

Prioritization Matrix



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What is a Prioritization Matrix?

A prioritization matrix can help an organization make decisions by narrowing options down by systematically comparing choices through the selection, weighing, and application of criteria. Prioritization matrices:

- Quickly surface basic disagreements, so disagreements can be resolved openly
- Force a team to narrow down all solutions from all solutions to the best solutions, which are more likely to increase chances for successful program implementation
- Limits "hidden agendas" by bringing decision criteria to the forefront of a choice
- Increases follow-through by asking for consensus after each step of the process

How to Construct a Prioritization Matrix

There are three ways to construct prioritization matrices, but the **Full Analytical Criteria Method** is detailed below. This specific method is best used in smaller groups (3-8 people), which require few options (5-10 options) and few criteria (3-6 criteria). This specific method also requires the team to reach complete consensus on criteria and options. Stakes may be high if the plan fails.

1. Set a Goal

In order to agree on the ultimate goal, your group should produce a clear goal statement through consensus.

Example Goal: Buy a car for regular daily travel.

2. Set Criteria

Create a list of criteria by reviewing available documents or guidelines. The team must come to a consensus on criteria and their meaning, or the process is likely to fail.

Example Criteria: Cost, Reliability, Efficiency, Desirability

Example Options: New Chevrolet, Used Mercedes, Pre-Owned Ford, Uncle Henry's Old Clunker

3. Weigh Criteria for Importance

Use a matrix to weigh each **criteria** against another, in order to decide which criteria are most important.

A. Write Criteria

Write your criteria across the top of the columns. Add extra columns at the end for "Row Total" and "Relative Decimal Value" (you'll use those later). Write your criteria at the beginning of each row.

	Cost	Reliability	Efficiency	Desirability	Row Total	Relative Decimal Value
Cost						
Reliability						
Efficiency						
Desirability						
Grand Total						

B. Weigh Criteria

Begin the process of deciding which criteria are more important. (Since we can't compare a criterion against itself, we'll start in the second cell of the first column.)

	Cost
Cost	----
Reliability	

In this cell, ask yourself whether the criterion **above** (*cost*) is more or less important than the criterion to the **left** (*reliability*). Use the following weighting system to indicate whether it's more important, and by how much:

- 10** = Much more important
- 5** = More important
- 1** = Equally important
- 0.2** = Less important
- 0.1** = Much less important

Note: A whole number (10, 5, 1) should always represent the "desirable" rating. In some cases, this mean "more" of something (e.g., importance, reliability, educational value), and in others it may mean "less" (e.g., cost, travel time).

	Cost
Cost	----
Reliability	5

<-- This indicates that **cost** is **more important** (5) than **reliability**.

Each time you record a **weight** in a row cell, you must record its **reciprocal value** in the corresponding column cell.

- Weight of **10** --> Reciprocal value of **0.1**
- Weight of **5** --> Reciprocal value of **0.2**
- Weight of **1** --> Reciprocal value of **1**
- Weight of **0.2** --> Reciprocal value of **5**
- Weight of **0.1** --> Reciprocal value of **10**

	Cost	Reliability
Cost	----	0.2
Reliability	5	----

<-- The reciprocal value of 5 is 0.2; this shows that **reliability** is **less important** (0.2) than **cost**.

Continue weighting the remaining criteria and recording reciprocal values.

C. Calculate Totals

When finished, total each horizontal row and enter the sum under "Row Total." Add all row totals to reach a grand total.

	Cost	Reliability	Efficiency	Desirability	Row Total	Relative Decimal Value
Cost	-----	0.2	0.1	5	5.3	
Reliability	5	-----	0.2	5	10.2	
Efficiency	10	5	-----	5	20	
Desirability	0.2	0.2	0.2	-----	0.6	
Grand Total					36.1	

D. Calculate Criteria Weighting

Divide each row total by the grand total, and enter this under "Relative Decimal Value."

	Cost	Reliability	Efficiency	Desirability	Row Total	Relative Decimal Value
Cost	-----	0.2	0.1	5	5.3	0.15
Reliability	5	-----	0.2	5	10.2	0.28
Efficiency	10	5	-----	5	20	0.55
Desirability	0.2	0.2	0.2	-----	0.6	0.02
Grand Total					36.1	

These **relative decimal values** indicate how relatively important each criterion is to you—they are now called your "**criteria weighting**." You will use criteria weighting to compare options at the end of the process, in Step 6.

Criteria Weighting for All Options	
Cost	0.15
Reliability	0.28
Efficiency	0.55
Desirability	0.02

4. Weigh Options against Criteria

Use a set of matrices to weigh **options** within given criteria, in order to start deciding which options best meet your criteria.

A. Weigh Options

Using the same weighting and method as above, place one **criterion** in the upper left corner of its own matrix, and weigh **options** against each other. Use weights to indicate which option better meets the matrix's single criterion.

Remember: A whole number (10, 5, 1) should always represent the "desirable" rating. In some cases, this mean "more" of something (e.g., importance, reliability, educational value), and in others it may mean "less" (e.g., cost, travel time).

10 = Much less expensive 5 = Less expensive 1 = Same cost 0.2 = More expensive 0.1 = Much more expensive

COST	New Chevrolet	Used Mercedes	Pre-Owned Ford	Uncle Henry's Car	Row Total	Relative Decimal Value
New Chevrolet	-----	0.2	5	0.1	5.3	0.12
Used Mercedes	5	-----	10	0.2	15.2	0.33
Pre-Owned Ford	0.2	0.1	-----	0.1	0.4	0.01
Uncle Henry's Car	10	5	10	-----	25	0.54
Grand Total					45.9	

Repeat this step with each criterion (**cost**, **reliability**, **efficiency**, **desirability**) using the same options and weighting method, until you have a matrix for each criterion. **There will be as many matrices as there are criteria.**

These relative decimal values indicate how well each option meets a given criterion—they are now called your **“option ratings.”**

B. Optional: Compile Option Ratings

You may find it helpful to put your option ratings from each matrix into a single table to minimize confusion.

	Option Rating: COST	Option Rating: RELIABILITY (Matrix not shown)	Option Rating: EFFICIENCY (Matrix not shown)	Option Rating: DESIRABILITY (Matrix not shown)
New Chevrolet	0.12	0.24	0.40	0.65
Used Mercedes	0.33	0.37	0.10	0.22
Pre-Owned Ford	0.01	0.37	0.49	0.12
Uncle Henry’s Car	0.54	0.01	0.01	0.01

5. Compare Options

Using another L-shaped matrix, compare each option based on all combined criteria.

A. Create Summary Matrix

List your **criteria** at the top of each column, along with their respective **criteria weighting** values from **Step 3**. Write each **option** at the beginning of a row.

SUMMARY	Cost (Weight: 0.15)	Reliability (Weight: 0.28)	Efficiency (Weight: 0.55)	Desirability (Weight: 0.02)
New Chevrolet				
Used Mercedes				
Pre-Owned Ford				
Uncle Henry’s Car				

B. Multiply Criteria Weighting and Option Ratings

In each cell, multiply the criteria weighting values (found at the top of each column) by the option rating from each matrix in **Step 4**.

SUMMARY	Cost (Weight: 0.15)	
New Chevrolet	0.12 x 0.15 = 0.02	<-- New Chevrolet option rating from Step 4 cost matrix = 0.12
Used Mercedes	0.33 x 0.15 = 0.05	<-- Used Mercedes option rating from Step 4 cost matrix = 0.33
Pre-Owned Ford	0.01 x 0.15 = 0.002	<-- Pre-Owned Ford option rating from Step 4 cost matrix = 0.01
Uncle Henry’s Car	0.54 x 0.15 = 0.08	<-- Uncle Henry’s Car option rating from Step 4 cost matrix = 0.54

In this example, the RDV specific to a New Chevrolet was 0.12 from the cost matrix (shown above), 0.07 from the reliability matrix, 0.22 from the efficiency matrix, and 0.01 from the desirability matrix (not shown in Step 4).

SUMMARY	Cost (Weight: 0.15)	Reliability (Weight: 0.28)	Efficiency (Weight: 0.55)	Desirability (Weight: 0.02)
New Chevrolet	0.12 x 0.15 = 0.02	0.24 x 0.28 = 0.07	0.40 x 0.55 = 0.22	0.65 x 0.02 = 0.01

Repeat this for each option and criterion, pulling values from Steps 3 and 4.

SUMMARY	Cost (Weight: 0.15)	Reliability (Weight: 0.28)	Efficiency (Weight: 0.55)	Desirability (Weight: 0.02)
New Chevrolet	0.12 x 0.15 = 0.02	0.24 x 0.28 = 0.07	0.40 x 0.55 = 0.22	0.65 x 0.02 = 0.01
Used Mercedes	0.33 x 0.15 = 0.05	0.37 x 0.28 = 0.10	0.10 x 0.55 = 0.06	0.22 x 0.02 = 0.004
Pre-Owned Ford	0.01 x 0.15 = 0.001	0.37 x 0.28 = 0.10	0.49 x 0.55 = 0.27	0.12 x 0.02 = 0.002
Uncle Henry's Car	0.54 x 0.15 = 0.08	0.01 x 0.28 = 0.002	0.01 x 0.55 = 0.01	0.01 x 0.02 = 0.0002

C. Calculate Row Total

Add values across each row to reach a row total.

SUMMARY	Cost (Weight: 0.15)	Reliability (Weight: 0.28)	Efficiency (Weight: 0.55)	Desirability (Weight: 0.02)	Row Total
New Chevrolet	0.12 x 0.15 = 0.02	0.24 x 0.28 = 0.07	0.40 x 0.55 = 0.22	0.65 x 0.02 = 0.01	0.32
Used Mercedes	0.33 x 0.15 = 0.05	0.37 x 0.28 = 0.10	0.10 x 0.55 = 0.06	0.22 x 0.02 = 0.004	0.22
Pre-Owned Ford	0.01 x 0.15 = 0.001	0.37 x 0.28 = 0.10	0.49 x 0.55 = 0.27	0.12 x 0.02 = 0.002	0.37
Uncle Henry's Car	0.54 x 0.15 = 0.08	0.01 x 0.28 = 0.002	0.01 x 0.55 = 0.01	0.01 x 0.02 = 0.0002	0.09

D. Calculate Grand Total

Add all row totals to reach a grand total.

SUMMARY	Cost (Weight: 0.15)	Reliability (Weight: 0.28)	Efficiency (Weight: 0.55)	Desirability (Weight: 0.02)	Row Total
New Chevrolet	0.12 x 0.15 = 0.02	0.24 x 0.28 = 0.07	0.40 x 0.55 = 0.22	0.65 x 0.02 = 0.01	0.32
Used Mercedes	0.33 x 0.15 = 0.05	0.37 x 0.28 = 0.10	0.10 x 0.55 = 0.06	0.22 x 0.02 = 0.004	0.22
Pre-Owned Ford	0.01 x 0.15 = 0.001	0.37 x 0.28 = 0.10	0.49 x 0.55 = 0.27	0.12 x 0.02 = 0.002	0.37
Uncle Henry's Car	0.54 x 0.15 = 0.08	0.01 x 0.28 = 0.002	0.01 x 0.55 = 0.01	0.01 x 0.02 = 0.0002	0.09
Grand Total					1.0

E. Calculate Relative Decimal Value

Divide each row total by the grand total, and enter this under "Relative Decimal Value."

SUMMARY	Cost (Weight: 0.15)	Reliability (Weight: 0.28)	Efficiency (Weight: 0.55)	Desirability (Weight: 0.02)	Row Total	Relative Decimal Value
New Chevrolet	0.12 x 0.15 = 0.02	0.24 x 0.28 = 0.07	0.40 x 0.55 = 0.22	0.65 x 0.02 = 0.01	0.32	0.32
Used Mercedes	0.33 x 0.15 = 0.05	0.37 x 0.28 = 0.10	0.10 x 0.55 = 0.06	0.22 x 0.02 = 0.004	0.22	0.22
Pre-Owned Ford	0.01 x 0.15 = 0.001	0.37 x 0.28 = 0.10	0.49 x 0.55 = 0.27	0.12 x 0.02 = 0.002	0.37	0.37
Uncle Henry's Car	0.54 x 0.15 = 0.08	0.01 x 0.28 = 0.002	0.01 x 0.55 = 0.01	0.01 x 0.02 = 0.0002	0.09	0.09
Grand Total					1.0	

6. Choose the Best Option Across all Criteria

Compare the **relative decimal values** to decide which option is **highest**—this is the best choice given options and criteria.

In our example, a Pre-Owned Ford seems to best meet our criteria for a car, because its relative decimal value is highest in our summary matrix.

SUMMARY	Cost (Weight: 0.15)	Reliability (Weight: 0.28)	Efficiency (Weight: 0.55)	Desirability (Weight: 0.02)	Row Total	Relative Decimal Value
New Chevrolet	0.12 x 0.15 = 0.02	0.24 x 0.28 = 0.07	0.40 x 0.55 = 0.22	0.65 x 0.02 = 0.01	0.32	0.32
Used Mercedes	0.33 x 0.15 = 0.05	0.37 x 0.28 = 0.10	0.10 x 0.55 = 0.06	0.22 x 0.02 = 0.004	0.22	0.22
Pre-Owned Ford	0.01 x 0.15 = 0.001	0.37 x 0.28 = 0.10	0.49 x 0.55 = 0.27	0.12 x 0.02 = 0.002	0.37	0.37
Uncle Henry's Car	0.54 x 0.15 = 0.08	0.01 x 0.28 = 0.002	0.01 x 0.55 = 0.01	0.01 x 0.02 = 0.0002	0.09	0.09
Grand Total					1.0	

Find sources, examples, and more information from MDH: www.health.state.mn.us/qi