**DECISION SUPPORT SYSTEM COURSE JOBSHEET**

MEETING : 2

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

PURPOSE : Students are able to apply the Weighted Sum Model (WSM) and Weighted Product (WPM) methods to decision-making problems

**CASE STUDY**

A software developer creates a Decision Support System to select apartments 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, namely:

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 work (in kilometers) (weight: 20)

C5: Apartment security system (weight: 10)

The criteria for c1 and c5 have the following score ranges:

|  |  |
| --- | --- |
| **Condition of Supporting Facilities / Security Systems** | **Score** |
| Less | 1 |
| Keep | 2 |
| Good | 3 |
| Very good | 4 |

Criterion c2 uses the following ranges:

|  |  |
| --- | --- |
| **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:

|  |  |
| --- | --- |
| **Year of Building** | **Score** |
| x >= 2015 | 3 |
| 2010 <= x < 2015 | 2 |
| 2005 <= x < 2010 | 1 |

The scores of each alternative on each criterion are shown in the following decision matrix:

|  |  |  |  |
| --- | --- | --- | --- |
| **Alternative**  **Criterion** | **Apartment 1** | **Apartment 2** | **Apartment 3** |
| Supporting facilities | Keep | Very good | Good |
| Building price / m2 | 7.000.000 | 10.000.000 | 8.500.000 |
| Year of construction of the building | 2012 | 2015 | 2010 |
| Distance from work | 4.7 miles | 1.2 miles | 2.5 miles |
| Apartment security system | 3 | 3 | 4 |

**PRACTICUM PROCEDURE**

1. **Group the criteria included in *the attribute benefit* and *cost attribute*!**
2. Make the final score calculation of each alternative using Excel so that it becomes semi-automatic and determine the best alternative for the case!
3. Bonus! Code your program for a case study. You can use programming languages according to your expertise

**QUESTION**

Change the score on criteria c1 and c2 as follows:

1. Apartment 2: c1 = 2
2. Apartment 1: c2 = 8. 500.000

Observe the change in the final score of the WSM and WPM calculations in alternatives 1 and 2 before and after the change in the score of the criterion. From the observations, explain:

1. The effect of changes in the score of the decision-making sharing criteria.