JOBSHEET FOR DECISION SUPPORT SYSTEMS COURSE

WEEK : 2

MATERIAL : Weighted Sum Model (WSM) and Weighted Product Model (WPM)

OBJECTIVE : Students can apply the Weighted Sum Model (WSM) and Weighted Product (WPM) methods to decision-making problems

CASE STUDY

A software developer created a Decision Support System for choosing an apartment using the WSM and WPM methods. There are 3 locations that are used as alternatives, namely: Location 1, Location 2, and Location 3. There are 5 criteria used in decision making, as follows:

c1: Supporting facilities in the apartment (weight: 30)
c2: Building price per square meter (weight: 20)
c3: Year of construction of the apartment building (weight: 20)
c4: Distance from workplace (in kilometers) (weight: 20)
c5: Apartment security system (weight: 10)

Criteria c1 and c5 have the following score ranges:

Condition of Supporting Facilities / Security Systems	**Score**
Bad	1
Moderate	2
Good	3
Very well	4

Criterion c2 uses the following range:

Building Price Per Square Meter	**Score**
x >= 10 million	1
5 million <= x < 10 million	2
1 million <= x < 5 million	3

Criterion c3 uses the following ranges:

Building Price Per Square Meter	**Score**
x >= 2015	3
2010 <= x < 2015	2
2005 <= x < 2010	1

The score of each alternative on each criterion is shown in the following decision matrix:

Alternative / Criteria	Apartment 1	Apartment 2	Apartment 3
Supporting facilities	2	4	3
Building price per square meter	7.000.000	10.000.000	8.500.000
Year of building construction	2012	2015	2010
Distance from workplace	7 km	2 km	4 km
Apartment security system	3	3	4

PRACTICUM PROCEDURE

1. Group the criteria included in benefit attributes and cost attributes!
2. Calculate the final score for each alternative using Excel so that it becomes semi-automatic and determine the best alternative for that case!
3. Bonuses! Create program code for the case study. You can use programming languages according to your skills.

QUESTION

Change the scores in criteria c1 and c2 as follows:

a. Apartment 2: c1 = 2
b. Apartment 1: c2 = 8.500.000

Observe changes in the final score from the WSM and WPM calculations in alternatives 1 and 2 before and after changing the criteria scores. From the results of your observations, explain:

1. The effect of changes in criteria scores on decision making results.
2. Difference between benefit attributes and cost attributes.