USER EXPERIENCE DESIGN A STRATEGY FOR COMPETITIVE ADVANTAGE

David Sward
Intel Corporation
Arizona State University Polytechnic
Innovation Value Institute: National University Ireland Maynooth
david.s.sward@intel.com

Abstract
This paper urges the User Centered Design (UCD) community to broaden its perspective in order to deliver the user experiences demanded by consumers today. The challenge is for UCD to partner with other business disciples; pool organizational resources; and drive a user-centric approach throughout the organization, to the extent that it becomes embedded in the business strategy and develops the basis for everything the company does. This paper presents a set of interrelated strategies to assist in delivering a sustainable competitive advantage through compelling user experiences; these include linking IT to the bottom line; implementing a User Experience Design (UXD) Program; and managing the UXD capability.

Keywords: user experience design, user-centered design, business value, competitive advantage, marketing.

Business Challenge

Information Technology (IT) has revolutionized the way organizations conduct business. IT has expanded the market place, generated new markets, and created a multitude of business opportunities. As a result IT users have never been so sophisticated with respect to the IT products they demand. As organizations have rushed to satisfy market requirements this has only served to increase competitiveness (Pettigrew and Wipp 1991). Today products and services stand in the wings –
they alone no longer satisfy the market. To compete for center stage organizations must continually deliver compelling user experiences (Schmitt 1999, Pine and Gilmore 1999).

While IT has been a catalyst for enormous change and innovation, IT organizations are viewed as cost centers within and by companies. Some argue the Internet and the services it provides represent the greatest force for commoditization the world has seen (Pine and Gilmore 1999). Furthermore, internal rivalry for scarce resources and external competitive forces squeeze departmental budgets year after year. Many of the products and services these organizations design and develop are also viewed from this cost center mentality. The lack of knowledge with regard to what is valued, inappropriate allocation of funds, and constant cost validation breeds a culture that stifles innovation as IT organizations view justifying their existence as their primary objective. Organizations begin to nurture the belief that growth is only achieved by finding the next great new idea (Rae 2007).

Given this organizational inertia how can IT move from being perceived as a cost center to a strategic partner that contributes to strategic objectives and enables a competitive advantage? There is no single answer, but to make progress the UCD community must be willing to step away from approaches that focus on tactical justifications of their skills. The community needs to broaden its’ vision of the discipline; see itself as integral to the business strategy; become proactive in delivering on organizational objectives; partner with other business disciplines; drive and lead the vision of a user-centric business orientation throughout the organization.

The UCD community must recognize that user experience (UX) is the embodiment of their discipline. It is their domain, but it is a shared one; where success will come from partnering with other business units. Once the experience is created the “value” delivered must be measured and systematically managed to form the basis of a sustainable competitive advantage (Sward 2006a).

Assembling the right resources to deliver user experiences is aligned with work in the strategic management field. This resource-based view of strategy arises from the premise that firms achieve a competitive advantage by assembling combinations of resources that are scarce and difficult to replicate. In the case of IT, the resource-based perspective suggests that IT, when deployed creatively and strategically, can allow firms to develop or enhance a distinctive and defensible position (Bharadwaj 2002).

UX design and competitive advantage are not new concepts. The two however are not often linked to UCD in any systematic fashion. This paper outlines how the two are inextricably linked; that UX pulls from various business disciplines; and makes the argument that this should be recognized and rather than compete for resources, they should be pooled to achieve a single organizational vision. This realization is vital for companies to compete in the experience economy, in which customers will pay a premium for the experience provided (Pine and Gilmore 1999).
IT Commodity or Competitive Advantage?

There has been a long-standing debate on whether IT provides business value. Researchers have demonstrated the connection between IT and productivity. Using a production function to compare business-value outputs (i.e., revenue, stock price) with inputs (i.e., capital, labor) Brynjolfsson and Hitt (2002) found a positive return on IT investments. Dedrick et al. (2002) concluded that greater investment in IT is associated with greater productivity growth. Research by Tallon et al. (2000) based on executive perspectives concluded that the degree of alignment between the IT strategy and the firm’s business strategy was also important in realizing productivity from the investment.

Although evidence mounted on the role of IT in improving firm performance and productivity, management writer Nicholas Carr published a widely influential article entitled “IT Doesn’t Matter.” In this paper Carr (2003) argued that continued investment in IT was a poor strategy because IT was becoming a commodity input that could no longer enable a competitive advantage. When an input is a commodity the focus should be on cost reduction and risk mitigation.

The apparent disagreement between Carr and economic researchers on IT’s role is primarily a matter of their differing perspectives. Economic research provides evidence that IT creates value when examining data across hundreds of firms. Carr and other strategic management writers are interested in the ability of IT to enable a sustainable competitive advantage. Subsequent researchers found that IT investment alone is not guaranteed to improve productivity (Brynjolfsson et al. 2002). In fact, Smith and Fingar (2003) wrote in a book rebutting Carr’s claims, “IT doesn't matter — business processes do.” It is not just about IT investment, it is about what you do with the IT investment.

User Experience

User experience; customer experience; consumer experience have striking similarities, but terms and meaning differ depending on the author’s discipline (Shaw and Ivens 2002, Knemeyer and Svoboda 2007), and consequently the relevance. If you are involved in Human Computer Interaction (HCI) UX is your agenda, but is customer experience? Many authors discuss the effects, the importance, and barriers to improving the experience without actually defining it (Dorsey et al. 2006). Some consider that UX is an “emergent discipline….without a formal body of knowledge” (Knemeyer and Svoboda 2007) and some regard that it encompasses all aspects of the end user’s interaction with the company and the merging of the services of multiple disciplines (Nielsen Norman Group 2007, Kuniavsky 2007, Vredenburg 2002, Sward 2006a). Difficulty in finding agreement on the term could also be due to the fact that it means different things to different organizations (Marcus 2004).
There has been a considerable amount of published work on UX. Efforts include work in understanding UX as it relates to e-commerce design activities (Garrett 2002, Donoghue 2002, Chandler and Hyatt 2003). UX is associated with a wide range of meanings and concepts when compared to traditional usability; including aesthetics, hedonics, contextual, and temporal variables (Forlizzi and Battarbee 2004). Some researchers focus heavily on the emotional aspect in the assessment of UX (Beauregard et al. 2007). Jordan (2002) proposed a needs abstraction model for UX conceptualization, suggesting that products should engage people at three distinct levels: functionality; usability, and UX. Hassenzahl and Tractinsky (2006) take a comprehensive look at what is meant by UX, noting the fast acceptance of the term despite no clear understanding of the meaning. Swallow et al. (2005) note that recent work on theoretical models of UX show that it is complex and difficult to define succinctly. While others question the expansion of basic concepts like usability to UX given the lack of agreement on an accepted definition of the concept (McNamara and Kirakowski 2005).

**UX Defined**

The definition of UX presented here has its roots in UCD - a philosophy that places the user at the center of all design activities. UCD seeks to humanize our interaction with technology. Figure 1 shows the relationship between UCD and UXD. UXD extends UCD to incorporate all aspects of the end user’s interaction with the product or service and the organization that supports it. Experience begins with an awareness of the product or service and includes all aspects of the end user’s interaction.

UX is the value derived from interaction(s) [or anticipated interaction(s)] with a product / service and the supporting cast in the context of use (e.g., time, location, and user disposition). User value can be actual value (e.g., efficiency and effectiveness), perceived value (e.g., trustworthiness, emotions, satisfaction, aesthetic, social rewards, behavior, entertainment, etc.), or a combination of both. UX is best viewed in terms of the following components: (a) marketing and
awareness; (b) acquisition and installation; (c) product or service use; (d) product support; and (e) removal or end of life.

![Figure 2. User experience components](image)

Each component refers to a particular aspect of the user’s experience, and the importance of each component to the user will vary throughout the life span of the product or service (see Figure 2). In addition, the experience will differ based on the product or service being developed (e.g., online gaming vs. enterprise applications). Users may not encounter every aspect of the experience at the same time, since the experience can unfold over time and through multiple interactions:

a) Marketing and Brand awareness focuses on the image portrayed to users before they interact with the product or service, including advertisements, staff interaction, aesthetics, word of mouth, etc.

b) Acquisition and Installation includes elements like packaging, first-time setup, integration with other solutions, registration, billing, and so on.

c) Product or Service Use can be accurately represented using the concepts of quality in use (ISO 9241) in that it should be effective, efficient, and satisfactory in the context of use.

d) Product Support can include training, support, updates, problem resolution, warranties, and ongoing maintenance.

e) Removal/End of Life is the final interaction and possibly the first experience with a replacement product or service.

The user’s experience is the outcome of a user-centric design process; not a design process in itself. The process an organization engages in is a matter of choice, but the result should encompass the five components. Delivering a good experience requires a wide range of disciplines, such as marketing, ethnography, industrial design, human factors engineering, software engineering, hardware engineering, interaction designers, information architects, and business process analysts, to name a few.
User Experience and Related Disciplines

The HCI community focuses on the user and it is not surprising that this community feels UX is their domain. The business community, however, has a customer focused approach that is communicated and practiced throughout the organization as the basis for corporate strategy (Paliwoda and Thomas 2001, Drucker 1985, Baker 2000, Levitt 1960, Kale 1987). Marketing is also a discipline cited for its passion for the user/consumer/customer. Drucker (1985), a staunch advocate for a customer focused approach, lamented that so few organizations were willing to use marketing as a basis for strategy. A reason for this could be that like UX, “Marketing” is often poorly defined, wrongly interpreted, badly implemented and while widely discussed little is done to systematically consolidate opinions (Baker 2000, Morgan 1996).

Furthermore, theories over what marketing is and it’s relevance to organizations has become so fragmented that it has turned into a generic label with multiple meanings (Morgan 1996). In an attempt to reflect market movement and illustrate it’s evolution, marketing has coupled it’s name with trends such as Societal Marketing, Relationship Marketing, and E-Marketing (Morgan 1996). Experiential Marketing (Schmitt 1999) is applicable for the new millennium as “the nature of Marketing and what it is seen to represent has been changed and adapted to conform with requirements of the relevant decade” (Morgan 1996 p.23).

Blending Marketing and HCI is not a new. In the 1990’s as organizations moved to take advantage of the virtual market place designers and marketers were melded together in a way not previously done. The success of an e-commerce site was now a marriage between understanding user requirements from two separate disciplines with the same goal, creating a winning UX.

The market is calling for further action as we enter the experience economy. The key to this economy is the premise that people will pay a price premium for a “memorable experience” (Pine and Gilmore 1998, p98). The success of airlines such as Eos specializing in flights between London and NY who have considered every element of the UX from how to deal with your late arrival; comfort within the airport and during the flight; to ground transportation to your final destination (Delio 2007). The outstanding success of Starbucks coffee (Schmitt 1999) stands as testament that commodities can be translated into profitable entities once you start designing an experience and stop focusing on an isolated product.

The immediate challenge for UX to become an organizational focus requires that “a shared understanding of how to think about customer experience” be built (Dorsey et al. 2006). Furthermore, it is not “owned” by one discipline (Bogaards and Priester 2005) and there is agreement that who owns it is not as important as who is going to take the lead (Hawdale 2005). A multi-disciplinary approach is a core tenet of HCI, but the team has to expand beyond the immediate family of skills tightly
related to HCI. To get alignment across disciplines a working definition of UX, like the one presented in this paper, will require strong collaboration between disciplines. Success will require more than just an agreed-on definition; it will require the right collection of resources and strategies and a clear understanding by all employees and business partners as to the company’s strategic intent (Hamel and Prahalad 1989) in order to achieve a competitive advantage through user experience design.

User Experience Strategies

Getting maximum value from IT is as much about how you manage it as it is about investing in it. From a business perspective it is about harmonizing IT; organizing IT; managing IT (Curley 2004), and identifying the value delivered to the organization (Prahalad and Hamel 1990, Sward and Haas 2003). Link this to UXD to deliver what the market wants and you have the basis for a competitive advantage (Sward 2006a). Understand how to do it continually and you have a sustainable competitive advantage to assist the corporate strategy (Porter 1987, Hamel and Prahalad 1994). Strategy one focuses on understanding the value delivered by solutions, strategy two focuses on getting UCD skills embedded in the organization, and strategy three focuses on effectively managing the UXD capability.

Strategy One: Implement a Business Value Program

To execute this strategy, organizations need to employ a consistent, repeatable, and objective process that measures forecasted and delivered value as defined by the customers and users. There are many approaches for quantifying IT returns. In e-commerce management, using a systematic value-driven analysis approach is aligned with maximizing value creation and minimizing loss to increase business performance (Hahn et al. 2002).

Sward (2006b) outlines an IT Business Value program that is focused on two core ideas:

- Define IT product and service value in the language of the customers and users.
- Link IT product and service success to the impact on the firm’s top and bottom line.

Executing this strategy is a pre-requisite to demonstrating that IT products and services are more than a cost. It facilitates alignment and development of strategic partnerships with customers and users. It also demonstrates that the organization assists in achieving firm level objectives and understands how to impact the bottom line. This is true if looking at solutions that enable employees or products and services sold by the firm.
Measuring business value is similar to cost justifying usability (Bias and Mayhew 1994), but cost justifying usability differs in important ways. A series of tactical justifications is not a long-term strategy to drive change in how UCD is employed. Work by Lund (1997), Rosenberg (2004), and Lindgaard (2004) summarize a number of other limitations with cost justifying usability. The focus of these efforts should be on measuring the total value delivered in order to understand how it relates to delivering a competitive advantage.

**Strategy Two: Implement a User Experience Design Program**

If a UCD team is not in place, one should be formed before trying to tackle UXD. Schaffer (2004) has an excellent step-by-step guide on building a UCD program. The UXD program is focused on proactively designing, developing, and measuring the UX delivered and managed by an organization. IT organizations deliver the greatest value when they design user experiences that directly enable organizational objectives. For a product or service to have a good UX; necessary activities must be performed during all stages of design and development using a multi-disciplinary team.

Another way to envision the goal of a UXD program is shown in Figure 4 and Figure 5. Figure 4 depicts an IT organization with each support group deploying solutions, and managing or not managing the UX that results. In this case the user's experience is fractured; it is unlikely that it will be a cohesive experience.

![Figure 4. Unmanaged IT user experience](image)

Figure 5 shows the desired state, in which IT delivers a UX that is managed across groups. In this case, the user's experience is consistent across the organization. To achieve this, the user's experience has to be designed, deployed, and continually
managed. This is more than delivering consistent user interfaces or standards applied to applications. Consistent user interfaces may influence the experience, but they cannot define it.

Implementing a UXD program continues the transition from a tech-centric to user-centric organization, and, as mentioned, implementing a business value program is a good way to get this process started. It is at this stage that the culture shift starts to manifest itself in how the organization thinks about supporting the users.

**Strategy Three: Manage and Grow the UXD Capability**

Strategy three focuses on effectively managing, growing, and enabling transformation of the UXD capability to meet changing market demands. This is done by a) measuring the UX with products and services; b) measuring the UX across an interrelated set of products and service, c) measuring the ability of an organization to repeatedly produce compelling user experiences; and d) measure the organization's ability to deliver UX against that of its competitors.

**Product or Service Assessment**

Product or service level assessment requires the creation of a User Experience Index (UXi) that is consistent with an
expanded definition of UX. Broad based measures like the System Usability Scale (SUS) (Brooke 1996, Finstad 2006) and Software Usability Measurement Inventory (SUMI) (Kirakowski 1994) are universal, but have less diagnostic power when compared to deep measures; which are not broadly comparable since they are based on local experience goal setting for a product - making these deep measures more powerful for risk identification and design decisions. In order to inform product design a necessary outcome at this level is comparisons across and within products. Valid cross product comparisons require the same assessment tool, as do comparisons to previous versions of products or competitor’s products.

Assessment of Product and Service Sets

For organizations that deliver multiple products and services or that have highly interrelated products and services (e.g., financial services); understanding the experience that the organization delivers is important. There are two questions to consider with respect to experience assessment at this level. First, is the experience the summation of the individual UXi scores for products and services? Second, is the experience the summation of these individual UXi scores, in addition to another assessment that looks at the entire product and service set delivered by the organization?

Organizational Assessment

Measuring the UX delivered for products and services provides insight in to how it is being managed, but will not answer how capable an organization is at UXD. Assessment at this level can take many forms; Jokela et al. (2006) have provided a compressive review of approaches. It is important to separate this level of assessment into process assessments (ISO 18529 and 18152) and maturity assessments that examine management attitudes (Earthy 1998). Existing approaches (Earthy 1998, Jokela 2001, ISO 18529 and 18152) tend to focus on UCD in terms of how well a product team engages in the process and have an assumption that a product is already selected. They also have a bias toward an outsider in view of the development process with respect to UCD involvement.

With this in mind, the Innovation Value Institute at the National University Ireland Maynooth is developing a UX Capability Maturity Framework (CMF). The UX CMF is a formal approach to assessing an organization's capability to engage in UXD. Understanding and managing the capability is central to the overall effort of continually delivering user experiences that result in competitive advantages.
Competitive Advantage Assessment

The results from the assessments are most beneficial when linked to UX success, value delivered, and the firm’s competitive position in the market. Research from the web services arena shows that providing a compelling consumer experience is linked to a firm’s competitive advantage (Rajgopal et al. 2000), but this research also has results supporting IT as commodity. This study indicates that some elements of the consumer experience, such as the user interface, are easy for competitors to replicate and therefore this element in isolation did not contribute to firm’s market position, supporting Carr’s (2003) assertion. However the same study found that when looking across multiple dimensions of consumer experience, the firm’s ability to provide compelling consumer experiences contributed to the firm’s market position. This could be seen to support the resource-based approach (Bharadwaj 2002) for designing user experiences as the best strategy to maintaining a sustainable competitive advantage. This interesting dichotomy requires further investigation.

Summary

The experience economy has arrived and of paramount importance is the user experience. Confusion over UX definitions has created ambiguity as to how to deliver the new market expectations. Furthermore the lack of clarity in definitions appears to be a result of business, technical, and economic disciplines’ fervent interest, but with no clear path to execution.

This paper has attempted to reduce confusion by providing a working definition of UX by concentrating on factors that constitute the makeup and delivery of a compelling experience. This recommends building the experience around five vectors to reduce confusion and encourage practical, measurable, effective progress.

No one discipline owns the term. Delivering compelling user experiences requires expertise from several business domains and technical fields. However as with any new concept there needs to be a driver and no discipline is better poised to drive a user experience orientation throughout the organization than UCD. The UCD community should take up the challenge to partner with and appreciate its relationship within the business community. UCD must promote and demonstrate that following the user-centered philosophy is critical to delivering corporate success. The framework and strategy is available to implement a UCD approach to drive a sustainable competitive advantage.
References


