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Recommended Citation

Lewis, William, "Flow in Computer-Mediated Environments: Strategies for Electronic Commerce on the World Wide Web" (1997).
AMCIS 1997 Proceedings. 124.
<http://aisel.aisnet.org/amcis1997/124>

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Flow in Computer-Mediated Environments: Strategies for Electronic Commerce on the World Wide Web

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Abstract

The World Wide Web is a hypermedia computer-mediated environment (CME) allowing access to multimedia content through hyperlinks across the Internet. Under conditions of intense use, Web users may experience a state of enhanced interaction known as flow. By customizing Web site content to match individual user characteristics, IS managers can increase user flow and, subsequently, the number of electronic commerce transactions conducted on the site. Descriptions of flow and customized content are developed and propositions with implications for electronic commerce are presented.

Introduction

The Internet is a global network of individual computer networks that deliver each others' data, often free of charge. A recent Project 2000 study (Hoffman, Kalsbeek, and Novak 1996) estimates that 11.5 million Americans have access to the World Wide Web, a portion of the Internet that allows users to view multimedia content (e.g., graphics, audio, video, text, etc.). Millions more users are expected to join their ranks over the next few years. The tremendous growth of the Web has created an on-line market of firms and consumers interacting in dynamic and untraditional ways.

Hoffman and Novak (1996) describe the Web as a hypermedia computer-mediated environment (CME) allowing access to multimedia content through hyperlinks across the 'Net'. The authors view the CME as a many-to-many communication model, where consumers and firms interact not just with each other, but with the medium as well. Unlike traditional, static one-to-many models such as newspapers, television, billboards, and radio, this new communication mechanism allows the sender and receiver to progress beyond simple transmission of information or content and create a mediated environment that both can experience. If the user's interaction with the electronic environment is intense enough, he/she may slip into a state of highly focused attention, concentration, and awareness - the flow state. This paper will describe flow and offer a set of propositions with implications for electronic commerce (EC) strategies.

Flow in Computer-Mediated Environments

"...[a consumer] may choose to use a [CME] not merely for the utilitarian purpose of communicating...but because he or she enjoys interacting with the technology" (Trevino and Webster, 1992).

The concept of involved enjoyment has been a topic of interest to researchers for many years. Scholarly manuscripts from myriad academic fields have been published on the topic, although each group of researchers seemed to develop their own label for the construct: Psychology - absorbed attention; Consumer Research - felt-involvement, optimum stimulation level; Communications - flow.

Among the first prominent researchers of the flow construct, Csikszentmihalyi (1977) described flow as "the process of optimal experience". Hoffman and Novak (1996) suggested that when in the flow state, "...irrelevant thoughts and perceptions are screened out and the consumer's attention is focused entirely on the interaction. Flow thus involves a merging of actions and awareness, with concentration so intense there is little attention left over to consider anything else".

Research suggests that flow can have a substantial effect on a consumer's level of satisfaction with their computer-mediated environment. Webster, Trevino, and Ryan (1993) state, "...employees who interact more playfully with computers should view computer interactions more positively than those who interact less playfully". There may be negative effects of playfulness as well, such as longer time required to complete a task and adversely high levels of involvement (Webster, et. al. 1993) These drawbacks pose a concern [in the work environment] for managers who are responsible for organizational productivity. From a firm's EC transaction perspective, however, extended playfulness by the consumer may actually be desirable since higher levels of flow could led to greater satisfaction for the user which could in turn impact purchase behavior.

In order to enter and remain in the flow state, the user's perceived skill level for manipulating and navigating the CME must be in congruence with the perceived challenges. If skills exceed challenges, the user will become bored and end the CME session, whereas if challenges exceed skills, the user will experience anxiety at not being able to control the situation and will likewise exit the CME (Hoffman and Novak, 1996). Some Web users, such as EC beginners, are reluctant to carry out purchase transactions due to the fear of electronic payment fraud (e.g. stolen credit card number, etc.). This fear creates a level of anxiety that will eject these users from the flow state when making an electronic purchase. This creates a dilemma for IS managers who strategically design corporate Web sites to facilitate and increase user flow and satisfaction, but find that using the technology to "close the sale" may have the opposite effect on the flow states of certain users. This leads to the following proposition:

P1: Web users who are in the flow state will not conduct EC transactions if they are afraid that electronic payment fraud might occur.

This congruence requirement for presence of the flow state is consistent with the optimal stimulation level (OSL) theory, which holds that: "...the relationship between stimulation and a person's affective reaction to stimulation follows an inverted U curve, with intermediate levels of stimulation creating the most satisfaction" (Steenkamp and Baumgartner, 1992). In a single Web session, the skills of the user are fixed. Thus, if the amount of stimulation the person is experiencing exceeds a certain subjective limit, the user will become anxious and the level of enjoyment of the experience will start to fall off dramatically. This loss of the OSL will cause the user to end the session.

Steenkamp and Baumgartner (1992) developed three propositions that were borne out by their research study: individuals with higher OSLs will generate more cognitive responses to an ad, especially curiosity-motivated responses, than individuals with lower OSLs individuals with higher OSLs will exhibit more variety-seeking behavior in a product category than individuals with lower OSLs individuals with higher OSLs will be more willing to make risky choices than individuals with lower OSLs.

These hypotheses suggest that a differentiation strategy for the Web site content may produce user behavioral modifications that can increase EC transactions. With the use of server-based software and logs, site content can be varied according to the user's OSL. For instance, if visitors to the site could be identified and tracked over time, an OSL profile could be developed that would be utilized to seamlessly connect the user to a version of the page that has been specifically designed for their individual OSL. This is known as narrow-casting, the transmission of a message over some medium to a small group or a subset of the total possible audience available. Customized content is a new-fashioned technique made possible by the hypermedia CME. It is currently also being developed for use in interactive television and digital radio. This leads to the second proposition:

P2: Use of customized content on a Web site will increase the number of EC transactions conducted by visitors to the site.

Hoffman and Novak (1996) view flow as measurable along a continuum and characterized by two distinct categories: (1) experiential oriented and (2) goal-oriented. Experiential flow activities are dominated by hedonic motivations. Web users in this flow state navigate for the involved enjoyment and loss of presence

they experience. Loss of track of time and of the ability to distinguish one activity from the next will result. Goal-oriented flow activities, on the other hand, are utilitarian or task-focused in nature. Since EC transactions require cognitive processing of product and ordering information, if the user is experiencing flow, he must be positioned more toward the cognitive end of the continuum before carrying out a purchase transaction.

IS managers may be able to increase the proportion of site visitors who complete purchase transactions by taking a proactive view of user flow. A regulating scale can be used with goal-directed and experiential flow at the extremes (Figure 1).

Figure 1 is useful because it visualizes a movement along the flow continuum towards the goal-oriented end of the spectrum, where purchase transactions will occur while the user is in flow. At some intermediate stage, the user will begin to experience felt-involvement, an overall subjective feeling of personal relevance (Celsi, 1988) to the content of the Web site. Felt-involvement can be increased by use of customized content which, if adjusted gradually over time, could move the consumer into goal-directed flow, where purchase transactions can take place. This leads to the final proposition:

P3: Use of customized content over time will move the user from experiential to felt-involvement to goal-oriented flow.

Conclusion

In recent years, the tremendous growth of the World Wide Web has created an on-line market of firms and consumers interacting in dynamic and untraditional ways (Hoffman and Novak 1996). The Web is a hypermedia computer-mediated environment (CME) allowing access to multimedia content through hyperlinks to the Internet. This communication mechanism allows both the sender and receiver to progress beyond simple transmission of information or content and create a mediated environment that both can experience.

When the user interacts intently with the CME, a state of highly focused attention, concentration, and awareness may result. This so-called flow state can have a substantial effect on a consumer's level of satisfaction with their computer-mediated environment (Webster et al., 1993). This paper defined flow and customized content and developed theoretical propositions with implications for IS managers striving to increase the number of electronic commerce transactions conducted by visitors to their respective corporate Web sites.

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