

Activity 5-3: Scoring Matrices

Why?

Designers must choose between design alternatives. One objective way to do so is with a **scoring matrix**. The matrix records ratings assigned to alternatives for weighted evaluation criteria. These are used to compute total scores for each alternative. The total scores are used to select the best alternative.

Learning Objectives

- Understand the purpose of a scoring matrix
- Construct a scoring matrix to select a design alternative

Success Criteria

- Be able to set up a scoring matrix with appropriate evaluation criteria and weights
- Be able to assign ratings to alternatives for each evaluation criterion
- Be able to compute evaluation criterion scores and the overall scores for each design alternative

Resources

ISED section 5.3

Vocabulary

Design alternative, adequacy, beauty, economy, feasibility, simplicity, time, cost, risk, multi-dimensional ranking, scoring matrix, evaluation criterion, rating, and score.

Plan

1. Review *ISED* section 5.3 individually.
2. Answer the Key Questions individually, and then evaluate the answers as a team.
3. Do the Exercise as a team, and then check your answer with the instructor.
4. Do the Problems (based on the Case Study) and Assessment as a team.
5. Turn in the Problems and Assessment as a team deliverable.

Key Questions

1. What considerations come into play when evaluating design alternatives?
2. Who selects among design alternatives?
3. What techniques are available for selecting between design alternatives?
4. What are the advantages and disadvantages of using scoring matrices to select among design alternatives?

Exercise

Do *ISED* Chapter 5 exercise 9.

Case Study

A small start-up company wants to market a web-based service to restaurants that will automate order-taking for customers with wireless Internet connections. Customers would be presented with menus on their personal digital assistants or cell phones and place their orders. The company does not have much funding so they must produce a first version of the product fairly quickly and cheaply.

Needs elicitation has resulted in the following needs list:

- Restaurant Managers need customers to place orders only from tables in the restaurant.
- Restaurant Managers must not have any sort of installation or maintenance tasks.
- Restaurant Managers and Servers need the product to interface with their current order management systems.
- Restaurant Managers need the product to manage inventory.
- Servers need to do their work at least as fast as without the product.
- Customers need to connect to the web site given only the URL.
- Customers need to see menus and to place orders.
- Customers need to track the status of their orders.
- Customers need to see their bills.
- Customers need to send messages to servers (bring more bread, more water, the check, and so forth).
- Customers need to interact with the web site without human instruction.
- Marketing needs the product to have as many features as possible.
- Marketing and Upper Management need the product to be highly reliable.
- Development needs the product to be deliverable in about eight months with only a single developer.

Three alternative product concepts are under consideration:

Alternative A—The product has two web sites run from a single web server. The *customer site* is used by customers who access it using a URL posted on a sign and on cards at the tables. The *staff site* is used by restaurant staff. The customer site presents menus, accepts orders, and displays orders and their cost. The staff site controls enabling of interaction from individuals tables, displays orders to the staff, and allows staff to alter orders. Servers must enter orders into existing order management software by hand.

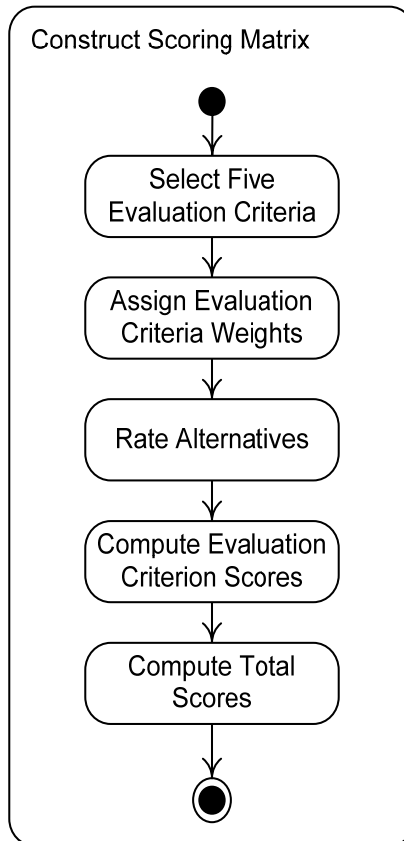
Alternative B—The product has three web sites run from a single web server. The *customer site* is used by customers who access it as in alternative A. The *billing site* is

used by restaurant cashiers. The *server site* is used by cooks and servers. The customer has all the functions in alternative A, and also lets customers send messages to servers. The billing site controls enabling of interaction from individuals tables, displays and prints bills, and handles credit card charges. The server site displays orders to the cooks and servers and displays messages from customers.

Alternative C—The product has four web sites run from a single web server. The *customer site* is used by customers who access it as in alternatives A and B. The *billing site* is used by restaurant cashiers. The *server site* is used by cooks and servers. The *management site* is used by restaurant managers. The customer, billing, and server sites have the same features as in alternative B. The management site displays logs and reports of orders for various time periods, and provides an interface to a database with an inventory of supplies. This database is adjusted based on orders from customers placed on the customer site, information from cooks and servers at the server site, and restaurant managers at the manager site.

Problems (Deliverable)

Construct a scoring matrix to choose between these three design alternatives by executing the following process.



Please turn in your scoring matrix and answer the following questions:

1. Why did you choose the criteria and weights you used?

2. Which is the reference product for each evaluation criterion?
3. Why did you rate each alternative for each evaluation criterion the way you did?
4. Which alternative should be selected?
5. Are you comfortable with this result?

Assessment (Deliverable)

1. Did your team improve its performance from last week?
2. How could you improve your team's performance next time?