

APPLYING IT INNOVATION

An empirical model of key trends and business drivers

Keith Beggs

Intel Corporation

Abstract: To take root and proliferate in today's environment, innovation must serve a purpose. Although the various technologies behind IT innovation are incredibly diverse, the rationale for their adoption converge around six empirically derived themes. Each theme, or motive, is significant, valid and described with real-world examples. Two metrics characterize the extent to which the various motives are used to justify investments in innovative IT approaches and infer other trends. Instructions on ways others can further apply the business driver investment model are included in order to enable IT stakeholders to brainstorm new or underutilized approaches and better leverage each of the six business drivers of IT innovation adoption for their competitive advantage.

Key words: Innovation business drivers, empirical study, rationale for IT innovation investment

1. INTRODUCTION

To take root and proliferate in today's environment, innovation must serve a purpose. In today's tough economic times, deployment of innovative IT solutions and capabilities does not occur in a vacuum or for its own sake. Innovation is applied to provide distinctive new capabilities that in turn provide some form of competitive advantage or benefit. While innovation occurs through a myriad of technologies, methods and approaches, the *application* of IT innovation can be characterized along six key themes or business drivers. This paper will define these themes in a new analytical model, examine real-world application of them, and provide a conceptual framework for others to examine their discretionary IT investments and brainstorm new possibilities.

2. THE BUSINESS DRIVER INVESTMENT MODEL

The business driver model (Figure 1) simplifies and categorizes the key business drivers behind adoption of IT innovation. Businesses use multiple paths to increase their adaptability and competitive advantage. The model can be applied broadly because it was derived empirically from real world IT consulting experience and analysis of over 600 pages of content from Fortune 500 IT consultants, product developers and practitioners.

Recent application of IT innovation occurs along six major themes or types of rationale. Three of these are more offensive or externally focused in nature. They focus on maximizing revenue, net income and competitive advantage through:

- New sales channels, methods and globalization efforts
- Deployment of new products and capabilities
- Positively differentiating existing products or services.

The benefits associated with these types of investment are typically visible above the gross income line on the balance sheet. Consequently, these investment motives are shown above the black line in the model.

Conversely, CIOs and stakeholders also strategically invest in IT to optimize internal operations and minimize expenses. These benefits are visible below the gross income line in the balance sheet. Hence, these three business drivers are displayed below the black line in the diagram:

- Cost and expense reduction
- Automation, productivity, and process redesign
- Strategic decision making and risk reduction assets.

To varying degrees in different types of industries, such as technology services and semiconductors, the themes on the left side of the diagram (increased sales, cost reduction) tend to have more quantifiable benefits, while the motives on the right (product differentiation, branding, or information for strategic decision making) tend to be more qualitative and harder to quantify.

The arrows in the diagram conceptually connect what is being innovated, IT innovations, with the six major types of rationale used to justify their adoption or use, the sides of the hexagon. They also demonstrate the relative importance and frequency of these investment motives using two metrics. White arrows describe how frequently this rationale was used to recommend adoption of IT innovations in a sample of web-based content across Fortune 500 IT consultants and practitioners (such as Accenture, IBM Global Services, Intel, and EDS). Black arrows correspond to the amount of actual discretionary investment observed within another sample of IT deployment initiatives. The length of the arrows represents relative importance of the driver and the percentage that rationale was cited or applied. Longer arrows

are the predominate or most widely observed rationale. Together, these metrics provide some insight into the relative frequency and extent various rationale are used in IT decision making.

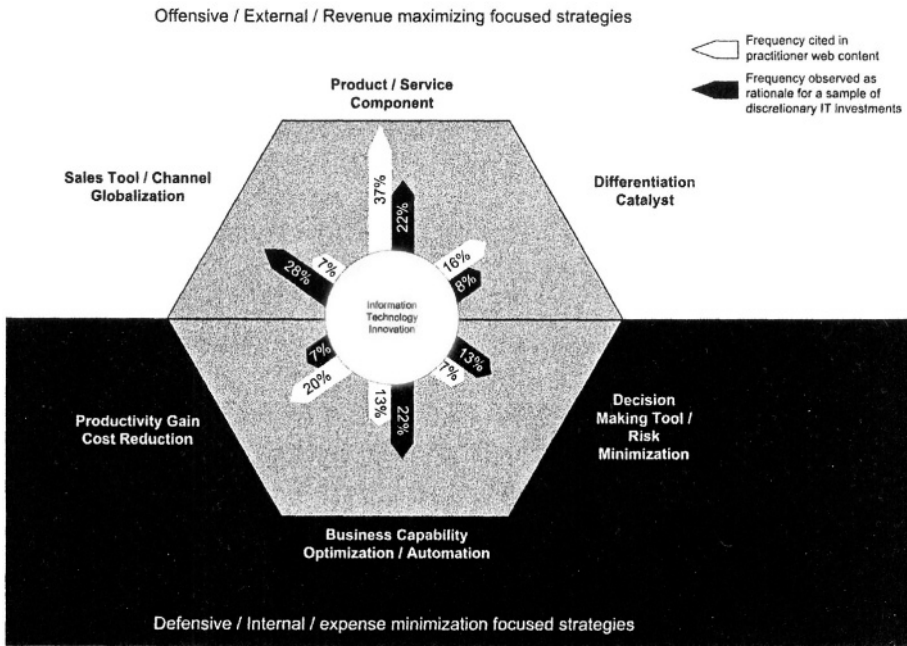


Figure 1. Key Drivers of IT Innovation Adoption

3. EXTERNALLY FOCUSED, INCOME GROWTH FOCUSED STRATEGIES

Tom Peters highlights the importance of investments to maximize growth and income by stating “Revenue enhancement (new products, innovation in general) is the ticket. While relative costs must remain under control, and fat kept to a minimum, it’s the builders, in the long haul who will reap the rewards from Wall Street.”¹ Andy Grove’s comment: “We need to create waves of lust for our product”² further confirms the significance of growth-focused IT investments. Forward thinking teams recognize that IT innovation is a strategic asset to be leveraged, not just an expense to be minimized. Three major types of leverage points exist to do just that.

¹ Tom Peters, *The Circle of Innovation*, 1997, Knopf: New York, Toronto

² Alan Goldstein, *Dallas Morning News*, August 11, 1996, page 54.

- **New sales tools, channels and globalization efforts** – As globalization intensifies, we're clearly seeing IT capabilities (Internet, rich media, localization and internationalization, and other technologies) being used to produce additional revenue across domestic and international markets. IT capabilities provide global impact and efficiently reach new markets, particularly emerging markets or areas where a business has limited physical presence.
- **New service and product development components** – IT innovation is also being developed into new products or service capabilities, which provide additional revenue potential. As Moore's law plays out through time, various new IT capabilities continue to be the cornerstone of new products. Exciting new embedded, networking, server and microprocessor capabilities are being applied to enable new capabilities and usage models, and to help drive demand for replacement of legacy technologies.
- **Service and product differentiator catalysts** – In many cases, IT innovation is bundled with existing products or incorporated into service delivery to positively differentiate core products, even though the innovation itself is not the end product consumed. Insightful application of IT can positively differentiate other products. This is clearly evident with Progressive Insurance's approach to providing automated, real-time self-service insurance quotes.

4. INTERNALLY FOCUSED, EXPENSE MINIMIZATION STRATEGIES

IT innovation is also a strategic asset with various internal benefits. However, the benefits span well beyond the obvious cost saving motive.

- **Cost reduction** – Replacing legacy technologies and approaches with new solutions and technology can reduce the cost of providing equivalent capabilities. This is clearly evident in trends like the replacing of expensive data centers based on proprietary standards with newer infrastructure, deploying wireless-enabled platforms, and replacing antiquated PC technology to reduce the total cost of ownership. New approaches to infrastructure services and usage, such as On Demand computing, also appear to offer promise.
- **Business process optimization, productivity and automation improvements** – These all provide new benefits and help increase competitive advantage. New database and web application innovations are helping to automate manual, labor-intensive processes and enable various process improvements.

- **Strategic decision making and risk mitigation capabilities** – If information is power, then IT innovation is a power grid that can illuminate the entire enterprise. IT capabilities such as OLAP, data mining, and decision support equip operations with strategic insights and help minimize risk. Although difficult to quantify, the value of these investments should not be underestimated. In certain cases, like HIPAA and the health care industry, compliance programs and legal mandates drive additional IT investment.

5. ANALYZING THE RESULTS

Looking at Table 1, we discover that while each investment motive is valid, they don't appear to be used to a uniform extent. Project data highlights the importance of web, localization and other related investments. However, their value is often self-evident, implied, and not explicitly mentioned in web content. It is not surprising that IT practitioners would consistently channel IT innovations into product development, perhaps more so than other industries. However, it initially appears that while frequently described, IT capabilities may not be fully utilized to differentiate other non-IT related products or services. Cost reduction is a frequent justification for internal investments. However, investments may often be speculative at first and focus on savings through new productivity or capability enhancing investments, rather than simply "like for like" technology replacements. It is also extremely encouraging to see IT decision makers invest in strategic decision making and information investments as well.

Table 1. Frequency and extent to which these motives are used

Motive category / theme	Metric 1: relative % of sampled IT practitioner web content that used that motive	Metric 2: relative % of sampled discretionary IT projects observed using that motive
New sales tools, channels and globalization efforts	7%	28%
New service and product development components	37%	22%
Service and product differentiating catalysts	16%	8%
Cost reduction (for <i>identical</i> capabilities)	20%	7%
Automation, productivity, process redesign	13%	22%
Strategic decision making and risk reduction assets	7%	13%
	100%	100%

The model we've discussed provides a fresh perspective on the major drivers or rationale for adoption of IT innovation. Although the various technologies behind IT innovation are incredibly diverse, the rationale for their adoption converge around six empirically derived themes:

Income, growth and externally focused

1. Sales capabilities and globalization efforts
2. Service and product development components
3. Differentiation catalysts

Internal capability and expense focused

4. Cost reduction
5. Automation, productivity, and process redesign
6. Strategic information and risk reduction capabilities.

Each theme or motive is significant, valid and described with real world examples. Two metrics which characterize the extent to which each rationale is used further validate the above "business driver investment" model. It is interesting to note that various rationale are not used in uniform frequency. CIOs and stakeholders must tailor and prioritize IT adoption and investments to various economic and situational constraints. Stakeholders should also evaluate their application of innovation by charting their major investments along each of the six edges of the business driver investment model hexagon. Working with other key stakeholders, one can then brainstorm new or underutilized approaches and identify ways to leverage each of the six business drivers of IT innovation adoption for their competitive advantage.