

Why Enterprises Can't Innovate: Helping Companies Learn Design Thinking

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Abstract. This paper describes the challenges of introducing design and innovation best practices into large companies focusing on enterprise software products. It proposes a theory for why existing companies tend to focus primarily on technical development factors while largely ignoring ease-of-use of the resulting solutions, and yet have been commercially successful to date. It also proposes that the market circumstances that have enabled this situation are likely to change as the market continues to mature. It then suggests methods for existing vendors to adapt to those changes and outlines the risks of not doing so.

Keywords: Design, innovation, user experience (UX), user interfaces, enterprise software.

1 Introduction

In the middle of the twentieth century, noted author Rudolph Flesch, wrote *Why Johnny Can't Read* [1] addressing the fundamental flaw in educational training that was preventing young children from mastering basic reading skills. As a result, significant changes were made in early educational programs around the globe helping many children gain basic literacy skills. Today, human computer interaction (HCI) professionals face a similar challenge in teaching corporations how to become more innovative via user-centered methods.

Roger Martin of the Rotman School of Management at the University of Toronto has written a book *The Design of Business: Why Design Thinking Is The Next Competitive Advantage* [2] that calls for all business leaders to reconsider the current organizational paradigm in favor of optimizing for what he calls “*Design Thinking*”. The similarity to Flesch’s work is striking. Martin is not alone in his views, Silicon Valley author Michael Malone [3], IDEO CEO Tim Brown [4], and other’s have similar suggestions.

When surveyed, the consensus of these leading thinkers is that today’s fast moving global business environment requires businesses to master two key types of innovation for their long-term survival:

1. Refining innovation, also known in HCI circles as N+1 innovation [5]
2. Disruptive innovation, aka “breakthrough innovation” [6]

Without refining innovation, existing market leaders risk being left behind by competitors who can refine a product or service for a market faster than they can. Without disruptive innovation, companies serving markets are at risk of being displaced by new competitors who define entirely new products or services, making existing business models obsolete. Both types of innovation are at the essence of HCI work focused on shaping technologies to map to human needs.

2 Transformation Requirements for Innovation

As the above-mentioned authors and many others have noted, the process of helping companies improve their design thinking skills is not a simple one. It requires deep changes in the organization's culture and structure. Most large companies value process efficiency that drives out variation and ambiguity.

Variation and ambiguity are key elements in any creative endeavor. As such, creating an environment that encourages innovation requires changes that are counterintuitive to most managers who have developed their skills entirely while working within large enterprises. Leading such a change in mindset at most large companies is akin to attempting to change the DNA of a living organism. These are endeavors with high failure rates. Transformations of this sort remain more art than science.

Business books are full of stories of failed attempts of enterprises to develop "design-driven innovation" programs. What are the lessons we can learn from these past efforts? If we hope to codify the insights and gut feelings of early thought leaders into repeatable best practices, analysis and reflection is required. Here are some of the factors to consider as HCI professionals helping organizations attempting to transition to a state of user-centered design and innovation competency.

2.1 The Resources, Processes and Values Framework

Clayton Christensen's popular series of books on innovation provide a very comprehensive analysis on what prevents companies from innovating. His thesis is well supported by numerous case studies.

Christensen's first book, *The Innovator's Dilemma* [7], introduces a framework that is very applicable to the enterprise software space. That framework, which emphasizes three key components *resources*, *processes*, and *values*, explains why many HCI efforts fail, especially within large established companies developing what is known as Enterprise Resource Planning (ERP) in the software industry. This is somewhat ironic given ERP products are intended to help companies manage processes and resources, and yet the ERP vendors struggle with implementing design processes.

2.2 The Values Problem

Most ERP companies do not value user-centered design or the benefits it provides, a good user experience (UX). Actually to clarify, most ERP companies fail to understand the value of UX in ERP products. They view good UX as unnecessary for the sale of ERP solutions. Why is this? Norman's [8] theory, as depicted in Figure 1

below, explains this if one concedes that the ERP market is still in an immature state relative to the market for consumer electronics or eCommerce sites. This is a reasonable position given that ERP vendors mainly compete against IT teams developing “*custom software*” that fail to deliver on over 90% of their projects [9].

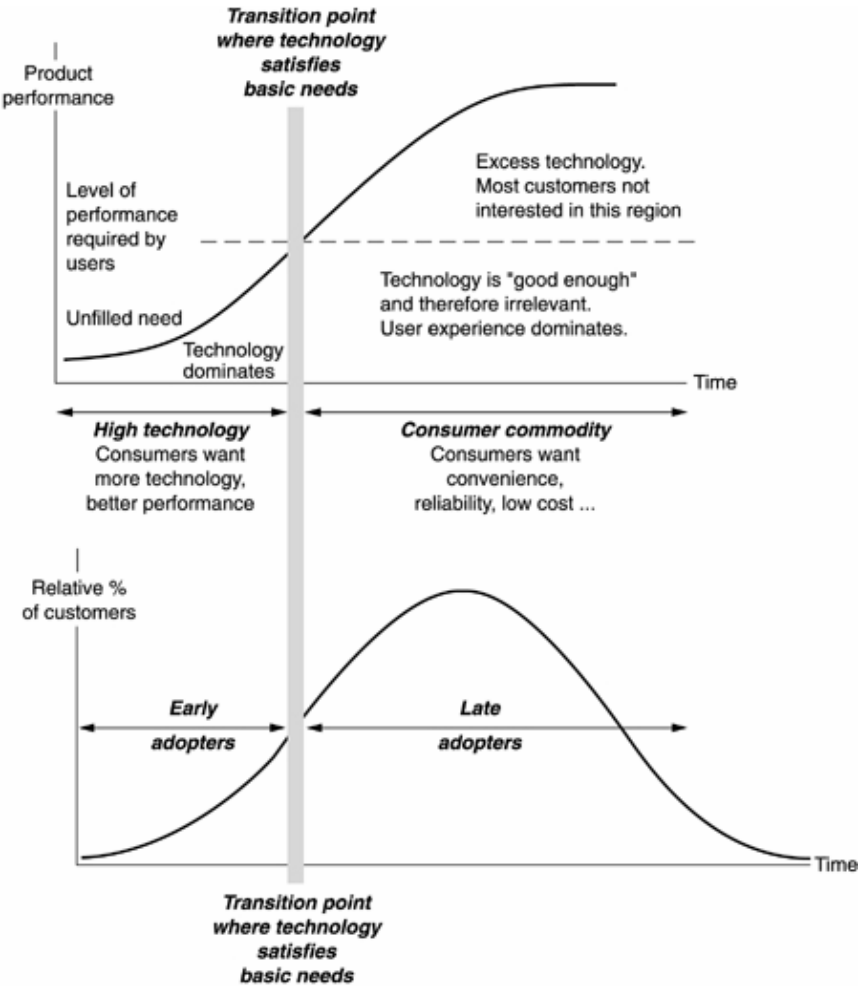


Fig. 1. The importance of user experience varies as a function of market maturity

Vendors of ERP solutions are currently highly profitable, selling solutions that are half as usable as consumer software, and an order of magnitude less usable than consumer websites [10]. They succeed despite the relatively poor UX of their software because no ERP vendor has ever attempted to compete solely based on UX merits to date. This is why ERP companies invest so little in HCI and related

innovation efforts. Corporate IT, the customers of ERP systems, generally don't value UX factors that impact end-users today. Steve Jobs [11] recently noted the difference between the consumer and enterprise market dynamics in a recent interview:

"We want to make better products than them. What I love about the marketplace is that we do our products, we tell people about them, and if they like them, we get to come to work tomorrow. It's not like that in enterprise... the people who make those decisions are sometimes confused"

Might this change soon? It might. In general, the population at large is gaining an appreciation for high quality design through the exposure to more consumer products and is starting to demand it from products they use to do work. Another promising sign is that the venture capital community is starting to recognize the value of user-centered design [12].

As a profession, we need to help accelerate this trend by educating those who are influential to recognize that UX best practices can actually help them improve their profit margins in multiple ways. For example, what were the main factors contributing to all those failed IT projects analyzed by The Standish Group over the past 15 years in its aptly named Chaos reports? *Lack of user input, incomplete requirements, and poor specifications*. Those same things are also the root cause of ERP quality issues and the lack of innovation in the ERP market today. The entire ERP ecosystem shares a common viewpoint, for better or worse.

2.3 The Resources Problem—Effect Not a Cause

Values and processes determine resources in companies. As HCI professionals, do you lack the resources to effectively engage users in iterative design? Do you lack the time to develop detailed requirements and specifications? Is your staff unable to find time to collaborate on innovation projects? Contrast the findings of the Standish Group with this quote from Tim Cook, COO of Apple [13] about how his team managed to grow Apple into the 2nd largest public company on earth with a market capitalization of \$300 Billion as of 2011, saving it from bankruptcy:

"We're constantly focusing on innovating. We believe in the simple, not the complex. We believe that we need to own and control the primary technologies behind the products that we make, and participate only in markets where we can make a significant contribution. We believe in saying no to thousands of projects, so that we can really focus on the few that are truly important and meaningful to us. We believe in deep collaboration and cross-pollination of our groups, which allows us to innovate in a way others cannot. And frankly, we don't settle for anything less than excellence in every group in the company, and we have the self-honesty to admit where we're wrong, and the courage to change."

Consider the resource allocation process at Google and 3M. Both are widely recognized as highly innovative companies with strong financials. Both encourage staff to spend 20% of their work hours on self-selected innovation projects [14]. How do these companies manage to find the resources to do this? They recognize that they can't afford not to. To do otherwise would result in a failure to grow their businesses.

In reality, most resource problems have the same root cause. Corporate values and processes that emphasize action over outcome and a focus on short-term costs, versus the long-term returns of design work.

2.4 Good Processes Lead to Effective Resource Allocation and Innovation

Most leaders realize that new, truly disruptive innovations are rare, and far and few between. However, that does not mean they can be left to happen by accident. Big breakthroughs are the typically the result of a long process of extensive exploration to refine the initial idea. One of the greatest technological achievements of the past century, the development of the atomic bomb was the product of a carefully constructed and executed plan that spanned many years [15]. The Manhattan Project showed innovation could be managed into existence. The management lessons learned on that project helped spawn the modern technology revolution.

Real disruptive innovation is rarely an accident, but rather the result of a deliberate application of discovery mechanisms based on the scientific method [16] where organizations focus intensely for years on refining an idea. This requires long term thinking that most ERP vendors lack as they, like many other technology companies suffer from myopic planning cycles that rarely span more than a single year. One could argue that technology makes such long term planning irrelevant, but again there are clear examples of this long-term focus paying off. The consumer electronics hit of 2010? The Apple iPad, a product that has similar characteristics to the Newton MessagePad product it started work on in 1987, nearly 23 years earlier. Recently Apple acknowledged that the 2010 iPad model was over 3 years in the making [17] and its other recent hit, the iPhone, was actually a spin off project of its tablet efforts.

How does one identify and refine new disruptive innovations in a systematic way? There are many well-documented best practices, but these remain poorly integrated into operational processes of today's ERP vendors that focus on product technology development rather than product discovery. Examples include:

1. Lead user studies as defined by Von Hippel at MIT [18]
2. Corporate and user community based prediction markets [19]
3. Ethnographic design methods such as Holtzblatt & Beyer's Contextual Design [20]
4. Applied social network analysis of markets [21]
5. Steven Blanks' Customer Development Model [22]

As technologies continue to mature, most project risks are unrelated to technology factors. Instead, project risks tend to be more about market identification, segmentation, and product design factors. Facebook, for example, did not need to innovate technically, at least for its initial success. Facebook and other web services rely largely on proven technology already in the public domain.

2.5 The Relation to Operational Execution

Bill Gates argues *"that in order for existing companies to be innovative, the key is in execution..."* [23]. Most managers forget design culture, innovation, and operational

execution are symbiotic. Even the best ideas will fail to reach the market to become innovations if operational details go neglected due to organizational chaos. In addition, chaotic environments lead to detached staff, and make collaboration with partners and customers difficult. Thus poisoning the well from which innovation springs.

Best practices include defining user experience (UX) related quality metrics aligned with the operational metrics of all functional areas so they are an integrated, instead of an ignored, part of the process. Consider the following best practices:

1. Including UX metrics as part of overall company quality goals and staffing accordingly
2. Defining customer satisfaction goals for all external touch points and linking them to business operations
3. Developing project plans that emphasize learning through design research and iteration
4. Making project failures and lessons learned accessible and part of institutional knowledge
5. Developing budgets considering the true costs of not building the right product or not building the product right.

3 Conclusions

Managers overseeing existing products at ERP vendors tend to focus on short-term cost and risk reduction. They often fail to consider the often high costs of inefficient design processes and the risk associated with building the wrong product (false leads in pursuit of disruptive innovation) by focusing on product development at the expense of customer development and product design.

ERP vendors are at risk of losing market share to competitors who may “out innovate them” by applying UX methods to create superior offerings via refining innovation that may even lower costs or increase profits long-term. Current trends in SaaS delivered ERP are a good example of this. SaaS-based ERP vendors have the advantage of improved feedback loops due to their sales and distribution models that will likely improve their rate of innovation and ability to capture market share.

Both fates are avoidable using proven techniques from other more mature industries such as consumer-packaged goods. Perhaps one of the existing vendors can manage the difficult transformation into a design-oriented culture. A culture that recognizes that technology leadership is no longer sufficient in a mature market. That vendor might survive. However, it is even more likely that a new generation of firms with different DNA will succeed as the market transitions into a phase that values UX. This is more likely, as Christensen, Norman, and others suggest from their analysis of other markets. One only need look to the recent changes in the mobile phone industry to see how plausible such a scenario is.

References

1. Flesch, R.: *Why Johnny Can't Read—And What You Can Do About It* Harper Paperbacks, New York (1986)
2. Martin, R.: *The Design of Business: Why Design Thinking Is The Next Competitive Advantage*. Harvard Business School Publishing, Boston (2009)
3. Malone, M.: *The Future Arrived Yesterday: The Rise of the Protean Corporation and What It Means for You*. Crown Business, New York (2009)
4. Kleiner, A.: The Thought Leader Interview: Tim Brown. *Strategy + Business* (56). Autumn, New York (2009)
5. Buxton, B.: *Sketching User Experiences: Getting the Design Right and the Right Design*. Morgan Kaufmann Publishers, San Francisco (2007)
6. Lafley, A.G., Charan, R.: *The Game-Changer: How You Can Drive Revenue and Profit Growth with Innovation*. Crown Business, New York (2008)
7. Christensen, C.M.: *The Innovators Dilemma: When New Technologies Cause Great Firms to Fail*. Harvard Business School Press, Boston (1997)
8. Norman, D.: *The Invisible Computer: Why Good Products Fail, The Personal Computer Is So Complex, and Information Appliances Are The Solution*. MIT Press, Cambridge (2008)
9. CHAOS Technical Report. The Standish Group International (1995)
10. Sauros, J.:
<http://www.measuringusability.com/problem-frequency.php> (2010)
11. Jobs, S.:
<http://www.engadget.com/2010/06/01/steve-jobs-live-from-d8/> (2010)
12. Cleveland, B.:
<http://www.interwest.com/software-as-a-service/marketing/creating-the-killer-app-starts-with-killer-ueui/> (2010)
13. Cook, T.: Transcript of Apple Q1 2009 Earnings Call (2009)
14. Berkun, S.: *The Myths of Innovation*. O'Reilly Media, Sebastopol (2007)
15. Zachary, G.P.: *Endless Frontier: Vannevar Bush, Engineer of the American Century*, New York (1997)
16. Hargadon, A.: *How Breakthroughs Happen: The Surprising Truth About How Companies Innovate*. Harvard Business School Press, Boston (2003)
17. Stone, B., Burrows, P.: Opening Remarks: The Essence of Apple. In: *Bloomberg Businessweek*, New York, January 30 (2010)
18. Hippel, E.: *The Sources of Innovation*. Oxford University Press, Oxford (1988)
19. Taylor, C.: How Bets Among Employees Can Guide a Company's Future (December 9, 2010), <http://www.technologyreview.com/business/26800/>
20. Beyer, H., Holtzblatt, K.: *Contextual Design: Defining Customer-Centered Systems*. Morgan Kaufmann Publishers Inc., San Francisco (1998)
21. Wasserman & Faust.: *Social Network Analysis: Methods and Applications*. Cambridge University Press, Cambridge (1995)
22. Blank, S.: *The Four Steps To The Ephiphany: Successful Strategies for Products that Win*. Quad Graphics, San Francisco (2007)
23. Gates, B.: *The Wall Street Journal*, 1–2 (November 28, 2010)