

Financial Benefits of Effective Project Management and Team Performance

White Paper

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Executive Overview

Globalization combines with highly-volatile markets to produce organizational demands like no other period in history. In this paper, we examine the effects of project team performance on organizational performance in such competitive marketplaces. While innovation has been at the forefront of addressing volatile markets, few studies examine the need for successful and rapid implementation of innovations into the market and on organizational performance.

The classical method for establishing the financial benefit of projects involves the use of Net Present Value (NPV) taught in many management-based academic classrooms. The method presented in these classrooms, however, tends to hide the effect of project delays from the analysis. In this paper, we develop a more rigorous approach to this classical method to examine this effect. We further examine additional effects of project delays on the organization.

Thesis

NPV analysis has been the standard for evaluating the value of projects for many years. This analysis accounts for the time-value-of-money which has the effect of reducing the value of profits seen in future years as the value of money reduces over time. With this analysis, the entire cost of the project is expensed in the first year (period zero) and profits resulting from the project are realized in future years.

We suggest that the classical analysis fails in two areas. First, by expensing the project budget in period zero, the analysis fails to account for the fact that money is actually expended in the future. Second, by assuming yearly cash flows, the analysis tends to hide the effect of project team performance on the NPV calculation.

In this paper, we examine these two effects on project value.

Analysis

Classical NPV Analysis

The classical NPV analysis for a project involves establishing a set of cash flows that result from the project. Consider a new product introduction project. For this example we make the following assumptions:

Assumptions:

1. We have a high-performance project team
2. Total project budget is \$500,000 (\$500k)
3. The project takes 3 quarters to complete
4. Product life cycle is 3 years

The classical NPV calculation accounts for the time-value-of-money, which recognizes that profits received in future periods have less value than profits received today. For this example, we assume a discount rate of 10%:

5. Discount rate (cost of capital) is 10% annually (2.5% per quarter)

Again, using a classical NPV calculation, we would establish cash flows for each year of the project and product life cycle, expending the entire project budget in period zero (0). However, for our more detailed analysis, we'll examine the cash flows for each quarter and examine the effects of expensing the money in the actual quarter expended. The resulting NPV table might appear as follows:

Table 1: Quarterly NPV - High-Performance Team

Quarter	Cash Flow	Discounted Cash Flow
0	(\$100)	(\$100)
1	(\$300)	(\$308)
2	(\$100)	(\$105)
3	\$25	\$23
4	\$40	\$36
5	\$60	\$53
6	\$90	\$78
7	\$100	\$84
8	\$100	\$82
9	\$95	\$76
10	\$75	\$59
11	\$60	\$46
12	\$50	\$37
13	\$40	\$29
14	\$20	\$14
15		
16		
NPV		\$ 104

Note the effect of negative cash flows beyond period zero (0). While the time-value-of-money reduces the positive cash flows beyond period zero, it has the opposite effect of increasing the negative cash flows in those periods. This is due to the effect that the

value of future money is less than the value of today’s money. Despite this effect, this project exhibits a positive NPV (\$104k) and so would be considered a valuable project.

Now let’s look at the effect of the project team’s performance. For this example, we’ll examine a typical project team and a low-performance project team. For this analysis, we add the following assumptions.

Assumptions (continued):

6. Project team cost is \$100K for the first and last quarter and \$200K for all intermediate quarters.
7. The project expends \$100K in quarter one (1) for general expenses (equipment, etc.)
8. A “typical” project team will take four (4) quarters to complete the project
9. A “low-performance” project team will take five (5) quarters to complete the project

Team performance has two pronounced effects on the NPV analysis. First, it pushes the benefits of the project out to further periods. It also increases the overall project cost as the project team must stay together for an extended period. Table 2 compares the results of the three types of project teams.

Table 2: NPV Effects of Team Performance

Quarter	High Performance Team		"Typical" Performance Team		Low Performance Team	
	Cash Flow	Discounted Cash Flow	Cash Flow	Discounted Cash Flow	Cash Flow	Discounted Cash Flow
0	(\$100)	(\$100)	(\$100)	(\$100)	(\$100)	(\$100)
1	(\$300)	(\$308)	(\$300)	(\$308)	(\$300)	(\$308)
2	(\$100)	(\$105)	(\$200)	(\$210)	(\$200)	(\$210)
3	\$25	\$23	(\$100)	(\$108)	(\$200)	(\$216)
4	\$40	\$36	\$25	\$23	(\$100)	(\$111)
5	\$60	\$53	\$40	\$35	\$25	\$22
6	\$90	\$78	\$60	\$52	\$40	\$34
7	\$100	\$84	\$90	\$76	\$60	\$50
8	\$100	\$82	\$100	\$82	\$90	\$74
9	\$95	\$76	\$100	\$80	\$100	\$80
10	\$75	\$59	\$95	\$74	\$100	\$78
11	\$60	\$46	\$75	\$57	\$95	\$72
12	\$50	\$37	\$60	\$45	\$75	\$56
13	\$40	\$29	\$50	\$36	\$60	\$44
14	\$20	\$14	\$40	\$28	\$50	\$35
15			\$20	\$14	\$40	\$28
16					\$20	\$13
NPV		\$ 104		\$ (124)		\$ (357)

Note that the NPV turns sharply negative even with typical team performance and substantially negative for the low-performance team.

Additional Effects of Project Team Performance

Previously, we examined purely financial effects on team performance. The analysis shows a pronounced effect on the overall value of a project as project team performance declines. However, additional effects take place in a typical organizational environment.

Market and Competition Demands of Current Projects

Let's examine a long-term project in a highly-volatile market. In such markets, competitors, or market demands change rapidly. Therefore, product requirements must change to maintain market position. Consider a manufacturer of computer chips in a highly-volatile market. New product development projects may take 18-36 months and even longer. During this time, market demands and competition may require changes to the new product even before it's released. The product marketing team now faces a conundrum: implement the new feature in the product currently under development or release the product and wait to release a new product with the new features.

If marketing decides to implement the changes to the current product, that will further delay its release reducing the NPV of the product. If marketing decides to release the current product without the new features, it will also reduce the NPV as the company will sell less product.

Reduced Product Life Cycle

The above examples showed the effect of project team performance on the NPV of a new development project. In those examples, we assumed a 3-year product life which did not change as a result of project delays. However, product life cycles are established by marketplace conditions as well as product introduction dates. Therefore, if we assume the product in these examples expires in quarter 14 rather than simply expanding in time, the NPV becomes more negative for the typical and low-performance project teams. In practice, the overall sales will likely reduce over all quarters of the project life cycle exhibiting a more pronounced effect.

Cascade Effect of Project Delays

Now, let's consider the effect of delays on other projects. Certainly, by keeping a project team involved in one project, they're unable to properly address additional projects. This not only affects the NPV of the current projects as examined above, but also produces a cascading effect on the NPV of future projects.

Conclusion

Globalization and the expansion of the global economy has introduced fierce competition and a constant demand for innovation. The pressure for new product introductions, manufacturing improvement projects, and the demand for innovation depends on organizational performance more than any other period in history. Successfully addressing these pressures demands not only effective project management, but the development of high-performance project teams. Such teams get products to market, reduce manufacturing costs, and address marketplace changes more rapidly improving the overall performance of the organization.