What Does Product Development Really Cost?

How internal rate of return for a new product improves substantially with a decrease in time to market.

Kirk Douglass
Over the past few decades, one fact about American business has become clear: Many companies have little idea as to what their true cost is to develop a new product. And because of this lack of understanding, they accept greatly reduced returns on their investment without even knowing it.

This lack of cost awareness shouldn’t come as a great surprise. Companies that develop new products are often not product developers. They perhaps develop ideas for new products, but the process of product development isn’t something they do every day. It isn’t a core competency, and they don’t have the systems and procedures to control or measure the efficiency and cost of their product development efforts.

To get at the real costs of product development, companies would benefit from looking at the situation from two perspectives:

- The amount of money actually spent to develop a product.
- The effect of time to market on the value of the new product investment and the cost of inefficiencies in the product development process.

First, though, it’s necessary to define “product development.” The development process has three phases:

- **Phase 1**: Concept generation and proof of concept, which includes generating product ideas, market analysis and establishing technical feasibility. Activities in this phase identify the technology to be used and provide marketing information, such as cost and pricing targets and estimated production volume.
- **Phase 2**: Definition, the technical and marketing efforts needed to generate a complete product specification.
- **Phase 3**: Implementation, including all design and engineering needed to get from product specification to first product off the manufacturing line.

In the following analysis, the phrase, “product development” refers only to Phases 2 and 3, definition and implementation.
Where All the Money Goes

Companies commonly underestimate out-of-pocket costs for new product development because their accounting systems aren’t set up to capture all the expenses associated with the effort. For example, personnel costs are usually a major part of overall new product development. But failure to track engineering hours against projects makes it impossible to know the total personnel cost.

And that’s only engineering. Most companies would be surprised how many employees get involved in a development project, including some people they don’t think about, such as:

- **Senior management.** How much time does senior management spend overseeing the project? How often do senior managers act as senior project manager to make sure things are getting done?
- **“Extra” engineers and technicians.** A couple of engineers might be assigned to the project, but how much time do they actually spend on it? How many other engineers and technicians are brought in to help?
- **Marketing.** If marketing gets involved in the development process, how much time is required?
- **Preparation for manufacturing.** How much employee time is needed to prepare documentation, processes and procedures?
- **Prototypes and pilot runs.** These critical components take employee time. The question is — how much time?

Then there are the out-of-pocket costs, and they can add up to significant money. For example:

- **Expendable materials.** Samples of competitors’ products and products with applicable technology, miscellaneous parts for lab work and prototype development, and the prototypes themselves.
- **Travel.** Checking out vendors, investigating the market.
- **Technical consultation.** Bringing in outside expertise.
- **Tooling.** Gearing up for production is often quite expensive.
- **Samples and pilot run.** How many samples are built? Are they used for destructive testing, life testing or sales rep samples? Or do they just sit on a shelf?
- **Rework.** Accommodating last-minute engineering changes for the pilot run.
- **Product certification.** If certification is required, what are the costs of labs and charges from certifying bodies?
Time Really Is Money

Companies that account for out-of-pocket and personnel costs are well ahead of most of their competitors, but other financial implications of development efforts remain. The most important factor is the one most often overlooked: time to market.

Time to market is the amount of time it takes to complete the product development project. It is by far the most important factor affecting the internal rate of return (“IRR”) on the product development investment.

By creating a financial model that determines IRR for a new product based on a number of variables including time to market, we were able to quantify the financial importance of time to market. The results were impressive.

- 12 month reduction in time to market increases IRR by approximately 92%.
- 9 month reduction in time to market increases IRR by approximately 63%.
- 6 month reduction in time to market increases IRR by approximately 39%.
- These relationships are, for the most part, unaffected by changes in other variables including product life or product profitability.

Chart 1 is a typical example of the relationship between time to market and IRR while varying product life.

Chart 1
Internal Rate of Return on New Product as a Function of Development Time for Varying Time Horizons
Based on 360% Annual Gross Profit to Investment Ratio
Chart 2 shows a typical example of the relationship between time to market and IRR for different levels of product profitability.

**Chart 2**

**Internal Rate of Return on New Product as a Function of Development Time for Varying Ratios of Annual Gross Profit to Investment**

Base on five years for development and sales

Chart 2 reveals some interesting data concerning the relationship between time to market and IRR for varying profit to cost ratios. For this analysis, profit to cost is measured as the annual gross profit generated by sales to the cost of development. Aside from the intuitively obvious fact that IRR falls as the ratio of profit to development falls:

- The underlying relationship between time to market and IRR is not affected by the profit to cost ratio.
- At a ratio of 800%, the IRR of a project done in 21 months is 34%. If the project could be finished in 12 months, the IRR would increase to 56%.
- At a ratio of just 120%, the IRR of a project done in 21 months is 11%. If it could be finished more efficiently in 12 months, the IRR would increase to 17.8%.
Chart 3
Internal Rate of Return on New Product as a Function of Development Time for Varying Investment Levels
Based on 5 years for development and sales and a 480% Annual Gross Profit to Investment Ratio

Chart 3 is an example of the relationship for different development costs. Chart 3 also shows that meeting the budget for the development is less important than meeting the time line.

For example, if a project takes 24 months and development cost is held to the base value, the IRR is 27%. If the same project is accomplished more efficiently and completed in 12 months but at a cost that is 40% more, then the IRR is 40%.

Running over budget by 40% but getting to market 12 months faster increased IRR by 48%.

A more realistic scenario would show a cost savings by getting things done faster. In this case, comparing a project done efficiently in 12 months on budget to a project done inefficiently in 24 months and costing 40% more shows that you get a 50% IRR rather than a 22% IRR — an increase in IRR of 126%!
Should You Outsource Efficiency?

A study of time to market cited in the September 2007 issue of IndustryWeek Magazine\(^1\) says that companies meet their product launch dates an average of 45% of the time, and fewer than one third meet target dates 60% of the time. These statistics are strong evidence showing why the financial benefit of bringing a new product to market is so often much smaller than it could be.

Since time to market is critical to maximizing the financial return on new product investment, there are questions each CEO must seriously consider:

- How can I substantially improve the efficiency of my company’s development effort?
- Do I want to invest in product development as a core competency?
- Should I outsource this activity to a business which custom product development is a core competency?

Summary

The IRR for a new product improves substantially with a decrease in time to market. Very little alters this fact; not the product life, nor the relationship between profitability and development cost, and even the variation of those costs. If a company’s business is not product development, it must consider the alternatives. One, invest in the necessary core competencies for product development, which is often costly and time consuming. Or two, outsource with a strategic partner, someone for whom product development is a core competency, thereby, maximizing your return!

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\(^1\) Jusko, J., Failure to launch, IndustryWeek, http://www.industryweek.com/ReadArticle.aspx?ArticleID=14782 (September 1, 2007)
About Kirk Douglass

Career Highlights

Mr. Douglass joined Applied Resources Inc., a subsidiary of Allegheny International, as Vice President with duties in product development and operations. Applied Resources was a contract product development and manufacturing firm. Kirk assisted in the establishment of Applied Resources’ office in Taiwan of which he later became General Manager. In 1987, the subsidiary was sold to PPG Biomedical Systems and Mr. Douglass was made General Manager of the Health and Fitness Group, which included the Company’s operations in the Far East.

In 1994, PPG divested itself of the Biomedical Systems Division. Kirk arranged a management buy-out of the Health and Fitness Group and formed Pivot International in July 1994. Since then he has been the President and CEO of Pivot International, Inc and a member of the Board of Directors.

With Kirk’s leadership and entrepreneurial skills, Pivot is recognized as a leading outsource for fast-track new product development and offshore manufacturing.

Kirk Douglass has over 35 years of experience in industry, and has spent the past 22 years in product development and offshore manufacturing.

Education

- Bachelor of Science - Electrical Engineering
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