

Tutorial 8 Managing Business Processes Suggested Solutions

Objectives:

- Describe the concepts of material flow, information flow, customer flow and workflow
 - Discuss how these flows are managed in a company and a supply chain
 - Apply line balancing principles
 - Perform load distance analysis
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1. Why are customer flows and workflows important to the firm?

Taken together, both are important for visualizing the workflow of delivering the customer delivery system and how the customer is involved in the system. The customer flow analysis seeks to identify the potential problems related to servicing the customer. The workflow analysis is used to determine which processes add value (or not) to the customer delivery system.

2. Describe the concepts of material flow and why these are important to the firm.

Materials flow through a firm to produce a product or provide a service to the customer. In general, the materials flow includes the receipt of raw materials, scheduling the sequence of operations to produce the finished good, the storage of goods, and the delivery to the customer. Managing these flows effectively can lead to reduced costs while simultaneously maximizing customer satisfaction.

3. Describe the various types of flow analysis and the impact that flow has on the organization.

Process mapping, process flowcharting, and value stream mapping are basically the same terms used to describe the first step in understanding how processes work and integrate with other processes. These process maps are useful for gaining an understanding of how materials flow into, within, and out of a process. This is important for identifying where inventories are delayed or stored, as well as how long the inventories were delayed or stored.

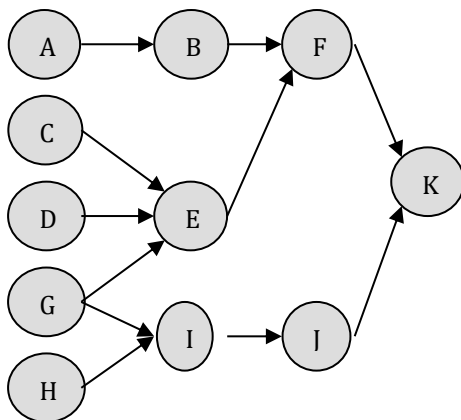
The process maps also help determine the path of the material movement and the sequence of activities that make up the process. This type of information is important for scheduling production and determining the capacity levels needed at each activity.

4. ABC Communications has redesigned one of its core business processes. Processing times are not expected to vary significantly so management wants to use line-balancing approach to assign activities to workstations. The process has 11 activities, and the market demand is to process 4 jobs per 400 minute working day. The table below shows the standard time and immediate predecessors for each activity in the process.

Activity	Time (minutes)	Immediate predecessor
A	70	-
B	15	A
C	8	-
D	32	-
E	47	C,D,G
F	25	B,E
G	61	-
H	52	-
I	29	G,H
J	42	I
K	50	F,J

- Construct a precedence diagram.
- Calculate the cycle time corresponding to a market demand of 4 jobs per day.
- What is the theoretical minimum number of workstations?
- Use the longest activity time rule as the primary rule to balance the line.
- What is the efficiency of the line? How does it compare with theoretical maximum efficiency?

a)



- Calculate the cycle time corresponding to a market demand of 4 jobs per day.

$$C = 400/4 = 100 \text{ minutes}$$

- What is the theoretical minimum number of workstation?

$$TM = 431/100 = 4.31 \approx 5 \text{ workstations}$$

- d) Use the “longest activity time first” as the primary rule to balance the line.

Station	Activity	Idle time	Feasible activities	Activity with longest time
1	A	30	B and C	B
	B	15	C	C
	C	7	None	
2	G	39	D	D
	D	7	None	
3	H	48	E and I	E
	E	1	None	
4	I	71	F and J	J
	J	29	F	F
	F	4	None	
5	K	50		

- e) What is the efficiency of the obtained solution? How does it compare to the theoretical maximum efficiency?

Efficiency = $431 / (5 \cdot 100) = 86.2\%$. This design achieves maximum efficiency, because it uses the theoretical minimum number of stations.