

## **Designing Effective Web Sites: How Academic Research Influences Practice**

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### **Introduction**

The design of effective human interfaces to systems, especially in the realm of electronic commerce, has received considerable attention from researchers given the practical importance of enhancing the online consumer's experience. From this body of work, a comprehensive set of interface characteristics has been developed. While it is important to understand which characteristics can be successfully applied to a Web site's design, it is equally important to understand their relative value in shaping a consumer's experience, given the natural trade-offs that occur due to design complexity, resources limitations, or situational factors. Unfortunately, little research has been conducted to provide clear guidance for optimizing the selection and prioritization of various characteristics within this context of the online consumer experience.

In this presentation, I will review a series of studies that have focused on gaining a better understanding on how various designs characteristics influence the human-computer interface in a variety of contexts. These studies are motivated and utilize various behavioral theories; the general approach has been to instantiate aspects of the selected theory into the system design, then assessing how these characteristics influence various outcomes. Below, I reproduce the abstracts of various projects that will form the basis of my presentation. The presentation will conclude with prescriptive guidance to the design of web interfaces for a variety of contexts.

### **Influencing Impulse Buying Behavior**

#### **Online Impulse Buying: Understanding the Interplay between Consumer Impulsiveness and Website Quality [1]**

With the proliferation of e-commerce, there is growing evidence that online impulse buying is an emerging phenomenon, which has been the focus of researchers from a variety of disciplines. This paper reports on two empirical studies that examine the interplay between a consumer's inherent impulsiveness to buy and website quality. Specifically, consistent with past online impulse buying research, website quality manifests as an environmental cue that directly influences the likelihood that a consumer will experience an urge to buy impulsively. Further, highly impulsive consumers can be both positively and negatively influenced by varying degrees of website quality. Thus, while the objective quality of an e-commerce website is important, the inherent impulsiveness of a consumer is also a critical factor for understanding how and why individuals react impulsively to varying degrees of website quality. The implications of the results for both future research and the design of electronic commerce websites are discussed.

#### **The Influence of Website Characteristics on a Consumer's Urge to Buy Impulsively [2]**

With the proliferation of e-commerce, there is growing evidence that online impulse buying is occurring, yet relatively few researchers have studied this phenomenon. This paper reports on two studies that examine how variations in a website influence online impulse buying. The results reveal some relevant insights about this phenomenon. Specifically, although many

participants had the urge to buy impulsively, regardless of website quality, this behavior's likelihood and magnitude was directly influenced by varying the quality of task relevant and mood-relevant cues. Task-relevant cues include characteristics, such as navigability, that help in the attainment of the online consumer's shopping goal. Conversely, mood-relevant cues refer to the characteristics, such as visual appeal, that affect the degree to which a user enjoys browsing a website but that do not directly support a particular shopping goal. The implications of the results for both future research and the design of human-computer interfaces are discussed.

### **Influencing Organizational / Product Quality Perceptions**

#### **What Signal Are You Sending? How Website Quality Influences Perceptions of Product Quality and Purchase Intentions [3]**

An electronic commerce marketing channel is fully mediated by information technology, stripping away much of a product's physical informational cues, and creating information asymmetries (i.e., limited information). These asymmetries may impede consumers' ability to effectively assess certain types of products, thus creating challenges for online sellers. Signaling theory provides a framework for understanding how extrinsic cues—signals—can be used by sellers to convey product quality information to consumers, reducing uncertainty and facilitating a purchase or exchange. This research proposes a model to investigate website quality as a potential signal of product quality and consider the moderating effects of product information asymmetries and signal credibility. Three experiments are reported that examine the efficacy of signaling theory as a basis for predicting online consumer behavior with an experience good. The results indicate that website quality influences consumers' perceptions of product quality, which subsequently affects online purchase intentions. Additionally, website quality was found to have a greater influence on perceived product quality when consumers had higher information asymmetries. Likewise, signal credibility was found to strengthen the relationship between website quality and product quality perceptions

for a high quality website. Implications for future research and website design are examined.

### **Influencing Customer Relationships**

#### **Diagnosing and Managing Online Business-to-Consumer (B2C) Relationships: Toward an eCommerce B2C Relationship Stage Theory [4]**

The emergence of eCommerce has provided organizations with an unprecedented opportunity to take advantage of business-to-consumer (B2C) interactions. Generally speaking, relationships move through various stages, when a customer chooses to establish a relationship with a person or an organization. Likewise, when a customer forms an ongoing relationship with an online organization, it progresses through similar stages. Yet, the IT-mediated nature of B2C eCommerce interactions causes the manifestation of these stages to be different from offline B2C interactions. As such, this paper proposes a theoretical framework for examining stages of online B2C relationships, based on Stage Theory. The proposed eCommerce B2C Relationship Stage Theory (eB2C-RST) highlights three stages of eCommerce B2C relationships from the customer's perspective: Attraction, Build-Up, and Continuance. This theoretical framework provides a foundation for both research and practice in the areas of interface design and online B2C customer relationship management.

#### **Breaking the Ice in B2C Relationships: Understanding Pre-Adoption E-Commerce Attraction [5]**

This research proposes that the forming of a business-to-consumer (B2C) customer relationship is part of a multi-phased technology adoption process, where attraction is the first step in this sequence. A conceptual model, called the electronic commerce attraction model (eCAM), offers a theoretical foundation for guiding two empirical studies (N=345 and N=240 respectively) investigating how initial customer perceptions of a website influence attraction towards this website. The results support the eCAM as a new theoretical lens for understanding electronic commerce (e-commerce)-based attraction. Comparisons are made between the proposed eCAM to previously established models (i.e., the Technology

Acceptance Model and WebQual) as well as the discriminant validity of the constructs in these models. Results demonstrate that the eCAM provides additional insights for understanding how website design influences e-commerce attraction and adoption. The implications of these results for future research and website design are examined.

## **Personalizing the Online Experience**

### **Online Consumer Motivation: A Task-Technology Fit Perspective [6]**

Website design is a key challenge for most modern organizations. Optimizing Website design to fit the vast range of tasks that are being executed by an increasingly heterogeneous consumer base is fraught with uncompromising tradeoffs. For instance, the design and features of a particular Website to better support the task of some consumers (e.g., pay a bill), may stifle the task activities of others (e.g., browsing). As such, at a given point in time, different consumers visiting the same Website may have vastly different technology requirements based upon the current task they are performing. Utilizing Task-Technology Fit theory as a framework, a temporal view of online consumer motivation – i.e., why a consumer is interacting with a particular Website at a particular time – is proposed. The goal of establishing this temporal view of consumer interaction is to inform Website design. Ultimately, such an understanding will allow organizations to tailor interfaces to meet the unique needs of different consumers. This temporal view of online consumer motivation is tested utilizing both a controlled laboratory experiment and a field survey. The results of these studies provide evidence of the existence of online consumer motivation (i.e., that different consumers are motivated to visit Websites to perform different tasks and that these tasks can be better supported by different Website designs), and that differences in consumer motivation can influence ecommerce outcomes such as task performance and satisfaction. Results also suggest that online consumer motivation is shaped by individual characteristics. The implications of these results for future research and Website design are examined.

## **Detecting Emotions of Online Users**

### **From Service Failures to Service Recovery: Measuring Online Consumers' Emotions during E-Commerce Transactions [7]**

Online retailers have limited ability to detect and therefore respond when customers are having problems interacting with their Web site (i.e., perform a service recovery). This inability to detect such service issues at the time of interaction can result in various negative consequences, including termination of transactions, reduction in customer loyalty, or an increasing likelihood of negative word-of-mouth reviews. Bringing together research from human-computer interaction, marketing, and psychology, this research assesses online consumers' negative emotions through the analysis of mouse cursor movements. Results show that mouse cursor movements are indicators of negative consumer emotions in two different cultural contexts and two different e-commerce Web sites. These results have important implications for the design of e-commerce Web sites as well as for online retailers to aid in service recovery efforts.

## **Enhancing Team Performance**

### **Enhancing the Motivational Affordance of Information Systems: The Effects of Real-Time Performance Feedback and Goal Setting in Group Collaboration Environments [8]**

Increasing globalization has created tremendous opportunities and challenges for organizations and societies. Consequently, a broad range of information technologies to better support the collaboration of diverse, and increasingly distributed, sets of participants is ever more utilized. Arguably, the success of such technology mediated collaboration is dependent upon the quality of each individual's contributions; however, although individuals' motivations to do their best could be significantly influenced by the design of a system's human-computer interface, this area has received little attention within the context of group collaboration environments. We fill this gap by integrating research from human-computer interaction, motivation, and technology

supported group work to theoretically derive mechanisms for increasing each individual's motivation within a collective setting. Specifically, we manipulate the interface of a computer-mediated idea generation system (a widely used collaboration tool) to enhance the system's motivational affordance, i.e., the system's properties that fulfill users' motivational needs. Results from two studies demonstrate that by embedding the theoretically derived mechanisms "providing feedback" and "designing for optimal challenge" into the collaboration environment, significant performance gains were realized. The results suggest that even slight manipulations of the human-computer interface can contribute significantly to the successful design of a wide variety of group collaboration environments.

## **Design of Emergency Response Dashboards**

### **Designing Emergency Response Dispatch Systems for Better Dispatcher Performance [9]**

Emergency response systems are a relatively new and important area of research in the information systems community. While there is a growing body of literature in this research stream, human-computer interaction (HCI) issues concerning the design of emergency response system interfaces have received limited attention. Emergency responders often work in time pressured situations and depend on fast access to key information. One of the problems studied in HCI research is the design of interfaces to improve user information selection and processing performance. Based on cue-summation theory and research findings on parallel processing, associative processing, and hemispheric differences in information processing, this study proposes that information selection of target information in an emergency response dispatch application can be improved by using supplementary cues. Color-coding and sorting are proposed as relevant cues that can improve processing performance by providing prioritization heuristics. An experimental emergency response dispatch application is developed, and user performance is tested under conditions of varying complexity and time pressure. The results suggest that supplementary cues significantly improve performance, with

better results often obtained when both cues are used. Additionally, the use of these cues becomes more beneficial as time pressure and task complexity increase.

## **Conclusions**

A consumer has different expectations or goals when visiting different Web sites at different times. Indeed, consumers visit sites not only to search for and purchase products/services, but also to have rich, entertaining experiences. These goals or objectives determine what type of tasks the consumer performs at a site; different tasks and goals require a different human-computer interactive experience. This program of research has demonstrated that rich behavioral theories can provide clear guidance to system designers. Consequently, it is fundamental that system designers understand why a person is at a website and the theoretical factors that drive improved interaction experiences and stronger customer relationships [10].

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