

CORNELL HR REVIEW

MOTIVATING EMPLOYEES IN R&D

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A new medicine can take as long as 15 years to develop and may cost a pharmaceutical research company \$1.3 billion or more from the laboratory to the pharmacy shelf.¹ The research environment is very different from most other jobs for a host of reasons: the high degree of uncertainty in the research process, the accessibility of individual contributions, and the unpredictable impact of any given final product.² As such, the practices employed by pharmaceutical companies to reward and recognize employees in research and development (R&D) functions must reflect these challenges.

This report will highlight extrinsic and intrinsic motivators thought to drive innovative behavior. This report will also present additional factors that managers should consider in the design and allocation of rewards and recognition schemes. Lastly, the research offers the best practices of other companies in related industries.

Drivers of Innovative Behavior

For decades researchers have acknowledged that both pecuniary and nonpecuniary incentives play a critical role in entrepreneurship and innovative activity.³ *Extrinsic motivation* and *intrinsic motivation*, two related constructs that were popularized by the work of self-determination theorists Deci and Ryan,⁴ remain commonly used in the fields of HRM and organizational behavior.⁵ The former construct—usually associated with pecuniary incentives—is defined as “motivation deriving from external pressures or constraints,” while the latter construct refers to nonpecuniary incentives or “the motivational state in which an individual is attracted to their work in and of itself.”⁶ In an attempt to identify the HRM practices that are most likely to drive innovative behavior among R&D professionals, both extrinsic and intrinsic motivators are considered below.

Extrinsic Motivators

Some researchers contend that extrinsic motivation is a more dominant component contributing to (or inhibiting) an innovative culture.⁷ As such, managers are wise to reward and recognize R&D professionals in external or tangible ways. For example, in a study of 1,544 researchers in multinational enterprises’ decentralized R&D laboratories in Greece, the three most influential motivators included salary, opportunity for hierarchical advancement, and bonuses.⁸ Interestingly, while variable pay compensation and internal promotions in R&D activities may be efficient ways to distribute extrinsic rewards, procedural justice and social comparisons make implementation of these practices difficult for HR managers.⁹

Intrinsic Motivators

Other studies find intrinsic motivators to be at least as beneficial as extrinsic motivators for innovation among scientists and engineers.¹⁰ According to data collected from more than 11,000 scientists and engineers, employees who were motivated by intellectual challenge spent more hours at work and produced more patent applications than those motivated by job security.¹¹ Managers are encouraged to both recruit R&D professionals who are intrinsically motivated and identify the rewards and recognition practices that serve to promote intrinsic motivation among existing employees. Unfortunately, intrinsic motivation cannot be administered directly; rather, intrinsic benefits must be provided “more indirectly in the provision of facilitating conditions, through, for example, task assignments (e.g., providing more challenging assignments).”¹² HRM practices should emphasize self-actualization, self-control, and self-regulation (e.g., through the use of flexible working arrangements, team-based job design, and formalized career development).¹³

Todd Dewett’s path to employee creativity suggests that intrinsic motivation mediates the relationship between individual differences and an employee’s willingness to take risks, which itself mediates the relationship between intrinsic motivation and employee creativity (see Figure 1). In a study of 165 R&D employee-supervisor pairs, Dewett found that two antecedents were ultimately linked to subjective measures of creative behavior. Creativity was encouraged when managers verbally recognized and showed general enthusiasm for idea generation. In addition, during the selection process, employees with high levels of self-efficacy were more likely to be creative. Interestingly, autonomy and openness to experience did not show the anticipated significant relationships.¹⁴

In sum, it appears that both intrinsic and extrinsic rewards are important to R&D workers.¹⁵ Designing an appropriate mix of extrinsic and intrinsic incentives may depend on the personalities and goals of individual R&D professionals.

Additional Considerations

Generational Differences

In addition to deciding the types of HRM motivators and incentives to be used, unlike any other industry or field, an organization with employees in research and development must consider other underlying factors. One of these factors is generational differences. Studies show that in order for an organization to build an effective retention plan and keep its employee base highly motivated, strategies and tactics need to be tailored to reflect generational differences.¹⁶ The majority of organizations are failing to even consider generational differences when designing total rewards programs, as shown in a 2008 WorldAtWork survey. It found that 80 percent of surveyed organizations did not have an organization-wide formal or informal strategy in place to evaluate the needs of each generation.¹⁷

Many experts have divided the world's current workforce into "generations" that share years of birth and significant life events. Researchers may differ slightly as to the precise years of birth that define the different generations, but most agree that four distinct groups of employees exist: Veterans/Traditionalists (1925-1944), Baby Boomers (1945-1964), Gen X (1965-1981), and Gen Y (1982-2000).¹⁸ Veterans/Traditionalists see their profession as a vocational calling and respect hierarchy. Their profession and self-identity are often viewed as one and the same thing.¹⁹ Baby Boomers are currently the largest generation in the workforce and tend to value job security and a stable work environment.²⁰ They expect their hard work to be rewarded.²¹ Gen X's are seen as individualists. Research shows this generation needs immediate, continuous feedback and is more likely to leave a job to seek greater challenge and higher salary.²² The final generation, Gen Y, succeeds with social technology and diversity.²³ Gen Y's are comfortable with change and value skill development and the challenge of new opportunities.²⁴

Cultural Differences

Another factor an organization must consider when deciding how best to motivate its employee base is culture. The concept of generational difference is universal, but individual cultures determine how those generations are specifically defined. The U.S.-centric generational model, for example, has little meaning in China. Chinese experts have also distinguished four generational groupings, but in a different context: post-'50, post-'60, post-'70, and post-'80 generations.²⁵ It becomes extremely critical to consider local specifics when creating rewards and recognition schemes for a worldwide workforce. Managerial decisions to motivate must consider national culture before making decisions based on experiences from other cultures. Many experts believe that local specifics can be the difference between successful motivation and failure.²⁶

Best Practices

Two companies that have been recognized externally for sponsoring practices that motivate employees in R&D are **Genencor International**, a diversified biotechnology company headquartered in Palo Alto, California, and **Genentech**, a San Francisco-based biotechnology company. The former utilizes a peer recognition program that allows employees to nominate coworkers for acknowledgement with gift cards; Friday morning R&D seminars for scientists to share their work with colleagues; a bronze plaque on display for every published journal article; assistance with continuing education and professional development; and a myriad of social activities to foster a sense of teamwork. Genencor's vice president of R&D operations noted, "People are allowed to work in different areas or move from project to project as long as their primary goals are met. It's an open and entrepreneurial environment that lets scientists flourish." The company's eight percent turnover rate, compared to an industry standard of 20 percent, may be one indicator of its success.²⁷ It was furthermore named the Best Place to Work in America for 2005 by SHRM.

Genentech established a reward and recognition program, GenenCheck, through which any employee—usually below director level—is eligible to receive an after-tax check ranging from \$1,000 to \$2,500 for key contributions made beyond his or her regular responsibilities. In addition, the *gLife* program is designed to help employees understand how salaries, bonuses, employee stock plans, and employee stock options are administered. Genentech is also committed to nurturing employee growth both within and across departments, as demonstrated by its rising promotion and internal transfer rates. In fact, in 2005 internal transfers surpassed employee referrals as the number one way to fill open positions.²⁸

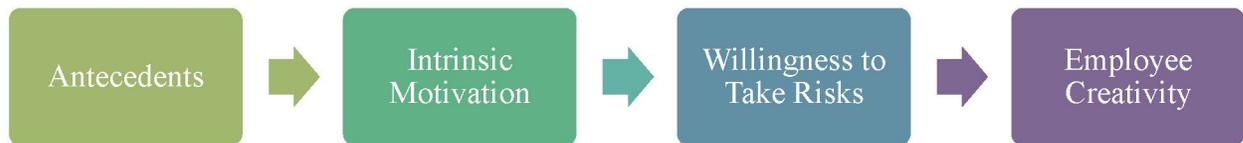
Conclusion

Long-term projects are commonplace in pharmaceutical companies, and HRM practices should be molded to meet the different needs of employees in the research and development (R&D) function. Drivers of innovative behavior will differ because of the unique nature of the research environment. Both extrinsic and intrinsic incentives must be considered, and research has demonstrated that generational and cultural differences play a role in the distribution of incentives. A few best practices of similar companies have been identified and illustrated. Given the competitive nature of the industry, organizations should continue their exploration of appropriate methods to reward and recognize their workforces. ✎

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Figure 1. Todd Dewett's Path to Employee Creativity



Source: Dewett, T. (2007). Linking intrinsic motivation, risk taking, and employee creativity in an R&D environment. *R&D Management*, 37(3), 197-208.

¹ 2010 Pharmaceutical Industry Profile. (2010). *The Pharmaceutical Research and Manufacturers of America*. Retrieved from http://www.phrma.org/sites/phrma.org/files/attachments/Profile_2010_FINAL.pdf

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⁴ Dewett, T. (2007). Linking intrinsic motivation, risk taking, and employee creativity in an R&D environment. *R&D Management*, 37(3), 197-208.

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⁶ Ibid. 4

⁷ Kubinski, R. (2002). Getting started... Building a culture of innovation. *Executive Action*, 40, 1-8.

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⁹ Ibid. 5

¹⁰ Ibid. 3

¹¹ Mangelsdorf, M. E. (2009). Motivated to innovate: R&D employees who find intellectual challenge motivating tend to be more productive. *MIT Sloan Management Review*, 50(3), 24.

¹² Ibid. 3

¹³ Minbaeva, D. (2008). HRM practices affecting extrinsic and intrinsic motivation of knowledge receivers and their effect on intra-MNC knowledge transfer. *International Business Review*, 17(6), 703-713.

¹⁴ Ibid. 4

¹⁵ Jordan, G. B. (2005). What matters to R&D workers. *Research Technology Management*, 48(3), 23-32.

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