

Theory in Action Postmortems at Microsoft

At Microsoft, almost all projects receive either a postmortem discussion or a written postmortem report to ensure that the company learns from each of its development experiences. These postmortems tend to be extremely candid and can be quite critical. As noted by one Microsoft manager, "The purpose of the document is to beat yourself up." Another Microsoft manager notes that part of the Microsoft culture is to be very self-critical and never be satisfied at getting things "halfway right." A team will spend three to six months putting together a postmortem document

that may number anywhere from less than 10 pages to more than 100. These postmortem reports describe the development activities and team, provide data on the product size (e.g., lines of code) and quality (e.g., number of bugs), and evaluate what worked well, what did not work well, and what the group should do to improve on the next project. These reports are then distributed to the team members and to senior executives throughout the organization.

Source: M. A. Cusumano and R. W. Selby, *Microsoft Secrets* (New York: Free Press, 1995).

new product development process may provide insight into which core competencies the firm should focus on, how projects should be selected, whether or not it should seek collaboration partners, how it should manage its development teams, and so on.

Both the metrics used by firms and the timing of their use vary substantially across firms. In a survey by Goldense and Gilmore, 45 percent of companies reported using periodic reviews at calendar periods (e.g., monthly or weekly) and at predetermined milestones (e.g., after product definition, after process design, post launch, etc.).³⁸ Microsoft, for example, uses postmortems to measure new product development performance, as described in the accompanying Theory in Action. Measures of the success of the new product development process can help management to:

- Identify which projects met their goals and why.
- Benchmark the organization's performance compared to that of competitors or to the organization's own prior performance.
- Improve resource allocation and employee compensation.
- Refine future innovation strategies.³⁹

Multiple measures are important because any measure used singly may not give a fair representation of the effectiveness of the firm's development process or its overall innovation performance. Also, the firm's development strategy, industry, and other environmental circumstances must be considered when formulating measures and interpreting results. For example, a firm whose capabilities or objectives favor development of breakthrough projects may experience long intervals between product introductions and receive a low score on measures such as cycle time or percent of sales earned on projects launched within the past five years, despite its success at its strategy. Conversely, a firm that rapidly produces new generations of products may receive a high score on such measures even if it finds its resources are overtaxed and its projects are overbudget. Additionally, the success rate of new product development can vary significantly by industry and project type. Some authors argue that even firms with excellent new product development processes should not expect to have a greater than 65 percent success rate for all new products launched.⁴⁰

New Product Development Process Metrics

Many firms use a number of methods to gauge the effectiveness and efficiency of the development process. These measures capture different dimensions of the firm's ability to successfully shepherd projects through the development process. To use such methods it is important to first define a finite period in which the measure is to be applied in order to get an accurate view of the company's current performance; this also makes it easier for the manager to calculate a response. The following questions can then be asked:

1. What was the average cycle time (time to market) for development projects? How did this cycle time vary for projects characterized as breakthrough, platform, or derivative?
2. What percentage of development projects undertaken within the past 5 years met all or most of the deadlines set for the project?
3. What percentage of development projects undertaken within the past 5 years stayed within budget?
4. What percentage of development projects undertaken within the past 5 years resulted in a completed product?

Overall Innovation Performance

Firms also use a variety of methods to assess their overall performance at innovation. These measures give an overall view of the bang for the buck the organization is achieving with its new product development processes. Such measures include:

1. What is the firm's return on innovation? (This measure assesses the ratio of the firm's total profits from new products to its total expenditures, including research and development costs, the costs of retooling and staffing production facilities, and initial commercialization and marketing costs.)
2. What percentage of projects achieve their sales goals?
3. What percentage of revenues are generated by products developed within the past five years?
4. What is the firm's ratio of successful projects to its total project portfolio?

Summary of Chapter

1. Successful new product development requires achieving three simultaneous objectives: maximizing fit with customer requirements, minimizing time to market, and controlling development costs.
2. Many firms have adopted parallel development processes to shorten the development cycle time and to increase coordination among functions such as R&D, marketing, and manufacturing.
3. Many firms have also begun using project champions to help ensure a project's momentum and improve its access to key resources. Use of champions also has its risks, however, including escalating commitment and unwillingness of others in the organization to challenge the project.
4. Involving customers in the development process can help a firm ensure that its new products match customer expectations. In particular, research indicates that involving lead users can help the firm understand what needs are most important

- to customers, helping the firm to identify its development priorities. Involving lead users in the development process can also be faster and cheaper than involving a random sample of customers in the development process.
5. Many firms use beta testing to get customer feedback, exploit external development of the product, and signal the market about the firm's upcoming products.
 6. Firms can also involve suppliers in the development process, helping to minimize the input cost of a new product design and improving the likelihood that inputs are of appropriate quality and arrive on time.
 7. Stage-gate processes offer a blueprint for guiding firms through the new product development process, providing a series of go/kill gates where the firm must decide if the project should be continued and how its activities should be prioritized.
 8. Quality function deployment can be used to improve the development team's understanding of the relationship between customer requirements and engineering attributes. It can also be a tool for improving communication between the various functions involved in the development process.
 9. Failure Modes and Effects Analysis can be used to help firms prioritize their development efforts in order to reduce the likelihood of failures that will have the greatest impact on the quality, reliability, and safety of a product or process.
 10. Design for manufacturing and CAD/CAM are additional tools development teams can use to reduce cycle time, improve product quality, and control development costs.
 11. Firms should use a variety of measures of their new product development effectiveness and overall innovation performance to identify opportunities for improving the new product development process and improving the allocation of resources.

Discussion Questions

1. What are some of the advantages and disadvantages of a parallel development process? What obstacles might a firm face in attempting to adopt a parallel process?
2. Consider a group project you have worked on at work or school. Did your group use mostly sequential or parallel processes?
3. Name some industries in which a parallel process would not be possible or effective.
4. What kinds of people make good project champions? How can a firm ensure that it gets the benefits of championing while minimizing the risks?
5. Is the stage-gate process consistent with suggestions that firms adopt parallel processes? What impact do you think using stage-gate processes would have on development cycle time and development costs?
6. What are the benefits and costs of involving customers and suppliers in the development process?

Suggested Further Reading

- Classics**
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- Markham, S., "Corporate championing and antagonism as forms of political behavior: An R&D perspective," *Organization Science* 11 (2000), pp. 429-47.
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Endnotes

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3. A. Dhebar, "Speeding High-Tech Producer, Meet Balking Consumer," *Sloan Management Review*, Winter 1996, pp. 37-49.
4. M. C. Crawford, "The Hidden Costs of Accelerated Product Development," *Journal of Product Innovation Management* 9, no. 3 (1992), pp. 188-200.
5. G. Pacheco-de-Almeida and P. Zemsky, "The Creation and Sustainability of Competitive Advantage: Resource Accumulation with Time Compression Diseconomies," mimeo, Stern School of Business, 2003.
6. E. J. Nijssen, A. R. Arbouw, and H. R. Commandeur, "Accelerating New Product Development: A Preliminary Empirical Test of a Hierarchy of Implementation," *Journal of Product Innovation Management* 12 (1995), pp. 99-104; R. W. Schmenner, "The Merits of Making Things Fast," *Sloan Management Review*, Fall 1988, pp. 11-17; A. Ali, R. Krapfel, and D. LaBahn, "Product Innovativeness and Entry Strategy: Impact on Cycle Time and Break-Even Time," *Journal of Product Innovation Management* 12 (1995), pp. 54-69; and R. Rothwell,