commerce
undergraduate
society

# COMM 204

## Midterm Review Session

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CMP

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## I. Basic Information

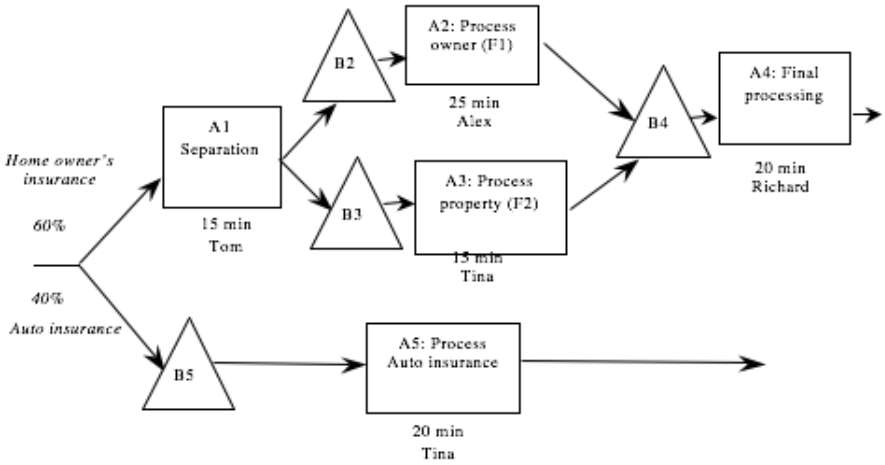
1. The “operations frontier” diagram can be used to illustrate:
   a. Tactical issues (ensuring that the firm is on the operations frontier)
   b. Strategic issues (choosing the correct position on the operations frontier)
   c. Operational innovation (moving the operations frontier)
   d. Both A and B
   e. A, B, and C

2. Which of the following is a measure of efficiency?
   a. Days of inventory
   b. Capacity used/total capacity
   c. Output/input
   d. All of the above
   e. None of the above

## II. Process Flow Analysis

1. True or False:
   a. If a process has two bottleneck resources, then the bottleneck resources must both have the same capacity rate.
   b. The non-bottleneck resource always gets idled for some time in any process.
   c. The only thing a manager of Telus call centre could do to reduce customers’ waiting time is to recruit more telephone operators.
   d. In any process, the flow time can be smaller than the cycle time.
   e. The long run average input rate cannot be smaller than the long run average output rate; although it is possible that the short run input rate be smaller than the short run output rate when there is positive inventory.

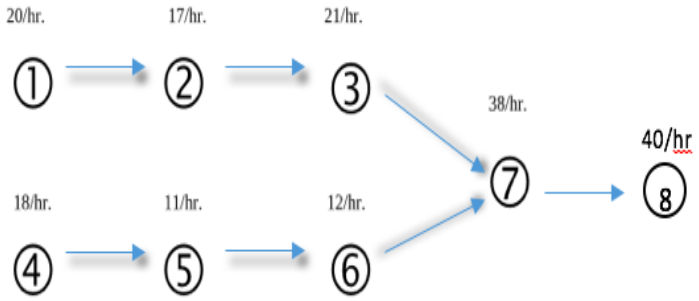
2. Safeco Insurance Group offers both home owner’s insurance and auto insurance. The manager of the company states that around 60% of the applicants want home owner’s insurance and the others want auto insurance. The flow of the process is:
   A home owner’s insurance application consists of two types: B2, which relates to the home owner, and B3, which relates to the property. Upon receipt, each application is separated in to B2 and B3. The operation (Activity A1 below) is done by Tom and takes 15 minutes. B2 is processed (at Activity A2) by Alex at 25 minutes per unit. B3 is processed (at Activity A3) by Tina at 15 minutes per unit. B2 and B3 are then recombined into B4 and further processed (at Activity A4) by Richard, who writes the final policy at 20 minutes per unit. Auto insurance applications, B5, are processed by Tina (at Activity A5) at 20 minutes per unit.




a. What is the theoretical flow time for an auto insurance application?
b. What is the theoretical flow time for a home owner's insurance application?
c. What is the capacity of home-auto insurance (in applications per hour) given its current product mix?
d. What is the bottleneck?
e. The manager of the insurance company believes that there is more demand to be served even though the firm is operating at capacity. Two options were suggested:
    1. Shorten the time to do A3 by 2 minutes.
    2. Shorten the time to do A5 by 2 minutes.

    What would you recommend and why?

3. Bread-making at Richmond Bakery consists of the follow process. The dough goes through either one of two parallel three-step processes and then merge into a single line for the final step. Capacities are shown on the diagram.
    a. What is the current capacity of the entire process?
    b. What is the bottleneck?
    c. If the logistics manager can increase the capacity of only one operation through process improvement efforts, which operation would he select, how much additional capacity would he strive for, and what would be the resulting capacity of the process?




## III. Multiple Types and Product Process Matrix

1. Mark each of the following products on appropriate positions on the product process matrix. Briefly justify your choice.
    a. Milk

b. Strawberries
c. Rolls Royce cars
d. Bakery
e. Boeing airplanes
f. McKinsey Consulting projects
g. Automobile assembly line

| | One of a kind | Low volume, many products | High volume standard products | High volume, commodity products |
|---|---|---|---|---|
| Job shop | | | | |
| Batch | | | | |
| Flow shop | | | | |
| Continuous flow | | | | |

2. Differentiate flow shops and job shops in terms of:
   i. Variable production cost
   ii. Labour specialization
   iii. Size of facilities
   iv. Flow time
   v. Volume
   vi. Product variety
   vii. WIP inventory
   viii. Level of automation
   ix. Capital investment

## IV. Variability in Processes

1. True or false: According to Little's Law, the inventory equals the product of the throughput rate and the flow time at any time.

2. You are the owner of a hotdog stand that sells hotdogs to drivers driving home from work on the Highway 99. You have a choice of spending money on inventory, capacity, and/or information. What are some that factors that you need to take into account in choosing which parameter to spend the most resources on?

3. You are an employee of Lovetopia, a dating service that offers blind dates in its store locations. Your manager has assigned you the task of finding the reason for the growing number of customer complaints. You have a hunch that it might be the long line ups. Suppose the average service time is 3 minutes per customer and that 15 customers arrive every hour, on average. In response to the manager, do you think the line is likely to be relatively long or short? Explain.

4. At a McDonald's drive-through, vehicles arrive at a rate of 10 per minute. Assume that there is only one lane and one employee, who can serve vehicles at a rate of 12 per minute in an exponentially distributed fashion.
   a) What would be the average length of the waiting line?
   b) What would be the average time that a vehicle must wait to get through the system?
   c) What is the utilization of the employee?
   d) What is the probability that when you arrive there will be three or more vehicles ahead of you?