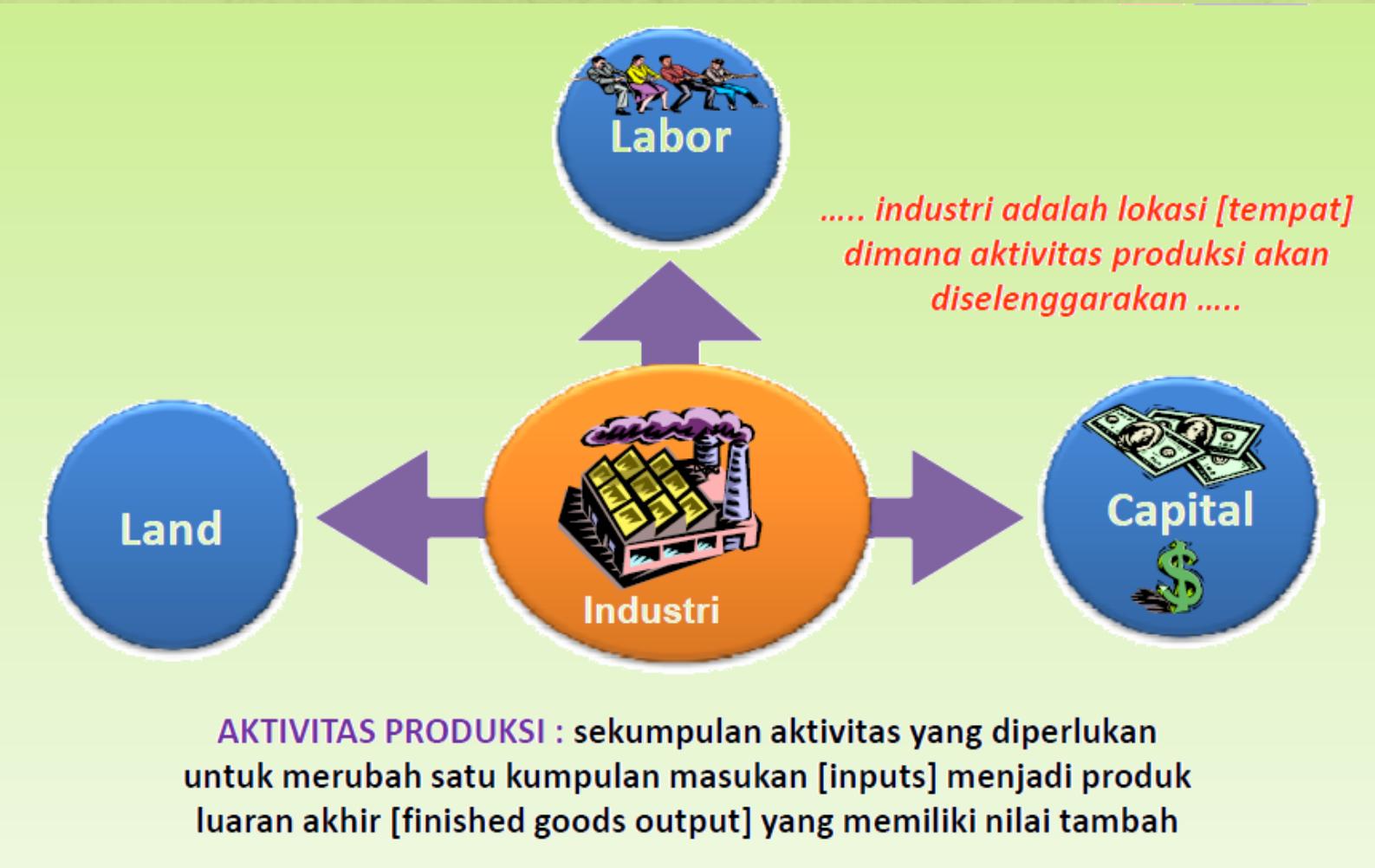


#2 Origin of Productivity

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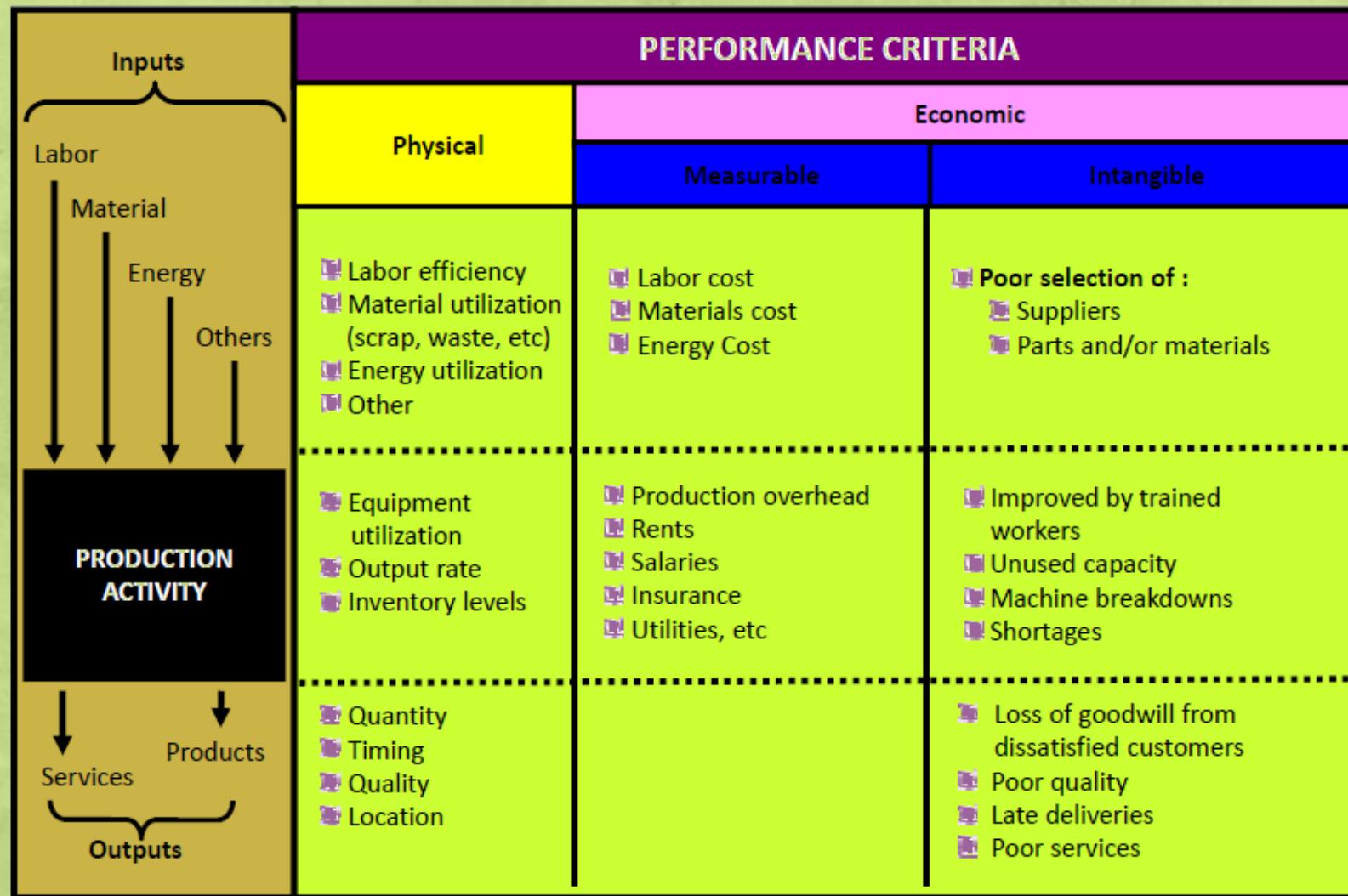
Production Activity



Production System



Evaluating Production System



Definition of Productivity

DEFINITION	REFERENCE
Productivity is what man can accomplish with material, capital and technology. Productivity is mainly an issue of personal manner. It is an attitude that we must continuously improve ourselves and the things around us	Japan Productivity Centre, 1958
Productivity $\frac{1}{4}$ units of output/units of input	Chew, 1988
Productivity is defined as the ratio of what is produced to what is required to produce it. Productivity measures the relationship between output such as goods and services produced, and inputs that include labour, capital, material and other resources	Hill, 1993
Productivity means how much and how well we produce from the resources used. If we produce more or better goods from the same resources, we increase productivity. Or if we produce the same goods from lesser resources, we also increase productivity. By "resources", we mean all human and physical resources, i.e. the people who produce the goods or provide the services, and the assets with which the people can produce the goods or provide the services	Bernolak, 1997
Productivity is the ability to satisfy the market's need for goods and services with a minimum of total resource consumption	Moseng and Rolstada's, 2001

Produktivitas berhubungan dengan efektivitas dan efisiensi utilisasi dari sumber daya produksi (*input*) dengan produk atau jasa yang dihasilkan (*output*) (Sumanth, 1987).

Input – Output

Input adalah sumber-sumber daya yang digunakan untuk memperoleh hasil tersebut, seperti tenaga kerja, modal, energi, bahan baku, dll.

Output adalah hasil produksi baik berupa barang atau jasa yang dihasilkan suatu proses produksi.

- Contoh input dalam sistem transportasi
 - Material yang masuk dan akan diproses dalam sistem pergudangan (bahan baku, WIP, produk jadi, dll).
 - Tenaga kerja (*labor*) yaitu operator, supervisor, manajer.
 - Sistem *informasi* dan *loading unloading*.

- Contoh output dalam sistem transportasi
 - Jumlah unit, pesanan, merek, atau berat yang dikirim kepada konsumen
 - Rute-rute pengiriman

Efficiency – Effectiveness



DEFINITION of EFFICIENCY

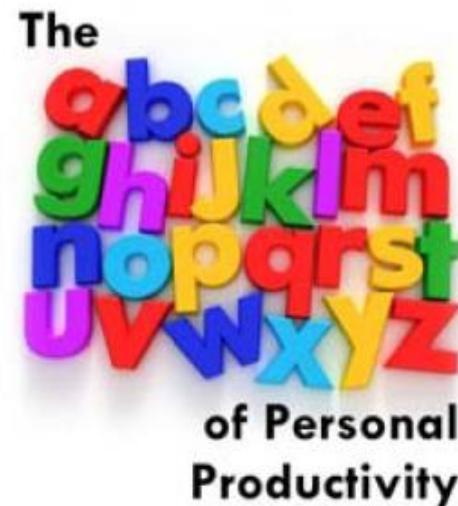
Efficiency is a measure of how economically the firm's resources are utilised when providing the given level of customer satisfaction

do the things right

DEFINITION of EFFECTIVENESS

Effectiveness refers to the extent to which the customer requirements are met

do the right things



$$\text{produktivitas} = \frac{\text{output yang dihasilkan}}{\text{input yang dikeluarkan}}$$

$$\text{produktivitas} = \frac{\text{hasil yang sukses dicapai}}{\text{sumber daya yang dikonsumsi}}$$

$$\text{produktivitas} = \frac{\text{efektivitas}}{\text{efisiensi}}$$

Supporting Factors of Productivity



*(Productivity The
High Road to Wealth,
2005)*

Case Study :

- Suppose that a company manufacturing electronic calculators produced 10,000 calculators by employing 50 people at 8 hours/day for 25 days.
- Suppose this company increased its production to 12,000 calculators by hiring 10 additional workers at 8 hours/day for 25 days.
- What is your opinion about these condition ?

Solution :

Existing Condition :

$$\text{Productivity (of labor)} = \frac{10,000 \text{ calculators}}{50 \times 8 \times 25 \text{ man - hours}} = 1 \text{ calculator/man - hour}$$

Current Condition :

$$\text{Productivity (of labor)} = \frac{12,000 \text{ calculators}}{60 \times 8 \times 25 \text{ man - hours}} = 1 \text{ calculator/man - hour}$$

Basic Types of Productivity

PARTIAL PRODUCTIVITY MEASURE [PPM]

Adalah rasio dari output terhadap satu kelas *input*. Kelas *input* yang dimaksud disini adalah *input* material, modal, manusia, energi dan lain-lain

$$\text{produktivitas } n = \frac{\text{Output}}{\text{Input } n}$$

TOTAL PRODUCTIVITY MEASURE [TPM]

Adalah rasio dari total *output* dengan akumulasi dari keseluruhan faktor *input*. Pengukuran ini merefleksikan seluruh dampak dari keseluruhan *input* di dalam memproduksi *output*

$$\text{produktivitas total} = \frac{\text{output total}}{\text{Input total}}$$

TOTAL FACTOR PRODUCTIVITY MEASURE [TFPM]

Adalah rasio dari net *output* terhadap penjumlahan dari *input* tenaga kerja dan modal (meliputi mesin dan peralatan). Net *output* adalah total *output* dikurangi biaya material dan biaya servis

$$TFPM = \frac{\text{output total} - \text{material dan servis}}{\text{Input (Tenaga kerja+modal)}}$$

Basic Types of Productivity

ADVANTAGES	LIMITATIONS
A. Partial Productivity Measures (PPM) <ul style="list-style-type: none">1. Mudah dipahami dan dikalkulasikan2. Sebuah tool untuk menunjukkan dengan tepat peningkatan/ improvement yang ada.	<ul style="list-style-type: none">1. Menyesatkan jika digunakan sebagai ukuran tunggal.2. Tidak memiliki kemampuan untuk menjelaskan pengaruh keseluruhan dari peningkatan yang ada.
B. Total Productivity Measures (TPM) <ul style="list-style-type: none">1. Mudah dan lebih akurat dalam merepresentasikan perusahaan secara keseluruhan2. Mempertimbangkan seluruh output dan input.	<ul style="list-style-type: none">1. Membutuhkan sistem pengumpulan data yang khusus.
C. Total Factor Productivity Measures (TFPM) <ul style="list-style-type: none">1. Data yang diperlukan mudah untuk dikumpulkan.2. Pendekatan value added.	<ul style="list-style-type: none">1. Tidak mempertimbangkan input material dan input energi.2. Manager operasional kesulitan menghubungkan value added output terhadap efisiensi produksi.

Case Study :

- Consider the ABC Company. The data for output produced and input consumed for a particular time period are given below:

- Output = \$1000
- Human input = \$300
- Material input = \$200
- Capital input = \$300
- Energy input = \$100
- Other expense input = \$50

Solution :

Partial Productivities

- Human productivity = 3.33
- Material productivity = 5.00
- Capital productivity = 3.33
- Energy productivity = 10.00
- Other expense productivity = 20.00

Total Productivity

TP = Total output/Total input

$$TP = 1000/(300+200+300+100+50)$$

$$TP = 1.053$$

Solution :

- Total-Factor Productivity

$$\begin{aligned} \text{TFP} &= \frac{\text{net output}}{(\text{labor} + \text{capital})\text{input}} \\ &= \frac{\text{total output} - \text{material and services purchased}}{(\text{labor} + \text{capital})\text{input}} \\ &= \frac{1000 - (200 + 300 + 100 + 50)}{300 + 300} \\ &= 0.583 \end{aligned}$$

Paradigma Peningkatan Produktivitas

Peningkatan produktivitas harus lebih fokus pada (Tolentino, 2004)

- *Doing the right things*
- *Doing things right*

Berikut beberapa kunci dalam paradigma peningkatan produktivitas (TomZose Associates, 2004):

- Produktivitas bukan hanya konsep.
- Proses adalah sama pentingnya
- *Green productivity* dan pengembangan yang berkelanjutan.
- Fokus pada peningkatan produktivitas melalui *value-chain* dan *supply-chain management* yang lebih baik.
- Kuncinya adalah pada faktor manusia

Have an enjoy study
and see you next week...

Thank you...