PRODUCTIVITY MEASURMENT

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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 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

- *Multifactor Productivity =* $\dfrac{Output}{Labor + Machine}$, $\dfrac{Output}{Labor + Energy}$

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 ?

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

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?

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

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

Example, Calculate productivity *(Output /Labor Hour)*

Four workers installed 900 square yards of carpeting in eight hours

$$\text{Productivity} = \frac{\text{Yards of carpet installed}}{\text{Labor hours worked}}$$

$$= \frac{900 \text{ square yards}}{4 \text{ workers} \times 8 \text{ hours/worker}}$$

$$= \frac{900 \text{ square yards}}{32 \text{ hours}}$$

$$= 28 \text{ square yards/hour}$$

MULTIFACTOR PRODUCTIVITY

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

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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
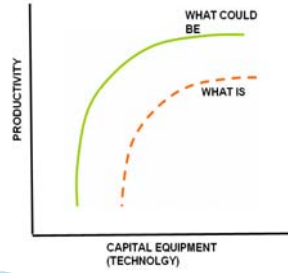-- Materials: Rs. 520
-- Overhead: Rs. 2000

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

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Answers

$$\text{Productivity} = \frac{\text{Output}}{\text{Labor+Materials+Overhead}} = \frac{7040 \text{ units} * \textbf{Rs.}\, 10}{1000 + 520 + 2000}$$

$$= 20 \text{ units output} / \textbf{Rs.} \text{ input}$$

$$\frac{(500 \text{ units})(10/\text{unit})}{400 + 2000 + 500} = \frac{5000}{2900} = 1.72$$

Technology enhances productivity to an extent,
beyond which productivity wont 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 u carry it out.

OR

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