



Internet apprehensiveness

An examination of on-line information seeking and purchasing behavior

Internet
apprehensiveness

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Abstract

Purpose – A model of the relationships between individuals' perceptions of internet use and internet usage behaviors is presented and tested. The purpose of this paper is to propose that a lack of perceived responsiveness to on-line communication is positively related to individuals' general resistance to use the internet as a communication information exchange medium, termed general internet apprehensiveness (GIA). Perceptions of GIA are negatively associated with on-line information-seeking behavior, and positively associated with individuals' resistance to or fear of using the internet for on-line retail transactions, termed transactional internet apprehensiveness (TIA).

Design/methodology/approach – College-aged students reported their attitudes about on-line information seeking, on-line purchasing, and their on-line information seeking and purchasing behaviors. The model presented is tested with path analysis to assess the variables' interrelationships.

Findings – Ultimately, lack of responsiveness is positively related to GIA, GIA is negatively related to information-seeking behavior, and TIA is negatively related to consumers' on-line purchasing of goods and services.

Research limitations/implications – The student sample used in this study prevents us from making broad-based generalizations. While students represent a large base of internet users and have been presented as a viable population to study in investigations for both academic audiences and marketing practitioners, future research will continue to benefit from more diverse samples of internet users.

Practical implications – This study offers hospitality professionals a better understanding of the elements that inhibit or encourage on-line information seeking and purchasing behaviors.

Originality/value – This paper further defines the socio-demographic factors that inhibit consumers from using the internet as both an information-sharing tool and purchasing medium.

Keywords Electronic commerce, Information retrieval, Internet, User studies, Consumer behaviour, United States of America

Paper type Research paper

There is a growing trend among communication scholars interested in communication technologies to synthesize and apply existing theories of communication processes to internet communication and use. As new internet innovations continue to be introduced, individuals faced with choices of adoption and use are likely to experience a sense of uneasiness and reluctance regarding the new technologies. Internet apprehensiveness is presented here as a way to gauge individuals' perceptions of internet communication and technology and how the internet apprehensiveness is related to internet use for on-line information seeking and purchasing behaviors.



While the internet potentially offers numerous advantages to users, there are limitations associated with the internet as well. There is currently no direct overarching governing system to regulate internet sites to ensure credibility, legitimacy, or accuracy of information presented or products offered and exchanged. As with most innovations we have seen become institutionalized into our daily lives – including television, the facsimile, the VCR, and voice mail – the internet has been met with some resistance by consumers, despite its steadily increasing popularity and use. Issues such as environmental instability, user competence, security, trust, and privacy have all been cited as factors contributing to consumers' apprehensiveness toward internet use (Swaminathan *et al.*, 1999; Miyazaki and Fernandez, 2001; Rifon *et al.*, 2005) particularly regarding electronic commerce (Hoffman *et al.*, 1999; Jarvenpaa and Todd, 1996/1997, 1997; Jarvenpaa *et al.*, 1999; Palmer *et al.*, 2000; Ramaswami *et al.*, 2000/2001). These noted elements likely contribute to a general sense of uncertainty and anxiety regarding internet use as medium to a communication and conduct retail transactions.

Computer-mediated communication (CMC) is a relatively new medium for exchange when compared to other communication media. Familiarity, user confidence, and skill level are all factors that have been shown to influence users' perceptions of CMC and how it is used (Agarwal and Karahanna, 2000). A key focus of research on CMC has been on the comparison of traditional communication media to the internet communication in terms of interpersonal- and group-based interaction (Walther, 1992, 1996; Rice and Love, 1987) and the extent to which CMC can substitute for more traditional forms of communication (Flaherty *et al.*, 1998; Walther, 1996). Results from this line of research suggest that individuals' motives and behavior toward CMC are influenced by their psychological characteristics, attitudes, and the social context in which the communication exchange takes place (Rubin, 1993; Weiser, 2001) and these factors produce outcomes that influence future appraisals of CMC and its utility (Agarwal and Karahanna, 2000; Ramirez *et al.*, 2002).

Further, the objective characteristics of media used in a CMC environment influences users' perceptions, attitudes, and usage behavior. Hoffman and Novak (1996) articulated a typology that classified media used for marketing purposes on two dimensions: dynamic-static and personal-impersonal, applied to CMC used for information seeking, information exchange and commercial transactions. This is a more current adaptation of media richness theory (Trevino *et al.*, 1987), where the mode and complexity of the communication is chosen by a user based on the perceived functionality and intended impact.

Papacharissi and Rubin (2000) and Weiser (2001) indicate that CMC is comprised of distinct elements of social interaction and informational/task orientation. Building upon those noted distinctions, and the work of Susskind *et al.* (2003), we explore the elements surrounding the informational/task-related applications of the internet by examining the relationship between individuals' apprehensiveness or resistance toward internet use for on-line information seeking and purchasing activities. Specifically, we present a model that builds upon the existing concepts of internet apprehensiveness presented by Flaherty *et al.* (1998), Ramaswami *et al.* (2000/2001), Scott and Rockwell (1997), Susskind *et al.* (2003), Susskind (2004) and Weiser (2001) with the specific goals of:

- examining how general internet apprehensiveness (GIA) and apprehensiveness regarding on-line retail transactions are related to the usage frequency of specific on-line information seeking and purchasing behaviors; and

- expanding the measurement of internet apprehensiveness and resistance by measuring perceptions of users' perceived responsiveness to internet as an antecedent of GIA.

Internet communication and apprehensiveness

In previous research considering internet communication, the relationship between user apprehensiveness and computer anxiety has been shown to be particularly relevant, given that communication using the internet requires the use of computer technology (Compeau *et al.*, 1999; Eastin and LaRose, 2000; Scott and Rockwell, 1997; Eastin, 2001). However, in addition to anxiety toward computer use, research suggests there are other factors likely to inhibit internet use such as concerns about on-line privacy, security, comfort, and trust (Hoffman *et al.*, 1999; Swaminathan *et al.*, 1999; Tan and Thoen, 2000/2001; Westin, 2003; Rifon *et al.*, 2005).

In an early attempt to gauge internet apprehensiveness, Clarke (1991) created and applied a measure of CMC apprehension to assess the extent to which interpersonal exchanges in computer-mediated environment lead to anxiety. Clarke's (1991) research showed a strong relationship between CMC apprehension and McCroskey's (1977) measure of communication apprehension and indicated that apprehension in a computer-mediated environment is similar to traditional communication apprehension measured as oral (McCroskey, 1977) or written (Daly, 1978) communication apprehension. It should be noted, however, that Clarke's (1991) study operationalized CMC apprehension specifically in the context of e-mail use – which was appropriate at the time of his study – making his assessment more relevant to written communication apprehension. Clarke (1991) found three emergent dimensions of CMC apprehension:

- (1) confidence (similar to self-efficacy);
- (2) interest (or motivation); and
- (3) privacy.

Based on that preliminary work and considered a larger range of electronic communication media, Flaherty *et al.* (1998) used Clarke's (1991) measure of CMC apprehension and found that individuals reporting low levels of CMC apprehension used the internet for recreation, affection, information, and entertainment. These newer findings parallel the earlier work of Cambre and Cook (1985) and Carlson and Wright (1993) and suggest that apprehension and computer anxiety block individuals' use of internet technology.

Individuals use the internet for a variety of purposes. Compared to the earlier studies of CMC noted above, there are many more CMC applications in use today, such as chat rooms, VOIP, e-mail, web sites, social networking sites, and blogs.

Through a set of factor analyses, Weiser (2001) determined that individuals use the internet for two main purposes:

- (1) *Social uses*. He terms "socio-affective regulation," such as, e-mail, chat rooms, entertainment, and romance.
- (2) *Practical uses*. He terms "goods and information acquisition," such as, shopping and keeping up with current events.

Susskind *et al.* (2003) further examined the dimensions of goods, services, and information acquisition by examining two distinct dimensions of practical internet use:

general information acquisition and exchange, and specific travel-related commercial transactions.

In so doing, Susskind *et al.* (2003) extended the work of Clarke (1991), Flaherty *et al.* (1998), Scott and Rockwell (1997) and most notably Weiser (2001) through the presentation of a two-factor model of internet use and apprehensiveness that differentiated between apprehensiveness related to general on-line information seeking and exchange, and apprehensiveness related to on-line purchases of goods and services. Their results indicated that GIA was strongly related to perceptions of internet use for information seeking when compared to on-line purchasing. Also, apprehensiveness toward on-line transactions was strongly related to reported on-line purchasing behavior, when compared to perceptions of on-line information-seeking behavior.

What is unique about the frameworks presented by Scott and Rockwell (1997) and Susskind *et al.* (2003) is that their studies examined the extent to which people resisted or used the internet for specific purposes (i.e. outcomes) rather than their motives or the interpersonal needs to use or resist the internet (Papacharissi and Rubin, 2000), which to date has been the traditional focus of research examining CMC (Newhagen and Rafaeli, 1996; Rice and Love, 1987; Walther, 1992, 1996). The internet is much more broadly defined today (Kraut *et al.*, 2002; Fallows, 2005). Weiser (2001) and Susskind *et al.* (2003) recognize that fact by separating social uses from practical uses in their research.

The concept of internet apprehensiveness as an adaptation of the basic concepts of communication apprehension (McCroskey, 1977, 1978) and CMC apprehension (Clarke, 1991; Flaherty *et al.*, 1998) is based on the theoretical framework of innovation resistance (Jarvenpaa and Todd, 1996/1997; Ram, 1987, 1989; Sheth, 1981). This framework identifies how internet users vary in their comfort level with the internet applications based on their perceived risk and cognitive resistance relative to using the internet, and shows that users require adjustment time to engage comfortably in internet communication and interchange (Eastin and LaRose, 2000).

Additionally, as newer CMC media emerge (such as Facebook, Myspace, Twitter, or other CMC applications) users experience uneasiness as they learn how to balance their needs for privacy features and protection while exchanging and posting personal information.

A model of internet apprehensiveness

The model shown as Figure 1 details the proposed linear mediated relationships between users' perceived responsiveness to the internet, internet apprehensiveness, and

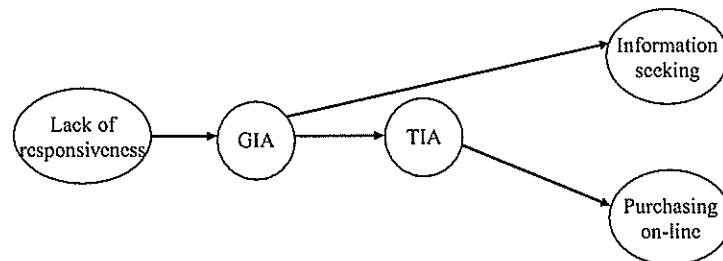


Figure 1.
Hypothesized model of perceptual influences upon internet usage

Notes: GIA = General internet apprehensiveness; TIA = Transactional internet apprehensiveness

manifest on-line usage behaviors. Specifically, we propose that a lack of perceived responsiveness is positively associated with GIA (*H1*), GIA is positively associated with transactional internet apprehensiveness (TIA) (*H2*), GIA also is negatively related to the frequency of on-line information-seeking behavior (*H3*), and TIA is negatively related to the frequency of on-line purchasing (*H4*). Each proposed relationship in the model is described in turn below, and we begin with a discussion innovation resistance and how it is related to internet use and internet apprehensiveness.

Innovation resistance

Sheth (1981) presented a line of research that examined consumers who resisted innovations based on existing pre-innovation practices and the perceived risk of adopting a new innovation. Existing pre-innovation practices (i.e. habits) represent a spectrum of multi-dimensional behaviors, ranging from activities such as physically shopping for products to the act of consuming products. In Sheth's (1981) research, strong habits toward a particular behavior or activity and an associated high-perceived risk were shown to influence an individual's resistance to adopt or use a given innovation.

Ram (1987, 1989), who noted problems within the innovation-based literature, such as pro-innovation bias and limited research into particularly successful innovations, proposed a model of innovation resistance from the consumers' perspective. Much like Sheth's (1981) framework, Ram's (1987, 1989) research examined how the perceived risk of adoption and cognitive resistance to adoption influences individuals' adoption and usage behavior.

Perceived risk is defined as the degree to which an individual is hesitant about using an innovation. According to Ram (1989), perceived risk is influenced by four factors:

- (1) functional risk, defined as the fear of performance uncertainty;
- (2) economic risk, defined as the fear of financial costs associated with the innovation;
- (3) social risk, defined as the fear of social ridicule or discomfort surrounding the use of the innovation; and
- (4) psychological risk, defined as the fear of psychological discomfort.

Similarly, Jarvenpaa and Todd (1996/1997) and Swaminathan *et al.* (1999) identified privacy risk as an additional risk factor relevant to consumers when shopping for goods and services on the internet, that was not directly identified by Ram (1987, 1989).

These risks influence individuals' cognitive resistance to CMC. Cognitive resistance is defined as users' resistance based on a need for additional information or exposure to influence or change an existing belief structure about a specific innovation adoption (Ram, 1987, 1989). For example, a consumer considering a purchase of a hotel room on Priceline.com using the "price negotiator" feature, may be uneasy with agreeing to prepay for the room without knowing which specific hotel property will be exchanged based on the set parameters of the exchange. Innovation resistance has a direct influence on attitudes and behavior surrounding internet use (Swaminathan *et al.*, 1999).

Likewise, Compeau *et al.* (1999, p. 148) in their study of individuals' reactions to computer use identified both positive and negative affect as possible influences on usage intentions, defining negative affect as "the feelings of apprehension or anxiety when

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using computers." Simply put, innovation resistance is the extent to which individuals remain apprehensive about using a new or different product. Thus, potential and actual internet users likely weigh the influence of both perceived risk elements and cognitive resistance elements with regard to both general information exchange as well as retail purchasing behavior on-line.

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Internet apprehensiveness

General internet apprehensiveness. GIA is defined as a resistance to, or fear of using the internet for information seeking and communication exchanges. GIA assesses the extent to which an individual is anxious or uncomfortable using the internet for both asynchronous information seeking and synchronous information exchange. As presented, GIA is not limited to a single on-line activity or behavior, but is directed at individual perceptions of internet use for broad range of communication-related activities. This type of internet apprehension is similar to a state or situational apprehension (McCroskey, 1982), where the circumstances surrounding the communication exchange determine the level of apprehensiveness (i.e. the apprehensiveness is not trait-based). Chen and Herson (1982) and Varlejs (1986) indicated that individuals rely on similar media for information if they believe they are reliable and effective in the information-seeking process. This is consistent with the work of Ramirez *et al.* (2002) who indicated that perceived outcomes of CMC-based information-seeking influence future information-seeking behaviors. However, during the information-seeking process, not all of the information exchanged may be considered useful or valuable.

GIA is in part influenced by innovation resistance. As individuals follow particular routines regarding communication and information exchange (Chen and Herson, 1982; Varlejs, 1986), user's habits of communication processes and channel selection lead to a resistance to change when faced with the decision to use or adopt a given innovation (Ram, 1987, 1989; Sheth, 1981).

Transactional internet apprehensiveness. Similarly, TIA is defined as an individual's dislike of or resistance to using the internet specifically for electronic commerce-based transactions. TIA reflects individuals' resistance to make on-line purchases based on the corresponding levels of anxiety or discomfort that are perceived regarding the use of electronic commerce. This includes assessments of individuals' reported willingness to spend specific dollar amounts (i.e. above or below \$1,000) and the use of credit cards for on-line transactions. This type of apprehensiveness is also similar to McCroskey's (1982) description of situational apprehensiveness where anxiety toward internet use for on-line transactions is a response to situational constraints of the medium. The valence of these constraints can be enhanced by specific web sites, service providers, or process-specific concerns, such as perceived security risks. TIA is presented as a resistance to engage in a specific type of consumer behavior given a number of different alternatives, such as brick and mortar or catalogue purchases. Again, innovation resistance underlies TIA as individuals cognitively evaluate the risk of engaging in electronic commerce, such as functional, economic, psychological (Ram, 1987, 1989), or privacy risks (Jarvenpaa and Todd, 1996/1997; Swaminathan *et al.*, 1999), identified above.

GIA versus TIA

Since engaging in on-line transactions likely involves information seeking and information-exchange activities prior to the initiation and completion of a transaction,

we propose that GIA is related to TIA. It would be expected that individuals who report higher levels GIA are likely to report higher levels of TIA. It does, however, remain possible that an individual may report a high level of TIA and not prefer to engage in commerce-based transactions over the internet, and still use the internet to gather and exchange information (Ramaswami *et al.* (2000/2001)). These constructs differ because GIA, as measured, does not directly relate to the act of purchasing or directly exchanging dollars for "things." A high level of TIA is present when an individual is apprehensive about making on-line purchases. If they desire additional information about security or privacy and continue to seek that information, this reflects the perception of an information need that would be influenced by GIA. Susskind *et al.* (2003) offer support for this relationship. Their two samples of travelers and tourists reported high levels of GIA, but of those participants reporting high levels of GIA, approximately half reported an equally high level of TIA. Conversely, with the younger student sample, the majority of the participants reported a low level of GIA, but also reported a mix of TIA levels, suggesting that GIA and TIA are related but are viewed as distinct elements by internet users. We therefore propose that GIA is related to TIA.

Responsiveness to on-line cues

Earlier, we indicated that the focus on internet apprehensiveness in this study was unique because we are trying to build an understanding of why individuals resist using the internet for specific purposes. Along that line, we examine users' perceived responsiveness to internet communication activities, based on the concept of interaction involvement presented by Cegala (1981).

People possess differing levels of relational skills that characterize their effectiveness during interpersonal interaction. The sum of these skills, such as turn taking, the ability to follow grammatical rules and/or competence regarding goal attainment constitute communication competence (Cegala, 1981; Cegala *et al.*, 1982). These same conventions exist for CMC, but many conventions or communication rules for CMC are less well defined. As a result, individuals using the internet as a communication medium often start with operational and functional difficulties in computer-mediated environments; they are, however, able to gain skills through experience and adapt to new communication media over time (Eastin and LaRose, 2000; Morris and Ogan, 1996; Ramaswami *et al.*, 2000/2001; Walther, 1992).

The application of interaction involvement to CMC is an important next step to further define the elements that lead to resistance among internet users. In the context of interpersonal communication, Cegala (1981, p. 112) defined interaction involvement as "the extent to which an individual partakes in a social environment." Individuals exhibiting high levels of interaction involvement have been shown to incorporate feeling and meaningful thoughts to communication interaction (Cegala *et al.*, 1982), such that a conscious effort is made toward developing an interpersonal relationship. Those exhibiting low levels of interaction involvement, on the other hand, are seen as distracted, withdrawn, and uncertain.

In subsequent research by Cegala *et al.* (1982) and later by Boorum *et al.* (1998), three dimensions of the interaction involvement construct were examined: attentiveness, perceptiveness, and responsiveness. Attentiveness is defined as the eagerness to listen and utilize nonverbal cues and conceptualized as one's awareness of environmental

communication stimuli. Consistent with our focus on the application of interaction and behavior in the on-line environment – rather than a limited view of interpersonal motives – the attentiveness dimension is less crucial to internet communication, and offers less-additional explanatory power given that CMC can be devoid of verbal and non-verbal. Thus, attentiveness, while appropriate for traditional interpersonal communication, is less applicable to CMC.

Next, perceptiveness is defined as the ability to effectively interpret stimuli, assign meaning, and understand pertinent goals within a communication situation. Perceptive individuals are assumed to have accurate knowledge of the meaning assigned to their behavior by others. With CMC, the user initiates the communication activity, and is forced to interpret the information with limited cues (Kiesler *et al.*, 1984), if any. Therefore, the on-line communication exchange concerning the perceptiveness dimension as conceptualized by Cegala *et al.* (1982) again appears to be less relevant to on-line communication.

Responsiveness, on the other hand, is directly relevant to on-line behavior and is defined as skill reflecting an individual's capacity to develop and issue messages directed at goal achievement. This dimension is directly related to on-line communication behavior. As noted above, goal achievement in the context of this investigation is primarily related to on-line information seeking and purchasing, which are behaviors that need to be initiated by the user. Practically speaking, the responsiveness dimension of interaction involvement is an index of an individual's tendency to successfully deliver or receive messages appropriate to specific goal-directed communication situations, and is the most behaviorally focused dimension of interaction involvement (Boorum *et al.*, 1998).

The responsiveness dimension of interaction involvement resembles self-efficacy to the extent that people believe they can appropriately engage in specific communication activities. As one might then expect, communication apprehension has been shown to be negatively associated with interaction involvement (Cegala *et al.*, 1982), as individuals who are more apprehensive about engaging in specific communication behavior would be less attentive, perceptive, and particularly responsive regarding that communication behavior. This notion is consistent with the work of Eastin and LaRose (2000) who found internet self-efficacy to be positively related to internet use and negatively related to anxiety or stress surrounding internet use.

These findings further suggest that anxiety toward general internet use addresses one's lack of comfort using that particular communication medium, while self-efficacy measures user confidence based on experience. It is therefore likely that individuals who lack a sense of responsiveness to internet communication will be more apprehensive toward its use. For this reason, we suggest that an internet-specific measure of the responsiveness dimension of interaction involvement will be negatively related to GIA, but not related to the more context-specific TIA.

The difference between general information seeking and searching for a specific product is due to fundamental differences between the respective searching environments (i.e. the tools used) and, thus, the size of the databases queried and the level of structure associated with the process. To highlight this, one could compare the results of an identical keyword search using both Google, Orbitz, and Marriott.com. For this illustration, imagine we use the three sites to search for a luxury hotel room in Midtown Manhattan. At the time of this writing, Google, drawing from a dramatically larger corpus of web sites, yields 67,000 results ranging from specific hotels, to stories

about hotels, hotel owners, developers, and a variety of other topics related to the search keywords. Orbitz returned several hundred results, all of which were hotel rooms currently available for purchase from a wide range of hotels. The Marriott.com search returned 98 hotels, of which around a dozen would be considered luxury hotels in midtown Manhattan. In this example, the commercial two commercial web sites provide its customers with highly focused results. Google presents the users with a myriad of options, while Orbitz and Marriott.com are designed to help the user efficiently navigate with the objective of completing the transaction. In other words, Orbitz and Marriott.com are designed to guide the user through the purchasing process.

As noted above, the transactional process, by design, provides the user with more cues to complete their goal directed behavior; the information search is more ambiguous making it more likely that a lack of known responsiveness about that process will lead to higher levels of GIA, but not TIA. Given these proposed relationships, we hypothesize that:

- H1. A lack of responsiveness is positively associated with GIA.
- H2. GIA is positively associated with TIA.

Connecting users' perceptions and on-line behavior

On-line information seeking

Ramirez *et al.* (2002, p. 217) define interpersonal information seeking as "the pursuit of desired information about a target." Information seeking can also be defined as the purposive acquisition of information from selected information carriers with the objective to inform decisions (Johnson, 1997). Information seeking is a dynamic process where individuals' levels of knowledge change as information is sought, acquired, and exchanged. The internet can be used for a variety of asynchronous or synchronous information-seeking activities addressing social, work, or commerce-related topics.

As noted above, individuals tend to exhibit habitual information-seeking behaviors and rely on similar information media when they are found to be reliable and effective in the information-seeking process (Chen and Herson, 1982; Varlejs, 1986; Ramirez *et al.*, 2002). Regarding the utility of information, Hackman (1992) suggests information exchange has both ambient and discretionary qualities, where ambient qualities permeate the entire interaction process and discretionary cues are targeted, intentional, and not necessarily available to all parties involved in the exchange process. In an on-line context, information seekers first must cognitively sort out ambient and discretionary cues and then determine whether or not the experience was satisfactory. Managing these cues and resulting information will influence future information-seeking decisions and activities (Chen and Herson, 1982; Kuhlthau, 1991; Ramirez *et al.*, 2002).

When considering the internet as an information and communication tool, mere access to information does not guarantee that the information retrieved will be useful, as users' proficiency in navigating, acquiring, and sorting information on-line are likely to vary (Doctor, 1992). Further, the relative utility of the information is judged based on the effort expended to retrieve the information (Li *et al.*, 1999; Ramirez *et al.*, 2002). Users' perceptions of the fluctuating state and credibility of information available through the internet also may be a concern, as web sites are generally easy to create, often come and go, and are modified without advance notice to users (Kotler *et al.*, 1997). Additionally, web sites may or may not present accurate or complete information to

end-users (Li *et al.*, 1999; Swaminathan *et al.*, 1999). Just like in the hotel search example above, when an internet user performs a keyword search, the results could yield a large number of "hits." These "hits" could potentially come from sources including, but not limited to, government agencies, credible and legitimate businesses, lobbyists, and teenagers. The sorting and interpretation process is potentially challenging for internet users as they must process this information and determine what future actions and information-gathering activities they will engage into continue or complete their search. Similarly, the richness of the available information is likely to have an impact on the user's perceptions of information utility and value (Papacharissi and Rubin, 2000; Swaminathan *et al.*, 1999; Ramirez *et al.*, 2002).

These uncertainties are likely to influence individuals' decisions regarding further information seeking. The extent to which individuals are willing to engage in the on-line information-seeking process is likely influenced in part by their apprehensiveness toward the internet as an information and communication medium (i.e. GIA) based on past experiences with the medium (Newhagen and Rafaeli, 1996; Papacharissi and Rubin, 2000). Therefore, we propose that individuals who demonstrate high levels of GIA are less likely to use the internet for information seeking, while individuals who exhibit low levels of GIA are more likely to use the internet for information-seeking purposes.

It is important to note that when referring to on-line information seeking or on-line purchasing, the people who initiate the communication exchange may not be in a reciprocal relationship with the receiver (Li *et al.*, 1999; Ramirez *et al.*, 2002; Swaminathan *et al.*, 1999). While it is true that an individual or a set of people can be associated with a communication exchange, that association is not necessarily the key element in the exchange, as is the case with e-mail messages or chat room conversations where both the content of the communication, the social/interpersonal elements, and the specific set of communicators are key to the exchange (Rice and Love, 1987; Walther, 1996; Ramirez *et al.*, 2002). Conversely, when dealing with informational or task-oriented motives, it is not necessarily the interpersonal relationship that matters first, but rather the content of the exchange. It is this distinction that we explore here and focus on individuals' resistance to use the internet as an information-seeking medium:

H3. GIA is negatively associated with on-line information-seeking behavior.

On-line purchasing behavior

Since the internet's first mainstream use was for research-related activities, not electronic commerce, on-line security was based on mutual respect and shared knowledge of appropriate behavior and norms for interaction (Ratnasingham, 1998) for a (somewhat) limited set of interactions. With the rapid expansion of the internet into commerce (Li *et al.*, 1999; LaRose, 2001), the nature of internet communication and interaction has necessarily changed. Despite a number of recent improvements to on-line security from a technological standpoint (e.g. cryptography, firewalls, and digital certifications), consumer uncertainty still exists regarding internet use for retail commerce (Hoffman *et al.*, 1999; Ramaswami *et al.*, 2000/2001; Susskind, 2004; Swaminathan *et al.*, 1999).

Consumers' apprehensiveness toward internet use for retail transactions (presented here as TIA) not only stems from questions consumers have about the security associated with sending personal information over the internet, but also from uncertainty surrounding a new purchase method. Internet-based commerce relies on

the obvious physical barriers between buyers and sellers. Thus, the flow of interpersonal cues such as verbal and non-verbal communication, more commonly associated with traditional in-store buyer-seller transactions, is limited, as well. If a consumer is more interested in the social elements of shopping, they may prefer more traditional retail transactions, because the lack of interpersonal and situational cues present in the on-line environment may negatively impact the consumers' ability to appropriately assess the purchase decision consistent with their expectations for a shopping experience (Swaminathan *et al.*, 1999). If, however, a consumer places a premium on convenience, the relatively lean characteristics of on-line purchasing may be more appealing (Li *et al.*, 1999; Papacharissi and Rubin, 2000; Swaminathan *et al.*, 1999) and appear less risky to the user (Swaminathan *et al.*, 1999).

Consumers who are less inclined to focus on the relative conveniences of on-line shopping and are uncomfortable using the internet, are likely to have feelings of uncertainty or uneasiness toward the internet as a retail transaction medium. We propose that those consumers reporting higher levels of TIA will use the internet less for commerce-related activities, whereas individuals who report low levels of TIA will be increasingly willing to use the internet for commerce-related activities:

H4. TIA is negatively associated with on-line purchase frequency.

Method

Participants

In total, 336 junior and senior-level undergraduate business students enrolled in courses in organizational behavior and human resources management, and 99 MBA and executive MBA students were sampled from a large southeastern university and a large northeastern university. The study yielded a combined sample of 408 participants following listwise deletion of missing cases. The participants were approximately 54 percent male, between the ages of 18 and 60 ($M = 23.25$, $SD = 6.47$, $Mdn = 21$). Participants were asked if they owned or had access to a personal computer and subscribed to or had access to an on-line service (e.g. AOL, DSL, Road Runner, etc.). A total of 99 percent of the participants ($n = 431$) reported they had access to a computer while 1 percent did not ($n = 4$), and 92 percent of the participants ($n = 399$) subscribed to or had access to an on-line service while 8 percent did not ($n = 36$). Two questions measured the participants' on-line spending in dollars during the previous year on-line purchases made on:

- (1) tangible products and services; and
- (2) intangible products and services.

The two categories were aggregated to yield a single dollar amount. The aggregated on-line spending ranged from \$00.00 to \$15,000 ($M = \$498.97$, $SD = \$1,397.93$) with 29 percent of the participants ($n = 124$) indicating that they spent zero dollars on-line for products or services.

Scale measurement

The participants completed a questionnaire assessing their perceptions of and attitudes toward internet use and were asked to report their specific internet use behavior regarding on-line information seeking and purchasing activities. Using the

scale items developed by Susskind *et al.* (2003), GIA was assessed with four items and TIA was assessed with nine items, all of which were adapted from McCroskey's (1977) measure of communication apprehension. These 13 items were measured on a five-point Likert-type scale gauging the participants' level of agreement with each statement from "strongly disagree" to "strongly agree." Lack of responsiveness was measured using seven items from the responsiveness dimension adopted specifically for the internet from Cegala *et al.* (1982). The items were measured on a five-point Likert-type scale gauging the participant's level of agreement with each statement ranging from "very much like me" to "not like me at all." The seven responsiveness items were worded and coded in such a way that a high score on the variable (i.e. five) represented a lack of responsiveness. To assess the participants' on-line information-seeking behavior, they were asked to report the frequency with which they seek on-line information or resources for six distinct purposes, such as research for school or work, job searching, travel, and consumer products, on a five-point scale ranging from "never" to "very often." Lastly, to assess the participants' frequency of on-line purchasing behavior, the participants were asked to report the frequency with which they purchased seven distinct categories of products and services, such as investments and banking, transportation services, and retail consumer goods and services, on a five-point scale ranging from "never" to "very often."

Factor analysis. To assess the internal consistency and reliability of the three attitudinal scales (responsiveness, GIA, and TIA) and the two behaviorally based measures of on-line information seeking and on-line purchasing frequency, two separate sets of factor analyses were conducted using principal components analyses with an oblimin rotation. This set of oblique factor analytic techniques was selected to allow the factors to be correlated, given the conceptual similarities within the two sets of scale items (Norusis, 1993). Factor and item retention were based on:

- items not displaying cross-loadings greater than 0.40 with other factors;
- items exhibiting principal factor loadings approximating 0.60 or above; and
- a reliability coefficient for the aggregated scale (Cronbach's α) of 0.70 or greater.

Any items, not meeting the statistical and evaluative criteria set forth, were removed from consideration in the final factor model[1].

Attitudinal items. Three factors were anticipated and pre-specified: lack of responsiveness, GIA, and TIA. The initial principal components analyses supported a three-factor solution, as the scree plot identified noticeable breaks between the first and second factors and the second and third factors. The final three-factor solution utilized all of the 20 items. GIA was represented by the four original items (Cronbach's $\alpha = 0.74$), TIA was represented by the original nine items (Cronbach's $\alpha = 0.93$), and lack of responsiveness was represented by the seven original items (Cronbach's $\alpha = 0.88$). The rotated sum of squared loadings from the final three-factor solution explained 60.54 percent of the variance. The survey items along with their final factor loadings are reported in Table I.

Behavioral items. From the 13 information seeking and purchasing behavior items, two factors were anticipated and pre-specified. The initial principal components analyses supported a two-factor solution, utilizing all 13 items. Information seeking was represented by the six original items (Cronbach's $\alpha = 0.78$) and on-line purchasing was represented by the seven original items (Cronbach's $\alpha = 0.86$). The rotated sum of

	Factor loadings			Internet apprehensiveness
	(1)	(2)	(3)	
<i>Lack of responsiveness</i>				
1. Often, while using the internet, I am not sure how to respond to queries made by others	0.18	0.72	0.06	17
2. Often, while using the internet, I am not sure what role to take as a user and how to interact with others on-line	0.06	0.79	0.22	
3. At times, while using the internet, I know how to respond to communication but feel uncomfortable doing so	0.09	0.69	-0.06	
4. While using the internet, I feel withdrawn and distant	0.04	0.77	0.23	
5. While using the internet, I often feel like I do not know what to do until it is too late	0.00	0.69	0.35	
6. Often, I feel sort of distant while using the internet	-0.01	0.72	0.29	
7. Often, I feel uncertain that others are accurately receiving my internet communication	0.09	0.69	0.13	
<i>General internet apprehensiveness</i>				
1. Generally, I am comfortable using the internet to gather information ^a	0.10	0.19	0.68	
2. I like to use the internet for a variety of reasons ^a	0.08	0.13	0.69	
3. I am usually calm and relaxed while using the internet ^a	0.05	0.18	0.62	
4. Communicating with the internet usually makes me uncomfortable	0.07	0.34	0.53	
<i>Transactional internet apprehensiveness</i>				
1. I am very relaxed when using the internet to purchase products or services ^a	0.82	0.00	0.32	
2. I have no fear of using the internet to make on-line purchases ^a	0.86	0.00	0.18	
3. Ordinarily, I am very calm and relaxed when making on-line purchases ^a	0.83	0.03	0.20	
4. I am afraid to make on-line purchases at times	0.84	0.16	0.03	
5. I have no fear of making on-line purchases ^a	0.88	0.15	0.01	
6. I feel perfectly comfortable using the internet to make on-line purchases under \$1,000 ^a	0.87	0.13	0.06	
7. I feel perfectly comfortable using the internet to make on-line purchases over \$1,000 ^a	0.66	0.21	-0.16	
8. The security of my credit card for use with on-line purchases concerns me	0.70	0.02	-0.17	
9. I would use the internet to purchase airline tickets, book hotel rooms, or other travel-related services ^a	0.69	-0.05	0.33	
Eigenvalue	5.82	3.99	2.28	
Percentage of variance explained	29.07	19.94	11.40	

Table I.
Final factor structure loadings from the factor analyses of the attitudinal items

squared loadings from the final three-factor solution explained 51.70 percent of the variance. The items and their final factor loadings are reported in Table II. The descriptive statistics, correlations, and reliability coefficients for the final aggregated scales are presented in Table III. Dollars spent on-line were reported to highlight the criterion-related and discriminant validity of the measures tested in the model.

Control variables. Previous research examining internet use has identified education, age, and sex as important variables regarding internet usage behavior (Li *et al.*, 1999; Ramaswami *et al.*, 2000/2001). In our undergraduate and graduate student sample, all of our participants were either college educated or in the process of receiving a college education making that comparison less important. However, because the sample contained a mix of undergraduate and graduate students, age was likely to be a distinguishing characteristic, despite Li *et al.*'s (1999) findings that age was not significantly related to on-line buying behavior. Likewise, Li *et al.* (1999)

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Table II.
Final factor structure
loadings from the factor
analyses of the
activity-based items

		Factor loadings	
		(1)	(2)
<i>On-line purchasing activities</i>			
	Investments and banking (e.g. E-trade, Ameritrade, and Citibank)	0.63	0.17
	Small goods and services (e.g. flowers, clothing, and books)	0.84	0.30
	Lodging services	0.82	0.38
	Transportation services (e.g. airline, rental cars, and bus tickets)	0.80	0.40
	Retail food products (e.g. Williams Sonoma, Harry and David)	0.59	0.26
	On-line subscriptions to magazines, newspapers, news, and entertainment services	0.72	0.26
	Computer-related products (hardware and software)	0.80	0.37
<i>On-line information-seeking activities</i>			
	Research for school- or work-related activities	0.18	0.63
	Product or service information for consumer goods and services	0.31	0.64
	Job-search activities	0.21	0.73
	Government-related activities and information (forms, legislation, etc.)	0.38	0.67
	Travel-related information	0.36	0.77
	Locate restaurants or lodging options in terms of geographic location	0.32	0.75
	Eigenvalue	4.92	1.80
	Percentage of variance explained	37.86	13.84

reported that men made more on-line purchases than women. To determine the potential influences of age and sex in our model, we examined the correlation matrix presented as Table III to determine which demographic variables were significantly related to the attitudinal and behavioral variables presented in our model. Sex was dummy coded with male equal to zero and age was measured continuously. In Table III, sex was significantly related to TIA ($r = 0.26, p < 0.001$) and on-line purchasing ($r = -0.23, p < 0.001$). This relationship was further examined using a t -test ($|t_{407}| = 2.15, p < 0.05$) which showed that females reported a significantly higher level of TIA and purchased products and services on-line less frequently than males; age was significantly correlated with on-line information seeking ($r = 0.16, p < 0.001$) and on-line purchasing ($r = 0.17, p < 0.001$) indicating that older participants engaged in more on-line information seeking and on-line purchasing activities than younger participants. These four additional relationships were added to the final path model (with sex added as a dummy variable in the model).

Path analyses

Following the factor analysis and the assessment of the demographic variables, the model originally shown as Figure 1 was tested with least squares static path analysis using PATH.BAS (Hunter and Hamilton, 1995) to assess the variables' interrelationships as modeled. In the model, responsiveness and the demographic variables were treated as the exogenous variables, and GIA, TIA, on-line information seeking, and on-line purchasing were treated as endogenous variables. The specified path model was assessed for fit based on the recommendations that:

- global χ^2 -tests for the sum of squared error for the model be non-significant;
- each link be tested for significance by calculating a confidence interval around the observed correlations (Hunter and Hamilton, 1995);

Variable	M	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Age	23.26	6.47	(-)							
(2) Sex	-	-	-0.09	(-)						
(3) Lack of responsiveness	2.14	0.69	0.04	0.01	(0.88)					
(4) GIA	1.78	0.62	0.05	0.03	0.45*	(0.74)				
(5) TIA	3.30	0.91	-0.06	0.26**	0.17*	0.22*	(0.93)			
(6) On-line information seeking	3.26	0.79	0.16*	-0.01	-0.18*	-0.41*	-0.22*	(0.78)		
(7) Purchasing on-line	1.63	0.69	0.17*	-0.23*	-0.06	-0.19*	-0.55*	0.44*	(0.86)	
(8) Dollars spent on-line	497.98	1,401.15	0.13**	-0.04	-0.16**	-0.17**	-0.33*	0.25*	0.32	(-)

Notes: Significant at * $p < 0.001$ and ** $p < 0.01$ (two-tailed), respectively; $n = 408$ using listwise deletion; the reliability coefficients appear in parentheses along the diagonal and were not calculated for sex, age, and dollars spent on-line

Table III.
Final scale descriptive
statistics and correlations

- the model demonstrate a normed fit index (NFI) of greater than 0.90 (Bentler, 1990); and
- the model demonstrate a root mean square error of approximation (RMSEA) less than 0.05 (Steiger, 1989).

Results

To aid in the interpretation of the relationships among the variables, the descriptive statistics and correlations of the final scale variables are reported in Table III, followed by the tests of the path model. The pattern of observed relationships is consistent with what was anticipated. Lack of responsiveness, GIA, and TIA were all positively correlated with each other and negatively related to both on-line information seeking and purchasing behaviors, while on-line information-seeking behavior was positively correlated with on-line purchasing behavior.

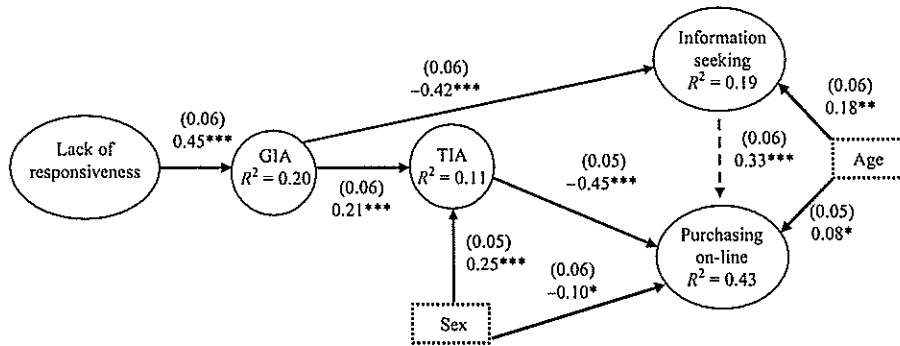
Tests of the path model

The hypothesized model of the relationships between perceived interaction involvement, GIA, TIA, and on-line information seeking, on-line spending, sex, and age was tested using the final aggregated scales presented above. The initial path analysis revealed that the hypothesized model did not produce an acceptable fit to the data ($\chi^2[10] = 23.31, p = 0.01$; NFI = 0.60, RMSEA = 0.18), despite a number of significant path linkages in the model. While each of the hypothesized paths in the model were significant, the model could not support the data as presented due to sampling error. Sampling error analysis revealed a significant deviation in the model due to one non-specified link between on-line information seeking and dollars spent on-line (difference = 0.37, $z = 4.31, p < 0.001$). Based on these findings, the model was subsequently revised to include the unspecified link and re-tested in an attempt to better model the data.

Post hoc analyses

Initially, we hypothesized that GIA would influence TIA and on-line information seeking and TIA would influence dollars spent on-line, but we did not specify the relationship between on-line information seeking and dollars spent on-line. Considering the concept of transitivity it is plausible that on-line information seeking is an antecedent of on-line spending (behaviorally speaking), just as GIA is an antecedent of TIA (perceptually speaking), despite Ramaswami *et al.*'s (2000/2001) findings to the contrary. Attitudinally speaking, a general level of apprehensiveness is also related to perceptions of using the internet to make purchases. In regard to specific on-line behavior, the relationship between on-line information seeking and on-line purchasing mirrors the relationship between GIA and TIA. Given the observed correlations, we anticipated more prominent relationships between GIA and on-line information seeking and TIA and dollars spent on-line (both percept-behavior relationships). But it also can be expected that the relationship between on-line information seeking and on-line purchasing (behavior-behavior relationships) would be similar in magnitude to the GIA-TIA relationship in a transitive sense. Subsequently, a *post hoc* test was conducted with the link between on-line information seeking and on-line purchasing added to the model.

The revised model shown as Figure 2 demonstrated a good fit to the data ($\chi^2[9] = 4.33, p = 0.89, NFI = 0.90, RMSEA = 0.05$). As noted above, lack of responsiveness was



Notes: * = $p < 0.10$; ** = $p < 0.01$; *** = $p < 0.001$; GIA = General internet apprehensiveness; TIA = Transactional internet apprehensiveness. Standard errors are presented in the parentheses; the dashed arrow represents the link added in the post analyses; sex was dummy coded with male equal to zero; sex and age were treated as exogenous variables in the model; and the incremental R^2 of each endogenous variable is presented in its respective bubble in the model

Figure 2.
Model of perceptual
influences upon internet
usage

significantly related to GIA (path coefficient = 0.45, $p < 0.001$), providing support for *H1*. GIA was significantly related to TIA and on-line information seeking (path coefficient = 0.21, $p < 0.001$ and -0.42 , $p < 0.001$, respectively), supporting *H2* and *H3*. In support of *H4*, TIA was negatively and significantly related to on-line purchasing (path coefficient = -0.45 , $p < 0.001$, suggesting that those reporting high levels of TIA purchase on-line less frequently). Sex was significantly related to TIA (path coefficient = 0.25, $p < 0.001$), indicating that women reported a higher level of TIA than men among this sample. While sex was not significantly related to on-line purchasing in the model at the $p < 0.05$ level (path coefficient = -0.10 , $p < 0.10$), females did purchase on-line less frequently than their male counterparts as noted above. Age was a significant influence upon reported information seeking in the model (path coefficient = 0.18, $p < 0.01$) indicating that older participants used the internet for information seeking more frequently than younger participants. While age was not significantly related to on-line purchasing in the model at the $p < 0.05$ level (path coefficient = 0.08, $p < 0.10$), the path coefficient suggested that older participants purchased on-line more frequently than younger participants. Lastly, the *post hoc* link between on-line information seeking and on-line purchasing was significant in the model (path coefficient = 0.33, $p < 0.001$). This finding supports the transitive explanation indicating that on-line information seeking is moderately related to on-line purchasing in a similar manner to the relationship between GIA and TIA ($r = 0.22$, $p < 0.001$, and $r = 0.44$, $p < 0.001$, for the percept-percept and behavior-behavior relationships, respectively).

Discussion

From our research on individuals' perceptions of internet apprehensiveness and use, four notable findings emerged. First, the responsiveness dimension of interaction involvement presented here as lack of responsiveness, was a strongly related to GIA. This finding suggests that uncertainty in how to react to communication cues over the internet is related to the extent to which individuals report they are apprehensive about

engaging in basic internet communication, such as information seeking. As with theories of interactivity (Rafaeli, 1988; Hoffman and Novak, 1996) and media richness (Trevino *et al.*, 1987), internet apprehensiveness as presented here crosses disciplinary boundaries within the field of communication by applying concepts from traditional interpersonal communication research to newer CMC elements.

Second, the hypothesized link between GIA and TIA was supported suggesting that general apprehensiveness toward using the internet was significantly related to individuals' perceptions of using the internet for electronic commerce. This relationship likely exists for two reasons:

- (1) If individuals have reservations about using the internet as an information seeking and general communication channel, it is likely that they also have reservations about the internet as a retail transaction medium.
- (2) Likewise, if issues of utility, trust, and credibility related to on-line communication activities create uncertainty for individuals while searching for information, it is likely that the same perceptions of uncertainty are present regarding on-line purchases.

Third, the two proposed percept-behavior relationships were supported in the model: the GIA to information-seeking link and the TIA to on-line purchasing link (path coefficient = -0.42 , $p < 0.001$ and path coefficient = -0.45 , $p < 0.001$, respectively). These findings demonstrate that individuals' reported apprehensiveness toward using the internet is manifest through specific usage behaviors and further support Susskind *et al.*'s (2003) two factor representation of internet apprehension, where GIA was associated with a resistance to gather travel-related information on-line and TIA was negatively related to intentions to purchase travel-related products on-line and reported on-line spending.

Fourth, the *post hoc* behavior-behavior relationship (i.e. information seeking to on-line purchasing) was also a significant influence in the model. This additional path was needed to create an acceptable fit of the model to the data in our path analyses. This relationship suggests that individuals who engage in on-line information seeking are more likely to also make on-line purchases, suggesting a spillover effect from on-line information seeking to on-line spending. This finding further supports the propositions that comfort with using the internet develops with time (Eastin and LaRose, 2000; Ramaswami *et al.*, 2000/2001; Walther, 1992).

Limitations

Although our study participants represented a broad range of backgrounds, the student sample used in this study lacks the heterogeneity necessary to propose broad-based generalizations outside of that segment. Students represent a large base of internet users and have been presented as a viable population to study in several investigations produced for both academic audiences (Hoffman *et al.*, 2000; Weiser, 2001) and marketing practitioners (Hütt *et al.*, 2001). That being said, future research in this area will continue to benefit from more diverse samples of internet users.

Since the study was conducted using cross-sectional data it is not possible to make causal attributions among the variables. The collection of longitudinal data is likely to further our understanding of the true causal processes that exist among internet apprehensiveness and specific usage behaviors, but longitudinal studies of this type are

rare (Kraut *et al.*, 1998, 2002). There is also an emerging stream of research on formative measurement that suggests that the indicators influence the latent variables, rather than being caused by them (Diamantopoulos and Winklhofer, 2001). A significant amount of research in this area has shown promise in this approach to measurement (Diamantopoulos, 2008) and should be considered for future studies of this kind where cause and effect modeling is applied. In this case, the traditional, reflective approach to construct development was used.

Lastly, while we did assess elements of internet use reported as on-line information seeking and purchasing behavior, we did not assess elements of risk that we propose underlie internet apprehensiveness. This can be accomplished by collecting data from the participants' that represent their relative investment in the use of the internet. These variables include, but are not limited to, disposable income, time spent on-line, web sites visited, years of experience with the internet, and usage frequency by specific function such as e-mail use, chat rooms, and, etc. Data such as these in proportion to information seeking and purchasing behavior reported here can offer more insight into the risk-reward relationship that is likely related to internet apprehensiveness and internet use.

Future research

Future research with a focus on the antecedents of both GIA and TIA would significantly add to the development of a comprehensive internet user profile. As alluded to above, the issues of trust, credibility, and the loss of situational cues have been identified as potential influences of GIA and TIA and subsequent on-line behaviors. Specifically, it would be beneficial to explore how specific components of trust affect internet apprehensiveness, as both GIA and TIA do not directly measure trust of the on-line channel. There is a growing literature associated with trust and the internet regarding the transmission of secure information such as credit card data and the merchants' use of users' personal information (Hoffman *et al.*, 1999; Tan and Thoen, 2000/2001; McKnight *et al.*, 2002). While on-line security has begun to be addressed in practice, users' perceptions of merchants and the transactional properties surrounding the internet have yet to be extensively investigated.

Practical implications

As the internet continues to grow and change, its perceived utility as a communication and business transaction channel changes too. This study has added to our understanding of how individuals use the internet in several ways. First, we integrated research from two different fields of inquiry (communication and marketing) to formulate our framework. In so doing, we applied and reformulated the traditional foci of uses and gratifications (Rubin, 1993), communication apprehension (McCroskey, 1977), and innovation resistance (Ram, 1987, 1989) to gauge the extent to which individuals resist using CMC channels (Clarke, 1991; Flaherty *et al.*, 1998; Susskind *et al.*, 2003; Swaminathan *et al.*, 1999) specifically regarding on-line information seeking and on-line purchasing (Ramaswami *et al.*, 2000/2001). These findings also further the work of Weiser (2001) who in his examination of internet pathologies identified practical uses of the internet as including both information seeking and purchasing activities as a single factor and demonstrate that individuals can be apprehensive concerning either

dimension or both, and engage in computer-mediated interaction in both or either domain.

Second, the electronic distribution of hospitality goods and services across the hospitality and tourism industries continues to rise. With company web sites (such as Marriott.com) and third party web sites (such as Orbitz, Expedia and Hotels.com) offering information and goods and services, the importance of understanding how consumers process CMC is key. This study and several others (Bonn *et al.*, 1999; Hoffman *et al.*, 2000; Hütt *et al.*, 2001; Ramaswami *et al.*, 2000/2001) have shown that internet users discern among and segment their on-line activities based on the function of the CMC channel, the perceived utility of the CMC channel, and the anticipated outcomes from the communication exchange. It therefore makes sense that users' levels of affect are differently connected to the uses of the internet examined here. This means that when offering or seeking information, goods, and/or services over the internet, the offerings need to be appropriately matched to the potential users to maximize the impact of the offerings and minimize the noise in the on-line delivery and exchange. This implies that web site providers and web merchants need to offer varying levels of on-line interaction and complexity to ensure that internet users can be appropriately segmented.

Lastly, as anticipated, this investigation demonstrated that both GIA and TIA are negatively related to information-seeking behavior and on-line purchasing behavior. While TIA shows a weaker relationship to on-line information-seeking behavior, and stronger relationship to on-line purchasing behavior, GIA shows a strong relationship to on-line information-seeking behavior and a weaker relationship to on-line purchasing intentions and behavior. The 2D framework of apprehensiveness that presented here is consistent with many new internet service offerings and communication, where internet service providers carefully bundle information-related search engines with purchase-related search engines to match users' needs and desires with the medium, to expose users to information and/or products that might further encourage their internet use. It should be noted, however, that it is possible to over expose users to on-line cues and information (O'Connell, 2002). Communication specialists and e-marketers need to recognize that internet users have varying levels of tolerance for unsolicited e-mails, ad banners, and the like.

Understanding individuals' levels of internet apprehension can go a long way in bolstering the informational and transactional potential of this medium beyond its current level. The findings reported here should be viewed as an added step toward creating a better understanding of the internet user and the internet's potential use in communication and marketing processes.

Note

1. To allay the concerns over the validity of the GIA and TIA measures, we offer the following support: Susskind *et al.*'s (2003) items were adapted and reworded directly from McCroskey's (1977) communication apprehension measure. The terms "comfortable," "fear," "relaxed," "uncomfortable," and "afraid" were all used by McCroskey (1977) in his measure of communication apprehension, to describe elements of resistance to engage in public speaking. Susskind *et al.* (2003) used the same items, modifying them to assess perceptions of general internet use (for information seeking and communication) and internet use to conduct retail transactions, rather than oral communication as originally intended. In their study, Susskind *et al.* (2003) used three independent samples of consumers/users to test and validate

their GIA and TIA measures. Across their three samples, the exploratory and confirmatory factor analyses resulted in a consistent four-item GIA measure and a consistent nine-item TIA scale, with reliabilities of $\alpha = 0.72$ to $\alpha = 0.75$ for GIA and $\alpha = 0.89$ to $\alpha = 0.93$ for TIA. Likewise the discriminant and criterion-related validity reported by Susskind *et al.* in their multi-sample study further supported the use of the scale: GIA was significantly and negatively correlated with intentions to seek information on-line ($r = -0.41, p < 0.001$) and TIA was significantly and negatively correlated with intentions to purchase travel services on-line ($r = -0.50, p < 0.001$) and reported dollars spent on-line ($r = -0.35, p < 0.001$). We applied the GIA and TIA measures based on the scales' demonstrated content and construct validation in previous research.

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