

Popping a Project

Using a 1-3-9 Ranking System in Selecting a Project

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Abstract

Organizations are often faced with multiple projects from which to select, there being more projects being proposed than resources to do them. Several different evaluation techniques exist to select projects to pursue, with the *Ranked Scoring with Weights* method taking into account the relative impact of each project on the criteria chosen by the organization as important, as well as allowing the weighting of the criteria against each other – e.g., a Pugh Matrix. Traditional 1-2-3 rankings work, but often lead to close scores if not outright ties, with a small differentiation between the lowest and highest scores. A different numerical system, 1-3-9, is borrowed from a technique called *Quality Function Deployment*, tried, and evaluated. In the given example of four possible projects, the 1-2-3 system resulted in a tie between the two top project possibilities, with small differentiation between the lowest and highest projects. In contrast, the 1-3-9 scoring method “pops” one project clearly above the rest, and also shows the lower-rated projects being lower, more effectively removing them from consideration.

Introduction

In considering projects to take on, organizations typically have more potential projects being proposed than resources to pursue them. Thus, a sorting and evaluation of projects to pursue occurs in order to allocate finite resources – e.g., money, personnel time, facilities, and equipment – to projects that will benefit the organization the most. This is to answer the question, “which projects give the most bang for the buck”?

Both non-numerical and numerical evaluation processes exist. Non-numerical processes are not models per se, but qualitative justifications for projects. Such justifications can include projects being “sacred cows” or “pet projects” of senior management, clearly-necessary operational improvements where the organization is suffering from lost sales, reduced throughput, or other easily-assignable consequences requiring remediation. Another justification for a new project can result from observing the competition taking the initiative with a new and innovative product or service, requiring a new project on the part of the organization to counter this new competitive challenge.

Numerical models can include an examination of the potential financial benefits. These methods require estimations of the costs and gains from the project, and evaluations can include a simple time-to-payback method, examination of Net Present Value (NPV) of the outlays vs. returns, or an Internal Rate of Return (IRR) calculation to examine the return on investment. While these methods are very good and are often used, as stated before they require estimates of costs and returns up front. With estimates being exactly that, they are subject to uncertainty. They also can ignore non-monetary factors, and tend to be short-term focused given the time value of money.

Another method exists for project evaluation. This requires the development of a list of criteria for evaluation of each project, such as profitability, cost, time-to-completion, potential market size... the list is endless and each organization will have its own set of criteria. This paper will focus on scoring-based numerical methods for project evaluation, and will propose a modification to the method.

Current Scoring Methodologies

Assuming that a formal evaluation methodology is adopted to compare possible projects side-by-side in order to facilitate an “apples to apples” comparison, there are three numerical evaluation techniques. Each of these techniques assumes a list of criteria that are believed to apply and are important to the organization. Note that while the example shown in this paper was evaluated *in toto* by the author, the best and most robust results come from a team approach with a trained project manager (acting as facilitator), representatives of management, and persons who are likely to be involved in the projects. Thus the group dynamic of getting multiple viewpoints based on diverse experiences and backgrounds contributes to a better project selection process. The team approach also washes out individual biases, as multiple participants tend to dilute, and even counteract, any one person’s specific biases.

In this paper, there are four possible projects that were considered as a part of my class at Southern New Hampshire University, specifically *QSO-640-G2059 Project Management*:

1. Remodeling the kids’ rooms
2. Cleaning the garage to allow my wife to park the car inside
3. Cataloging and archiving my family’s genealogical materials
4. Organize Funding for Weddings for IDF “Lone Soldiers”¹

It should be noted that the emotional favorite was #4. The criteria used for evaluating these for projects against each other were:

CRITERIA
Profitability
Cost (\$ req'd)
Skills Required
Feasibility of Deadline
Necessity
Urgency
People Needed
Deadline
Spiritual Benefit
Helping Others
Prob. Of Success
Family Impact
Personal Satisfaction
Time Commitment
Learning Potential
Networking Opportunity

¹ IDF “Lone Soldiers” are young persons who have moved to Israel as a singular individual, not part of a family relocation; thus, as new residents of Israel on their own, they have little social support structure around them to assist in life events like weddings.

Attribute Scoring

The first method is a simple check-mark method. For each project, the question is asked: Does the criterion apply? For each "Applies" one point for the project is accrued, and the sums for each project compared. This can be used as a first-pass screen to weed out clearly non-viable projects when evaluating a long list of possible projects. Note that I did not use this approach in my evaluation.

Ranked Scoring

For each criterion, for each project, a score is given 0-1-2-3, with the ranking as follows:

<u>Score</u>	<u>Project's Impact on Criterion</u>
0	None
1	Low
2	Medium
3	High

Thus, as can be seen in the matrix below, no project had any profitability level at all. Others criteria were ranked 1, 2, or 3.

	Remodel Kids Rooms	Clean Garage for Wife Car Parking	Sort / Archive Genealogical Materials	Organize Funding for Weddings for IDF "Lone Soldiers"
CRITERIA				
Profitability	0	0	0	0
Cost (\$ req'd)	2	3	2	1
Skills Required	2	3	3	1
Feasibility of Deadline	2	1	2	3
Necessity	3	2	3	1
Urgency	1	3	2	2
# People Needed	3	3	3	1
Deadline	3	1	2	2
Spiritual Benefit	2	2	1	3
Helping Others	2	3	2	3
Prob. Of Success	2	2	2	2
Family Impact	2	1	3	1
Personal Satisfaction	2	1	3	3
Time Commitment	3	2	3	3
Learning Potential	2	1	2	3
Networking Opportunity	0	0	1	3
	31	28	34	32

The high scoring project for this system is the Genealogical project. However, note that all projects are within a couple of points of each other, and nothing truly stands out as a head-and-shoulders winner. The Garage project clearly shows up at the bottom of the list.

Ranked Scoring with Weights

A refinement can be introduced by weighting the different criteria. For example, an organization might rank "Profitability" over "Ease of Implementation", or "Time to Market" over "Disruptive Innovation". Not only will each organization have its own criteria but also its own weighting preferences for the criteria it chooses. This added dimension clearly is an improvement as it allows organizations to prioritize some criteria over others. Continuing with the example from above with an added "Weight" column, and multiplying the numbers from above, the following matrix and score total appears:

		Remodel Kids Rooms	Clean Garage for Wife Car Parking	Sort / Archive Genealogical Materials	Organize funding for Weddings for IDF "Lone Soldiers"
CRITERIA	Weight				
Profitability	1	0	0	0	0
Cost (\$ req'd)	2	4	6	4	2
Skills Required	2	4	6	6	2
Feasibility of Deadline	1	2	1	2	3
Necessity	2	6	4	6	2
Urgency	1	1	3	2	2
# People Needed	1	3	3	3	1
Deadline	2	6	2	4	4
Spiritual Benefit	3	6	6	3	9
Helping Others	2	4	6	4	6
Prob. Of Success	2	4	4	4	4
Family Impact	3	6	3	9	3
Personal Satisfaction	3	6	3	9	9
Time Commitment	1	3	2	3	3
Learning Potential	3	6	3	6	9
Networking Opportunity	3	0	0	3	9
		61	52	68	68

Note how this definitively repeats showing the Garage project as being lowest, the next lower one being the Kid Room project, but the two others, the Genealogy and the IDF projects, are now tied.

The 1-3-9 Method

There is an analytical technique called *Quality Function Deployment (QFD)*, which is used as a tool in many aspects of engineering to correlate desired features of a product or service with internal terms that are understood by the organization. Often this can highlight how customer needs and wants are misunderstood by an organization. An anecdote about the use of QFD is contained in Appendix A.

One of the aspects taught in the QFD course was to use a 1-3-9 system rather than a 1-2-3 system. The point behind using this scoring system was to “pop” highly-ranked factors more clearly, while lowering the scores of low-ranking factors. An added benefit discussed in the class was a reduced likelihood that factors and analyses thereof would result in a tie. Replacing the 0-1-2-3 correlation and 1-2-3 weighting in the matrices above with 0-1-3-9 and 1-3-9, respectively, and multiplying through shows this resulting score matrix:

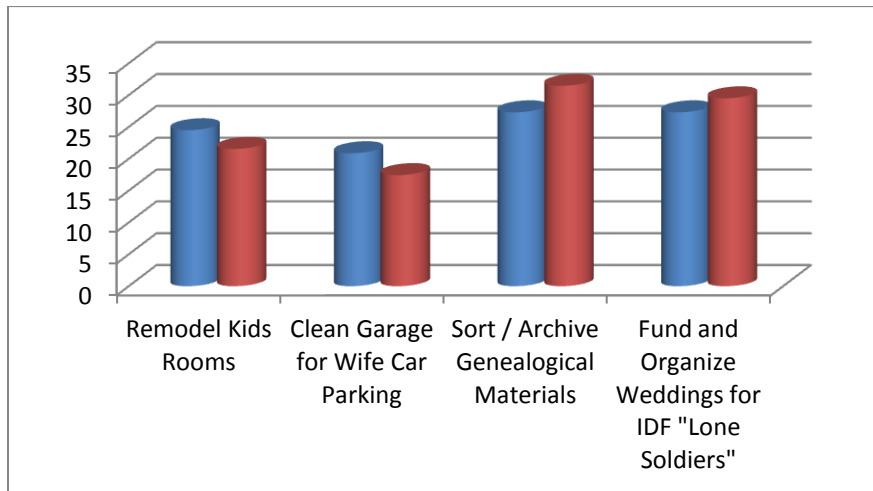
	Remodel Kids Rooms	Clean Garage for Wife Car Parking	Sort / Archive Genealogical Materials	Organize Funding for Weddings for IDF "Lone Soldiers"
CRITERIA				
Profitability	0	0	0	0
Cost (\$ req'd)	9	27	9	3
Skills Required	9	27	27	3
Feasibility of Deadline	3	1	3	9
Necessity	27	9	27	3
Urgency	1	9	3	3
# People Needed	9	9	9	1
Deadline	27	3	9	9
Spiritual Benefit	27	27	9	81
Helping Others	9	27	9	27
Prob. Of Success	9	9	9	9
Family Impact	27	9	81	9
Personal Satisfaction	27	9	81	81
Time Commitment	9	3	9	9
Learning Potential	27	9	27	27
Networking Opportunity	0	0	9	27
	220	178	321	301

Now we see the Genealogy project “popping” up much more clearly.

Another way to compare the two methods, 0-1-2-3 and 0-1-3-9, is to normalize the data between the two methods. Summing the scores for 0-1-2-3 yields 249; for 0-1-3-9 yields 1020. Normalizing the two sets of scores to those sums, respectively, yields – on a percentage of the total – the following table:

Remodel Kids Rooms	Clean Garage for Wife Car Parking	Sort / Archive Genealogical Materials	Organize Funding for Weddings for IDF "Lone Soldiers"
24	21	27	27
22	17	31	30

Graphically, these numbers are shown below (blue: 0-1-2-3, red: 0-1-3-9):



Results

As can be easily seen, the two less-impactful projects, Kids Room and Clean Garage, fall farther down as predicted. Additionally, there is a definite advantage to the Genealogy project as compared to the tie shown by the 1-2-3 method.

Conclusion

When evaluating one project against another in order to determine which project(s) should receive approval to proceed, a *Ranked Scoring with Weights* method allows for including the relative impact of each project on the criteria selected as important, with the criteria weighting permitting a prioritization of criteria one versus another. However, conventional 1-2-3 scoring can lead to ties, and very often projects can have very close scores. Using a 1-3-9 scoring system, borrowed from QFD, can “pop” projects to more clearly identify which projects to select while reducing the odds of an outright tie.

APPENDIX A

A short story from a QFD course, taken while the author worked at Ford Motor Company. The Ford Ranger pickup truck was losing sales to the Toyota competitor. Market surveys and focus groups showed that customers evaluating both trucks side-by-side said that they preferred the Toyota because it was “peppy”. This was baffling, as customers were then quizzed as to what was peppy. “Fast” was the answer.

Yet Ford’s competitive benchmarking showed that the Ford pickup dominated the Toyota one in 0-to-60 acceleration. Clearly there was a missing understanding of “fast” and “peppy”. More surveys and tests were done², revealing that the Toyota truck would accelerate instantaneously when the accelerator pedal was depressed. In contrast, the design of the Ford truck gas system meant there was a fraction of a second delay before the truck would start to move.

The learning point was emphasized: by understanding that the customer desire for “fast” and “peppy” was not just answered by 0-to-60 acceleration, but also by reaction time to depressing the accelerator, a better product could be designed by including a new criterion for the design: reaction time after pressing the accelerator pedal.

² Every car company buys a sampling of competitor products for performance evaluation/benchmarking and engineering teardown.