

Production Planning & Control BMM4823

Transportation method

by

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Chapter Description

- Aims
 - To understand the importance of transportation method.
 - To determine the priority of each strategy in production planning
- Expected Outcomes
 - Able to determine optimum planning cost through transportation method
 - Able to differentiate various cost involved in the process planning
- References
 - Heizer, J and Render,B. 2011. Principles of Operations Management, 8th Edition, Pearson Prentice Hall, Inc.

Introduction

What is a transportation method?

It was used to solve the problem related to the study of the transportation route. It is used linear programming method.

The objective of transportation method is to find the optimal cost for production planning.

Objectives

Minimizing the cost over the planning period by controlling

- **Level of production**
- **Level of Inventory**
- **Allocation of Overtime**
- **Subcontracting**
- **Other controllable variables**

	Sales Period		
	Mar	Apr	May
Demand	800	1,000	750
Capacity:			
Regular	700	700	700
Overtime	50	50	50
Subcontracting	150	150	130
Beginning inventory	100 tires		

Costs	
Regular time	RM40 per unit
Overtime	RM50 per unit
Subcontracting	RM70 per unit
Carrying	RM 2 per unit per month

Transportation method

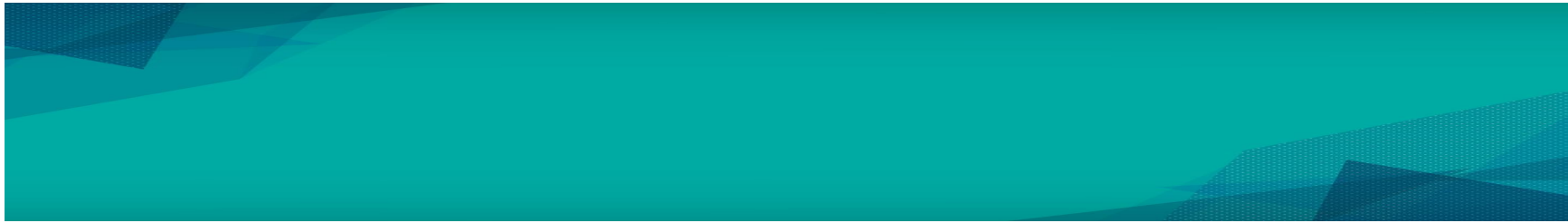
Important points

- 1. Carrying costs are RM2/unit/month. If bring the goods to the next period, it will be holding cost in that period.**
- 2. Supply should always equal to demand.**
- 3. Use dummy column to represent “unused quantity”**
- 4. Back order is not allowed in this method.**

Transportation Method – Cont'd

Important points

- 4. Each column shows the requirement of the demand.**
- 5. Try to find the lowest cost without exceeding the allowed capacity**
- 6. Always allocate the production at the lowest cost cell. Use inventory if possible to reduce cost.**



Supply from		Demand for						Total capacity available	
		March		April		May			Dummy
Beginning inventory		100	0		2		4	0	100
March	Regular time	700	40		42		44	0	700
	Overtime		50	50	52		54	0	50
	Subcontract		70	50	72		74	100	150
April	Regular time			700	40		42	0	700
	Overtime			50	50		52	0	50
	Subcontract			150	70		72	0	150
May	Regular time					700	40	0	700
	Overtime					50	50	0	50
	Subcontract						70	130	150
Total demand		800		1000		750		230	2780

Red = Cost

- Total cost
- Period 1: $100 \times \text{RM}0 + 700 \times \text{RM}40 = 28000$
- Period 2: $50 \times \text{RM}52 + 50 \times \text{RM}72 + 700 \times \text{RM}40 +$
 $50 \times \text{RM}50 + 150 \times \text{RM}70 = \text{RM}47200$
- Period 3: $700 \times \text{RM}40 + 50 \times \text{RM}50 = \text{RM}30500$
- Total = $\text{RM}28000 + \text{RM}47200 + \text{RM}30500$
= RM105700

Class Activity

	Sales Period		
	Mar	Apr	May
Demand			
Capacity			
Regular	720	720	720
OT	50	50	50
Sub-Con	150	150	130
	Costs		
Reg. Time	RM50/unit		
OT	RM60/unit		
Sub-Con	RM80/unit		
Carrying	RM2/unit/month		

Group	Mar	Apr	May	Beginning inventory
1	750	950	700	100
2	700	900	650	110
3	650	850	600	120
4	850	1050	800	100
5	880	1090	810	110
6	880	1095	805	120

Form a group with 2-3 students to discuss on the above information.



The End