

# What a University Can Teach You about Choosing Capital Projects

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It's no simple task to make economic sense of which capital projects will help your organization compete with its peers (or at least allow it to catch up with them). The decision is complicated by the fact that only some projects are associated with easily projected cash inflows and outflows—for example, new product offerings and more-efficient equipment. For other projects, including those related to corporate support functions and information technology (IT) infrastructure, only the cash outflows may be estimable. These projects are difficult to evaluate using the traditional discounted cash flow (DCF) and payback models that most for-profit businesses use.

When the University of Vermont (UVM) realized it needed a way to prioritize its multiple potential building projects, it created a unique model that evaluates their impact on the University's mission, vision, and strategy. This article highlights how the University developed its model and illustrates how a focus on strategy and mission can help organizations like yours, whether for-profit or not-for-profit, determine the viability of strategic initiatives that don't easily fit in a traditional DCF format.

## Recognizing a Need for Standardization

For many not-for-profit and governmental organizations, neither DCF nor payback is an appropriate decision aid. For instance, a university may need a new building to replace an existing structure or to add more classroom space. The cost and associated cash outflows for this project are easy to predict. But no cash savings are anticipated, and it's difficult to trace tuition dollars to a specific building. For-profit corporations may face similar decisions when choosing between projects with comparable cash flow implications or when deciding to fund projects for which DCF analysis is inappropriate—corporate support activities, IT infrastructure, deferred maintenance, or voluntary emissions-reduction initiatives, among others.

Without clearly defined criteria, it's difficult for management to objectively decide which projects have priority. It's even tougher for board members to determine if they're committing scarce funds to value-added projects. This is exactly the problem the University of Vermont faced during the summer of 2007. UVM had a long list of capital projects worthy of support, but the Board of Trustees wasn't clear as to how the priorities were being assigned. As a result, the trustees asked the University's top administrators to develop a model that would provide greater transparency into the prioritization process and clearly explain how the rankings were determined.

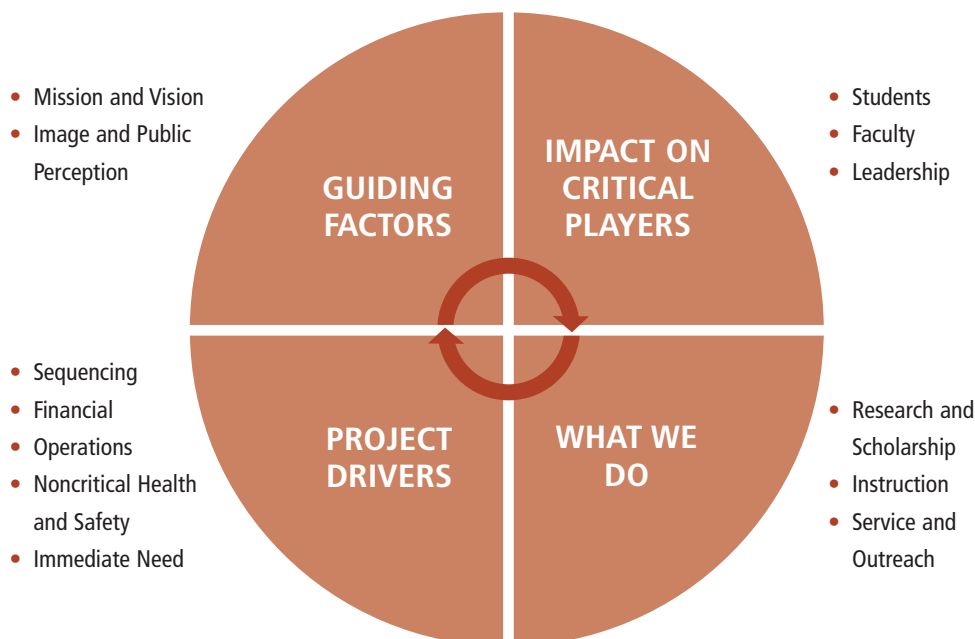
UVM's management team agreed that such a tool would be valuable and that developing it should be given high priority. But time was critical because the model was to be presented to the trustees at their September meeting, only three months away. As a result, the administrators decided that a customized solution should be developed in-house. A team composed of six MBA students—individuals with no vested interest in the prioritization outcome and who weren't members of the University's administration—was given five weeks to develop a model and its processes. They realized that the solution must:

1. Allow management to evaluate each capital project appropriately.
2. Easily convert the evaluations to comparative project rankings.
3. Provide transparency so that Board members could understand how the ratings and rankings were determined.
4. Include a standardized process for subsequent additions and changes to proposed capital projects.
5. Be easy to use and maintain so that updates could be made quickly and painlessly.

## Developing the Rating and Ranking Criteria

The six-member development team first investigated whether another organization or business entity had

Figure 1: A Summary of the Model's Prioritization Criteria



already developed an appropriate ranking system that directly addressed the University's needs. Library database searches turned up nothing. Nor did an examination of appropriate decision criteria used by competing schools and local governments. The fact that an off-the-shelf model didn't exist motivated the team to develop a project-ranking system unique to the University's needs.

Where to begin? The team decided that the University's mission and vision statements, as well as its published strategic goals, provided the clearest statement of the organization's objectives. The content of these documents, they agreed, should be used as the foundation of the prioritization model. If the model were designed appropriately, projects that best promoted UVM's mission, vision, and strategic goals should be ranked higher (and built sooner) than those that weren't as closely aligned to these objectives.

Next, to determine what various stakeholders considered critical to the model's success, the team interviewed key constituents, including the University's provost (its chief operating officer, or COO), CFO, trustees, individuals in the facilities management department, and faculty representatives. Questions were tailored to each group's perspective. The COO and CFO provided information about common industry practices and their influence on the current prioritization process. Two trustees explained that a clear and well-developed system was necessary to evaluate individual projects presented to the Board for funding approval. The facilities managers provided a greater understanding of the details included in the current evaluation process and the realities involved in planning a capital project. Faculty representatives offered perspectives related to their sensitivity to the long-term environmental impact of future projects.

Finally, the team members sought the insight of qualified external sources, including a former board chairman and board members of high-profile programs at two well-respected universities, a program director at a research university who had recently overseen the construction of a new campus, and the CEO of a hospital. All organizations face similar difficulties in appropriately allocating their scarce financial resources to possible construction projects.

With their data collection complete, the team members focused on creating a list of major concepts. During their many brainstorming sessions, they filled every inch of whiteboard space with topics, categories, and keywords. This first pass resulted in more than 50 ideas. The team relied on a series of iterative steps to eliminate overlap-

ping topics and to group the remaining ones into major themes, a process that continued until all relevant issues identified during the research stage were addressed. The resultant 13 scoring criteria included in the proposed model are shown in Figure 1.

The first criterion in the initial set of factors examines the guiding concepts identified in the University's vision and mission statements. Projects that score high on this criterion contribute to improving UVM's national competitive position and are consistent with its strategic goals of being environmentally responsible, promoting health, and improving academic quality. The other criterion in this set focuses on attributes that improve the University's image.

The second set of factors includes the impact of each project on critical players. Projects that promote the recruitment, retention, and development of students and faculty and those that have a positive impact on attracting and retaining senior leaders score high on these criteria.

The third set focuses on the primary activities of the University: research, instruction, and service and outreach. Factors that score the highest are those that significantly strengthen and focus support for applicable activities and/or programs.

The last five criteria have been categorized as project "drivers." Each of them—sequencing, financial, operations, noncritical health and safety, and immediate need—is related to something that impacts other aspects of the University. Examples include donor contributions, project sequencing based on construction timing, and safety factors, such as improving air quality within a building or installing emergency phones across campus.

## Assuring a Transparent Evaluation Process

After identifying and agreeing to the criteria, the team crafted a workable model that would not only provide the Board's desired level of transparency but would be enhanced by basing it on the key concepts of **accountability** and **understandability**.

A high level of accountability indicates that the model's inputs (criteria) justify why a particular project is ranked above or below other ones. To accomplish this goal, the team members decided that each input must be easily understood and applied. That meant the criteria had to be well-defined and include specific examples and subcriteria. Understandability eliminates vague processes or any process that creates a "black box" approach to developing the rankings.

The team realized that without transparency there is no

understanding; without understanding, no accountability; and that a lack of accountability ultimately would lead to a lack of trust. This chain became a driving concept for the team and heavily influenced all future decisions.

As mentioned earlier, the process also needed to be standardized to guarantee uniformity and consistency when producing a result—in this case a ranked list of capital projects. To achieve this, the team members agreed that all projects must be put through the same evaluation process based on a common set of well-defined criteria. The team concluded that the following goals must be met for any prioritization model to be effective:

1. Each project needs a “champion” who will usher it through the process, answer questions, and develop a business case for its existence.
2. The project must undergo a standard due-diligence process before being considered. This can include architectural assessments, cost estimates, project sequencing considerations, and a review of the organizational impact.
3. The project must be evaluated by the project champion and scored by the capital projects scoring team.
4. Scores must be entered into a computer program that can make the necessary calculations and produce a ranked list of projects.

In for-profit organizations, the financial analysis for a proposed project is generally prepared (or at least presented) by a project champion, usually a division or department head who believes in the value of the project and has been integrally involved in the cash flow estimates. In a university setting, however, the project champion may be a dean, a vice president, or even a committee charged by the Board of Trustees.

## Gathering, Summarizing, and Reporting the Inputs

The building projects proposed to UVM trustees are large, complex, and costly. Engineering and design consultants are often hired at a very early stage to determine the structure’s approximate size and components and to provide cost estimates. It’s only after these estimates are obtained that the project champion can complete the “Project Champion Form,” the first step in including the project in the prioritization model. This form first asks the champion to identify summary information that’s later used to evaluate the project. It includes the number of undergraduate and graduate students, as well as academic majors expected to benefit from the project; the potential amount of additional instruction and laboratory square feet it

would yield; grant dollars realized; and the estimated cost, time to build, and construction sequencing factors.

The project champion next answers questions that support each of the 13 criteria identified in Figure 1 on a scale of 0 to 3, where 0 has no impact, 1 has low impact, 2 has medium impact, and 3 has a high impact. In all, the project champion will assign numeric grades to roughly 50 questions. To improve the consistency of the evaluations across various project champions, the team of MBAs developed detailed definitions that explain each question and criterion and phrased all questions in a positive context to avoid decision bias. Figure 2 presents two of the 13 criteria and their related questions included on the Project Champion Form.

The team evaluated other scoring systems before adopting the 0-to-3 scale. Whereas a 0-or-1 scale didn’t provide enough input, a more sophisticated scoring system complicated the process unnecessarily. The team also considered more extensive 1-to-5 or 1-to-7 Likert scale models but eliminated them because of difficulties in consistently defining and assigning the various scores. The 0-to-3 scale is easy to define, clearly identifies areas that the project won’t impact (resulting in zeros), and allows the champion to differentiate among low-, medium-, and high-impact factors.

The completed form is then forwarded to the members of UVM’s “Capital Project Scoring Team,” the three officials charged with evaluating proposed capital projects: the COO, the CFO, and the chair of the Faculty Senate Committee on Physical and Financial Resources. Each individual completes a Project Scoring Form, which is essentially the same as the Project Champion Form. The difference is that the scoring form asks only for project scores at the criteria level. The supporting questions, however, are included on the form to remind the scoring team members of the factors that should drive a score for each criterion and to improve transparency and accountability in the scoring.

After each team member determines his or her scores, the model administrator enters the numbers (again ranging from 1 to 3) into a spreadsheet that includes a separate page for each team member. The criteria are included as column heads, and each project appears as a row. The model adds the 13 scores submitted for every project to determine the total score for each one. The scores of the team’s three members are then averaged and appear on a separate report that prioritizes projects from high to low. In the University’s case, the initial ratings resulted in the ranking of approximately 20 proposed capital projects.

**Figure 2: Examples of Criteria and Related Questions from the “Project Champion” Form**

<b>1.) University Vision/Mission</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
Does the project...				
a. Align with the University vision and mission?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Address a competitive threat?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Provide a competitive advantage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Promote diversity?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Additional information: _____				

<b>3.) Student</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
Does the project...				
a. Promote wellness?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Impact a large number of students?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Enhance learning opportunities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Enhance lifestyle/social environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Enhance ability to recruit/retain students?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Increase the marketability of graduates?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Sample individual and summary spreadsheets are shown in Figure 3.

The project team discussed whether or not the individual criteria should be weighted to represent their relative importance to the University: For instance, is it more vital for a project to address a competitive threat than to provide a competitive advantage? If nonequivalent weights were applied, it was reasoned, they would result in higher scores for those items considered to be more closely aligned with the University’s mission, vision, and strategy and would increase the overall priority for those particular projects. The team decided that if the criteria included in the model were appropriately identified and described in the first place, *all* of them would be focused equally on these objectives. As such, assigning different weights to different criteria wouldn’t be appropriate.

### Accepting and Using the Model

At the end of five weeks, the project team delivered its proposed model to the University’s administrators together with process recommendations and documentation, scoring forms, criteria definitions, and the spreadsheet. The quick turnaround allowed UVM officials

ample time to assess the model’s results prior to the September Board of Trustees meeting.

Initial feedback was overwhelmingly positive. Nevertheless, to determine if the model produced realistic average scores and ranks, the results were compared with those on the prioritization list that University officials had developed without benefit of the model. The rankings turned out to be remarkably similar, so the administrators decided that all criteria were equally focused on the university’s mission, vision, and strategic goals, and, as such, it wouldn’t be necessary to weight each criterion.

After further discussion of the model’s content and methods, the Board unanimously voted to accept the system *exactly* as presented. The trustees stipulated, however, that the Board must approve any future changes in the model’s criteria and that significant changes in a project’s circumstances (for example, it’s no longer needed or donor funding isn’t available) should result in the project and all others being rescored and reranked. To demonstrate their confidence in the model, the trustees approved the construction of the top-ranked project, a \$55 million plant-and-soil science building, at the same Board meeting.

Figure 3: Sample Inputs and Project Rankings

Sample Data Entry: Scoring Team Member A

Enter Scoring	VISION & MISSION	IMAGE & PUBLIC PERCEPTION	STUDENTS	FACULTY	LEADERSHIP	RESEARCH & SCHOLARSHIP	INSTRUCTION	SERVICE & OUTREACH	SEQUENCING	FINANCIAL	OPERATIONS	NONCRITICAL HEALTH & SAFETY	IMMEDIATE NEED	PERCENTAGE OF TOTAL POINTS ALLOWED
Project A	3	3	2	3	3	3	3	3	2	3	2	1	0	79.5
Project B	2	3	2	3	2	3	3	2	2	2	3	3	0	76.9
Project C	3	3	3	2	2	2	3	2	2	2	2	0	0	66.7
Project D	2	2	2	2	2	2	2	3	3	2	3	1	0	66.7
Project E	3	2	2	3	0	3	2	2	1	1	2	1	0	56.4
Project F	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Project G	3	3	3	3	3	3	2	2	1	3	2	3	0	79.5
Project H	2	2	1	2	1	1	1	1	1	1	2	0	0	38.5
Project I	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Project J	3	3	3	3	3	3	2	3	3	3	3	3	0	89.7
Project K	3	2	3	3	2	3	2	2	2	2	3	2	0	74.4
Project L	2	2	2	3	3	2	2	3	2	1	2	2	0	66.7
Project M	3	3	3	3	3	3	2	3	3	3	3	3	0	89.7
Project N	2	2	3	3	0	3	2	3	1	1	3	2	0	64.1
Project O	1	1	0	0	0	0	0	3	2	1	3	3	0	35.9
Project P	2	2	3	0	0	0	0	0	1	2	3	2	0	38.5
Project Q	1	2	1	0	0	1	1	1	2	2	3	1	0	38.5
Project R	2	2	2	3	1	1	2	1	2	1	3	3	0	59.0

Final Ranked Output: All Projects, All Scoring Team Members

PROJECT RANK	BUILDING/PROJECT NAME	PROJECT COST	PROJECT CATEGORY	TOTAL PROJECT SCORE
1	Project M	\$ 30,000,000	New Construction	92.31
1	Project J	\$ 5,000,000	Deferred Maintenance	92.31
3	Project G	\$ 10,000,000	Major Renovation	82.05
4	Project A	\$ 5,000,000	Major Renovation	80.34
5	Project K	\$ 1,500,000	New Construction	76.92
6	Project B	\$ 10,000,000	Major Renovation	74.36
7	Project L	\$ 10,000,000	New Construction	70.09
8	Project N	\$ 10,000,000	Major Renovation	67.52
9	Project D	\$ 5,000,000	Major Renovation	64.10
10	Project C	\$ 15,000,000	New Construction	63.25
11	Project E	\$ 1,000,000	Major Renovation	62.39
12	Project R	\$ 10,000,000	Major Renovation	59.83
13	Project Q	\$ 30,000,000	Utilities	41.88
14	Project P	\$ 40,000,000	Minor Renovations	39.32
15	Project H	\$ 5,000,000	Major Renovation	37.61
16	Project O	\$ 10,000,000	New Construction	35.04
17	Project I	\$ 2,000,000	New Construction	0.86
18	Project F	\$ 20,000,000	New Construction	0.00

News articles that appeared in *The Burlington (VT) Free Press* confirmed that the model was also referenced in subsequent Board meetings. In December 2007, one Board member said, “The trustees now have . . . a system for prioritizing capital projects . . . unavailable to previous boards.” In February 2008, it was noted that, following the completion of a feasibility study for a proposed new arena and athletic facilities, “The project also would be entered into the administration’s new ranking system that ranks all capital projects in order of priority.”

After the Board approved the model, other members of the UVM community commented that they could develop similar models to guide spending in their departments. Much like a balanced scorecard, the mission-based prioritization model could cascade downward throughout the organization.

## Maintaining the Model

When UVM’s team developed the capital projects prioritization model, one of its objectives was to identify a system that was easy to maintain. By extension, this meant that the model should be simple to update when new projects were identified, specific funding sources became available, or changes occurred in the University’s strategic objectives or among its key management personnel. The team decided that the forms should be produced in Microsoft Word, which would allow the topics or criteria to be changed quite easily (after the Board’s consent, of course). Likewise, they chose Microsoft Excel as the preferred computing and ranking tool because it’s simple to understand and available on every administrator’s computer.

## Replicating the Model

If your business or nonprofit is looking for appropriate tools to evaluate large investments that are inappropriate for DCF or to help management decide between equally compelling projects, you could implement a prioritization model similar to UVM’s. Start by relying on your organization’s mission, vision, and strategic goals to determine the value an investment will add to your capital base. If you haven’t revisited these objectives in recent years, first determine if the goals represent the current values and direction of the organization. In some cases, you may need to “operationalize” your mission to reflect the values in a way that’s relevant to the organization’s long-range planning and allow managers to appropriately define the criteria. Involving as many stakeholders as possible in tandem with incorporating your organization’s priorities will result in a list of criteria that most accu-

rately reflects the basis on which capital projects should be prioritized. In fact, the UVM team found that defining the criteria was the most time-consuming and critical part of the project.

Finally, if your organization is located near a university with a respected MBA program, consider leveraging the expertise available in the student body. The model described in this article was developed in just five weeks by a team of six MBA students mentored by an accounting professor. The MBA students approached the assignment with no hidden agendas and no standard consulting model. They were required to finish the project by the end of the semester, and they provided a high-quality, readily accepted product at no charge. Some universities with established management consulting programs may charge for their services, but the fees will probably be less than what you would pay a for-profit consulting group.

Regardless of the cost involved, establishing a standardized set of prioritization criteria that can be used to evaluate capital projects both large and small adds value for every organization. Consider making it part of your decision model. **SF**

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