

Interactivity and Revisits to Websites: A Theoretical Framework,
Ruby Roy Dholakia, Miao Zhao, Nikhilesh Dholakia, and David R. Fortin,
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Working Paper

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2000

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Abstract

Interactivity is a key component of the New Media but it is a loosely defined term and implemented in many different ways, depending on the goals of particular websites. After a review of definitions of interactivity, key components of the construct are identified from the perspective of Web site visitors including User Control, Responsiveness, Real time interactions, Connectedness, Personalization/Customization and Playfulness. A theoretical framework is proposed to relate the interactive dimensions to revisits. The framework takes into account the processes that promote revisits as well as different types of Web sites. Four types of websites are considered - shopping, information, entertainment and communication sites.

Key Words: interactivity, revisits, types of Websites

With the enormous growth in the use of the Internet by businesses and consumers, websites face three major challenges:

- to get people to visit for the first time (or reach measured in terms of unique visitors to a site);
- to make them stay at the site (or “stickiness” measured by time spent per visit); and
- to get people to repeatedly visit the site (or frequency measured by the number of repeat visits over a specified period of time).

The phenomenal increase in the number of Internet users has meant an increase in reach. In the month of April 2000, Yahoo! generated 45.05 million unique visitors; in one month (May 2000), the site’s reach had increased by 180,000 visitors (NetRatings 2000). Millions of unique visitors, attracted by special deals available only online; opportunities to participate in games of various kinds, risk analysis, quizzes and other forms of entertainment; and by advertising such as banner ads have visited various sites (Dalin 1999; Gamble 1999; Opiela 1997). Stickiness and

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frequency have been more difficult to achieve. A survey conducted by Engage Technologies and Nvision estimate that 80 percent of Web users never return to a site and 35 percent of surfing time is concentrated on only 50 of the Internet's top sites (Cyberatlas 1999).

For purposes of this paper, we only focus on interactivity as it affects revisits to Web sites. The objectives of the paper are threefold: First, to provide a clear definition of interactivity, and to identify its key components. Second, the paper examines the relationship between interactivity and revisits to Web sites. Finally, the importance of interactivity dimensions is related to four different types of websites.

Definition and Dimensions of Interactivity

Interactivity is a process-related variable characteristic of communication settings. It is a critical concept in computer-mediated communications (CMCs) because it is seen as the key advantage of the medium (Fortin and Dholakia 2000; Rafaeli and Sudweeks 1997; Williams, Rice and Rogers 1988). Some researchers believe that the *Web's interactive* nature, i.e. the ability of the user to receive and transmit messages create a totally new communication environment. Instead of the traditional model of one-to-many communication, the Web is a "many-to-many" channel of communication (Hoffman and Novak 1996; Rust and Oliver 1994; Venkatesh, Dholakia and Dholakia 1996).

Despite the "hype" about *interactivity* in the popular press, the term is used rather loosely and means many things to many people. Hoffman and Novak (1996) distinguish two levels of interactivity: person-interactivity that occurs between humans through a medium and machine-interactivity which occurs between humans and machines. Rafaeli and Sudweeks (1997) define interactivity from the perspective of interpersonal communication, as "the extent to which

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messages in a sequence relate to each other, and especially the extent to which later message recount the relatedness of earlier message”. A review of the literature leads Fortin (1997) to define interactivity as “the degree to which a communication system can allow one or more end users to communicate alternatively as senders or receivers with one or many other users or communication devices, either in real time (as in video teleconferencing) or on a store-and-forward basis (as with electronic mail), or to seek and gain access to information on an on-demand basis where the content, timing and sequence of the communication is under control of the end user, as opposed to a broadcast basis.”

Table 1 selectively summarizes some of the key definitions of interactivity.

Table 1: Reviews of Definitions of Interactivity

Authors	Definitions of Interactivity
Wiener (1950)	Notion of <i>feedback</i> : a method of controlling a system by reinserting into it the results of its past performance.
Steuer (1992)	The extent to which users can modify the form and content of a mediated environment in <i>real-time</i> .
Rafaeli and Sudweeks (1997)	The extent to which message in a sequence relate to each other, and especially the extent to which the last message recount the relatedness of earlier message.
Williams, Rice and Rogers (1988)	The degree to which participants in a communication process have control over, and can exchange roles in, their mutual discourse.
Ha and James (1998)	The extent to which the communicator and the audience respond to each other's communication need.
Fortin (1997)	The degree to which a communication system can allow one or more end users to communicate alternatively as senders or receivers with one or many other users or communication devices, either in real time (as in video teleconferencing) or on a store-and-forward basis (as with electronic mail), or to seek and gain access to information on an on-demand basis where the content, timing and sequence of the communication is under control of the end user, as opposed to a broadcast basis.

While there is considerable overlap in the definitions, different sets of dimensions are incorporated in the interactivity construct. Williams, Rice and Rogers' (1988) definition of interactivity includes three dimensions - control, exchange of roles and mutual discourse. Heeter (1989) identified six dimensions of interactivity of the new media - complexity of choice available, effort users must exert, responsiveness to the users, monitoring information use, ease of adding information and facilitation of interpersonal communication. Ha and James (1998) studied the interactivity of early business Web sites and proposed five dimensions of interactivity – playfulness, choice, connectedness, information collection and reciprocal communication.

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Fortin's (1997) definition implies user control, exchange of roles and includes synchronous as well as asynchronous communication.

In addition to multiple dimensions of the interactivity construct, it is also clear that it is a continuum (Fortin 1997); it is not just a matter of "either you have it or you don't" (Heeter 1989). Interactivity is a quality of a communication setting, which can *vary* within the same medium (Rafaeli, 1990). A website, for example, could simply be a page of text without any links, feedback options or search engine. Such a site would score very low on the interactivity continuum even though it is part of a *potentially* highly interactive medium. Conversely, some television broadcasts such as infomercials and shopping channels that allow for immediate response through the use of toll-free telephone numbers or on-the-air live interaction with the show's hosts would score much higher on the interactivity continuum. This example also illustrates the use of multiple media to achieve interactivity in a communication setting.

Based on the review of definitions of interactivity, the following six components may be described as critical to the construct of interactivity:

1. **User Control** – refers to the extent to which an individual can choose the timing, content, and sequence of a communication. Users will have a feeling of control, a dimension proposed by Williams et. al (1988), when they can choose - between "text only" and "text plus graphics", select the language, or use a search engine to find the information they want. Control may also be associated with minimizing effort in the achievement of a task ("effort user must exert" proposed by Heeter 1989). It also means control over the role played in the

communication environment – of a receiver as well as a sender of messages (Fortin 1997).

Heeter (1989) defines this as “the degree to which users can add information to the system that a mass undifferentiated audience can access”. As one of the key characteristics of the New Media, user control is considered explicitly in definitions of interactivity (e.g. Williams, Rice and Rogers 1988; Fortin 1998. Bezjian-Avery, Calder and Iacobucci (1998) emphasise user control in their definition of interactivity.

2. **Responsiveness** – is the relatedness of a response to earlier messages. This is a key characteristic of Rafaeli and Sudweeks’ (1997) definition: “the extent to which messages in a sequence relate to each other, and especially the extent to which later messages recount the relatedness of earlier message”. This is similar to Deighton (1996) who emphasized the ability to specifically address an individual and the ability to gather and relate responses so as to carry on a “conversation” with that specific individual. Responsiveness is “mutual discourse” (Williams, Rice and Rogers 1988). Users gauge responsiveness of a system from direct communication as in a reply to an email; or indirectly from actions taken as in changes in the website because of an expressed opinion.
3. **Real time interactions** – refers to the speed with which communication takes place, particularly response time. This is a key component of Steuer’s (1992) definition of interactivity. Not all communication takes place or need to take place in *real time* as recognized by Fortin (1997): “either in real time (as in video conferencing) or on a store-and-forward basis (as with electronic mail)”. Faster the response, greater the perception of interactivity. Instant messaging, for instance, is an attempt to improve perceived interactivity of a site over traditional store-and-forward e-mail.

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4. **Connectedness** - is the feeling of being linked to a world outside the specific site. This can be created through hyperlinks to related topics and sites, online chat rooms, discussion forums, newsgroups and other efforts that build a sense of community. Connectedness creates expectations of response from other visitors but not the specific site visited which takes on the role of a facilitating medium. Greater the connectedness, the more interactivity perceived by visitors.
5. **Personalization/Customization** - reflects the degree to which information is tailored to meet the needs of the individual visitor. As distinct from user control and responsiveness, personalization/customization is incorporated in the system's ability to use information - provided by the user and/or collected by the system - to offer a custom tailored web experience. While an automated email response function may increase the perception of responsiveness, it does not increase the perception of personalization/customization. Using questionnaires and/or collaborative filtering, personalization/customization efforts are undertaken by sites such as Amazon.com to recommend books, videos, music and toys.
6. **Playfulness** - refers to the entertainment value of a site. Eighmey (1997) concluded, after examining consumers' evaluations of five different Web sites, that a successful Web site must combine both entertainment and information to add value perceived by consumers. Playfulness may include features such as humorous animations or interactive games where the intent is to provoke an emotional or behavioral response from the viewer. Ha and James (1998) related playfulness to the entertainment value provided by interactive games and curiosity-arousal devices. Playfulness is a dimension that includes a visitor's interactions with a website (machine-interaction) as well as multi-person games (person-interaction).

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Sites that are rated to be more playful are likely to lead to their perception as being more interactive.

Interactivity and Revisits

Rafaeli (1988) had indicated that interactivity could lead to increased satisfaction but the process may not be a direct one. Research on repeat behaviors and loyalty has established the link between satisfaction and repeat behavior. We propose the following process linking perceived interactivity with revisits as indicated in Figure 1: Increased interactivity leads to perception of greater social presence and empowerment which in turn lead to higher satisfaction and probability of revisits. Fortin and Dholakia (2000) found a positive relationship of interactivity with social presence. Rafaeli and Sudweeks (1997) linked interactivity in communication settings with the attitudinal dimensions of acceptance and satisfaction.

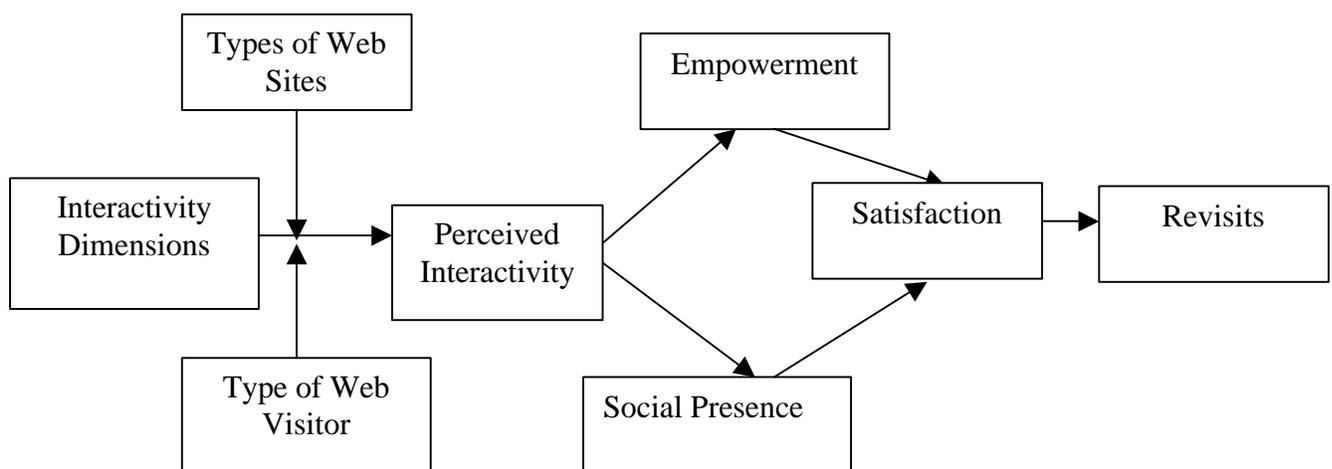


Figure 1: The Relationship between Interactivity and Revisits

Social Presence: Social Presence represents the degree to which a website conveys the perceived presence of communicating participants in the two-way exchange (Short et al. 1976). This is also termed “telepresence” in Hoffman and Novak’s (1996) model of network navigation. Interactivity is likely to create feelings of Social Presence for the user through the availability of open channels allowing for two-way communication. Hence our first hypothesis:

Proposition 1: There is a positive relationship between the degree of Interactivity of a website and the Social Presence it conveys.

Empowerment: Thomas and Velthouse (1990) define empowerment as increased intrinsic task motivation. Within a communication setting, empowerment comes from the ability to voice an opinion, to skip a commercial, to call up specialized data and information sources and to communicate with varied and distant participants. Because interactivity is likely to make visitors feel that they possess control over the communication, it is likely to increase perceived empowerment.

Proposition 2: There is a positive relationship between the degree of Interactivity of a website and the Empowerment it conveys.

Perceived Interactivity: Hoffman, Novak and Chatterjee (1995) argue that repeat visits is partly a function of Web site design and depends to a large extent on customer perceptions. While perceived interactivity is related to interactive features included in the Web site design, it

is not synonymous with it. Perceived interactivity is influenced by two major factors – type of websites and types of visitors.

Types of Web sites. Swaminathan, White and Rao (1999) suggest several uses of the Internet – as a source of communication, information, entertainment, and commercial transactions. Others have looked at three types of revenue-generating sites: advertisement-based, transaction-based and subscription-based (Student Project 1999). Even though most sites can be easily categorized, such as Luckysurf.com, it is hard to define some websites which combine many different uses and revenue models. For example, visitors can shop, search for information, chat, and play games at Yahoo.com. When visitors go to Yahoo.com mainly for searching information, it is considered an information site; when they visit for playing games, it is an entertainment site.

Proposition 3: Perceived interactivity will be related to the type of websites.

Types of Web Visitors. Newhagen, Cordes and Levy (1995) examined e-mail response to a NBC broadcast and treated interactivity as an individual trait, not only a characteristic of the medium or the technology used in the CMCs. They argue that perceived interactivity is the psychological sense message senders have of their own and of the receiver's interactivity. Moreover, perceived interactivity was conceptualized along two similar dimensions: perceived sender interactivity and perceived system interactivity. Perceived sender interactivity can be judged in terms of senders' sense of their own ability to generate an efficacious message. Perceived system interactivity can be rated in terms of the message senders' expectations that their message will be read and receive a response. For example, just the Email address button

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may increase the perceptions of interactivity; however, it may mean one thing to a visitor who is a heavy user of Email and another visitor who is more of a lurker.

Proposition 4: Perceived interactivity will be mediated by and dynamically related to visitor characteristics.

Interactive Dimensions and Revisits

Because of the moderating influence of website and web visitor characteristics, interactivity dimensions will affect revisits via different mechanism. In this section of the paper, we explore the relationship between interactivity dimensions and types of websites. We look at four types of websites: shopping, information, entertainment and communication.

Shopping sites. Consumers linking to shopping sites want to quickly and easily find and purchase appropriate goods. They want the site to easily answer questions such as: how can I find books by a particular author? How can I find books that are similar to books I like? How do I know what the reading level of a book is? Where can I get reviews or recommendations? Therefore, shopping sites should possess speed (real time interaction), flexibility (user control), feedback (responsiveness), customization and community environment (connectedness) (Fleming, 1998). For example, Amazon.com offers a search box on each page that provides advanced search feature allowing consumers to search for a book in different ways. Once registered, 1-Click ordering offers the fastest way to buy a book. Consumers have the choice of using 1-Click or the standard shopping cart. Either way, the site tells consumers clearly what they have ordered, and what the next steps are. The recommendation center, the BookMatcher, provide recommendations based on a particular customer's buying history and collaborative filtering. Swaminathan, White, and Rao (1999) argue that shopping websites should take

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advantage of discussion groups, chat forums etc. in order to enhance community feature to attract those shoppers guided by social interactions. Garden.com, for instance, built-in simple and easily used discussion forum where visitors are able to talk to others about gardening issues. When consumers get the information and want to buy a product, they can click on the icon directly.

Proposition 5a: Interactivity is positively related to revisits to shopping sites. Real time interaction, responsiveness, and customization dimensions of perceived interactivity are most important to consumer revisits to shopping sites; playfulness is the least important dimension.

Entertainment sites. Immersion is an important part of entertainment (Fleming 1998).

Entertainment sites should foster the immersive experience to attract revisits. Choice is important and the ability of the player to exercise that choice (user control) in terms of selecting a specific game, the level of difficulty of the games, and choice of partners. Furthermore, allowing visitors to exchange information helps improve their skills, which lead to revisits. For example, www.games.yahoo.com offers more than 30 different kinds of games, including games played with partners and single player games. It also shows how many people are playing in each game room. A player's profile can be obtained by clicking on his/her name. In reviews and news sections of the site, players may search a game via name, genre, or platform. The community section gives the players opportunities to find a friend, opponents and strategies. Players may talk about a particular game in appropriate clubs classified by games, and may suggest new games. Playfulness, real time interactions and user control are essential for revisits to entertainment sites followed by user control and connectedness.

There is likely to be a non-linear relationship with interactivity and revisits to entertainment sites. As interactivity of a entertainment site increases, it is likely to make a greater demand on

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bandwidth and hardware configurations. For example, www.game.yahoo.com advertises no extra plug-ins; while the waiting time is little, the level of game “difficulty” is low particularly in comparison to CD-ROM and video arcade games. We propose that:

Proposition 5b: Inverted-U relationship exists between interactivity and revisits to entertainment sites. Playfulness, user control and real time interactions of perceived interactivity are most important to revisits to entertainment sites.

Information sites. To meet users’ needs and demands, information sites must be faster, cleaner, better organized, more up-to-date, and more content-rich than any other type of site (Fleming 1998). Revisits are encouraged when it is easier for visitors to get the information they need. For example, when visitors link to msnbc.com, a navigation bar offers a clear picture of the content departments while a rotating “hot news” item allows users to jump immediately to an article or feature without navigating through hierarchical levels. Moreover, MSNBC interactive allows visitors to link to other related news related. Search engine helps users reach the content directly. When visitors input the zip code, a page of local news, sports and weather quickly appears. These interactivity dimensions help visitors reach appropriate and personalized information quickly. Therefore, the more interactivity, especially, the higher level of personalization/customization, real time interactions and user control, the more users’ revisits to information sites. We propose:

Proposition 5c: Interactivity is positively related to revisits to information sites. Personalization/customization, real time interactions and user control dimensions of perceived interactivity are more important to revisits to information sites than playfulness and connectedness.

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Communication sites. Visitors go to communication sites for social interaction that is becoming more and more important in cyberspace (Fleming 1998). Member interaction, participation, and content co-creation are the central value visitors anticipate at communication sites. Usually visitors are required to register before they begin communicating. After a user logs on, s/he may view a list of topics available for browsing. Choosing a topic, the user can view what others are talking about, and can contribute a new source or comment on an existing one. Users can choose a chat room, and start a public many-to-many chat. They also can choose one-to-one direct communication. Users may use a search engine to find people with same interests, check whether they are online, send information and invite them to talk. For example, bbs.mit.edu offers many discussion rooms, such as Chinanews, Shopping, Love, etc.,. After registration, users are eligible to post articles on the Web. They may discuss their problems with the friends on the Web. They even may unite to get a lower price from www.mopshop.com. For revisits to communication sites, connectedness is the most important dimension of interactivity; user choice and responsiveness are also important.

Proposition 5d: Interactivity is positively related to revisits to communication sites. The connectedness dimension of perceived interactivity is most important to revisits to communication sites followed by playfulness and real time communication. Playfulness and responsiveness are likely to much less important.

The relative importance of interactivity dimensions for different types of websites are summarized in Table 2.

Table 2: Relative Importance of Interactivity Dimensions

	Shopping Site	Entertainment Site	Information Site	Communication Site
Most Important Dimensions	Responsiveness Real time	Playfulness Real time	Customization/ Personalization	Connectedness

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	interactions Customization/ Personalization	interactions User Control	Real time interactions User Control	Playfulness Real time Interactions
Less Important Dimensions	Playfulness	Responsiveness	Connectedness Playfulness	Responsiveness

Conclusions and Further Research

Even though the term “interactivity” has been widely used, its conceptualization is still not clear.

In this paper, we identify six key dimensions of the interactivity construct – user control, responsiveness, real time interactions, connectedness, personalization/ customization, and playfulness. We focus on revisits and propose a framework that traces the effect of interactivity dimensions through intermediate stages of perceived interactivity, social presence, empowerment, and satisfaction. A closer look at the relationship between interactivity dimensions and revisits takes into consideration four types of websites – shopping, entertainment, information and communication. The relationship between interactivity and revisits are expressed through a series of propositions.

The paper is an attempt to provide a more systematic analysis of the interactivity construct. It is still at the theory development stage. Further research is needed to operationalize the interactivity dimensions and empirically test the proposed relationships.

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