Multi-Criteria in Selecting a Project

(Larson & Gray, 2018)

1. The Custom Bike Company has set up a weighted scoring matrix for evaluation of potential projects. Below are five projects under consideration.
a. Using the scoring matrix in the following chart, which project would you rate highest? Lowest?
b. If the weight for "Strong Sponsor" is changed from 2.0 to 5.0, will the project selection change? What are the three highest weighted project scores with this new weight?
c. Why is it important that the weights mirror critical strategic factors?

Project Screening Matrix

Criteria / Weight	Strong sponsor	Supports business strategy	Urgency	10% of sales from new products	Competition	Fill market gap	Weighted total
	2.0	5.0	4.0	3.0	1.0	3.0	
Project 1	9	5	2	0	2	5	
Project 2	3	7	2	0	5	1	
Project 3	6	8	2	3	6	8	
Project 4	1	0	5	10	6	9	
Project 5	3	10	10	1	8	0	

2. Please help Mr. Quan to choose between four kinds of car (A,B,C,D) for his transportation.

Criteria	Kind of car				Weight (%)
	A	B	C	D	
Min Z1	30	40	50	60	20
Max Z2	20.000	10.000	15.000	30.000	25
Max Z3	0,5	0,8	1,5	2,0	10
Max Z4	2	5	3	10	30
Min Z5	3	5	5	9	15
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a) Find the dominated alternative(s) if any.
b) Use the method of Collective Utility to rank and find the best alternative.
c) Use the method of Compromise Programming (shortest distance) to rank and find the best alternative.

3. The sign X→Y indicates that the alternate X is more favourable than Y. Choose the group of nondominant alternatives (Kernel), given that

C→A; A → B; C→E; B→D; D→F;E→F; and F→G