

Homework 4

Decision Problem: Launching a Cloud Computing Platform for Server Rentals

1. Decision-Maker

The decision-maker is the entrepreneur or founding team responsible for establishing and managing the cloud computing platform. This entity will assess strategic and financial implications and decide on the most suitable approach for launching the platform.

2. Statement of the Problem

The objective is to choose the most advantageous infrastructure and business approach for launching a cloud computing platform where users can rent servers. The goal is to evaluate multiple feasible options based on investment cost, launch time, operational costs, and scalability potential.

3. Set of Possible Variants (Solutions)

We consider four feasible infrastructure strategies for the business:

- V1: Lease infrastructure from a major cloud provider (e.g., AWS, Google Cloud)
- V2: Build an in-house data center using new equipment
- V3: Collaborate with colocation providers for shared infrastructure
- V4: Utilize refurbished hardware in a hybrid deployment model

4. Consequences (Criteria)

To evaluate the options, we consider four main consequences:

- C1: Initial Investment (in thousands of USD)
- C2: Time to launch (in months)
- C3: Monthly operational costs (in thousands of USD)
- C4: Flexibility (scalability potential as a percentage)

Variant	C1 (Investment)	C2 (Time)	C3 (Opex)	C4 (Flexibility)
V1	120	3	10	60
V2	350	10	6	90
V3	220	6	8	70
V4	150	5	7	80

5. Decision Criteria

The decision criteria used to assess the options are:

- X1 = min C1 (minimize investment)
- X2 = min C2 (minimize time to market)
- X3 = min C3 (minimize operational costs)
- X4 = max C4 (maximize flexibility)

6. Utility Computation

To compare alternatives fairly, we normalize all values using utility functions. For minimization (C1, C2, C3):

$$U_{ij} = (C_{\max} - C_{ij}) / (C_{\max} - C_{\min})$$

For maximization (C4):

$$U_{ij} = (C_{ij} - C_{\min}) / (C_{\max} - C_{\min})$$

Applying normalization:

- For C1: min = 120, max = 350
- For C2: min = 3, max = 10
- For C3: min = 6, max = 10
- For C4: min = 60, max = 90

Calculated utilities:

Variant	U1 (Investment)	U2 (Time)	U3 (Opex)	U4 (Flexibility)	Total Utility
V1	1.00	1.00	0.00	0.00	2.00
V2	0.00	0.00	1.00	1.00	2.00
V3	0.57	0.57	0.50	0.33	1.97
V4	0.87	0.71	0.75	0.67	3.00

7. Decision and Recommendation

Based on the total utility values, the hybrid model (V4) is the most balanced and strategic solution with a total utility of 3.00. It provides a moderate initial cost and time to market, along with competitive operational efficiency and scalability. It is recommended to proceed with V4 for initial implementation and validate the approach with performance metrics and user feedback before scaling.