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ABSTRACT

This paper reports a research agenda in developing an integral model to characterize and explain EC consumer shopping experience. It postulates that consumers' online shopping experience is constituted by successive sessions of activities in intensive and extensive information processing, decision making, and personal knowledge management. It reviews literatures from multiple disciplines, including management information systems, human computer interaction, marketing, psychology, library and information science, to layout the research plans for an integral model that would help not only understand the consumer shopping experience but also suggest useful system features to support it.

Keywords

Electronic Commerce, consumer shopping experience, information seeking, MISE, TAM

INTRODUCTION

Electronic commerce (EC) has continuously grown at a rapid pace. However, potential revenues of EC have yet to be fully realized. Many consumers still are not content with the supports they receive in completing the EC transactions. It was estimated that as many as 55% of EC consumers abandon their shopping carts prior to check out, and 82% abandon them at the point of sales (shop.org, 2001). A research report released by Foreseeresult.com (2005) concluded that electronic commerce (EC) consumers' satisfaction about their online shopping experience would lead to consumer loyalty, retention and acquisition, three keys to the success of EC stores. But what exactly constitute consumers' online shopping experience?

Consumers' shopping experience can be characterized as a series of processes involving information searches and decision making (Cook, 1993; Payne, 1976; Newell & Simon, 1972; Shields, 1980; Svenson, 1979). Hodkison et. al. (2000) found that consumers utilize the information they search to make decision and the decisions made affect successive information searches. EC consumers can be potentially overwhelmed by the amount and types of information to filter through and be empowered to make a wiser decision at the same time (Bakos, 1998; Evans and Wurster, 2000).

Thus, this research postulates that consumers' online shopping experience involves successive sessions of activities requiring intensive and extensive information processing, decision making, and personal knowledge management. Information processing activities include recognition and discovery of information needs, information exchange and dissemination, information searching and retrieving, information use and re-use, information organization and management. The information, once processed, could help generate knowledge and make decisions. The online consumers would need to actively manage their dynamically changing knowledge about the products and the processes of information seeking, decision making, and the task that motivates the desire to purchase.

If an EC store can provide a more efficient and effective shopping experience for online consumers, it could attract consumers to revisit and potentially turn these consumers into loyal consumers. While there are various conceptual models with different foci in different disciplines for conceptualizing consumers' online shopping experience, most of them lack the capability to help EC stores systematically analyze and design useful system features to supports online consumers' in information processing, decision making, and personal knowledge management. This research aims to develop a multi-disciplinary integral model to fill the void.

LITERATURE REVIEW

Literature in MIS and HCI

While prior Information System (IS) literatures have investigated the relationships between perceived quality of EC site elements (e.g., content readability, navigation, ease of search and comparison, etc.) and consumer-oriented outcomes variables (e.g., purchased intentions by Song and Zahedi, 2001, Lee, Park and Ahn, 2001, Sohn, 1999, Lee and Kozar, 2004, price sensitivity and purchase behavior by Lynch and Ariely, 2000) or system-oriented outcomes variables (e.g., store traffic and dollar sales, Lohse and Spiller, 1999), these studies seem to commonly assume that the site elements of EC sites could be evaluated and judged independent of the natures and goals of EC consumers' tasks and of the interaction between the site elements and the consumers. EC consumers could have lots of cognitive uncertainty about the site elements, including the lack of knowledge about the products and/or EC sites and the indecisiveness about the choice of products, etc. EC consumers' tasks could vary from simply learning more about the products to having a targeted product in mind and being to make a purchase. The cognitive uncertainty and task type (and the behavior to embody the task) of EC consumers could be the intervening variables for the relationships between EC site elements and the outcome variables for both consumers and system.

Another huge body of literatures in MIS vs. HCI is about adopting the technology acceptance model (TAM) (Davis, 1989) to explain the factors that affect consumers using web commerce channels for purchasing needs (e.g., Gefen, et. al. 2003; Koufaris, 2002; Koufaris, et. al. 2001; Sanchez-Franco, 2005). Perceived ease of use and perceived usefulness are the two main variables. But why and how certain EC Web sites are "perceived ease of use" and "perceived usefulness" are unexplored. Just like the studies on the site design, these two variables often are not associated with the behavioral (e.g., number of pages viewed, number of iteration of queries) and cognitive variables (e.g., amount of subject knowledge, ability to articulate information, ability to evaluate information) of EC consumers. As a result, these studies could underestimate the direct or indirect impacts of these variables.

Moreover, MIS, as a discipline, actually has not focused much on information searches by EC consumers. Information searches, often, is a concept that is partially explained or implied by other constructs. For example, beneficial search engine as a dimension of online service quality (Gefen and Devine, 2001), perceived self-efficacy and perceived resource facilitation as belief constructs (Song and Zahedi, 2001), navigation, ease of use, usefulness, and information quality (Saeed et. al. 2003) all indicated that it is important for consumers to effectively locate information about the products/ services from EC stores. But these studies cannot depict the granularity of consumers searches because they neglect the contextual factors such as information tasks leading to EC activities. Consequently, these studies could not suggest system features that could substantially contribute to consumer loyalty, retention and acquisition.

Literature in Marketing and Psychology

Most of consumer information search literature could be found in the fields of marketing and psychology. Lee and Lee (2005) summarized the three general perspectives on information searches in current literature. The first is the application of the economics of information theory to explain cost (i.e., search time and efforts) and behavior (i.e., amount) of external information searches. The second is the psychological or motivational approach to explain the effects of product involvement (e.g., relevance), and search goals (e.g., optimizing vs. satisfying) on the search direction and intensity. The third is the information processing approach that emphasizes the effects of consumers' memory and cognitive abilities on the search behavior, e.g., prior knowledge, familiarity, experience (Brucks, 1985; Johnson and Russo, 1984; Punj and Staelin, 1983) and expertise (Alba and Hutchinson, 1987), etc.

Lee and Lee (2005) went on to propose their own causal model of online information searches. The model, incorporating the three groups of variables in consumer ability (skill, purchase experience, knowledge), net benefits (perceived risk, situational involvement, media attitude, time pressure, product characteristics), and motivation (enduring involvement, need for cognition, shopping attitude), did provide a better view of information search behavior, but its ultimately concern was about the amount of information search and its leading factors. Chiang, Dholakia, and Westin (2005) proposed a similar, but less comprehensive model than Lee and Lee (2005). In their model, system variables like cognitive interruption by pop-up ads and banners and information loading speed were included, but fewer are motivational, psychological and personal variables. The linkage from the cognitive and behavioral variables in online shopping experience to consumer outcomes variables is still missing in both models.

Hodkinson and Kiel (2003) proposed an exploratory model on Web information search behavior. The model did explore the relationships between web search behavior variables (e.g., the breath and depth of Web searches) and Web search outcomes (e.g., purchase decision, post-search satisfaction). However, it did not discuss cognitive variables that determine whether and how information searches would be perceived as successful or useful. Searchers' knowledge and prior experience with products and EC stores are not accounted for. Although consumers' Web search tasks were included in the model, characterization of search tasks was void.

Literature in Library and Information Science

LIS also has a tradition in information searches with rich literature on information seeking behavior and evaluation of information retrieval systems. Several views in the literature could be particularly useful in helping constructing an integral model in EC consumers' shopping experience. First, the literature emphasizes how the situational and contextual factors in the information seeking process dictate the evolving nature of searchers' information needs and the relevance of the documents matching information needs is dynamic rather than static (e.g., Ingwersen, 1996; Schamber, Eisenberg, and Nilan,1990). Such a view can be expanded to explain in detail the tightly coupling of consumer information searches process to the overall EC shopping experience.

Second, the literature establishes that searchers could have an anomalous state of knowledge (Belkin, 1980) and thus are uncertain about how to articulate the queries to search (e.g., Kuhlthau, 1991, 1993). The view makes it imperative to consider the consumers' knowledge state, goals, and task types when studying EC consumers' behavior.

Third, the literature depicts how the searchers interact with not just information systems, but also information itself (Belkin, 1996; Ellis, 1989, 1993; Lin and Belkin, 2005). The searchers' knowledge state could be changed by interacting with the information (e.g., reading, extracting, assimilating, differentiating, etc.) in the information system, which further helps searchers improve the understanding of their own information needs. The view implies that the information system should support searchers not only in retrieving information to satisfy their information needs, but also in managing and using the information found.

Fourth, new research thrusts have started looking into a variety of information seeking behavior, including multi-tasking information searches (Spink, Ozmultu and Ozmultu, 2002), multi-session information searches (e.g., Lin, 2005; Spink, et. al. 2002; Vakkari, 2001), multi-partner collaborative information searches. Such a variety of information seeking behavior is likely applicable to EC consumer online searches.

Many large conceptual models that incorporate the four views above to explain information searches have been developed, including the Information Search Process model, abr. ISP (Kuhlthau, 1991, 1993) and the Multiple Information Seeking Episodes model, abr. MISE (Lin and Belkin, 2000, 2005). The ISP model with stage-oriented perspective claims that successive information searches migrate through the stages of task initiation, topic selection, pre-focus exploration, focus formulation, information collection, and search closure. The MISE model with a problem-oriented perspective postulates that the nature of information problems would affect how different cognitive and behavioral variables in the process of successive searches evolve and subsequently identifies eight different problem archetypes for successive searches.

MISE could be more relevant than ISP to help build an integral model for online consumer behavior because its eight problem archetypes could help identify the tasks for which consumers interact with EC sites. MISE also has been applied to study information seeking tasks in a non-library setting and is one of the few information search models that actually have been successfully applied as the design framework to derive system requirements for supporting successive searches (Lin 2001a; Lin, 2001b; Lin 2002).

A RESEARCH FRAMEWORK

The extensive literature review shows that different disciplines have different perspectives to offer. The TAM model (Davis, 1989) and its variations and trust research (e.g., Gefen, et. al. 2003) in MIS are useful for the outcome evaluation matrix, such as perceived usefulness, perceived ease of use, intention to purchase, intention to return, e-loyalty, etc. The consumer research from the marketing and psychology explains the impacts of knowledge, motivation and product types on information searches. The MISE model (Lin and Belkin, 2000, 2005) from LIS depicts a detailed information searches process tied into information use activities like EC transactions and decision making.

The MISE model can serve a starting point to synthesize constructs from these different theories into an integral model, because MISE can account for almost all variables found in the literatures on consumer information searches from other disciplines. MISE characterizes information searches with the variables in the classes of problematic situation, information problems (a term putting an emphasis on the dynamics of information needs), information seeking process, search episodes, search context, information collection, system, and information use activities (including decision making and problem solving).

To integrate various models from different disciplines, three research propositions are made. First, in common with marketing and psychology literatures, MISE explains information searches as a cognitive, constructive, and continuous process, in the sense that searchers seek for information to amend and improve their knowledge state that is too deficient, outdated, or conflicting to explicate the information problems at hands. For example, the three dimensions of variables in the model of Lee and Lee (2005): consumer ability, net benefits, and motivation reflect well the classes of MISE variables in problematic situation and information problems, which affect the class of variables in information seeking process.

Second, the MISE variables in the class of the information seeking process (including the abilities to articulate the information problems, navigate the information space, evaluate the search outcomes, monitor the search status) could theoretically be considered the antecedents to the variables of "perceived ease of use" (PEU) and "perceived usefulness" (PU) in the TAM-based consumer behavior models, in which PEU and PE could affect both user-oriented and system-oriented outcome variables.

Third, MISE identifies eight different tasks (e.g., transmuted information problems, spawned information problems, envisioned information problems, etc.) and characterizes them with its eight classes of variables. With the task/ technology fit model (Goodhue and Thompson, 1995; Goodhue, 1998) asserting that the correspondence between information systems functionality and task requirements would lead to positive impacts on user performance, the task type could moderate the conceptual relationships described in the first and second research propositions. In other words, some variables about consumer ability, net benefits, and motivation would affect consumers' abilities to engage in information seeking process more than others, depending on the task types. And for some tasks, certain abilities to engage in information seeking process will be more important than others to influence PEU and PU of the EC web sites.
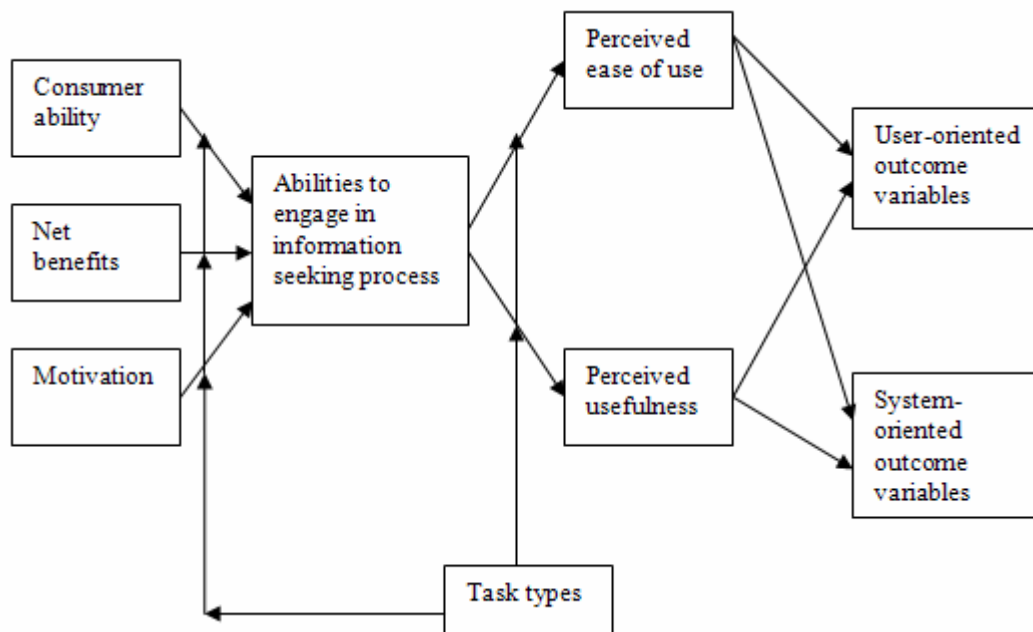

Figure 1 the research propositions in the integral model for EC consumer shopping experience

Figure 1 depicts these three research propositions. If all the research propositions above are confirmed, it will suggest that the integral model is indeed useful for helping understanding different tasks of consumer shopping, suggesting new useful functionalities for supporting those tasks and evaluating the suggested functionalities.

NEXT STAGE OF WORK

This research will proceed with the following three stages. In stage I, I will further elaborate the relationships among constructs in MISE, TAM and other relevant marketing literature to develop the first draft of the integral model. The operationalization of the constructs will be derived from the prior relevant literatures. In stage II, *all* the Web sessions of study participants over a long period of time will be recorded. Study participants will be interviewed in order to observe the validity of constructs and the postulated relationships among them, and to explore how different sessions are related conceptually and temporarily. The results will help revise the first draft of the integral model. In stage III, various controlled experiments directed to answer more specific and more focused research questions about the conceptual relationships among constructs in the model will be carried out. The research results of these experiments, as a whole, will help test the validity and reliability of the revised integral model and lead to the final draft of the integral model.

EXPECTED CONTRIBUTIONS

The intellectual merits of this research are multi-faceted. First, the integral model in development would be created by reviewing multi-disciplinary literature, including MIS, LIS, marketing, human computer interaction, psychology, etc. It would facilitate scholar communications among different academic disciplines on the design of EC Web sites. Second, the integral model can serve as the foundations to draw research hypotheses and generate research questions about the behaviors of EC consumers. Third, the integral model is design-oriented, providing a systematic way to describe, identify the strength and weakness of the concerned behaviors and inspire system requirements. Fourth, the integral model can serve as the evaluation matrix to evaluate the acceptance of the design of EC stores with both consumer-oriented and system-oriented outcome measurements.

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