policies}}{(3 \text{ employees})(40 \text{ hrs/emp.})} \)

Labor hour prod. = 6.7 policies / hour

Question

10,000 Units Produced, Sold for Rs. 10/unit
500 labor hours, Labor rate: Rs. 9/hr
Calculate productivity unit wise & non unit wise?

Labor Productivity = \( \frac{10,000 \text{ units}}{500 \text{ hrs}} \) = 20 units/hour

Labor Productivity = \( \frac{10,000 \text{ units} \times \text{ Rs. 10/unit}}{500 \text{ hrs} \times \text{ Rs. 9/hr}} \) = 22.22

Example, Calculate productivity (Yards/square yard)

Four workers installed 900 square yards of carpeting in eight hours

Productivity = \( \frac{900 \text{ square yards}}{32 \text{ hours}} \)

= 28 square yards/hour

MULTIFACTOR PRODUCTIVITY

Ratio of output to a group of inputs such as labor and material

Question

Determine the MFP for the combined input of labor and machine time using the following data:
Output: 7040 units @ Rs. 10 each
Input:
-- Labor: Rs. 1000
-- Materials: Rs. 520
-- Overhead: Rs. 2000

A team of workers make 500 units of a product having cost of Rs. 10 each. Actual cost is Rs. 400 for labor and Rs. 2000 for material & Rs. 500 for overheads, calculate the productivity

Answers

Productivity = \( \frac{7040 \text{ units} \times \text{ Rs. 10}}{1000 + 520 + 2000} \)

= \( \frac{70400}{2520} \) = 28 units

Productivity = \( \frac{500 \text{ units} \times \text{ Rs. 10}}{400 + 2000 + 500} \)

= \( \frac{5000}{2900} \) = 1.72
Technology enhances productivity to an extent, beyond which productivity won’t increase.

Exercise

You work for an organization which provides services of “House Debugging–Pest solution”. For every call debugging team reaches the destination to debug the place. Company has a conventional set up similar to most of companies, you are supposed to calculate the productivity using all the indices available to you, partial, MFP & total productivity. How would you carry it out?

OR

At your workplace how would you calculate different types of productivity using all the available indices?