

Bridging Financial Management and Project Management:

The Value of Project Portfolio Management

Tom Deaderick

Milligan College

Abstract

This paper illustrates the significant potential loss of net present value (NPV) from the project portfolio of a large organization, due to siloed, yet otherwise successful, implementation of both financial and project management functions. A project pipeline of 11 active projects and three prioritization methods was used to demonstrate value produced by bridging the gap between financial management and project management.

Keywords: project portfolio management, financial management, project management

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The Information Technology Infrastructure Library (ITIL) framework for management of Information Systems describes 26 key processes, including Financial Management, Project Management and Service Portfolio Management (Persse, 2010). These processes may be independently performed in accordance with industry-recognized best practice, and yet fail to deliver information effectively between processes, abandoning cash flow available from a more effective end-to-end project lifecycle management approach.

A sample of 11 active projects from a large (13,000 employee) organization demonstrates substantial lost cash flows for the portfolio over a period of less than four years. Additionally, the strategic importance of effective end-to-end project portfolio management is challenging to overstate, as explained by Kopmann, Kock, Killen & Gemunden (2017), "The Sum of project investments determines the organization's future in terms of shaping its structure, processes and products. Therefore, the organization's portfolio of projects represents the actual pursued strategy" (p. 560).

This paper describes these processes, as they relate to project portfolio management, and then provides analysis of the 11 projects using rankings by two financial metrics; net present value (NPV) and profitability index (PI), alongside a schedule-focused project management ranking.

Financial Management in a Project Portfolio Management Context

Specifically in the context of supporting project portfolio management, financial management has two primary roles; collecting the most relevant data and packaging the data into a "small package of information that facilitates effective decision making by top management"

(Hastie, 1974, p. 41). Hastie (1974) describes this process as one with the objective of "simplifying reality" (p. 41).

Approaches vary widely, with organizations often employing a mix of the most simplistic and expedient for smaller projects, with increasingly rigorous methods applied to more costly or involved projects.

The least complex method for project selection is simple budget constraint, with managers deciding to move forward on a project based on whether they have available budget remaining. According to a study of 80 companies by Bacon (1992), 68% of the companies used simple budget constraint to evaluate 64% of their projects.

Bacon (1992) found that the "payback" model, where a project's projected return on investment covers or exceeds its implementation costs was also widely used (p. 341).

Both of these models were more widely employed than the more rigorous, net present value analysis which was used by 49% of the companies (Bacon, 1992). The calculation of a project's NPV is highly structured without being entirely prescriptive in the selection or inclusion of various factors, including risk. Due (1989) found that "In many cases, however, the development and implementation risks are not taken into account in the cost/benefit analysis" (p. 15). This is supported an earlier study by Cardozo & Smith (1983).

Project Management in a Project Portfolio Management Context

Project management's primary role pertaining to portfolio management is the scheduling of selected projects. Schedules should deliver projects in the shortest time that may be achieved without overburdening resources.

Bell (2010) refers to this overburdening as:

Overburden (*muri* in Japanese) represents placing unrealistic workloads on people and equipment, which leads to stress, mistakes, rework, and poor morale. It is the job of management to remove overburden by making use of work design, training, standardized work, and demand management - to support a smooth flow of projects, services and information. (p. 34)

The Bridge: Project Portfolio Management

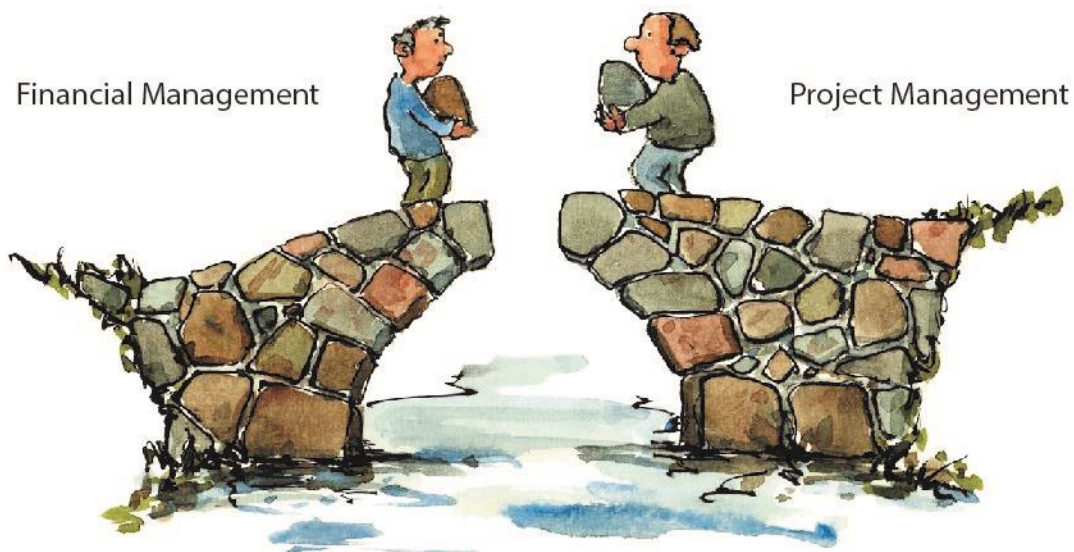


Figure 1: Building Bridges, (Ahlefeldt-Laurvig, 2009)

A project portfolio is the aggregate of selected projects. Portfolio management includes three phases; project selection, resource allocation and prioritization (Kopmann et al., 2017). Effective management of the portfolio, the aggregate of projects, is the measure of successful portfolio management, rather than the success of any single project (Project Management Institute, 2008).

Analysis Methodology

The 11 projects were provided by a healthcare organization. Project names (Table 1) were modified to redact specific references to organizations and software, and adjusted to clarify industry-specific terms. The organization provided five year cash flow estimates for each project. The estimated duration of the projects was provided in some cases and estimated from the author's experience in those projects where estimates were not included.

Table 1

Project References and Estimated Durations

Number	Reference	Project title	Months to Complete
1	P01	Integrate large cardiology organization	4
2	P03	Chronic Condition Clinic	6
3	P04	Consumer Scheduling Applications	2
4	P05	Enterprise CRM	8
5	P06	Population Health Registry	16
6	P07	Implement Ambulatory Partnership "A"	4
7	P08	Implement Ambulatory Partnership "B"	4
8	P09	Integrated PM, Ticket and Workflow System	12
9	P10	Security Camera Upgrade	2
10	P11	Ambulatory to Hospital billing connectivity	12
11	P12	Innovation Project: Patient Observation System	8

Table 1: Project References and Estimated Durations

Present values were calculated from the cash flows for each project (Table 2).

Table 2
Project Cash Flows & Present Values
Cost of Capital (*per Year*) 10.00%

Year	Initial Cost and Expected Cash Flows						
	0	1	2	3	4	5	6
P01: Cash Flows	(\$2,680,500.00)	\$90,000.00	\$90,000.00	\$90,000.00	\$90,000.00	\$90,000.00	\$90,000.00
P01: Present Values	(\$2,680,500.00)	\$81,818.18	\$74,380.17	\$67,618.33	\$61,471.21	\$55,882.92	\$50,802.65
P03: Cash Flows	(\$640,856.00)	\$2,306,788.00	\$2,370,075.00	\$2,374,715.00	\$2,379,493.00	\$2,384,416.00	\$2,368,560.00
P03: Present Values	(\$640,856.00)	\$2,097,080.00	\$1,958,739.67	\$1,784,158.53	\$1,625,225.74	\$1,480,534.74	\$1,336,990.37
P04: Cash Flows	(\$1,256,500.00)	\$240,000.00	\$240,000.00	\$240,000.00	\$240,000.00	\$240,000.00	\$240,000.00
P04: Present Values	(\$1,256,500.00)	\$218,181.82	\$198,347.11	\$180,315.55	\$163,923.23	\$149,021.12	\$135,473.74
P05: Cash Flows	(\$2,666,860.00)	(\$1,388,860.00)	(\$1,388,860.00)	(\$1,388,860.00)	(\$1,388,860.00)	(\$1,388,860.00)	(\$1,388,860.00)
P05: Present Values	(\$2,666,860.00)	(\$1,262,600.00)	(\$1,147,818.18)	(\$1,043,471.07)	(\$948,610.07)	(\$862,372.79)	(\$783,975.26)
P06: Cash Flows	(\$410,000.00)	(\$240,000.00)	(\$240,000.00)	(\$240,000.00)	(\$240,000.00)	(\$240,000.00)	(\$240,000.00)
P06: Present Values	(\$410,000.00)	(\$218,181.82)	(\$198,347.11)	(\$180,315.55)	(\$163,923.23)	(\$149,021.12)	(\$135,473.74)
P07: Cash Flows	(\$2,411,288.00)	(\$53,182.00)	(\$53,182.00)	\$26,137.00	\$26,137.00	\$26,137.00	\$26,137.00
P07: Present Values	(\$2,411,288.00)	(\$48,347.27)	(\$43,952.07)	\$19,637.11	\$17,851.92	\$16,229.02	\$14,753.66
P08: Cash Flows	(\$2,411,288.00)	(\$53,182.00)	(\$53,182.00)	\$26,137.00	\$26,137.00	\$26,137.00	\$26,137.00
P08: Present Values	(\$2,411,288.00)	(\$48,347.27)	(\$43,952.07)	\$19,637.11	\$17,851.92	\$16,229.02	\$14,753.66
P09: Cash Flows	(\$745,000.00)	\$377,000.00	\$377,000.00	\$377,000.00	\$377,000.00	\$377,000.00	\$377,000.00
P09: Present Values	(\$745,000.00)	\$342,727.27	\$311,570.25	\$283,245.68	\$257,496.07	\$234,087.34	\$212,806.67
P10: Cash Flows	(\$685,000.00)	(\$15,000.00)	(\$15,000.00)	(\$15,000.00)	(\$15,000.00)	(\$15,000.00)	(\$15,000.00)
P10: Present Values	(\$685,000.00)	(\$13,636.36)	(\$12,396.69)	(\$11,269.72)	(\$10,245.20)	(\$9,313.82)	(\$8,467.11)
P11: Cash Flows	(\$1,056,000.00)	\$2,835,789.00	\$2,835,789.00	\$2,835,789.00	\$2,835,789.00	\$2,835,789.00	\$2,835,789.00
P11: Present Values	(\$1,056,000.00)	\$2,577,990.00	\$2,343,627.27	\$2,130,570.25	\$1,936,882.04	\$1,760,801.86	\$1,600,728.96
P12: Cash Flows	(\$515,840.00)	\$149,189.00	\$149,189.00	\$149,189.00	\$149,189.00	\$149,189.00	\$149,189.00
P12: Present Values	(\$515,840.00)	\$135,626.36	\$123,296.69	\$112,087.90	\$101,898.09	\$92,634.63	\$84,213.30

Table 2: Project Cash Flows and Present Values

Net Present Value (NPV), Internal Rate of Return (IRR) and Profitability Index (PI) were calculated for each project (Table 3). Several projects create negative financial impact, but were deemed necessary for regulatory compliance, competitive factors or the upgrading of critical resources.

Table 3
Project Net Present Value (NPV) Internal Rate of Return (IRR) & Profitability Index (PI)

Project	NPV	IRR	PI
P01	(\$2,288,526.54)	-32.66%	0.15
P03	\$9,641,873.04	320.09%	11.94
P04	(\$211,237.43)	-5.42%	0.62
P05	(\$8,715,707.38)	-100.00%	-1.69
P06	(\$1,455,262.57)	-100.00%	-1.90
P07	(\$2,435,115.63)	-53.28%	-0.01
P08	(\$2,435,115.63)	-53.28%	-0.01
P09	\$896,933.28	32.00%	1.64
P10	(\$750,328.91)	100.00%	-0.07
P11	\$11,294,600.38	3.37%	8.71
P12	\$133,916.99	7.68%	0.94

Table 3: Project NPV, IRR & PI

A Microsoft Excel grid (Figure 2) representing months was developed to adjust start dates for the projects. For example, "Project X" is expected to start on the first month and require two months to complete, as represented by the blue boxes. The orange boxes represent operational status of the project during which the respective cash flows for each project begin. The cash flows for all completed projects were summed for the month, and a month-adjusted value of the Cost of Capital was used to calculate the NPV by month of the aggregate (the portfolio).

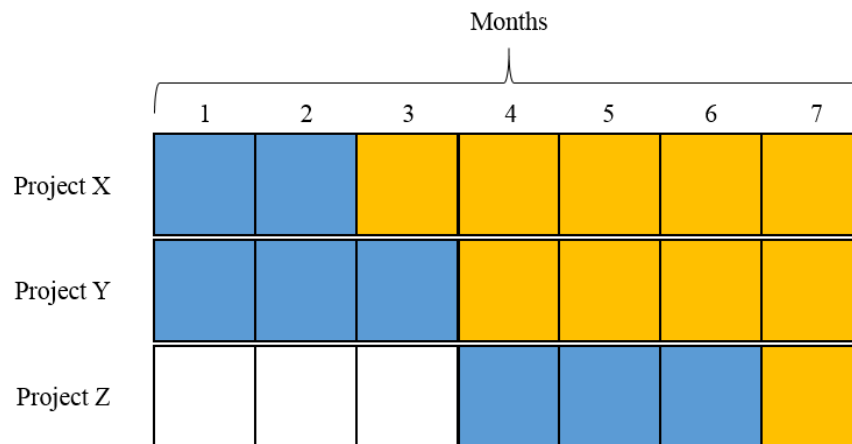


Figure 2: Project Schedule Representation

To simulate the project management requirement of avoiding resource overburden, the model only allowed two active projects during a month. Although this differs based upon each organization's available resources and efficiencies, all organizations have finite resources.

Analysis Findings

Scheduling projects with a goal to complete higher NPV projects soonest produced a substantial improvement over scheduling for typical project management objectives (throughput) or by the PI (which is a ratio rather than a true value measure) as shown in Table 4.

Table 4
Analysis Findings

Selection methodology	Months to complete portfolio	Portfolio NPV	Difference (\$)	Difference (%)
Portfolio NPV, NPV Selection	42	\$149,356,451.39	\$0.00	0.00%
Portfolio NPV, Project Management Selection	40	\$139,270,218.49	(\$10,086,232.89)	-7.24%
Portfolio NPV, PI Selection	44	\$141,051,594.63	(\$8,304,856.76)	-5.89%

Table 4: Analysis Findings

Conclusions

The organization's current practice employs sophisticated financial management analysis of projects and equally sophisticated project management oversight. This analysis indicates that implementation of integrated financial management and project management under the orchestration of project portfolio management could generate an additional 7.24% value, equivalent to over 10 million dollars, for the 11 projects. In terms of a parable, this is akin to a man placing 100 dollars in various bills and coins into a sack, shaking the sack for a brief time, and pouring out 107 dollars and change.

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