Gartner

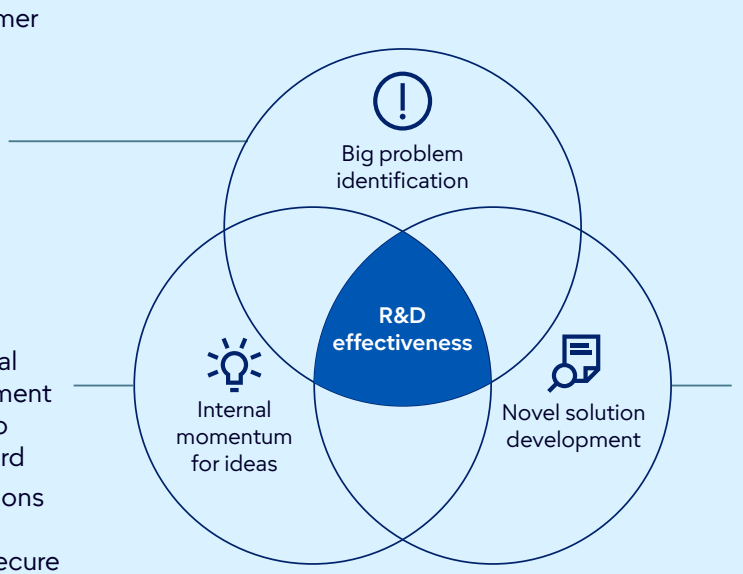
How to Become a Highly Effective R&D Leader

Measuring the effectiveness of an R&D leader enabling transformational innovation is challenging. A highly effective R&D leader is able to successfully identify impactful big problems, create novel solutions for them and build internal momentum for those solutions. This effectiveness is increasingly tied to the leader's ability to strategically integrate AI into workflows, data strategies and talent models.

Over the course of the past decade, Gartner has developed a measure of R&D leader effectiveness that encompasses three discrete but interconnected facets of an effective R&D leader from the perspective of driving innovation forward (see Figure 1). This definition of the characteristics of an effective R&D leader has been validated through a series of 35 interviews with R&D leaders and is now increasingly viewed through the lens of AI integration. This report outlines key actions R&D leaders can take to increase their effectiveness regarding transformational innovation and also drive significant impact for their organizations.

Figure 1: R&D effectiveness defined

Index of innovation potential



Source: Gartner

Big problem identification

Achieving transformational innovation outcomes begins by identifying the big problem to be solved — a customer problem that, if solved, would have a large impact on the customer and hence a high impact on the organization. An effective R&D leader is adept at understanding articulated and unarticulated customer needs and prioritizing the most impactful ones to be solved. On rare occasions, an R&D leader might first develop a technology or innovation and then search for a challenge it solves.

One method often employed by effective R&D leaders to identify big problems is to study key trends driving changes in technology, industry and customers. R&D leaders can use the technological, political, economic, social/cultural, trust/ethics, regulatory/legal, environmental (TPESTRE) framework for a range of trends that might be creating/illuminating challenges that will become critical to solve for issues over the coming years (see Figure 2). The technological aspect of this framework is even more critically shaped by AI, which enables leaders to identify emerging challenges and opportunities more rapidly.

Figure 2: A tapestry (TPESTRE) of trends

Technological	Evolution, impact and disruption of technology change
Political	Political attitudes, institutions and legislation shifting the political environment
Economic	Factors in the economic environment locally and globally that influence businesses and governments
Social/Cultural	Attitudes, behaviors and lifestyles of individuals and groups in a society
Trust/Ethics	Ethical expectations, behaviors, duties and biases of people and companies toward one another and society
Regulatory/ Legal	Changes in laws and governmental policies and regulations to reward or punish a particular behavior
Environmental	Technical, political, economic, cultural, ethical and legal changes supporting environmental protection and sustainability

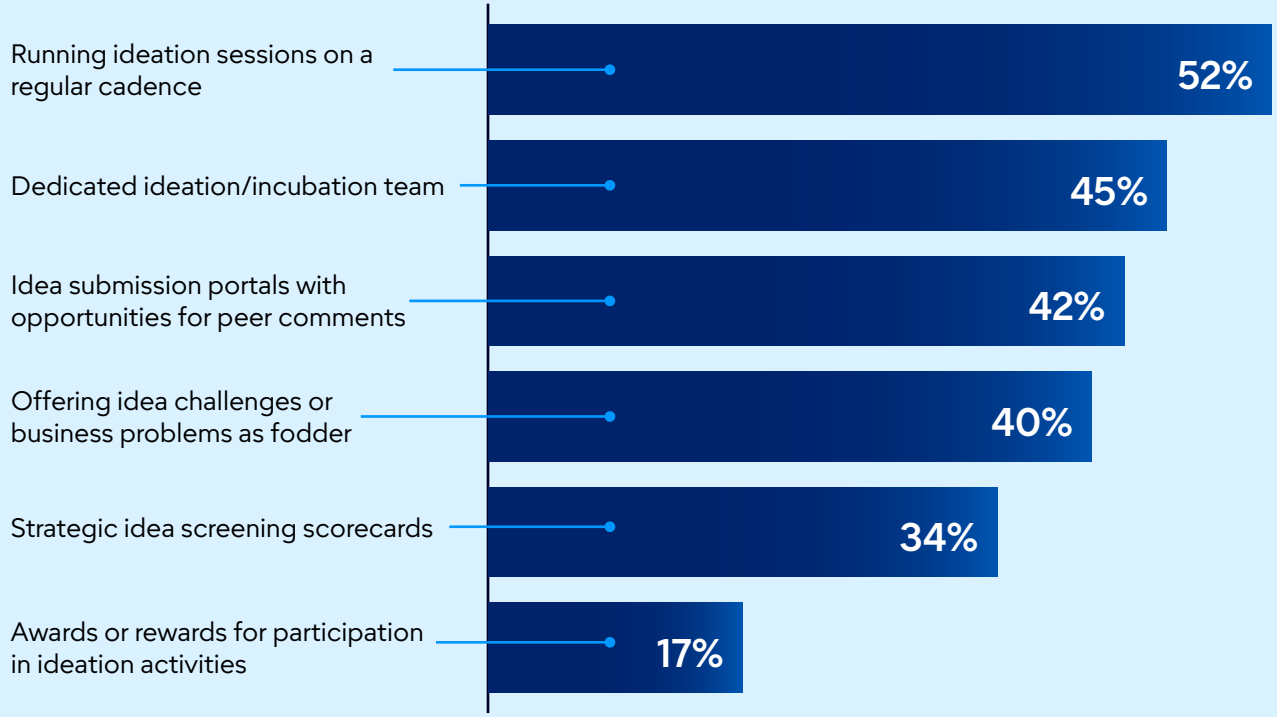
Source: Gartner

Novel solution development

Once a big problem has been identified, the effective R&D leader needs to pursue a novel solution to that big problem. A novel solution creates a competitive and economic advantage for the organization, while it is easy for customers to use. Ideally, the novel solution will have a large marketplace impact and be a differentiated offering in the marketplace — it will truly be perceived as innovative.

Rarely, if ever, are solutions developed by a single R&D leader in solitude. Creating novel solutions is a team sport requiring the use of a range of activities (see Figure 3). The effective R&D leader mines the trends (especially technology trends) identified during problem identification to test and refine solutions using a wide set of techniques to fill the pipeline with high-potential ideas. Increasingly, R&D leaders are experimenting with using generative AI to enhance ideation activities, design augmentation and simulation acceleration. This transition also involves scientists and engineers shifting roles from primary creators to orchestrators and validators of AI-driven hypotheses, fundamentally changing what it means to have “expertise.”

Figure 3: Sources for novel solutions



n = 88 Gartner R&D clients
Q: Which of the following techniques have you used to foster a consistently filled pipeline of high-potential ideas? (Select all)
Source: Gartner

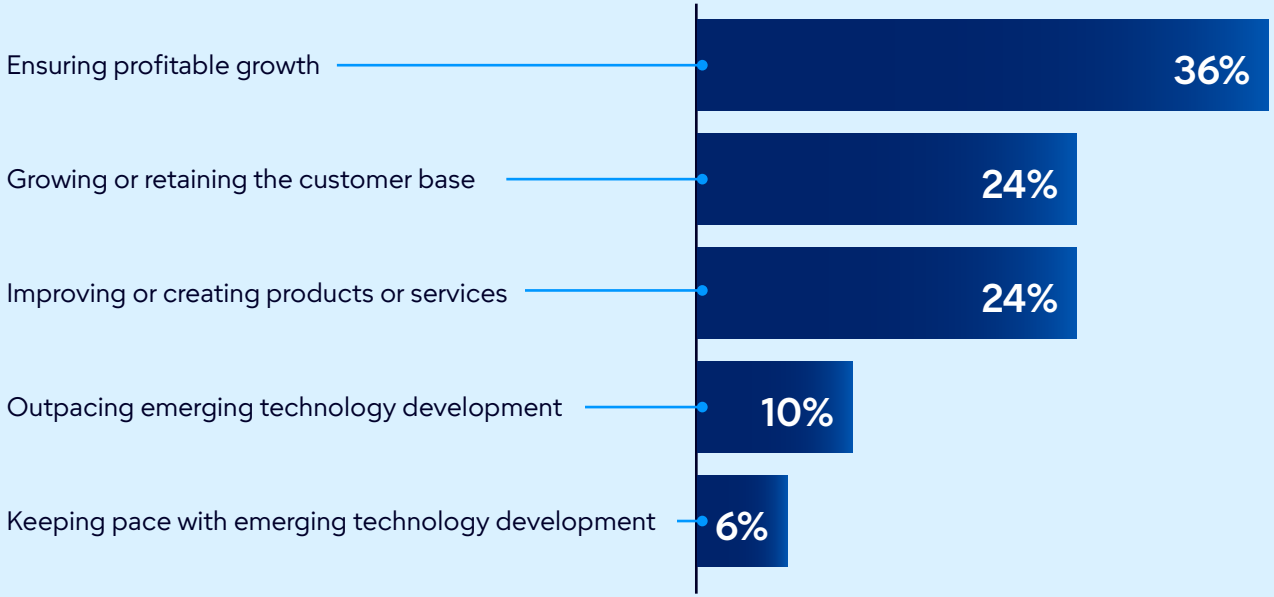
Internal momentum for ideas

R&D is a team sport requiring inputs and assistance from a variety of internal stakeholders and their teams. During problem identification and solution development, R&D collaborates with and, on occasion, needs to obtain approval from marketing, IT, HR, manufacturing, supply chain and finance. Stakeholder commitment can be the difference between success and failure. The effective R&D leader develops internal momentum for transformational ideas as they move forward in the development process. They understand the drivers of why the organization is investing in transformational innovation in the first place and then craft narratives on how and why the ideas under development advance toward those innovation investment objectives (see Figure 4).

Unfortunately, this is the element where success or failure often lies. In recent Gartner insights, more than 75% of R&D leaders reported that over 50% of innovation ideas and technologies are not adopted by the business upon handoff. In other words, over half the time, the R&D is not able to generate internal momentum for the idea to move it, once completed, into the marketplace. Even if a big problem is identified and a novel solution has been created, generating internal momentum is vital for the solution (and hence the R&D leader) to impact customers and their challenges and gain benefit from the efforts.

Figure 4: The most important drivers of innovation investment

Drivers for company investment in R&D



n = 80 Gartner R&D clients
Q: What are the most important drivers for your company's investment in innovation?
Source: Gartner

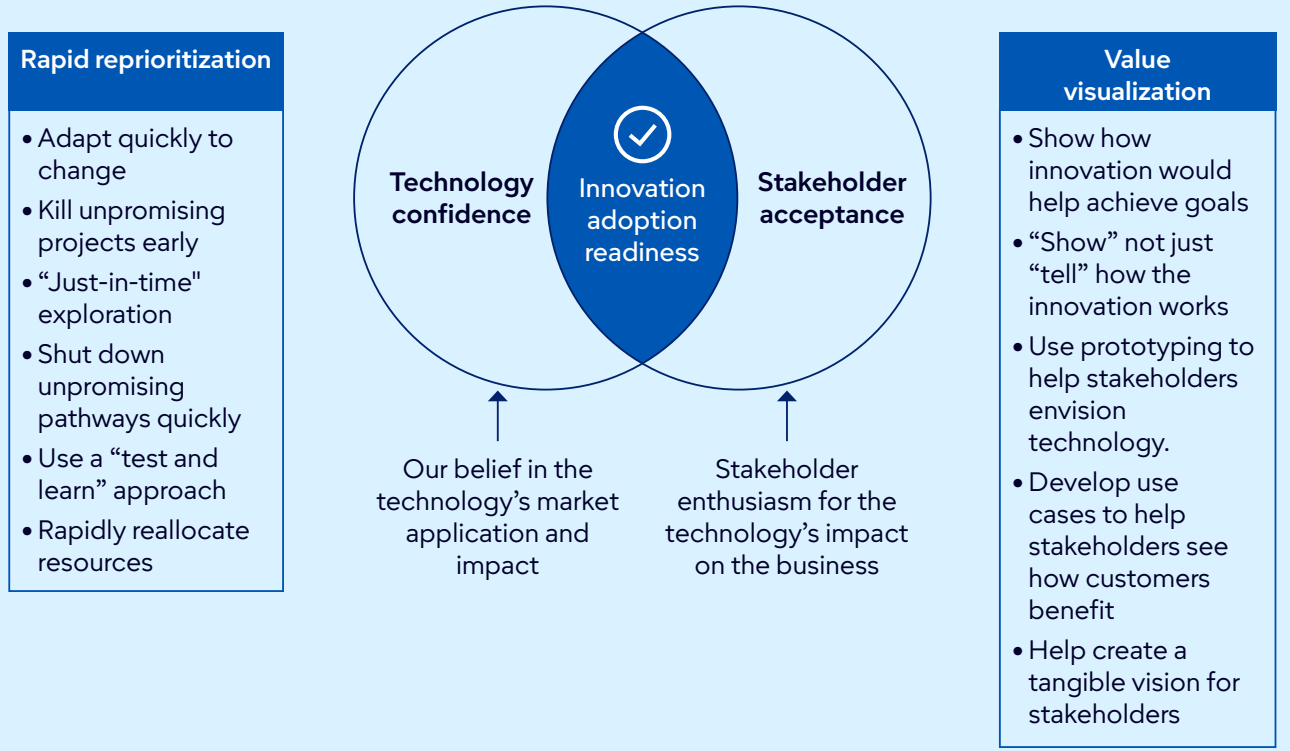
Internal momentum for ideas (cont.

There are two critical sets of drivers to increase innovation adoption and help generate internal momentum for ideas — rapid reprioritization and value visualization (see Figure 5). The effective R&D leaders understand and enable both to drive ideas forward.

By prioritizing and reprioritizing the most impactful ideas and stopping work on those less promising, the R&D leader is able to increase the overall confidence that the most novel solutions are being deployed to contend with the biggest problems. Along the development journey, effective R&D leaders don't just tell but show the novel solution's impact on the big problem by helping stakeholders visualize the value of what is under development, increasing their enthusiasm to adopt the solution.

Figure 5: Drivers to increase adoption readiness

Key components of successful innovation adoption, illustrative



Source: Gartner

Summary of recommended actions

In order to maximize their effectiveness, R&D leaders must:

Identify big problems that, if solved, would have a material impact on the organization, customers and the marketplace overall, using proven tools, such as an AI-enhanced megatrends analysis.

Create novel solutions for those big problems that are considered truly innovative and would have a disruptive impact, as measured by a disruption index.

Generate internal momentum for the solutions by rapidly reprioritizing the most impactful solutions and helping stakeholders visualize the value of the innovation in order to attain stakeholder support.

Actionable, objective insights

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