INJECTION Molding MAGAZINE

DOES R&D CONTRIBUTE TO PROFITS?

That's a good question, and one that is all too often not easy for a company to answer. According to Brad Goldense, president of Goldense Group Inc. (GGI), fewer than 40 percent of manufacturers know whether or not their company's R&D efforts add to the bottom line. This figure is the result of a recent survey conducted by GGI. "While global competition is forcing companies to reduce product life cycles and come up with more innovative products," he says, "most manufacturers have only a rudimentary idea of how to measure their new product development efforts."

Defining R&D as the effort to bring new products to market, it's clear that OEMs and custom molders engage in this activity on a regular basis. And as manufacturers increasingly turn to molders for product development, time spent at R&D is also rising. Measuring the effect of these efforts on profits can help manage product development and show which areas need improvement.

GGI is a consulting firm focused on process and technology integration between product strategy, R&D, design engineering, product development, manufacturing, and materials management. The group collected data on metrics used by, among others, OEMs and processors at R&D centers throughout North America, Europe, and Asia. Working in conjunction with The Management Roundtable of Lexington, MA, GGI surveyed 190 companies that produce medical, electronics, automotive, and industrial products.

All respondents used metrics of some form to track their R&D efforts, but survey results document a few areas of weakness:

- Minimal use of common measurement systems combined with an industry-wide inability to measure the effect new products have on company profits.
- A less-than-optimum responsibility for product development within the corporate hierarchy.
- A lack of centralization, automation, common usage, and standardization in the measurement tools used to capture results.

Survey Reveals Problems

"All companies prepare financial statements that show standardized measurements of corporate sales and profits," says Goldense. "But this practice does not extend to measuring R&D. Surprisingly, our survey found few standardized measurements to quantify the effect of product development."

For example, when survey respondents were asked which of 30 corporate metrics they use to measure product development efforts, their answers showed that no one metric was used by all companies. In fact, only five corporate metrics out of the total were used by more than 50 percent of respondents.

Although all responding companies perform some form of self-measurement, fewer than 40 percent measure new product development in relation to its contribution to the bottom line, the survey showed. Project-oriented metrics (which measure target product cost, time-to-market, and target price) were used by 80 percent, while project-oriented metrics that tie projects to profitability such as "time to profit" or "breakeven time" were not used by most companies (see Table 1).

"This suggests that product development and its metrics are presently decoupled from business strategy," he says. "Without the information that these metrics supply, it is impossible to get a complete picture of R&D performance as it relates to corporate strategy."

The survey also showed that the responsibility for product development metrics is not assigned optimally within the organization. "What is especially revealing in this response is who is not leading the charge in metrics reporting," Goldense explains. "It is not a dedicated engineering functional manager, or a quality function leader, or a cross-functional team leader, all of whom would be closest to the project." Rather, the largest percentage of respondents (21 percent) said that the vice president of product development or engineering is the owner of product development. The next largest percentage of respondents identified their general manager or business unit manager as the responsible party.

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Project Metrics: Survey Results

Commonly used metrics	Underused metrics
First-year sales volume	Time to profit
Target product price	Break-even time
Target product cost	Total product contribution
Project schedule/time to market	Lifetime sales volumes
Return on investment or payback	Three-year sales volume
Target gross margin percentage	Five-year sales volume
Development cost	Product requirement changes
Capital cost	Marketing promotion cost
	Product specification changes

Table 1. This table lists the types of measurements used by survey respondents. Commonly used metrics refer to those employed by at least 100 of the companies surveyed, while the underused category represents measurements used by less than 50 percent of the respondents.

Finally, nearly one-half of all respondents claimed that their product development metrics system consists of "a number of unlike systems." Furthermore, 54 percent use a manual system to capture and report metrics activities.

The Spread of Metrics

"In most companies, metrics are not tied together into a coherent system that is accessible to various levels within the organization," Goldense adds. "Metrics that are common across a multiproject environment must first be in place before automated collection of project metrics can occur at optimal cost."

The use of metrics for product development activities is growing in acceptance because metrics have led to many improvements in other areas of manufacturing. "Since the early 1990s, it has become evident that innovation in product development will be linked to innovations in measuring product development. Just look at the success of similar measurement approaches," says Goldense. "In the 1970s, industry used a measurement-based approach to develop just-in-time delivery. By the end of the 1980s, total quality control resulted in lower manufacturing costs and higher product quality."

GGI's survey identified several trends. Standardized cross-project metrics, in which companies are trying to track and structure development programs to function concurrently, are becoming more popular. On the other hand, most have not yet automated and centralized these measurement systems to help refine engineering programs and predict future performance. Current efforts are tactical and on the team level, rather than strategic and on the business level.

Also, most companies measure R&D expenditures as a percentage of sales to fulfill annual report requirements. However, this measurement doesn't offer insight into improving the R&D outcome. Instead, Goldense recommends measuring profit contribution from new products, concepts, and ideas prior to project approval, and quantifying relative resource capabilities such as staffing ratios.—*Michelle Maniscalco*

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