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Anne Beaudry

Concordia University, abeaudry@jmsb.concordia.ca

Kevin D. Carillo

Concordia University

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THE CUSTOMER-CENTERED B2C LITERATURE THROUGH THE LENS OF ACTIVITY THEORY: A REVIEW AND RESEARCH AGENDA

Kévin D. Carillo
Anne Beaudry
John Molson School of Business
Concordia University
abeaudry@jmsb.concordia.ca

ABSTRACT

A multitude of published research studies investigate the B2C phenomenon from the customer point of view. At this point, making sense of such a large number of studies is a difficult task. The aim of this paper is to organize the literature to provide a clear depiction of what we know and what we don't know about it in order to identify specific areas where future research efforts are needed. A review of the B2C literature of the past seven years yielded 115 papers investigating the phenomenon from the user/customer perspective, 74 of these were empirical. This literature is organized according to the Activity Theory framework, allowing for an enhanced understanding of the phenomenon through a social context perspective. Future research directions are identified and discussed.

Keywords: electronic commerce, e-business, B2C, activity theory, literature review

I. INTRODUCTION

The number of Internet users in July 2005 was estimated to be over 939 million people (14.6% of the world population) of which 223 million are from North America [Internetworldstats, 2005]. This number corresponds to 68% of the Northern American population. In the first quarter of 2005, retail e-commerce sales reached \$19.8 billion, an increase of 6.4 percent over the fourth quarter of 2004 [US Census Bureau Report, 2005]. In two years, online banking grew 47% to 53 million people in the United States alone [PEW Internet, 2005].

Governments also started providing their services online. A July 2003 survey showed that 97 million Americans took advantage of "e-gov" (U.S. electronic government services) [Pew Internet & American Life Project, 2003]. The situation in Canada is similar. Statistics Canada [2003] reports that in 2003, 65% of households with Internet access used online health services, 59% benefited from online government services, 57% used online banking services, and 34% purchased goods or services online.

Since their inception, online retail sales and services, commonly known as Business-to-Consumer (B2C), have been characterized by steady growth. Not surprisingly, the B2C phenomenon triggered a wealth of studies in both the academic and the practitioner literature. Dozens of studies focused on the consumer side of the phenomenon, examining it from various perspectives. The aim of this paper is to organize this research to provide a clear picture of what

we know, and what we don't know in order to identify areas where future research efforts are needed.

To accomplish this goal, we use Activity Theory (AT) [Engeström, 1987; Leont'ev, 1978; Vygotsky, 1971] as an integrative framework. AT consists of a set of basic principles which constitute a general conceptual system that can be used as a foundation for more specific theories [Bannon, 1998; Kaptelinin, 1996]. AT provides a high-level contextual perspective of human behavior. Hence, mapping the extensive literature into the AT framework allows it to be organized in a coherent manner, providing a more comprehensive and contextualized representation of our understanding of the phenomenon. By offering a macro-level view, AT enables us to identify areas that are overlooked with more micro-frameworks and that deserve further attention from researchers.

This paper is organized into four sections. Section II introduces activity theory (AT). The research method is described in Section III and is followed by our analyses (Section IV). The paper concludes (Section V) with the delineation of the state of our knowledge in a comprehensive framework which allows for the identification of future research directions in the area.

II. ACTIVITY THEORY: AN OVERVIEW

AT proposes a theory of mind that is fundamentally opposed to the traditional Cartesian view. It takes into account the role played by technological artifacts, people, and the environment so that it is referred to as a "social theory of consciousness" [Nardi, 1998]. Its basic version was formulated by Vygotsky [Vygotsky, 1978; Vygotsky, 1971] who developed the concepts of artifact-mediated and object-oriented activity. Vygotsky argued that individuals and their social environment should be considered as elements in a single interacting system in which their interactions are mediated by tools/artifacts.

AT is positioned in-between the behavioral and social sciences and proposes to adopt an intermediate concept that consists of a "minimal context for individual actions" called activities which should be taken as the unit of analysis [Engeström, 1987]. As seen in Figure 1, the components of an activity are: an active *subject* who directs the activity towards an *object* in a world mediated by an artifact or *tool* where the term *object* has to be understood as the main motive that drives the *subject* to achieve a particular activity [Tuikka, 2002].

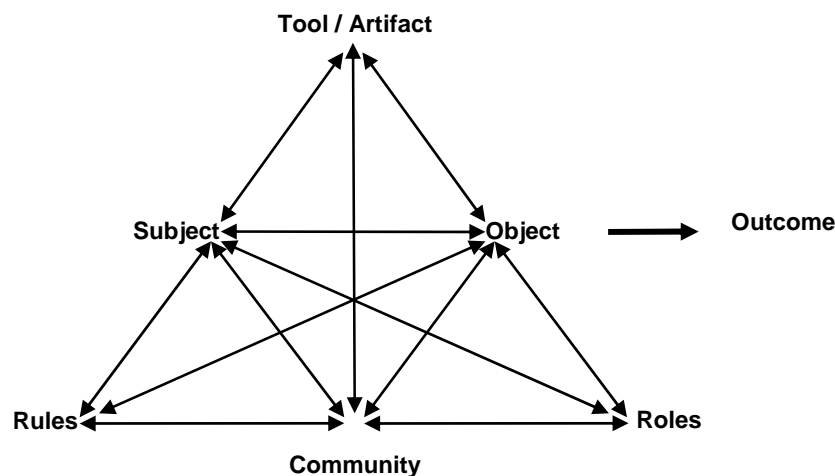


Figure 1. Activity Theory Framework

One of the main aspects of AT is the social context. Even when an individual performs a task seemingly alone (such as purchasing a product on the Internet or checking one's bank account balance through a bank website), he/she is engaged in an activity that has a specific meaning attributable to a wider set of practices. For instance, recent developments in AT, particularly by Engeström [1993], have significantly widened the scope from the individual-focused triangle of activities (subject, tool, and object) to include socially embedded concepts such as *rules*, *community*, and *roles* [Rogers and Scaife, 1997].

Specifically, the modern view of AT conceptualizes any activity as undertaken by a human agent (subject) who is motivated toward the solution of a problem or is motivated toward a goal (object), and mediated by tools (artifacts) in collaboration with other agents (community). The structuring of the activity is determined and constrained by cultural factors, including conventions (rules) and social divisions (roles) within the context [Engeström, 1987]. All the elements of such a system are continuously evolving. Individuals use artifacts or tools, continuously adapting them, either consciously or unconsciously [Beaudry and Pinsonneault, 2005; Leonard-Barton, 1988; Tyre and Orlikowski, 1994; Tyre and Orlikowski, 1996]. They also obey rules, either formal (e.g. laws, norms, regulations) or informal (e.g. socially accepted norms, moral rules), and transform them. Rules first inform individuals about their place in a community and instruct them on how they should act toward their object. Finally, subjects follow social roles related to a specific job or to discriminating factors such as age, gender, nationality, skills, or knowledge, which also constantly evolve. Transformation is key in the AT model and the interplay among the different elements constantly leads to various new outcomes being created.

Leont'ev [1978] extended Vygotsky's work concluding that one activity can be fundamentally distinguished from another only by its object, which defines the true motive of the activity. He also proposed a hierarchical view of the structure of an activity by introducing the notions of action and operation. Any *activity* consists of *actions* (or chains of actions), which in turn consist of *operations* [Decortis et al., 1997]. *Actions* are basic components of activities. They are subordinate to specific goals that are defined as conscious mental representations of outcomes to be achieved. Several actions may be undertaken in order to reach the same purpose. In such a case, activities are realized as goal-oriented actions [Decortis et al., 1997]. *Operations* are the ways in which actions are executed. They are driven by the conditions and tools of the action at hand. Operations may become routine and unconscious with practice [Decortis et al., 1997].

ACTIVITIES, ACTIONS, AND OPERATIONS: AN ILLUSTRATION

Leont'ev [1978] argued that any activity can be differentiated from another one by its object (motive). Hence, driving a car to go to work is a different activity from driving a car in order to obtain a driver's license. The tool, the car in this illustration, is a socially embedded artifact. Indeed, cars differ in style and characteristics between North America and Europe. They evolve due to technological advances. They also carry completely different social cues and references.

Driving an unfamiliar car requires the driver to perform many *actions* inherent to the activity. For instance, the seat, the mirrors, and the steering wheel may need to be adjusted for comfort. On the other hand, operations, such as unlocking the door, fastening the seat belt, inserting the key, and starting the engine, are done unconsciously.

Once on the road, expert drivers (role) are unaware of changing gears, checking the mirrors, activating the flashers (using the tool), obeying road signs (rules), and watching other cars (community). On the other hand, novice drivers perform more actions than operations. They must perform every single step of the driving process, paying attention according to the way they were taught by their instructor (role).

Outcomes may be concrete consequences, such as obtaining one's driver's license, or being late or on time for work. Outcomes may also be a new psychological state like a joyful mood because of a pleasant drive, or angeriness due to an unpleasant one.

ACTIVITY THEORY AND E-COMMERCE

Applications of AT in Information Systems can be found in the areas of human computer interaction [Bannon and Bødker, 1991; Bødker, 1991; Kaptelinin, 1994] and computer supported cooperative work [Bannon, 1998; Kuutti, 1991; Tuikka, 2002]. Researchers in these areas have recognized the potential of AT as a powerful analytical framework to understand computer-based artifacts as instruments for work design and materials for system design [Bødker, 1991].

As pointed out by Kumar et al. [1998], IS research has been dominated by a technical-economic rationality in which technology plays a central role. However, drawing from Kling [1980], the authors emphasize the need for developing additional perspectives in order to better understand the role played by information systems. The technical-economic view may not be fully explanatory [McMichael, 1999]. For instance, even though the use of transaction cost theory has been very insightful and prolific in the study of IS, Kumar et al. [1998] found that the conclusions of the theory were not always tenable and argued for a more human-focused approach. AT provides an integrated holistic framework that will help reframing IS by focusing on human activities, by considering IS as physical and symbolic tools, and by highlighting the individual and collective contexts of IS [McMichael, 1999]. Moreover, AT allows for the study of "different forms of human practices, with both individual and social levels interlinked at the same time" [Nardi, 1996, p. 25].

AT enables us to begin answering two requests from the field. First, IS researchers have been urged to cover all levels of analysis, from the individual to the societal [Walsham, 2000]. Second, a need for historical considerations have been emphasized [Mason et al., 1997a; Mason et al., 1997b; McKenney et al., 1997] to provide a complementary approach that allows us to "understand the sources of contemporary problems, how they arose, and how their circumstances unfolded through time". [Mason et al., 1997b, p. 307].

As part of IS research, electronic commerce research has inherited the need for multi-level and historical perspectives. Indeed, the need for adopting a multi-level approach is particularly relevant for e-commerce practices as characterized by intertwined interactions among: customers, e-vendors, website designers, online communities, as well as national and international entities involved with the development of laws and regulations in relation with online transactions and services. The use of a systemic approach such as General Systems Theory may fulfill such an encompassing view, but it omits focus on the central role played by the main components: online customers. Furthermore, historical considerations in studying B2C practices are also particularly relevant as online customers behavior may be strongly influenced by B2C website updates or redesigns, changes in rules and regulations, or new electronic payments methods for example. A recent Gartner survey [2005] revealed that Paypal (www.paypal.com), an Internet P2P e-payment system, has become the most trusted and most used of all Internet P2P e-payment systems in America. Its use has been affecting and changing people's behavior towards online retailing by redefining online transactions.

IS researchers have started to rely on the potential of AT in e-commerce research [Chaudhury et al., 2001; Johnston and Gregor, 2000] to tackle the emerging design problems associated with providing support to virtual users. In this paper, we conceptualize individuals' behavior in the B2C context by defining the AT components as follows:

B2C Activities consist of the interactions between an individual who aims to benefit from online services using B2C technological artifacts and a B2C community. Various actions can be performed by a customer in order to achieve a B2C activity (e.g. using a web browser, gathering information about a particular product, evaluating the different purchasing alternatives, providing personal information, or paying online). The Consumer Mercantile Model (CMM) [Kalakota and Whinston, 1997] allows categorizing these actions into three different phases: pre-purchase, purchase, and post-purchase actions. The *pre-purchase* phase involves actions such as product search, product comparison, bidding, and negotiation of terms. The *purchase* phase consists of order placement, payment, tracking delivery, and receipt of product/service. The *post-purchase* phase consists of using the product/service and asking/receiving support. A whole set of operations is then associated to each action. For example, the "payment" action could be seen as

comprising the following steps: filling in fields in an electronic form, switching from one webpage to another, or using a computer mouse to validate a choice.

Subjects are individuals motivated by the benefits of an online service such as purchasing goods, using a banking application, or using a brokering system.

The **artifact** or **tool** encompasses the overall B2C technological dimension from a customer angle. Since artifacts are socially and culturally embedded, B2C artifacts consist not only of the actual B2C IT-related items that are mainly the Internet (the channel) and B2C websites (the service vehicles), but also the characteristics, such as product-related criteria (e.g. price, value, quality), that define the online service itself. B2C technology is not limited to B2C websites. It encompasses all devices used in the B2C environment including cell phones and PDAs.

The **B2C community** involves all actors that participate in B2C activities. It consists of online customers, vendors, or any other actors that may play an intermediate role, such as marketers or any third party responsible for designing B2C websites or insuring security.

Rules are any constraints that influence online customers' behavior in relation to B2C activities. They can be formal, such as governmental laws about privacy and security, regulatory and organizational procedures with regard to payment and delivery, or informal, such as social pressures or norms that individuals may, or may not, follow.

Roles imply all characteristics that allow the differentiation of an individual from one group to another, such as demographics (e.g., age, gender, skills, education) or the type of customer (e.g., potential, repeated, novice, expert).

Two distinct **objects** in B2C activities can be identified: purchasing goods online or benefiting from a service such as online banking or brokering.

Outcomes are any direct or indirect consequences, short or long term effects or an individual's change in perception that results from the B2C activity. Examples of B2C outcomes are customer satisfaction, trust, and loyalty.

Using AT, the B2C activity is the unit of analysis. AT allows studying the activity in isolation at the individual level by considering only a subset of the triangle, such as the relationship among the subject, the tool, and the object. AT, however, encompasses this relationship in its context taking into account the social environment in which the activity takes place. In addition, it reminds us of the historical and evolutionary nature of the B2C activity by emphasizing the dynamic influence of each component in the process.

ACTIVITY THEORY AND THE B2C LITERATURE

AT thus provides a high-level perspective allowing for the integration of the bulk of studies on B2C. It encompasses all of the different perspectives used in MIS research to explore B2C and allows for the integration of all the results in a single framework by abstracting the theoretical considerations to which they belong. Most theories used in the literature on B2C actually rely on a subset of elements of the AT triangle. For example, the Technology Acceptance Model (TAM) [Davis, 1989] emphasizes the relationship between individuals' perceptions of the technological artifact under study and its actual usage. TAM is concerned by the *Subject – Tool – Object* area of the AT triangle. The Theory of Planned Behavior (TPB) [Ajzen, 1985] and the Theory of Reasoned Action (TRA) [Ajzen and Fishbein, 1980] deal with the same area and introduce subjective norms which characterize the social influence through formal or informal rules perceived in the corresponding community or organization. Using TPB or TRA thus allows investigating a wider area of the AT framework: *Subject – Tool – Rules - Object*.

Our review of the literature has allowed us to identify the various theories used by researchers in order to investigate the B2C phenomenon from a customer perspective. Table 1 presents these theories and maps them in the AT framework according to their application in the literature. As can be seen from Table 1, TAM is, by far, the most widely used theory in the B2C literature. IDT and TTF, as TAM, allow the investigation of the *Subject – Tool – Object* area of the AT framework. Other theories, such as Transaction Cost Theory and Social Exchange Theory allow

Table 1. Mapping of Theories used to study B2C in the AT Framework

THEORIES	EMPIRICAL	THEORETICAL	INSTRUMENT DESIGN / VALIDATION	A.T. FOCUS
Technology Acceptance Model	18	2	2	S-T-O
Theory of Planned Behavior	7	1		S-T-R-O
Theory of Reasoned Action	6			S-T-R-O
Information Diffusion Theory	5			S-T-O
Task-Technology Fit	2	2		S-T-O
Transaction Cost Theory	3			S-T-C-O
Expectancy Disconfirmation Paradigm	1	1	1	S-T-O
Flow Theory	2			S-T-O
Social Exchange Theory	2			S-C-O
Prospect Theory	1	1		S-T-C-O
Dissonance Theory	1			S-C-O
Mehrabian–Russell Model	1			S-C-O
Four-Channel Flow Model	1			S-C-O
Media Richness Theory	1			S-T-O
Mental Accounting Theory	1			S-T-O
Simon's Decision-making Model	1			S-C-O
Social Cognitive Theory	1			S-C-O
Social Contract Theory	1			S-C-O
Theory of Psychological Types	1			S-T-R-O
Uses and Gratification Theory	1			S-C-O
Utility Theory	1			S-C-O
Elaboration Likelihood Model		1		S-T-O
Institution-Based Trust Theory		1		S-T-O
Organizational Justice Theory		1		S-T-O
Psychological Contract theory		1		S-T-O
Stakeholder Theory		1		S-C-O
TOTAL:	58	12	3	

the investigation of an additional area, the role of the *community* in the relationship among the subject, the tool, and the object.

Table 1 emphasizes the various AT perspectives that have been studied in the B2C literature. It is noteworthy that no theory used in the literature allowed for the consideration of all areas of the AT framework. The mapping of the studies into the AT framework will provide a more comprehensive and integrated view of our fragmented knowledge about the B2C phenomenon.

III. RESEARCH METHOD

DATA COLLECTION

In order to broadly capture the B2C literature, three main research outlets have been considered. As such, we have reviewed three IS conference proceedings and 15 major journals that publish IS research. In addition, three major e-commerce journals and 3 marketing journals have been included. Appendix 1 presents the outlets, the publication range that has been included, and the number of empirical papers found in each.

The procedure used to identify the articles was carried out in several steps. An initial search of keywords was performed. This process revealed that, due to the relative newness of B2C research at the individual level, outlets should be scanned starting in 1998. The table of contents and abstracts of journals and proceedings published between 1998 and 2004 inclusively were reviewed. All studies involving any individual aspect related to B2C practices were retained. The process resulted in 115 papers pertaining to B2C from the individual/customer perspective, 75 of these were empirical in nature¹.

DATA ANALYSIS

The first step in data analysis consisted of identifying the variables in each study. The variables were then mapped into the AT framework. Using the AT framework, many areas linking the subject to its object were identifiable. Specifically, eight areas were identified as appropriate for study as part of any activity (see Figure 2). As shown in Figure 2a, the most straightforward area encompasses studies that have examined the relationships among the subject, the tool, and the object (S-T-O).

As seen from Table 1, studies falling under this area of AT have mainly relied on TAM as their theoretical foundation. Still, other theories have also been used to investigate the subject – tool – object relationships. We found studies that have used IDT, TTF, Flow Theory, and Media Richness Theory, among others.

Figure 2b represents the studies that have investigated the relationships among the subject, the tool, the community, and the object (S-T-C-O). Among this group of studies, five have relied on Transaction Cost Theory [e.g. Devaraj et al., 2002; Liang and Huang, 1998]. An important point is to be made in this regard. Although beliefs and perceptions are notions that belong to individuals, AT sees them as the fruit of the interaction of a subject and one of the AT triangle components, justifying the concept of social consciousness posited by AT. For instance, the concept of trust towards an e-vendor is a belief that belongs to an online customer, but it characterizes the interaction between this customer and the e-vendor that provides the considered electronic service. As a consequence, such a construct will be classified into the community component of the AT triangle. As stated previously, AT does not focus on individuals as the unit of analysis, but rather on activities which are conceptualized as the interaction among the subject, the tool, the community, the rules, and the roles.

Figure 2c shows that studies can also investigate the relationships among the subject, the tool, the rules, and the object (S-T-Ru-O). TRA and TPB, for instance, take social norms into account and have been used to investigate this particular area [e.g. Lau et al., 2001].

Studies examining the subject, the tool, the roles, and the object (S-T-Ro-O) fall under the area presented in Figure 2d. Various theories have been used to investigate this area of the AT framework (e.g., TTF, IDT) [e.g. Chen and Hitt, 2002; Jahng et al., 2002; Van Slyke et al., 2002].

¹ Non-empirical papers such as theory or instrument development were dropped from further analysis.

Other studies have taken a less theoretical approach in order to either identify antecedents of online shopping or create new models [e.g. Ahuja et al., 2003; Hoffman et al., 1999; Lee, 2002].

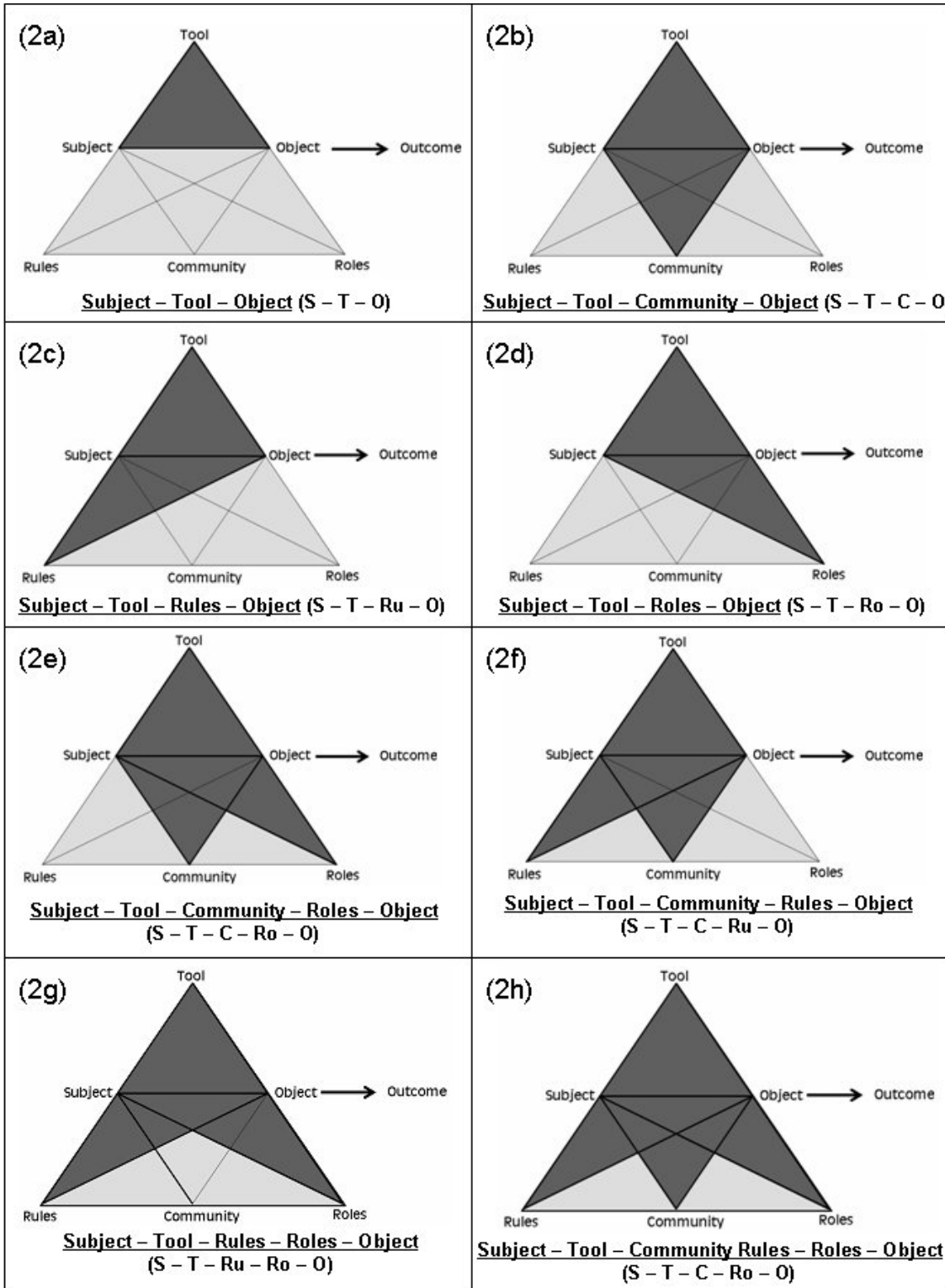


Figure 2. Activity Theory Areas

Following the AT framework, three additional, encompassing research areas exist. The relationships among the subject, the tool, the community, the roles, and the object (S-T-C-Ro-O), as represented in Figure 2e, have been examined using an extension of TAM [e.g. Gefen et al., 2003b] and extensions of TRA [e.g. Kim et al., 2003; Kim et al., 2004]. The subject, the tool, the community, the rules, and the object (S-T-C-Ru-O), as shown in Figure 2f, have also been examined using extensions of TAM [e.g. Gefen et al., 2003b; McKnight et al., 2002b]. One study [Bhattacharjee, 2000] was found that had investigated the subject, the tool, the rules, the roles, and the object relationships (S-T-Ru-Ro-O) as shown in Figure 2g. Few studies were found that examined the subject, the tool, the rules, the community, the roles, and the object interactions (S-T-C-Ru-Ro-O) as shown in Figure 2h [Tan and Teo, 2000].

Following Miles and Huberman [1994], both authors initially classified ten articles in the AT framework and compared their classifications. Eight articles had been classified identically by both authors. The two discrepancies were discussed and resolved. The 64 remaining papers were then classified independently by both authors who then compared their results. Disagreement over the classification occurred for only seven cases, which were then resolved by examining the measurement items when both conceptual and operational definitions of constructs used in the studies did not allow for the clear identification of the AT component to which they belonged.

The following section presents the studies regarding each of the areas of the AT framework introduced previously. They are presented according to their dependent variable. A few studies that encompassed two or more dependent variables will be discussed in each of the appropriate sections.

IV. RESULTS

Each of the following sub-sections includes a summary table (Tables 2 to 4). These tables all share the same layout. Each row represents an empirical study and each column represents one of the AT components. Each study's constructs are presented in appropriate cells.

Following the AT framework, any activity comprises actions and operations. We did not find any study that had examined operations. We did, however, find eight studies that examined three different actions.

ACTIONS

As can be seen from Table 2, three distinct actions have been studied in the literature, namely, information search, provision of personal information through a website, and paying online.

Information Search

As shown in Table 2, only one study [Oorni, 2003] was found to have investigated the relationship among the users (*subject*), the website (*tool*), and the action of searching for information (*object*). Results from Oorni's experiment suggest that poor availability of product information and lack of systems integration severely limit the efficiency of customers' searches for travel services.

Provision of personal information through a web site

Six studies were found to have examined the action of providing personal information over the Internet. Four of them investigated the relationship among the *subject*, the *tool*, the *community*, and the *object*. For instance, willingness to provide personal information over the web is significantly influenced by the online vendor reputation [Earp and Baumer, 2003; Teo et al., 2004]. Moreover, the existence of rewards and perceived fair informational practices are significantly related to the provision of personal information over the web [Teo et al., 2004].

Table 2 Studies Investigating Actions

Authors	Subject	Tool	Community	Roles	Rules	Object
Oorni, 2003	92 students	poor availability of product information, lack of systems integration				information search
Belanger et al., 2002	140 students	importance of privacy and security features, perceived website quality	e-vendor trustworthiness			provision of information
Earp & Braumer, 2003	415 online users	option to "opt out", presence of a privacy policy, presence of a Web seal, design of the site	e-vendor reputation			
Hoffman et al., 1999	15,569 Web users	perceived privacy	trust in e-vendor, trust in web providers	consumer s' skills		
Malhotra et al., 2004	742 household respondents	information privacy, perceived risk	trust in vendor			
McKnight et al., 2002b	1729 students	perceived web risk, perceived site quality	vendor reputation		structural assurance of the web	
Teo et al., 2004	147 subjects from Singapore	rewards, perceived fair informational practices	e-vendor reputation			
Treiblmaier et al., 2004	631 Internet users	experience, frictionless use, trust in e-payment security				paying online

In addition, the presence of security features such as encryption and authentication mechanisms was found to be an important determinant of respondents' willingness to give personal information over the web [Belanger et al., 2002]. Malhotra et al. [2004] found information privacy concerns to be negatively related to intention to release personal information over the web. They also found that trust in the vendor and perceived risk of transacting over the web mediated the relationship between privacy concerns and willingness to provide personal information.

Hoffman et al.'s. [1999] study falls in the *subject – tool – roles – object* area. They found that trust in the e-vendor and web providers was positively related to users' willingness to provide personal information over the web.

Lastly, the *subject – tool – rules – object* perspective was used by McKnight et al. [2002b] to develop a model of consumer trust in an electronic commerce vendor in the context of a web site offering legal advice. Mediated by trust in the e-vendor, it was found that perceived vendor reputation, perceived site quality, and structural assurance of the web are good predictors of the intention to share personal information. A direct and negative effect of perceived website quality was also found to influence respondents' intention to provide personal information over the web.

Paying online

The action of paying online has been studied by Treiblmaier et al. [2004] who found perceived frictionless use (referring to ease of use and level of support users expect to get from organizations if e-payment problems occur) and trust in e-payment security to be positively related to attitude toward paying online. Attitude toward paying online was positively related to intention to pay online. Treiblmaier et al. [2004] found previous experience with e-payment systems was a significant antecedent of intention to use e-payment through the mediation of both frictionless use and trust.

As can be seen in Table 2, provision of personal information online has been the most studied action. The subject – tool – community – object perspective has been the most widely used. As a result, one can tentatively conclude that perceived privacy, the presence of security features, and the e-vendor's trustworthiness and reputation are significantly related to web users' willingness to provide personal information online. Few studies have investigated the function of roles and rules in B2C underlying actions. Moreover, the actions of searching for information and paying online have hardly been addressed, thus raising a need for further research in these areas.

ACTIVITIES

In a B2C environment, the main object is purchasing or benefiting from a service online. Many studies have examined the actual activity of doing business online (either shopping online or using an e-service such as online banking or brokering). These studies are reviewed below along with those that have investigated the intention to do business online, the intention to continue to do business online, and the likelihood to abort a transaction.

Intention to do business online

Table 3a presents the 22 studies that have investigated individuals' intention to do business online (either buying or trading online). As can be seen from Table 3a, TAM's core constructs (i.e. perceived ease of use and perceived usefulness) along with perceived risks, figure among the most widely studied antecedents of intention to buy online.

Perceived usefulness was found to be significantly related to intention to purchase online [Featherman and Wells, 2004; Gefen et al., 2003b; Lee et al., 2001] and to intention to use an online trading system [Bhattacharjee, 2000; Lau et al., 2001]. Gefen et al., [2003a] found that repeat customers perceived the website to be more useful and were more inclined to purchase online than potential online customers. Also, Featherman and Fuller's [2003] results indicate that perceived usefulness is more strongly related to intention to buy online in perceived high risk situations.

Perceived ease of use of the website was found to be positively related to intention to purchase online [Belanger et al., 2002; van der Heijden et al., 2003] and to use an online trading system [Lau et al., 2001]. On the other hand, Lee et al. [2001] found perceived ease of use to be only indirectly related to intention to buy online through perceived usefulness of the web site. Gefen et al. [2003b] found perceived ease of use to be both directly and indirectly, through perceived usefulness, related to the intention to buy online. Gefen et al.'s [2003a] results indicate that repeat customers found the website to be more easy to use than their counterparts. Featherman and Fuller [2003] found perceived ease of use to be more strongly related to intention to buy online in situations perceived as less risky.

Table 3a. Studies investigating “intention to do business online”

Authors	Subject	Tool	Community	Roles	Rules	Object
Belanger et al., 2002	140 students	importance of privacy and security features, perceived website quality	e-vendor trustworthiness			intention to buy online
Choi et al., 2004	424 senior students	web site quality, product categories				
Featherman & Fuller, 2003	394 students	perceived usefulness, perceived ease of use	brand related perceived risk		subjective norms	
Featherman & Wells, 2004	407 students	perceived artificiality, perceived usefulness		generality, mental intangibility		
Gefen et al., 2003a	317 students	perceived usefulness, perceived ease of use	familiarity with e-vendor, trust in e-vendor	potential/repeat users, disposition to trust		
Gefen et al., 2003b	213 students	perceived usefulness, perceived ease of use,	familiarity with e-vendor, calculative-based trust, trust in e-vendor		institution-based structural assurances, institution-based situational normality	
Huang, 2003	115 web users	arousal, pleasure, dominance				
Jahng et al., 2000	408 subjects	product presence	social presence			
Jahng et al., 2002	136 students	richness of product information presentation		personality traits		
Kim & Xu, 2004	161 potential customers and 352 repeat customers	perceived price, perceived value	trust in e-vendor	potential/repeat customers		
Klopping & McKinney, 2004	826 students	playfulness, perceived usefulness, task-technology fit		self-efficacy, experienced/non-experienced users		
Lee et al., 2001	181 students	perceived risk with product/ service, perceived risk of transaction, perceived usefulness, perceived ease of use				
Liang & Huang, 1998	85 internet users	transaction cost, uncertainty, asset specificity	asset specificity	experienced/non experienced users		
Liao & Cheung, 2001	312 internet users in Singapore	perceived risk associated with transaction security, price, perceived relative life content	quality of e-vendor	IT education, internet usage		

Table 3a. Studies investigating "intention to do business online" (cont'd)

Authors	Subject	Tool	Community	Roles	Rules	Object
McKnight et al., 2002b	1729 students	perceived web risk, perceived site quality	trust in e-vendor, vendor reputation		structural assurance of the web	intention to buy online
Pavlou, 2001	52 students	perceived privacy, perceived security, perceived risk	reputation, trust in e-vendor			
Van der Heijden et al., 2001	227 students	perceived risk, perceived website ease of use	perceived reputation, trust in store			
Van der Heijden et al., 2003	228 students	perceived risk	trust in online store			
Van Slyke et al., 2002	511 subjects	prior web use		gender, computer use experience, usage of email, and access to a credit card		
Bhattacharjee, 2000	172 e-brokerage users	perceived usefulness, perceived ease of use, behavioral control, facilitating conditions		self-efficacy	interpersonal influence, external influence, subjective norms	intention to trade online
Lau et al., 2001	178 online trading users	perceived usefulness, perceived ease of use, and compatibility, perceived behavioral control			subjective norms	
Tan and Teo, 2000	454 subjects	relative advantage, compatibility, complexity, trialability, perceived risks	availability of government and technical support	self-efficacy, Internet experience, banking needs	subjective norms	intention to use online banking

Intention to purchase online was found to be negatively influenced by perceived risk with product or service [Lee et al., 2001] and by perceived risk of transaction [Featherman et al., 2004; Lee et al., 2001]. Pavlou [2001] found trust in buying online to be negatively related to perceived risks which, in turn, were negatively related to intention to buy online. In addition, perceived artificiality (a negative perception about the web site and its content), generality (how well consumers can clearly define a service) and mental intangibility (the ability to gain a clear picture of an object) were found to be significantly related to perceived risk [Featherman et al., 2004].

Van der Heijden et al. [2003] found trust to be negatively related to perceived risks which was negatively related to attitude toward online shopping. Attitude toward online shopping was, in turn, positively related to intention to purchase online. Trust in the online store was found to be positively related to intention to purchase online [van der Heijden et al., 2003].

Trust in the e-vendor was found to be positively related to intention to buy online [McKnight et al., 2002b]. Gefen et al.'s [2003a] results even suggest that for potential online customers, trust in the e-vendor is a much more influential factor than perceived website usefulness. McKnight et al. [2002b] also found that the vendor's perceived reputation, perceived website quality, and structural assurance were indirectly related to intention to purchase through trust in the e-vendor. Pavlou [2001] found perceived privacy and security to be related to trust in transacting over the web. Kim and Xu [2004] also found that trust in the e-vendor had a significant relationship with purchase intention for both potential and repeat customers.

Intention to buy online was found to be positively influenced by perceived website quality [Choi et al., 2004]. Furthermore, Choi et al. [2004] found product categories to moderate the relationship between perceived web site quality and intention to buy online. Willingness to provide personal information over the web, convenience, and pleasant web design were found to be positively related to intention to purchase over the web [Belanger et al., 2002].

Liang and Huang's [1998] results suggest that asset specificity (site specificity, physical asset specificity, human asset specificity, and brand name specificity) and product and process uncertainty are negatively related to intention to purchase online through the mediation of transaction costs (search, comparison, negotiation, payment, and delivery costs). Interestingly, experienced shoppers were found to be concerned more about the uncertainty in online shopping, whereas inexperienced shoppers seem to be concerned with both. Liao and Cheung's [2001] results suggest that perceived transaction security, price, and vendor quality, as well as IT education and level of Internet usage, were all significantly related to willingness to buy online. Product price was found to be more strongly related to intention to buy online for repeat customers than for potential customers [Kim et al., 2004].

Relying on media richness theory and on Jung's psychological types, Janhg et al.'s [2002] results suggest that the richness of product information presentation is positively related to intention to buy online. Moreover, the relationship is more influential for intuitive and feeling types than for sensing and thinking types. Jahng et al.'s [2000] results indicate that the fit between the e-commerce environment and the complexity of the product, defined as the congruence between the social and product presence provided and that required by the product, is positively related to intention to purchase online.

In addition, Gefen et al. [2003b] found that trust in the e-vendor mediated the relationship among calculative-based beliefs, institution-based structural assurances, institution-based situational normality, and intention to purchase online. Perceived ease of use mediated the relationship among institution-based situational normality and familiarity with the e-vendor and intention to buy online [Gefen et al., 2003b].

Lau et al. [2001] found compatibility to be positively related to intention to use an online trading system, whereas relative advantage positively affected intention to use through the mediating effect of attitude toward the system. Online brokerage was also explored by Bhattacharjee [2000] who found both interpersonal influence and external influence to be significantly related to intention to use online brokerage. Bhattacharjee also found behavioral control to moderate the relationship between self-efficacy and facilitating conditions (beliefs about availability of

resources to facilitate online brokerage behavior) and intention to use an online brokerage system.

Tan and Teo [2000] found relative advantage, compatibility, trialability, perceived risks, internet experience, banking needs, self-efficacy, and availability of government support to be significantly related to intention to use Internet banking services. Conversely, subjective norms were not related to either intention to use an online trading system [Lau et al., 2001] or intention to use online banking [Tan et al., 2000].

Van Slyke et al., [2002] found that men were more likely to buy online than women. In addition, they found that computer use experience, usage of email, prior web use, and access to a credit card were positively related to shopping on the web.

Finally, Klopping and McKinney [2004] found task-technology fit (between the e-shopping task and the technology used to accomplish that task), online shopping self-efficacy, playfulness, and perceived usefulness to be positively related to intention to buy online. They found the relationship between TTF and intention to be more influential for experienced respondents (experience in online shopping) whereas the relationship between self-efficacy and intention was more influential for inexperienced ones.

As shown in Table 3a, antecedents of customers' intention to buy online falling under all components of the AT framework have been examined by IS researchers. These studies' results contribute to enhancing the state of our knowledge about the subjects' intention to buy online by integrating variables pertaining to the tool, roles, and rules in a B2C environment. We can cautiously conclude that although perceived ease of use, perceived usefulness, and trust in the e-vendor were found to be important antecedents of intention to buy online and that perceived risks were found to be negatively related to intention to buy online; empirical evidence suggests that the strength of these relationships is a function of the relative experience of respondents with online shopping. Since intention to use an online service such as online trading or online banking has barely been studied, further research is needed in these areas.

Doing business online

Of the eight studies presented in Table 3b, seven have investigated the actual activity of buying online while one examined the antecedents of using online banking services. Liang and Lai's [2002] results suggest that website design quality, particularly motivational factors (e.g., good search engine, direct support provided to customer during transaction process) and hygiene factors (e.g., good security, protection of customers from risks or unwanted events) are positively related to buying online. Chau and Lai [2003] found personalization, services, task familiarity, accessibility, and alliances to be related to perceived ease of use and perceived usefulness which, in turn, were significantly related to online banking.

Lee [2002] compared factors considered most important by potential online buyers to those of online businesses. Interestingly, the two most important features from the vendors point of view, namely speed of website and ease of navigation, were ranked in third and fifth place respectively by customers behind good product description and company background information. Lee's [2002] results indicate that respondents' online buying behavior is highly contingent upon their perception of 1) their personal information being protected, 2) being offered a warranty, 3) perceived convenience, 4) a money-back guarantee and 5) after-sales service. On the other hand, results suggest that the most important barriers are 1) risk of stolen credit card number, 2) risk of transacting with a fake company, and 3) risk of inaccurate billings. In a study which aimed at differentiating students' versus non-students' motivations for buying online, Ahuja et al. [2003] found that both types of consumers choose to purchase online because of convenience and time saving.

Table 3b. Studies investigating “Doing Business Online”

Authors	Subject	Tool	Community	Roles	Rules	Object
Ahuja et al., 2003	190 students and 75 faculty or administrators	convenience, customer service		students/not students		buying online
Brown & Machira, 2004	186 Australian students	perceived privacy				
Chen et al., 2002	253 online users	compatibility, perceived ease of use, perceived usefulness				
Khalifa & Limayem, 2003	2115 internet shoppers	presence of facilitating conditions, perceived consequences			social influences	
Lee, 2002	424 students	personal information protection, warranty offer, perceived convenience, money-back guarantee, after-sales service, risk of stolen credit card number, risk of transacting with a fake company, risk of inaccurate billings		potential online buyers/ online businesses		
Liang & Lai, 2002	30 students	design quality				
Shang et al., 2004	478 Taiwanese consumers	cognitive absorption			fashion	
Chau & Lai, 2003	160 business executives	personalization, services, task familiarity, accessibility, and alliances, perceived usefulness, perceived ease of use				online banking

[Khalifa and Limayem, 2003] results suggest that a positive attitude toward online shopping is positively related to intention to shop online, whereas perceived negative consequences are negatively related to intention to buy online. In turn, intention to buy online, along with the presence of facilitating conditions (site accessibility, good product description, navigation efficiency, web page loading speed), were found to be positively related to online shopping in a longitudinal study of 706 internet users [Khalifa et al., 2003]. Fashion, defined as "a way of behaving that is temporarily adopted by a discernible proportion of members of a social group", and cognitive absorption were found to be positively related to online shopping [Shang et al., 2004].

Chen et al. [2002] found attitude toward online shopping and intention to purchase online to moderate the relationship among compatibility, perceived ease of use, perceived usefulness, and online shopping.

Alternatively, privacy concerns have been found to be negatively related to online purchasing [Ahuja et al., 2003; Brown and Muchira, 2004]. Security concerns and customer service were also found to be the main barriers to buying online [Ahuja et al., 2003].

In conclusion, only three AT mediation perspectives have been used to study the actual online shopping behavior by individuals. Namely, they are S-T-O (4 studies), S-T-Ro-O (2 studies) and S-T-Ru-O (2 studies). This emphasizes the need for more studies that encompass more AT mediation types, as no study has been found that addressed the community aspect. This essentially means that even though the previous sub-section concluded that the intention to do business online had been broadly addressed with community factors, the study of the actual behavior suffers significantly from a lack of community considerations and particularly e-vendor ones. Furthermore, shopping online is the object in seven out of eight studies, indicating a lack of understanding of other types of online services such as online banking, trading, health services, or government.

Continuance intention

Table 3c presents the studies that have investigated customers' intention to continue to do business online and likelihood to abort an online transaction. Liu et al., [2004] found perceptions of privacy to be related to trust in the e-vendor which, in turn, was found to be significantly related to intention to repeat online purchasing and to visit again. Bhattacharjee's [2001] results indicate that confirmation of expectations from initial use is positively related to perceived usefulness of online brokerage services, along with satisfaction with initial use, are positively related to continuance intention.

Likelihood to abort a transaction

Vatanasombut et al. [2004] compared privacy perceptions for novice and sophisticated users. Their results indicate that novice users cease their use of online banking because of simple technical problems, such as browser incompatibility or forgotten password. On the other hand, sophisticated users were found to stop using online banking because it did not meet their expectations with regard to ability to transfer bank information into their personal desktop software, response time, information quality, or costs.

Cho [2004] found that prior favorable online purchasing experience, a favorable attitude toward buying online, and high purchasing frequency from catalogs were negatively related to the likelihood to abort an online transaction. Alternatively, and independently of the perceived related benefits, perceived risks associated with buying online were positively related to transaction abortion likelihood.

Chen and Hitt [2002] found that customers' demographic characteristics had little effect on switching online brokerage providers. Their results, however, suggest that use of multiple brokers, changes in usage patterns, and ease of use were positively correlated with reduced switching. Conversely, website quality and breadth of offerings were negatively associated with switching.

Table 3c. Intention to continue to do business online and likelihood to abort a transaction

Authors	Subject	Tool	Community	Roles	Rules	Object
Bhattacharjee, 2001	172 e-brokerage users	confirmation of expectations, perceived usefulness, satisfaction with initial use	loyalty incentives from e-vendor			continuance intention
Lui et al., 2004	212 students	privacy	trust in e-vendor			
Chen & Hitt, 2002	archival data	use of multiple brokers, changes in usage patterns, ease of use, website quality, breadth of offerings		demographic variables		likelihood to abort a transaction
Cho, 2004	294 online users	effort saving, product offering, control in the information search, and time spent on the Internet per visit		prior favorable online purchasing experience, favorable attitude, high purchasing frequency from catalogs		
Vatanasombut et al., 2004	novice and sophisticated users (no sample size)	perceived security		novice/sophisticated users		

Interestingly, constructs studied in relationship with intention to buy online (e.g., perceived ease of use, perceived usefulness, reputation of, and trust in, e-vendor) have not been studied in relationship with the actual online shopping behavior, nor with intention to continue to shop online or with its counterpart of likelihood to abort a transaction. As can be seen from Table 3c, constructs from the community and rules component of the AT framework have been overlooked in this last area, calling for further research efforts in this direction.

OUTCOMES

In AT terms, the outcome is any direct or indirect consequence that results from the activity. Customer satisfaction, loyalty, intention to return, and trust can be seen as outcomes of the B2C activity. The studies that have investigated these outcomes are presented in Table 4 and discussed next.

Customer Satisfaction

Perceived website quality was found to be positively related to customer satisfaction [Éthier et al., 2004]. Utilizing Simon's decision-making model, Kohli et al. [2004] explored the relationship between decision-making and the selection of the online channel, taking into account cost and time savings. They found that the online shopping channel supports the overall decision-making model and more specifically the design and choice phases. Éthier et al. [2004] also found that both time and cost savings were related to greater online channel satisfaction. Customer satisfaction was also found to be positively influenced by the fit between the e-commerce

environment and the complexity of the product, defined as the congruence between the social and product presence provided and that is required by the product [Jahng et al., 2000].

Balasubramanian et al.'s. [2003] results indicate that perceived operational competence (defined as the perceived ability of the online broker to deliver high levels of day-to-day operational performance) and perceived environmental security (defined as the belief that institutional structures help in keeping online brokers to deliver their services as expected) are positively related to perceived trustworthiness (the level of trust an investor has in the online broker) which, in turn, is positively related to customer's satisfaction with online brokerage.

Loyalty

Mathwick and Rigdon [2004] found product involvement to moderate the relationship between play (intrinsic enjoyment and escapism) and attitudinal loyalty. Customer loyalty was also found to be influenced by belief about brand equity (value) [Lu and Lin, 2002], informational content, and perceived safety of transaction [Devaraj et al., 2003]. Chen and Hitt [2002] found that customers' demographic characteristics had little effect on loyalty towards online brokerage provider. They found that use of multiple brokers, high volume of website usage, and account minimums were negatively related to loyalty.

Luarn and Lin [2003] found trust in the e-vendor and commitment (attachment to the online service) to be positively related to loyalty to online travel services providers. Furthermore, customer satisfaction and perceived value were both directly related to loyalty and indirectly related to loyalty through commitment.

Intention to return

In a study that aimed at deriving functional website design requirements, Liang and Lai [2002] operationalized design quality as comprising three types of features: motivators (having a good search engine, provide direct support to customer transaction process), hygiene factors (having good security, protect customers from risks during the transaction), and media richness factors (providing chat rooms, add more information channels). They found that motivational factors most significantly influence respondents' intention to return. Koufaris [2002] found product involvement, web skills, and the presence of value added search mechanisms to be positively related to shopping enjoyment which was positively related to intention to return of new online purchasers.

Trust

Qui and Benbasat's [2004] results suggest that the presence of an animated embodiment (called a humanoid avatar) representing a service person on behalf of the e-vendor, is significantly related to increases in cognitive and emotional trust toward the trustee. Perceived company reputation, product and service customization, perceived website usefulness, ease of use, and security are all positively related to initial trust in the company after the first visit to a web-based company [Koufaris and Hampton-Sosa, 2004]. Perceived vendor reputation was found to be related to trust in the e-vendor [McKnight et al., 2002a] and to trust in online shopping [Kim et al., 2003; Walczuch and Lundgren, 2004]. Website quality and protective legal or technological structures assuring that the transaction will be conducted in a secure manner are significantly related to trust in the e-vendor [McKnight et al., 2002a].

Table 4. Outcomes

Authors	Subject	Tool	Community	Roles	Rules	Outcome
Balasubramanian et al., 2003	428 online brokers	price perceptions	perceived trustworthiness of online broker, perceived operational competence	customers' disposition to trust	perceived security of the investing environment	customer satisfaction
Ethier et al., 2004	226 students	perceived web site quality				
Jahng et al., 2000	408 subjects	product presence	social presence			
Kohli et al., 2004	134 students	intelligence, design, and choice decision phases, time and cost saving				
Chen & Hitt, 2002	archival data	use of multiple brokers, high volume of website usage, account minimums		demographic variables		loyalty
Devaraj, 2003	134 respondents	informational content, and perceived safety of transaction				
Lu & Lin, 2002	145 students	beliefs about content, context, and, infrastructure of the e-service				
Mathwick & Rigdon, 2004	110 respondents	product involvement, play				
Luarn & Lin, 2003	180 Taiwanese respondents	perceived value, customer satisfaction, commitment	trust in e-vendor			
Koufaris, 2002	280 new online purchasers	shopping and product involvement, presence of value added search mechanisms		new/expert online purchasers, web skills		intention to return
Liang & Lai, 2002	30 students	design quality				

Table 4. Outcomes (cont'd)

Authors	Subject	Tool	Community	Roles	Rules	Outcome
Kim et al., 2003	448 respondents	perceived privacy and security protection, information quality, system's reliability	e-vendor reputation	customers' disposition to trust		trust
Kim et al., 2004	161 potential and 1,191 repeat customers	perceived information quality, customer satisfaction, service level	e-vendor reputation	potential or repeat customers		
Koufaris & Hampton-Sosa, 2004	212 online users	perceived web site usefulness, ease of use, security	perceived company reputation, perceived willingness to customize			
McKnight et al., 2002a	1729 undergraduate students	site quality	trust in e-vendor	disposition to trust, personal innovativeness, general web experience	institution-based trust	
Qui & Benbasat, 2004	72 students	presence of an animated embodiment				
Walczuch & Lundgren, 2004	107 Dutch students	level of control, and perceived similarity	e-vendor's reputation, perceived level of investment	familiarity, knowledge about security	word-of-mouth, information from friends and relatives	
Devaraj et al., 2002	171 students	perceived ease of use, perceived usefulness, satisfaction with e-commerce channel	empathy, reliability, responsiveness, assurance			channel preference

Kim et al.'s [2003] results indicate that customers' disposition to trust, perceived privacy and security protection, information quality, and the system's reliability are significant antecedents of customers' trust in online purchasing. Kim et al.'s [2004] survey of 161 potential online customers and 191 repeat customers of an online bookstore suggest that customer satisfaction has a stronger effect on trust-building for repeat customers than does the e-vendor reputation and perceived information quality.

Finally, Walczuch and Lundgren's [2004] results also suggest that perception based factors are the main determinants of customers' trust in online shopping. Specifically, their study indicates that word-of-mouth, perceived level of investment from the e-vendor in the business, level of control, familiarity, and perceived similarity of the business to themselves are all significantly related to customers' trust in online shopping.

Channel Preference

Channel preference was defined by Devaraj et al., [2002] as a consumer behavior choice resulting from prior experiences with the electronic commerce channel. They found perceived ease of use, time and price savings, empathy, and assurance all to be significantly related to respondents' satisfaction with the e-commerce channel which, in turn, was significantly related to channel preference.

As seen in Table 4, aspects pertaining to the community, roles, and rules have been largely overlooked from research on outcomes of B2C activity from an individual point of view. In other words, IS researchers have studied a vast array of technological features, but have not yet studied the interaction of these technological features with that of the larger activity context. Empirical evidence, however, suggests that some of these constructs play an important role. For example, the e-vendor's reputation has been found to be significantly related to trust in online shopping [Kim et al., 2003; Kim et al., 2004; Walczuch et al., 2004].

V. DISCUSSION AND FUTURE RESEARCH

DEPENDENT VARIABLES

In AT terms, an object is the motive behind one's activity. In the B2C context, two main objects can be identified: purchasing a good or benefiting from a service online. This paper reveals that 22 studies have investigated the antecedents of respondents' intention to buy online. Only one study examined intention to use an online service, a trading system online. Moreover, we did not find any study that examined the antecedents of intention to use online banking, income tax filling systems, or health systems. As online services become more and more pervasive, research is obviously needed in these areas.

Nevertheless, from an organizational perspective, this is insufficient. Organizations do not survive on customers' intention to buy, but rather on the actual behavior. Surprisingly very few studies have investigated the actual behaviors. Further research is needed; paying attention to the design and the characteristics of efficient and effective systems: systems that actually encourage and adequately support the customer's buying process and, as an outcome, contribute to an increase in customer loyalty, satisfaction, and return intention.

Furthermore, not a single study that examined online buying considered any community mediation such as e-vendor reputation or announcement of hackers' attacks. Further research in this direction is clearly needed. Similarly, intention to continue and intention to abort B2C transactions were explored in a few studies, but none investigated rules and only one included community considerations.

Eighteen studies were found to have used outcomes as dependent variables. However, only two studies integrated the interaction between subject and rules [Balasubramanian et al., 2003; McKnight et al., 2002a] even though notions such as trust or loyalty may be inclined to be significantly influenced by "rules" factors such as government regulations or social norms.

We found that no study investigated the relationship between *actions* (i.e. information search, seeking/receiving support) and *outcomes* (customer's loyalty and return intention). These outcomes can contribute to shape the subjects in that they may contribute to change customers' cognitions (e.g. intentions, perceptions, and beliefs such as trust). They may also contribute to change the perception of the tool or to outline improved features such as increased privacy and security mechanisms.

STUDENTS AS CUSTOMERS

Of the 74 empirical studies that have been reviewed, 26 used students as their sample. Such a usage of students as proxy for online customers is questionable. It may be appropriate to use students to study issues pertaining to that particular group. For instance, it seems that students tend to purchase certain goods on the internet, whereas more mature customers may be inclined to buy others. Similarly, students use online banking to fulfill basic tasks such as checking their account balance and transferring money, while other types of customers may require more "advanced" services such as investment plans, mortgages, or insurance services. As a consequence, using students might be useful to shed light on some B2C avenues, but, in many instances, results should be confirmed with more appropriate samples so to increase our confidence in their generalizability.

Furthermore, using students with small size samples appears questionable. For instance, Liang and Lai [2002] used a sample of 30 students in an experiment in order to explore intention to return; Pavlou [2001] investigated intention to buy online using 52 students; and Qiu and Benbasat [2004] explored trust in the e-vendor using an animated embodiment based on a sample of 72 students. These results, along with those of studies relying on "subjects", "online users" or "respondents" without providing further details about their sample, although promising and insightful, should be interpreted cautiously and accordingly.

UNEXPLORED MEDIATIONS

Eight studies have explored action-level dependent variables, specifically, information search, paying online, and provision of personal information online, of which, provision of personal information online was the most investigated one. Community mediation factors have been considered somewhat, but roles and rules have been lacking from this stream of research. There is a need for more research in those areas. Paying or providing personal information online can be argued to be influenced by the laws and regulations that have been put in place by governments (rules). Repeat or experienced customers (roles) may not be as sensitive as new ones in providing personal information or paying online. Furthermore, other relevant actions in a B2C environment have not been studied (e.g. seeking support or customer service).

As activities have been depicted has a molar entity made of actions [Leont'ev, 1978], any lack in any of the actions might result in a behavioral change at the activity level. For instance, online customers might not be willing to shop on a certain website for the simple reason that the e-vendor is unable to ship in less than a period of one week or does not provide any online tracking functions. As a conclusion, a deeper understanding of B2C activities will be possible only when each category of B2C actions has been investigated.

ERRORS OF EXCLUSION

Our review of the literature allowed us to find a few more empirical papers than those presented in the preceding sections. For instance, Lu et al. [2004] investigated the moderating effect of extraversion on the relationships between social adjustments and the establishment of social identity by integrating into desired social groups and users' intention to disclose personal information. This study does not take into account the IT artifact and can be said to be plagued by an error of exclusion as discussed by Benbasat and Zmud [2003]. This study examines the role of factors belonging to the community component of the AT framework on

the performance of a specific B2C action. On a positive note, very few studies (five) were ignored for a similar reason.

THEORETICAL CONSTRUCTS AS MINIMAL TRIADS

A key notion in AT is that the subject is inseparable from his/her context which comprises tools, rules, community, and roles. The activity is seen as the interaction between the subject and the context. Since the subject cannot be studied apart from the context, the theoretical constructs which characterize the activity (e.g. beliefs, perceptions) must also be defined in relationship to the context. In the B2C context, this implies that any construct relating to any component of the framework must be defined specifically for the context under study. For example, PEOU and PU which have typically been studied in relationship with a technological artifact would take different meanings under varying B2C contexts (e.g., online shopping, brokering, and banking).

In other words, activity theory posits that any individual perception or belief is dynamically built through the interaction of the individual and his/her environment, leading to the concept of social consciousness. It states that beliefs and perceptions in the context of a determined activity are the results of the interaction between an individual and one or more components of activity: tool, community, roles and rules. For instance, this review has shown that perceptions such as perceived ease of use and perceived usefulness are dynamically built and shaped through the interaction of a subject and the technological artifact in B2C activities. Similarly, the perception of vendor reputation [Earp et al., 2003; Teo et al., 2004] characterizes the interaction between individuals and online vendors who are seen as part of the community component as defined in AT. As a consequence, AT does not define perceptions and beliefs as a static concept that encompasses only individuals, but rather as the result of a dynamic interaction between the subject and one or more AT components in the context of a specific activity. Such a perspective allows for a much finer view and definition of theoretical constructs by integrating them in a minimal triad that consists of the activity itself, its context, and the interaction with one or more components of the AT triangle that it characterizes.

Trust, for instance, has been shown to be a good predictor in a broad range of topics such as virtual teams [Jarvenpaa et al.; Paul and McDaniel, 2004; Piccoli and Ives, 2003] or a consumer's behavior towards internet service providers [Chiou, 2004]. Trust has also been largely investigated in the B2C literature. However, in each of those areas, the activity and the context differ. AT posits that the construct of trust also differs because it results from the interaction between subjects and different contexts. As a consequence, AT suggests that any conceptualization should be contextualized. It would be more appropriate to distinguish trust in online shopping from trust in online banking instead of simply studying "trust".

Furthermore, some aspects of the activity may differ if they do not characterize the same interaction in the AT triangle. For instance, the technological artifact may be trusted by a customer based on his/her experience using it. Trust can also be related to the community where a customer may trust an e-vendor. However, one may not trust the laws and regulations instituted by a government to protect online customers (rules). This example shows that some constructs may clearly depict the interaction between a subject and a single AT triangle (three components), whereas others may address several of them (four or more).

In order to examine the application of such key issues, the 115 articles were used to identify the most recurring constructs for which a triadic definition appears critical. The conceptual and operational definitions and measurement instruments were reviewed. Trust was revealed to be the most frequent one with 42 studies followed by perceived security (18 studies), perceived privacy (17 studies), and perceived risks (14 studies) (the detailed results can be found in Appendices II and III).

Out of 42 studies that included trust, 27 investigated trust in e-vendors (S-C-O) and 8 examined trust toward the technological artifact (S-T-O). Interestingly, four studies used trust as characterizing the interaction with both community and artifact related constructs (S-T-C-O) [Friedman et al., 2000; Salam et al., 2003; Shankar et al., 2002; Walczuch et al., 2004]

whereas four other studies relied on two separate trust constructs to address each interaction separately [Borchers, 2001; Kim and Benbasat, 2003; McKnight et al., 2000; McKnight et al., 2002b]. Hence, three different views of trust co-exist in the IS literature. AT posits that these three constructs differ and thus should be relabeled accordingly instead of treating them as a single one.

LEVEL OF ANALYSIS

Another valuable contribution of AT is to provide a multi-level approach of activities. As such, this review has shown that the dependent variables used in the reviewed papers belong to either actions or activities. It can be argued that studies of operations belong to the Human-Computer-Interaction literature. Similarly, both independent and mediating variables may also pertain to either the whole activity or to one or more actions. For example, perceived ease of use of a particular B2C web site may be high during the information search phase but very low during the payment phase. In such a case, the overall assessment of the perceived ease of use of the B2C website is a difficult task for the respondent and probably misleading for the researcher. As well, the perception of related risks may be particularly critical in the payment phase whereas it may not have any influence in the action of seeking customer support. On the other hand, the overall perception of risks at the activity level may be found to be influential in a person's decision to do business online. This highlights the need to clearly define the constructs according to the level of analysis: activity or action.

As can be seen in Appendix II, of the 42 articles examining trust, 40 addressed it at the level of the activity. Treiblmaier et al. [2004] however studied trust in e-payment security at the action level (order & payment) and Midha and Nemati [2004] examined trust in e-vendor by focusing on the "personal information sharing" phase.

Another example is the use of TAM constructs. TAM's constructs were investigated at the activity level in 12 articles, whereas eight studies encompassed both activity and action levels with information search and pricing being the two most studied actions (see appendix IV). Pavlou [2001] measured perceived ease of use with several items. The following are two examples: "I find this retailer's website easy to use" (activity level) and "I find it easy to locate the information that I need in this retailer's website" (action level: information search).

Other widely used constructs have been used at both the activity and action levels of analysis. For instance, perceived privacy was studied at the action level in nine studies and at the activity level in six studies. Furthermore, nine studies examined perceived privacy at both action and activity levels. As can be seen in Appendix III, seven studies have examined perceived security at the activity level, whereas eight have included both the activity and action levels. Finally, perceived risks were studied at the activity level in nine studies and at the action level in four.

Using AT as an integrating framework emphasizes the need for clearer definitions of theoretical constructs through contextual anchoring. The conceptualization proposed by the AT triangle highlights the need to accurately define both the context and related AT components each time a construct is used in B2C research. Taking into account the activity/action level of analysis provides a more precise use of theoretical constructs as many of them may be influential in one particular action and irrelevant in another one both comprising the same activity.

AN EVOLVING PHENOMENON

In light of AT, several avenues deserve further research efforts. Under the AT framework, any phenomenon must be analyzed in its dynamics and transformations, in its evolution, and historical change. As a consequence, the interaction between a subject and an artifact continuously shapes the activity. Such an approach encourages researchers to understand an individual B2C activity as an ever-changing process where all individual and technological variables evolve over time as opposed to the discreet approach that have been adopted so far by separating attitudes, intentions, and actual behavior.

For instance, constructs such as online consumer trust, loyalty, or satisfaction are components of the B2C activity outcomes, but also of tool-mediated individual variables. Except for a very few studies, [e.g. Balasubramanian et al., 2003; e.g. Bhattacharjee, 2001; Luarn et al., 2003] the B2C activity has not been seen as a feedback process in which outcomes modify the activity triangle. Similarly, online customers' perceptions evolve for two main reasons: time spent and experience with the activity and e-vendors do not provide constant service levels to their customers. Relying on the AT framework allows a dynamism to study the B2C phenomenon that is difficult to reach with variance models. This recursive framework allows for taking into account the evolution of all the constituents in the system which seems a promising avenue. Using AT, the B2C activity is a cultural, social, and legal phenomenon. Customers must be seen as evolving individuals whose actions and perceptions are influenced through experience and history. E-vendors, technologies, communities, and legal environments are also dynamic. They change over time to adjust to customers' actions and expectations. Future research should look at the reciprocal influence of the B2C activity on technological developments.

Additionally, Activity Theory introduces the hierarchical view of activity, actions, and operations. Future research must address each of those levels as they may be affected by different sets of factors. This paper has provided a tentative, but rather simplistic categorization of B2C actions and operations based on the CMM model. A sound and complete categorization is required for researchers' efforts to lead to cumulative knowledge. Operation-focused studies may be more related to HCI and CSCW research areas. This suggests that mainstream, HCI, and CSCW research streams may provide each other with very insightful results. Such results would also be very relevant to practitioners by providing them with actionable knowledge about each aspect of the B2C activity.

Finally, the use of AT as a theoretical framework in the context of B2C has allowed outlines of the particular role played by the B2C community. Among the reviewed articles, many focused on e-vendor factors as it seems obvious that such factors are among the most influential ones in terms of customer behavior. Nonetheless, the B2C community consists of more than customers and online vendors. Other actors (e.g., website designers, security certification bodies, online payment organizations) also play essential roles about which not much is known. Belanger et al. [2002] took a first step in that direction by studying perceptions and trustworthiness towards online marketers.

VI. CONCLUSION

Any classification can be seen as arbitrary and arguable [DeLone and McLean, 1992]. We do not claim otherwise. Not all papers fall "easily" under one category or another and the researchers' good judgment is required in completing such a task. Similarly, the reader's discretion is required in interpreting our results. The use of AT as an integrative framework to organize the B2C literature is but one way to do so. We do not claim that this is the best, or only, way but we argue that organizing the B2C literature through the lens of AT is insightful and highlights important new research avenues as well as overlooked ones.

We trust this paper provides a valuable integration and new perspective on the extant literature and sheds light on important gaps in the state of our knowledge with regard to the B2C phenomenon. It outlines relevant research questions and areas where IS researchers can make significant contributions to organizations by providing them with actionable knowledge.

Despite its rapid growth, online retail sales still only represent a very small proportion of customers' buying. B2C represents a valuable opportunity for many organizations, such as small and medium sized firms and organizations located in rural or remote regions. It is our contention that IS researchers can add significantly to the related knowledge base and help organizations succeed in that environment. The present paper suggests an integrative framework for B2C research and outlines many areas where research efforts are required. Using AT, many unexplored combinations of characteristics of subjects, tools, community,

roles, and rules are identifiable as relevant research areas. We hope this paper will trigger such new research efforts.

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ABOUT THE AUTHORS

Anne Beaudry is Assistant Professor of MIS at the John Molson School of Business, Concordia University. She obtained her Ph.D. from HEC-Montreal. Her work is published in *MIS Quarterly* and *International Journal of Information and Operations Management Education* and presented at ASAC, AMCIS, AOM, and ICIS. Her research interests focus on IT-induced behaviors and on individual and organizational impacts of IT implementation and use.

Kevin D. Carillo completed his M.Sc. at the John Molson School of Business, Concordia University. He earned an Engineering Degree in Computer Science and Applied Mathematics from the National Engineering Institute in Electronics, Hydraulics, Computer Science, and Telecommunications of Toulouse. His work is published in the *Encyclopedia of Virtual Communities and Technologies*. His research interests focus on e-commerce and both individual and group issues in open source and open content communities.

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APPENDIX I. REVIEWED JOURNALS

Journal	Publication Range	Article Type				Total per journal
		Empirical	Theoretical	Design	Instrument	
Communications of the ACM	1998 - 2004	11	3			14
Communication of the AIS	1999 - 2004		2			2
Decision Sciences	1998 - 2004	1				1
Decision Support Systems	1998 - 2004	4	1	1		6
European Journal of Information Systems	1998 - 2004	3			1	4
IEEE Transactions	1998 - 2004	3				3
Information & Management	1998 - 2004	11			4	15
Information Systems Research	1998 - 2004	5			3	8
Journal of the AIS	2000 - 2004	2				2
Journal of Information Technology	1998 - 2004					0
Journal of Management Information Systems	1998 - 2004	1			1	2
Journal of Strategic Information Systems	1998 - 2004	2	2			4
Management Information Systems Quarterly	1998 - 2004	1				1
Management Science	1998 - 2004	1		1		2
Organization Science	1998 - 2004					0
Total for IS Journals		45	8	3	9	62
ICIS	1998 - 2004	5	1			6
HICCS	1998 - 2004	5	1	1		7
AMCIS	1998 - 2004	7	13		1	21
Total for IS Conferences		17	15	1	1	34
Electronic Commerce Research	2001 - 2004	4				4
International Journal of Electronic Business	2003 - 2004				1	1
Journal of Electronic Commerce Research	2000 - 2004	1	1		1	3
Journal of Organizational Computing and Electronic Commerce	1999 - 2004	4				4
Total for E-commerce Journals		9	1	0	2	12
Journal of Marketing	1998 - 2004					0
Journal of Marketing Research	1998 - 2004					0
Journal of Customer Research	1998 - 2004	3				3
Total for Marketing Journals		3	0	0	0	3
TOTAL		74	24	4	12	115

APPENDIX II. TRUST IN B2C STUDIES

	References	Construct name	Activity	A.T. Focus	Construct Level
EMPIRICAL	Balasubramanian et al. (2003)	perceived trustworthiness	online brokerage	S-C-O	ACTIVITY
	Belanger et al. (2002)	trustworthiness	online shopping	S-T-O	ACTIVITY
	Borchers (2001)	trustworthiness of e-vendor	online shopping	S-T-C-O	ACTIVITY
		trust in Internet shopping	online shopping	S-C-O	ACTIVITY
	Gefen et al. (2003a)	trust	online shopping	S-C-O	ACTIVITY
	Gefen et al. (2003b)	trust	online shopping	S-C-O	ACTIVITY
	Kim et al. (2003)	trust	online shopping	S-C-O	ACTIVITY
	Kim and Xu (2004)	trust	online shopping	S-C-O	ACTIVITY
	Kim et al. (2004)	trust	online shopping	S-C-O	ACTIVITY
	Koufaris and Hampton-Sosa (2004)	initial trust in company	online shopping	S-C-O	ACTIVITY
	Liang et al. (2004)	trust	online prescription filling	S-C-O	ACTIVITY
	Liu et al. (2004)	trust	online shopping	S-C-O	ACTIVITY
	Luarn and Lin (2003)	trust	online traveling services	S-T-O	ACTIVITY
	Malhotra et al. (2004)	trusting beliefs	online shopping	S-C-O	ACTIVITY
	McKnight et al. (2002a)	trusting beliefs	online legal advice	S-C-O	ACTIVITY
		trusting intention	online legal advice	S-C-O	ACTIVITY
	Pavlou (2001)	trust	online shopping	S-C-O	ACTIVITY
	Qiu and Benbasat (2004)	cognitive trust	online shopping	S-C-O	ACTIVITY
		emotional trust	online shopping	S-C-O	ACTIVITY
	Salam et al. (2003)	institutional trust	online shopping	S-T-C-O	ACTIVITY
	Strader and Ramaswami (2002)	trustworthiness of e-vendor	online shopping	S-C-O	ACTIVITY
	Strader and Ramaswami (2004)	trustworthiness	online investing	S-T-O	ACTIVITY
	Tang et al. (2003)	marketspace trust	online shopping	S-C-O	ACTIVITY
		buyer's trust	online shopping	S-C-O	ACTIVITY
		seller's trust	online shopping	S-C-O	ACTIVITY
	Treiblmaier et al. (2004)	trust	online government services	S-T-O	ACTION(Order & Payment)
van der Heijden (2003)	trust in online store	online shopping	S-C-O	ACTIVITY	
van der Heijden et al. (2001)	trust in online store	online shopping	S-C-O	ACTIVITY	
Walczuch and Lundgren (2004)	trust in e-retailing	online shopping	S-T-C-O	ACTIVITY	

	References	Construct name	Activity	A.T. Focus	Construct Level
THEORETICAL	Cazier (2003)	trust	online shopping	S-C-O	ACTIVITY
	Chiravuri and Nazareth (2001)	trust	online shopping	S-C-O	ACTIVITY
	Ciganek et al. (2004)	trust belief	online shopping	S-C-O	ACTIVITY
	Dekleva (2002)	trust	online shopping	S-T-O	ACTIVITY
	Friedman et al. (2000)	trust	online services	S-T-C-O	ACTIVITY
	Hsiao (2003)	distrust	online services	S-C-O	ACTIVITY
	Kim and Benbasat (2003)	perceived trustworthiness of a merchant	online shopping	S-C-O	ACTIVITY
		perceived trustworthiness of internet shopping medium	online shopping	S-T-O	ACTIVITY
	Konana and Balasubramanian (2004)	trust in broker	online investing	S-C-O	ACTIVITY
	McKnight et al. (2000)	institution-based trust	online shopping	S-T-O	ACTIVITY
		trusting beliefs	online shopping	S-C-O	ACTIVITY
		trusting intention	online shopping	S-C-O	ACTIVITY
	Midha and Nemati (2004)	trust in company	online services	S-C-O	ACTION(share personal info, order & payment)
	Olson and Olson (2000)	trust	online shopping	S-C-O	ACTIVITY
Shankar et al. (2002)	online trust	online services	S-T-C-O	ACTIVITY	
Swan and Rosenbaum (2004)	trust	online shopping	S-T-O	ACTIVITY	
INSTRUMENT	Bhattacharjee (2002)	trust	online shopping	S-C-O	ACTIVITY
	Cao et al. (2004)	trust	online shopping	S-T-O	ACTIVITY
	Chang et al. (2004)	internet vendor trust	online shopping	S-C-O	ACTIVITY
	Kim and Stoel (2004)	trust	online shopping	S-T-O	ACTIVITY
	McKnight et al. (2002b)	institution-based trust	online legal advice	S-T-O	ACTIVITY
		trusting beliefs	online legal advice	S-C-O	ACTIVITY
trusting intentions		online legal advice	S-C-O	ACTIVITY	

APPENDIX III. PERCEIVED RISKS, PERCEIVED SECURITY AND PERCEIVED PRIVACY IN B2C STUDIES

	References	Construct name	A.T. Focus	Construct Level
Perceived Risks	Borchers (2001)	online shopping	S-T-O	ACTIVITY
	Featherman and Fuller (2003)	online shopping	S-C-O	not precised
	Featherman and Wells (2004)	online shopping	not precised	ACTIVITY
	Hsu and Chiu (2003)	electronic income tax filing	S-T-O	ACTIVITY
	Konana and Balasubramanian (2004)	online investing	S-T-O	ACTIVITY
	Lee et al. (2001)	online shopping	S-T-O	ACTIVITY & ACTION(share personal info, order and payment)
	Malhotra et al. (2004)	online shopping	S-T-O	ACTION(share personal information)
	McKnight et al. (2002)	online shopping	S-T-C-O	ACTION(order and payment, share personal information)
	Pavlou (2001)	online shopping	S-C-O	ACTION(order and payment)
	Salam et al. (2003)	online shopping	S-T-O	ACTION(order and payment)
	Strader and Ramaswami (2004)	online shopping	S-C-O	ACTIVITY
	Tan and Teo (2000)	online banking	S-T-O	ACTIVITY
	van der Heijden (2003)	online shopping	S-T-O	ACTIVITY
	van der Heijden et al. (2001)	online shopping	S-T-O	ACTIVITY
Perceived Privacy	Ahuja et al. (2003)	online shopping	not precised	ACTIVITY
	Belanger et al. (2002)	online shopping	S-T-O	ACTIVITY
	Borchers (2001)	online shopping	S-T-C-O	ACTIVITY & ACTION(share personal info)
	Brown and Muchira (2004)	online shopping	S-C-O	ACTION(share personal info)
	Cho (2004)	online shopping	S-T-O	ACTION(order and payment, share personal information)
	Clarke (1999)	online services in general	S-C-O	ACTION(share personal info)
	Earp and Baumer (2003)	online services in general	S-C-O	ACTION(share personal info)
	Hoffman et al. (1999)	online shopping	S-T-C-O	ACTION(share personal info)
	Khalifa and Limayem (2003)	online shopping	not precised	ACTIVITY
	Kim et al. (2003)	online shopping	S-C-O	ACTION(share personal info)
	Lee et al. (2001)	online shopping	S-T-O	ACTION(share personal info)
	Liu et al. (2004)	online shopping	S-T-C-O	ACTION(share personal info)
	Malhotra et al. (2004)	online shopping	S-T-C-O	ACTIVITY & ACTION(share personal info)
	Pavlou (2001)	online shopping	S-C-O	ACTION(share personal info)
	Payton (2003)	online health systems	S-T-O	ACTIVITY
	Shneiderman (2000)	online services in general	S-C-O	ACTIVITY
	Vijayasathy (2004)	online shopping	S-T-C-O	ACTIVITY

	References	Construct name	A.T. Focus	Construct Level
Perceived Security	Ahuja et al. (2003)	online shopping	not precised	ACTIVITY
	Balasubramanian et al. (2003)	online brokerage	S-T-O	ACTIVITY
	Belanger et al. (2002)	online shopping	S-T-O	ACTIVITY
	Borchers (2001)	online shopping	S-T-C-O	ACTIVITY & ACTION(order & payment)
	Cho (2004)	online shopping	S-T-O	ACTION(order and payment, share personal information)
	Khalifa and Limayem (2003)	online shopping	not precised	not precised
	Kim et al. (2003)	online shopping	S-T-C-O	ACTIVITY
	Koufaris and Hampton-Sosa (2004)	online shopping	S-T-O	ACTIVITY & ACTION(order and payment, share personal information)
	Lee (2002)	online shopping	S-T-C-O	ACTION(order and payment, delivery)
	Lee et al. (2001)	online shopping	S-T-O	ACTION(order and payment)
	Liao and Cheung (2001)	online shopping	S-T-O	ACTION(order and payment)
	Liu et al. (2004)	online shopping	S-T-C-O	ACTION(share personal info)
	Pavlou (2001)	online shopping	S-T-C-O	ACTION(order and payment, share personal information)
	Payton (2003)	online health systems	S-T-O	ACTIVITY
	Rose (1999)	online shopping	S-T-O	ACTIVITY
	Treiblmaier et al. (2004)	online shopping	S-T-O	ACTION(order and payment)
Vijayarathy (2004)	online shopping	S-T-O	ACTION(order and payment)	
Walczuch and Lundgren (2004)	online shopping	S-T-C-O	ACTIVITY	

**APPENDIX IV. PERCEIVED USEFULNESS AND
PERCEIVED EASE OF USE IN B2C STUDIES**

References	Activity	Variable Level	
		Perceived Usefulness	Perceived Ease of Use
Bhattacharjee (2000)	online brokerage	ACTIVITY	ACTIVITY
Bhattacharjee (2001)	online brokerage	ACTIVITY	N/A
Chau and Lai (2003)	online banking	ACTIVITY	ACTIVITY
Chen et al. (2002)	online brokerage	N/A	ACTIVITY
Chiravuri and Nazareth (2001)	online shopping	not precised	not precised
Devaraj et al. (2002)	online shopping	ACTIVITY	ACTIVITY & ACTION(control, decision-making)
Featherman and Fuller (2003)	online shopping	ACTIVITY	ACTIVITY
Featherman and Wells (2004)	online shopping	ACTIVITY	N/A
Gefen et al. (2003a)	online shopping	ACTIVITY & ACTION(information search)	ACTIVITY
Gefen et al. (2003b)	online shopping	ACTIVITY & ACTION(information search)	ACTIVITY
Hsu and Chiu (2003)	electronic income tax filing	ACTIVITY	N/A
Kim et al. (2003)	online shopping	ACTIVITY	N/A
Klopping and McKinney (2004)	online shopping	ACTIVITY & ACTION(information search)	ACTIVITY
Koufaris (2002)	online shopping	ACTIVITY	ACTIVITY
Lau et al. (2001)	online trading	ACTIVITY	ACTIVITY
Lee et al. (2001)	online shopping	ACTIVITY & ACTION(pricing, information search)	ACTIVITY & ACTION(information search, customer service)
Pavlou (2001)	online shopping	ACTIVITY	ACTIVITY & ACTION(information search)
Shang et al. (2004)	online shopping	ACTIVITY & ACTION(pricing, information search)	ACTION(information search, pricing, customer feedback, delivery, order & payment)
van der Heijden (2001)	online shopping	ACTIVITY	ACTIVITY
van der Heijden et al. (2003)	online shopping	ACTIVITY	ACTIVITY
Vijayasarathy (2004)	online shopping	ACTIVITY& ACTION(information search)	ACTIVITY

APPENDIX V. EMPIRICAL PAPERS REVIEWED

Reference	Description	Method.	Sample	Indep. variables	Mediating variables	Moderating variables	Dep. variables	Results
Ahuja et al. [2003] CACM	This article is focused on examining the factors and relationships that influence the browsing and buying behavior of individuals when they shop online.	2 surveys	190 undergraduate students/ 75 faculty or administrators	convenience, saves time, better prices , availability , customer service, privacy/security lack of interaction high prices, lack of time		student/non student	buying online	The results indicate that convenience and customer service can act as strong motivators when present; they can also be strong barriers when absent. Security and privacy concerns were the single biggest barriers to online shopping. Contrary to popular notion, these factors were found to be more important than price.
Balasubramanian et al. [2003] MS	This paper models trust as an endogenously formed entity that ultimately impacts customer satisfaction and the linkages between trust and other factors related to performance of the online service provider and to the service environment.	web survey	225+203 online brokers	price, trust disposition	perceived operational competence, perceived environment security, perceived trustworthiness		satisfaction	Perceived trustworthiness of an online broker is a significant antecedent to investors' satisfaction and perceived environmental security and perceived operational competence impact the formation of trust.
Belanger et al. [2002] JSIS	This research examined the consequences of security, privacy, Web site attributes, and trustworthiness in business-to-consumer e-commerce.	online experiment	140 U.S. southeastern university students (volunteers).	privacy and security seals and statements, security features, consumer's perceptions of a marketer's trustworthiness, pleasure features (perceived quality)			intention to purchase, willingness to give private information	Security features are ranked higher than privacy statements, security seals and privacy seals. Controlling for trustworthiness, consumers willingness to give private information is positively related to their purchase intentions for land and electronic marketers. Privacy and security features are less important than pleasure features to their intention to purchase.
Bharati and Chaudhury [2004] DSS	Experiment that aims at understanding the factors that impact decision-making satisfaction in web-based decision support systems.	lab experiment	210 subjects	system quality, information quality, information presentation.			decision-making satisfaction.	Information quality and system quality influence decision-making satisfaction, while information presentation does not have an effect on decision-making satisfaction.
Bhattacharjee [2000] IEEE	This paper examines human motivations underlying individual acceptance of B2C electronic commerce services.	survey	172 e-brokerage users.	usefulness, ease of use, interpersonal influence, external influence, self-efficacy, facilitating conditions	attitude, subjective norms, perceived behavioral control		intention	Subjective norm is an important predictor of e-commerce acceptance, behavioral control has minimal impact on e-commerce acceptance, and external influence is a significant determinant of subjective norm.

<p>Bhattacharjee [2001] DSS</p>	<p>This paper examines key drivers of consumers' intention to continue using business-to-consumer e-commerce services. Multiple theoretical perspectives are synthesized to hypothesize a model of continuance behavior, which is then empirically tested using a field survey of online brokerage OLB users.</p>	<p>survey</p>	<p>172 e-brokerage users.</p>	<p>confirmation, loyalty incentives.</p>	<p>satisfaction, perceived usefulness</p>		<p>continuance intention</p>	<p>Consumers' continuance intention is determined by their satisfaction with initial service use, their perceived usefulness of service use, and the interaction between perceived usefulness and loyalty incentives for service use satisfaction and perceived usefulness are both predicted by consumers' confirmation of expectations from initial service use.</p>
<p>Borchers [2001] AMCIS</p>	<p>This study tests a measurement model of consumer's trust in Internet shopping (CTIS), proposed by C. Cheung and M. Lee. The model posits trustworthiness of Internet vendors (including perceived security control, privacy control, integrity and competence) and external environment (third party recognition and legal framework) as being positively related to CTIS and moderated by propensity to trust.</p>	<p>survey</p>	<p>118 MBA students</p>	<p>trustworthiness of internet Vendor, external environment</p>	<p>trust in Internet Shopping</p>	<p>propensity to trust</p>	<p>perceived risks</p>	<p>The negative relationship between CTIS and Perceived Risk is quite strong. The other relationships, however, are much weaker or are statistically insignificant. Notably, the Propensity to Trust construct does not appear to moderate the relationships as suggested in the model</p>
<p>Brown and Chin [2004] DS</p>	<p>The degree of leverage possessed by manufacturers who outsource their customer service function to channel partners over customer satisfaction and loyalty is assessed empirically.</p>	<p>2 mail surveys</p>	<p>248 representatives, 3926 customers</p>	<p>manufacturer support</p>	<p>job satisfaction, self-rated job performance, customer perceived service quality, customer satisfaction</p>	<p>product quality</p>	<p>repurchase intention</p>	<p>Results indicate that a manufacturer's support of its representatives increases their job satisfaction which, in turn, is indirectly linked to the customer satisfaction through shared perceptions of service performance and quality. However, the strength of the effects is modest, suggesting that manufacturers may need to consider direct customer contact strategies or contractual means of assuring customer satisfaction when independent service representatives "own the customer."</p>
<p>Brown and Muchira [2004] ECR</p>	<p>Relationship between internet privacy and attitude towards online purchasing.</p>	<p>survey</p>	<p>186 undergraduate and postgraduate Australian students.</p>	<p>internet privacy: attitude towards unauthorized use of secondary data, experience of online invasion of privacy, experience of inaccuracy or manipulation of personal data</p>			<p>actual purchasing</p>	<p>Both errors and invasion of privacy have a significant inverse relationship with online purchase behavior. Unauthorized use of secondary data appears to have little impact. Managerial implications include the careful selection of communication channels for maximum impact, the maintenance of discrete "permission-based" contact with consumers, and accurate recording and handling of data.</p>

Chandon et al. [2004] JCR	The article compares the incidence, timing, and profitability of repeated online grocery purchases made by a cohort of consumers whose purchase intentions were measured with those of similar consumers whose intentions were not measured.	field experiment	251 customers of a Web-based grocer.	measuring purchase intentions		short term/long term	likelihood of repurchase incidence, speed of repurchase incidence, total customer profitability.	Measuring intentions increases the likelihood of repeat purchase incidence and shortens the time until the first repeat purchase but that these two mere measurement effects decay rapidly after 3 mo. Customer profitability persist over time because the accelerated purchases of the first 3 mo. lead to faster subsequent purchases in the remainder of the period.
Chau and Lai [2003] JOCEC	This paper investigates determinants of user acceptance of online banking	survey	160 business executives	personalization, alliance services, task familiarity, accessibility	PU, PEOU		attitude	personalization, alliance services, task familiarity, accessibility have a significant influence on PU and PEOU, which has an influence on attitude
Chen and Hitt [2002] ISR	This paper develops and implements an approach for measuring switching costs and brand loyalty for online service providers.	archival data	media metrix data	demographics, website usage, change in usage, use of multiple brokers, quality, product breadth, cost, personalization, ease of use, minimum deposit, investments in retention			attrition, switching behavior	Customer demographic characteristics have little effect on switching, but systems usage measures and systems quality are associated with reduced switching. Product breadth and quality reduce switching and customer attrition.
Chen et al. [2002] IM	This paper strives to explain consumers' use of virtual store and its antecedents.	web-survey	253 online users	compatibility, PEOU, PU	attitude toward using, behavioral intention to use		actual use	Compatibility, PU and PEOU are the primary determinants of consumer attitude towards using virtual stores. Both compatibility and PEOU influence PU.
Cho [2004] IM	This study identifies evaluative, attitudinal, and behavioral factors that enhance or reduce the likelihood of consumers aborting intended online transactions (transaction abort likelihood).	survey	294 online users	attitude toward traditional shopping centers, attitude toward catalog retailing, perceived benefits and risks associated with e-shopping, internet usage in general purchasing experience from the internet, purchasing history from catalogs	attitude toward online shopping		likelihood to abort an intended transaction	Risk perceptions associated with e-shopping have direct influence on the transaction abort likelihood, whereas benefit perceptions do not. Consumers who have favorable attitudes toward e-shopping, purchasing experiences from the Internet, and high purchasing frequencies from catalogs are less likely to abort intended transactions.

<p>Choi et al. [2004] HICSS</p>	<p>This paper explores how web retail service quality at the point of purchase influences consumers' perceptions of value and willingness to buy. In particular, this study highlights how web retail service quality has different effects on perceived product quality, value, and willingness to buy according to product categories.</p>	<p>experiment</p>	<p>424 senior undergraduate students</p>	<p>functional web-service quality, perceived relative price, technical web-service quality</p>	<p>perceived value, perceived product quality,</p>	<p>product involvement, web presentability</p>	<p>willingness to pay</p>	<p>The results imply that functional web retail service quality has a direct effect on willingness to buy and technical web retail service quality influences consumer perceptions of product quality and value. Furthermore, product categories moderate the relationships among web retail service quality, perceived product quality, perceived value, and willingness to buy.</p>
<p>Devaraj [2003] CACM</p>	<p>This paper focuses on consumer experience with online shopping. Using a paired sample approach in which customers' online shopping experience is contrasted with their conventional shopping experience.</p>	<p>experiment</p>	<p>134 respondents</p>	<p>time, ease of use, effort, price, quality, information, safety, load time, navigation</p>	<p>purchase decision</p>		<p>loyalty</p>	<p>Respondents were significantly more loyal to online shopping than to conventional shopping. Strong evidence of consumer loyalty to online shopping. Two factors are most associated with loyalty: information content and transaction safety.</p>
<p>Devaraj et al. [2002] ISR</p>	<p>This paper measure customer satisfaction with e-commerce channel through TAM, Transaction Cost Analysis and Service Quality.</p>	<p>survey</p>	<p>134 undergraduate students</p>	<p>asset specificity, uncertainty, price savings, usefulness, empathy, reliability, responsiveness, assurance.</p>	<p>ease of use, time, satisfaction with e-commerce channel</p>		<p>channel preference</p>	<p>TAM components, PEOU and PU, are important in forming consumer attitudes and satisfaction with the e-commerce channel. Ease of use, was also found significant in TCA. The assurance dimension of SERVQUAL is also a determinant.</p>
<p>Earp and Baumer [2003] CACM</p>	<p>The article uses an online survey that incorporates Web site screen captures to investigate consumer privacy fears and looks beyond consumer attitudes to investigate what Web sites can do to assuage consumer concerns about privacy.</p>	<p>survey</p>	<p>415 online users</p>	<p>company name option to "opt out" presence of a privacy policy, presence of a web seal, design of the site</p>			<p>consumer willingness to provide private information</p>	<p>The study suggests consumers protect themselves by being selective in providing information that could be used in ways adverse to their interests. Consumers are more willing to provide their home address, phone number, email address, Social Security number, and credit card number to a well-known site compared to a lesser-known site, in part because they have no confidence the e-commerce legal environment is secure.</p>

<p>Ethier et al. [2004] ICIS</p>	<p>this paper explores relationships between Web site quality, the cognitive appraisal of situational state (a key cognitive antecedent to emotions) and a set of positive and negative emotions.</p>	<p>survey</p>	<p>226 students</p>	<p>website quality</p>	<p>cognitive appraisal of situational state</p>		<p>emotions</p>	<p>Results show that when shopping on business-to-consumer Web sites for low-touch products, customers felt emotions, namely liking, joy, pride, dislike, frustration, and fear. Even though the mean intensity levels of these emotions is low to moderate, for a substantial number of shoppers the emotions of liking and joy were felt intensely. Results also indicate that Web site quality, measured by several Web site design components, has a positive impact on the cognitive appraisal of situational state, operationalized as the satisfaction level of the overall online shopping experience. In turn, this appraisal affects all emotions felt by shoppers except fear.</p>
<p>Featherman and Fuller [2003] HICSS</p>	<p>This research extends TAM to include a perceived usage risk main effect and also tested whether perceived risk moderated several of TAM's relationships.</p>	<p>2 lab experiments</p>	<p>167 and 227 undergraduate business students</p>	<p>PEOU, brand related perceived risks</p>	<p>subjective norms, PU</p>		<p>Adoption intention</p>	<p>Results indicate that higher levels of perceived risk deflated ease of use's effect and inflated subjective norm's effect on perceived usefulness and adoption intention.</p>
<p>Featherman and Wells [2004] HICSS</p>	<p>This paper focuses on perceptions and reactions to the intangible nature of newly digitized transaction processing systems which may increase risk concerns, thus inhibit system adoption.</p>	<p>web survey</p>	<p>2 samples, 154 and 253 undergraduate business students.</p>	<p>generality, physical intangibility, mental intangibility, perceived artificiality</p>			<p>perceived risks, adoption intention</p>	<p>The inherent intangibility of e-services creates concerns measured in raised perceived artificiality and perceived risk. Interestingly, mental rather than physical intangibility increased artificiality concerns. Perceived artificiality directly increased risk concerns and indirectly affected system evaluation and adoption, which were primarily affected by system perceived risk.</p>
<p>Gefen et al. [2003a] IEEE</p>	<p>this study describes a free-simulation experiment that compares the degree and relative importance of customer trust in an e-vendor vis-à-vis TAM constructs of the website, between potential (i.e., new) customers and repeat (i.e., experienced) ones.</p>	<p>survey</p>	<p>M.B.A. and senior undergraduate students, 139 potential customers, 178 repeat customers</p>	<p>PEOU, familiarity, disposition to trust</p>	<p>PU, trust</p>		<p>purchase intention</p>	<p>The study found that repeat customers trusted the e-vendor more, perceived the website to be more useful and easier to use, and were more inclined to purchase from it. The data also show that while repeat customers' purchase intentions were influenced by both their trust in the e-vendor and their perception that the website was useful, potential customers were not influenced by perceived usefulness, but only by their trust in the e-vendor.</p>

<p>Gefen et al. [2003b] MISQ</p>	<p>Development of an integrated model that combines trust and TAM for experienced online shoppers. (trust in the e-vendor)</p>	<p>survey</p>	<p>213 undergraduate and graduate students of a US business school.</p>	<p>calculative-based beliefs, structural assurances Institution-based structural assurances, Institution-based situational normality institution-based situational normality, knowledge-based familiarity knowledge-based familiarity</p>	<p>Trust, PEU, PU</p>		<p>intended Use</p>	<p>Consumer trust is as important to online commerce as the widely accepted TAM use-antecedents, perceived usefulness and perceived ease of use. Together these variable sets explain a considerable proportion of variance in intended behavior. The study also provides evidence that online trust is built through (1) a belief that the vendor has nothing to gain by cheating, (2) a belief that there are safety mechanisms built into the Web site, and (3) by having a typical interface, (4) one that is, moreover, easy to use.</p>
<p>Hoffman et al. [1999] CACM</p>	<p>This paper investigates the key consumer perceptions of privacy.</p>	<p>two biannual surveys</p>	<p>1555 Web users/ 14,014 Web users</p>				<p>shopping online, giving private information</p>	<p>Consumer expectations of privacy depend on the medium. Consumers need control and protection. The primary barriers to consumers' providing demographic data to Web sites are related to trust and the nature of the exchange relationship. Web consumers report wanting another type of exchange characterized by an explicit social contract executed in the context of a cooperative relationship built on trust.</p>
<p>Hsu and Chiu [2004] DSS</p>	<p>Two types of ISE (i.e., general Internet self-efficacy and Web-specific self-efficacy) as new factors that reflect the user's behavioral control beliefs in e-service acceptance.</p>	<p>survey</p>	<p>276 MBA students</p>	<p>social norm, PU, PEOU, perceived playfulness, perceived risk, general internet self-efficacy, web-specific self-efficacy</p>	<p>attitude, intention</p>		<p>e-service usage</p>	<p>Social norm, perceived usefulness, perceived playfulness, perceived risk, and general Internet self efficacy contributed to attitude toward using the e-service. GISE and WSE were found to play important roles in shaping individual behavior.</p>
<p>Huang [2003] IM</p>	<p>This study draws upon hypotheses from environmental psychology; specifically, users' tendencies to approach or avoid environments are modeled on the basis of user reaction to the information load of a virtual environment and the emotions that such an environment elicits.</p>	<p>field experiment</p>	<p>115 web users</p>	<p>arousal from change, arousal from new stimuli</p>	<p>arousal, pleasure, dominance</p>		<p>shopping decision, exploration decision</p>	<p>Information load and emotions influence significantly virtual exploratory and shopping decisions.</p>

<p>Jahng et al. [2000] AMCIS</p>	<p>This study uses the theme of "fit" between EC environment and the product type, develops four different prototype systems depicting different EC environments, and using laboratory-based experiments examines the influence of "fit" on four user outcomes.</p>	<p>lab experiment</p>	<p>408 subjects</p>	<p>social presence, product presence, social presence requirement, product presence requirement</p>			<p>users' satisfaction with the EC environments, decision confidence, acceptance of an EC environment as a transaction mode, and purchase intention.</p>	<p>For a complex product that requires high degree of social/product presence, a rich EC environment that provides high SP/PP is needed. If the EC environment is not rich enough for a complex product, consumers' level of satisfaction, decision confidence, EC acceptance, and purchase intention are significantly, unfavorably influenced. The results show that the congruence between EC environments and products is critical to user outcomes.</p>
<p>Jahng et al. [2002] EJIS</p>	<p>The article proposes to empirically validate relationships among online consumers' personality traits, product information presentation richness and on-line consumer behavior in e-commerce environments.</p>	<p>lab experiment</p>	<p>136 undergraduate students</p>	<p>product information richness, personality traits</p>			<p>purchase intention, purchase behavior</p>	<p>The results show that effectiveness of product information presentation varies by online consumers' psychological types, and that rich product information presentation significantly influences the online buying behavior of intuitive types, and feeling types, rather than sensing and thinking types.</p>
<p>Karjaluoto et al. [2003] IEEEET</p>	<p>This paper examines the uptake of online banking in Finland. It explores the demand side of online banking.</p>	<p>mail survey</p>	<p>1167 private bank customers</p>	<p>demographic variables</p>		<p>non, high/low frequency users</p>	<p>use</p>	<p>While the diffusion of electronic delivery channels has been rapid, the management of digital customer relationships has become of key importance. Nonusers of online banking might be most loyal segment whereas online banking users can be considered more likely to change their banks.</p>
<p>Khalifa and Limayem [2003] CACM</p>	<p>Well-established behavioral theories to explain Internet consumer behavior are integrated in order to determine the key factors influencing purchasing on the Web and to examine their relative importance.</p>	<p>longitudinal survey (2 surveys)</p>	<p>1410 and 705 Internet shoppers</p>	<p>attitude</p>	<p>Perceived Consequences, Intention to shop online, Social Influences</p>		<p>Actual Internet Shopping</p>	<p>Both intentions and facilitating conditions are found to affect Internet shopping behavior. Transaction efficiency, product description, navigation efficiency, Web-page loading speed, and site accessibility are important in assisting the Internet consumers to act on their intentions. Finally, the intentions of Internet consumers are significantly affected by the perceived consequences of online shopping, the consumers' attitudes towards it, and social influences.</p>

<p>Kim et al. [2003] AMCIS</p>	<p>This paper develops a theoretical framework identifying the antecedents of a consumer's trust and purchase intention and tests it.</p>	<p>web-survey</p>	<p>448 respondents</p>	<p>consumer disposition to trust, presence of a third party seal, perceived privacy protection, perceived Security protection, information quality, reputation, system reliability, familiarity, ease of use, internet experience</p>	<p>trust</p>		<p>purchase intention</p>	<p>The results of the study show that consumers' disposition to trust, privacy protection, security protection, consumers' perceptions about the selling party's reputation, information quality, and system reliability are strong antecedents of consumers' trust.</p>
<p>Kim and Xu [2004] ICIS</p>	<p>This study examines the different effects of perceived price and trust on Internet shopping for potential customers and repeat customers.</p>	<p>web-survey</p>	<p>161 potential customers and 352 repeat customers</p>	<p>trust, perceived price</p>	<p>perceived value</p>	<p>potential/repeat customers</p>	<p>intention to purchase</p>	<p>The study shows that trust has a significant relationship with purchase intention even for potential customers while perceived price does not. The effect of perceived price on purchase intention is stronger for repeat customers than for potential customers in an Internet bookstore context. Customers are more susceptible to trust as a risk reducer than perceived price as a monetary gain/loss in their shopping with an Internet vendor regardless of their transaction experience with the vendor.</p>
<p>Kim et al. [2004] JAIS</p>	<p>This paper aims to compare online trust-building factors between potential customers and repeat customers.</p>	<p>survey</p>	<p>161 potential customers and 1,191 repeat customers of an online bookstore</p>	<p>reputation, structural assurance, service level, empathy, information quality</p>	<p>customer satisfaction</p>	<p>potential/repeat customers</p>	<p>trust</p>	<p>Trust building differs between potential customers and repeat customers in terms of antecedents. Customer satisfaction has a stronger effect on trust building for repeat customers than other antecedents.</p>
<p>Klopping and McKinney [2004] AMCIS</p>	<p>This study examines the role of experience on consumers' intentions to purchase online and their perceptions of usefulness, using a modified version of TAM.</p>	<p>survey</p>	<p>826 undergraduate students</p>	<p>actual e-shopping experience</p>	<p>PU, PEOU, TTF, playfulness, self-efficacy</p>	<p>actual e-shopping experience</p>	<p>future intention to use online shopping</p>	<p>Experience has both direct and indirect effects on intention to use and moderating effects on antecedents to intention such as perceived usefulness, playfulness, and self efficacy.</p>
<p>Kohli et al. [2004] JMIS</p>	<p>Utilizing Simon's decision-making model, this paper explores the relationship between decision-making and the selection of the online channel.</p>	<p>survey</p>	<p>134 students</p>	<p>intelligence decision phase</p>	<p>design decision phase, choice decision phase, time saving, cost saving</p>		<p>channel satisfaction</p>	<p>The online shopping channel supports the overall decision-making model. Strong support was found from the design and choice phases. Support was found for the decision-making process is mediated by the cost savings and time saving gained and led to greater channel satisfaction.</p>

Koufaris [2002] ISR	This paper examines how emotional and cognitive responses to visiting a web-based store for the first time can influence online consumers' intention to return and their likelihood to make unplanned purchases.	survey	280 new online purchasers	product involvement, web skills, value-added search mechanisms, challenges	perceived control, shopping enjoyment, concentration, PU, PEOU		intention to return, unplanned purchases	The results confirm the double identity of consumers: shoppers/computer users. Both shopping enjoyment and perceived usefulness of the site strongly predict intention to return. Product involvement, web skills, challenges and use of value-added search mechanisms have a significant impact on the web consumer.
Koufaris and Hampton-Sosa [2004] IM	This study proposes a model to explain how new customers of a web-based company develop initial trust in the company after their first visit.	web-survey	212 online users	perceived willingness to customize, perceived reputation, PEOU, PU, perceived security control			initial trust in company	The results indicate that perceived company reputation and willingness to customize products and services can significantly affect initial trust. Perceived web site usefulness, ease of use, and security control are also significant antecedents of initial trust.
Lau et al. [2001] JECR	The purpose of this research is to study what issues may affect investor adoption of on-line trading in the Hong Kong financial market. The studied system is a system that provides straight-through trading for investors, rather than an order routing system that forwards orders from a broker firm to the appropriate market.	survey	178 online trading users	PU, PEOU, compatibility, peer influence, resource facilitating conditions, technology facilitating conditions, relative advantage	attitude, subjective norms, perceived behavioral control, behavior intention		usage behavior	The results of the analysis indicate that regarding the hypothesized model, there is strong statistical significance that Perceived Usefulness, Perceived Ease of Use, and Compatibility significantly affect the Attitude towards using the proposed system.
Lee [2002] ECR	This research studied the behavioral factors of Internet users when making an on-line purchase in order to propose a behavioral model of online purchasers	web/mail survey	179 online responses and 245 mailed responses from students	past experience with mail order and online shopping, use of credit cards, security and transaction integrity issues, internet knowledge, psychological factors			likelihood of online purchase	Demographic and most psychological factors, as well as web-savvy features of a virtual storefront appear non influential in determining the probability of an Internet user making a purchase. E-commerce businesses should focus on employing logo assurance services, state-of-the-art security technology, provide an online customer service center, establish warranties for products and services sold, maintain credit card payment facilities, and lastly, establish a policy for conflict resolution in the event of inaccurate billings.
Lee et al. [2001] ICIS	The article proposes the e-Commerce Adoption Model (e-CAM), which attempts to examine important factors that predict a consumer's online purchasing behavior.	Web-based surveys	183 undergraduate and MBA students.	perceived risk in the context of transaction, perceived risk with product/service, PEU,PU			Purchasing behavior	All of the antecedent constructs directly and/or indirectly affect the consumer's adoption of e-Commerce. Therefore, the findings suggest that firms providing products/services through e-Commerce should consider these contextual factors in order to facilitate consumers' adoption behavior.

<p>Liang and Huang [1998] DSS</p>	<p>The papers studies which product is more suitable for marketing electronically and why, based upon TCT.</p>	<p>survey</p>	<p>85 internet users</p>	<p>uncertainty, asset specificity</p>	<p>transaction cost</p>		<p>acceptance</p>	<p>The results indicate that different products do have different customer acceptance on the electronic market, the customer acceptance is determined by the transaction cost, which is in turn determined by the uncertainty and asset specificity, and experienced shoppers are concerned more about the uncertainty in electronic shopping, whereas inexperienced shoppers are concerned with both.</p>
<p>Liang and Lai [2002] IM</p>	<p>This paper uses a consumer-oriented perspective to derive functional requirements for e-store design. These needs are grouped into three categories: motivation, hygiene, media richness.</p>	<p>experiment</p>	<p>30 students</p>	<p>hygiene factors, motivators, media richness factors</p>			<p>current purchase, future visit, future purchase</p>	<p>The quality of e-store design has an effect on the consumer purchase decision. Consumers are more likely to shop at well-designed websites. Support of transaction and post-sales services play key roles. Hygiene factors are critical when consumers decide whether to shop electronically, while motivational factors play a key role when consumers choose among different electronic stores.</p>
<p>Liang et al. [2004] AMCIS</p>	<p>This paper examines the impact of trust and uncertainty on online prescription filling.</p>	<p>survey</p>	<p>145 undergraduate business students</p>	<p>calculative antecedents, knowledge-based antecedents, Institutional-based antecedents, opportunistic behavior, information asymmetry</p>	<p>Uncertainty, Trust</p>		<p>intention to adopt online prescription filling.</p>	<p>It is found that (1) calculative, knowledge-based, and institutional antecedents of trust significantly affect trust, (2) information asymmetry and online drug retailers' opportunistic behavior contribute to perceived uncertainty of online prescription filling, (3) trust reduces uncertainty and positively affects intention, and (4) uncertainty has a negative influence on intention.</p>

<p>Liao and Cheung [2001] IM</p>	<p>This paper analyses consumer attitudes towards Internet-based e-shopping. It aims to provide a theoretically and empirically grounded initial reference position, against which later research can explore and interpret the effects of changes in variables representing consumer preferences and shifts in these preferences on the success or failure of B2C e-commerce over the Internet.</p>	<p>survey</p>	<p>312 internet users in Singapore</p>	<p>perceived risks associated with transactions security in Internet-based e-shopping, level of education and training in computer applications and IT, representative retail price on the Internet e-market; consumer perceptions of the relative life content of Internet-based e-shopping, perceived quality of Internet e-vendors, level of Internet usage, network speed.</p>			<p>consumer willingness</p>	<p>The life content of products, transactions security, price, vendor quality, IT education and Internet usage significantly affect the initial willingness of Singaporeans to e-shop on the Internet.</p>
<p>Lightner [2004] CACM</p>	<p>The paper proposes a list of 50 functional requirements that represent facets of customer service in a B2C site and investigate whether and how two award winning sites fulfill them.</p>	<p>study of two websites</p>	<p>2 websites</p>					<p>a list of 50 functional requirements designed according to the CSLC for traditional shopping transactions</p>
<p>Liu et al. [2004] IM</p>	<p>This study proposed and tested a theoretical model that considers an individual's perceptions of privacy and how it relates to his or her behavioral intention to make an online transaction.</p>	<p>experiment</p>	<p>200 subjects</p>	<p>Privacy</p>	<p>Trust</p>		<p>Intention</p>	<p>Privacy has a strong influence on whether an individual trusts an EC business. In turn, this will influence their behavioral intentions to purchase from or visit the site again, whether they will have positive things to say about the business, and whether they would recommend this EC site to others.</p>
<p>Lu and Lin [2002] IM</p>	<p>This paper examines the significance of content, context and infrastructure in determining customer loyalty.</p>	<p>survey</p>	<p>145 undergraduate students</p>	<p>content-belief, context-belief, infrastructure-belief</p>	<p>customer attitude</p>		<p>customer loyalty</p>	<p>Customer attitude is influenced by belief about brand equity (value) which is affected by the content, context and infrastructure.</p>

<p>Lu et al. [2004] ICIS</p>	<p>This study investigates how social adjustment benefits (a type of psychological benefits based on human need for affiliation) can be used by Internet businesses to induce consumers to disclose their personal information. Drawing on psychology literature, this study focuses on the match between consumer characteristics (extraversion) and the media (electronic and traditional) used to offer social adjustment benefits.</p>	<p>experiment</p>	<p>95 working professionals</p>	<p>social adjustments</p>		<p>extraversion</p>	<p>intention to disclose personal information</p>	<p>(1) consumers who are extraverts tend to be willing to disclose personal information when social adjustment benefits are offered via either traditional or electronic media and (2) consumers who are introverts tend to be willing to disclose personal information only when social adjustment benefits are offered via electronic media</p>
<p>Luarn and Lin [2003] ECR</p>	<p>This paper describes a theoretical model for investigating the three main antecedent influences on loyalty (attitudinal commitment and behavioral loyalty) for e-service context: trust, customer satisfaction, and perceived value.</p>	<p>survey</p>	<p>180 respondents (Taiwan)</p>	<p>trust, customer satisfaction, perceived value</p>	<p>commitment</p>		<p>Loyalty, commitment</p>	<p>The results indicate that trust, customer satisfaction, perceived value, and commitment are separate constructs that combine to determine the loyalty, with commitment exerting a stronger influence than trust, customer satisfaction, and perceived value. Customer satisfaction and perceived value were also indirectly related to loyalty through commitment.</p>
<p>Malaga [2001] JOCEC</p>	<p>This paper explores the costs to the consumer of participating in electronic markets and compares those costs with traditional retail outlets.</p>			<p>product type</p>		<p>electronic/traditional channel</p>	<p>transaction time, perceived personal data security, perceived credit card security</p>	<p>There is no significant difference in the price of goods sold via electronic markets versus traditional markets. Consumers perceive electronic commerce more risky.</p>
<p>Malhotra et al. [2004] ISR</p>	<p>This article uses social contract theory, to focus on the dimensionality of Internet users' information privacy concerns (IUIPC). It proposes and tests a causal model on the relationship between IUIPC and behavioral intention toward releasing personal information at the request of a marketer.</p>	<p>survey</p>	<p>742 household respondents</p>	<p>internet users' information privacy concerns (IUIPC)</p>	<p>trusting beliefs, risk beliefs</p>		<p>intention to give private information</p>	<p>The results of this study indicate that the second-order IUIPC factor, which consists of three first-order dimensions—namely, collection, control, and awareness—exhibited desirable psychometric properties in the context of online privacy. In addition, we found that the causal model centering on IUIPC fits the data satisfactorily and explains a large amount of variance in behavioral intention, suggesting that the proposed model will serve as a useful tool for analyzing online consumers' reactions to various privacy threats on the Internet.</p>

Mandel and Johnson [2002] JCR	This article extends the idea that priming can influence preferences by making selected attributes focal. The experiment manipulates the background pictures and colors of a Web page, affecting consumer product choice.	2 experiments	76 undergraduate students, 385 internet users	priming	change in search behavior	expert/novice, level of expertise	product preferences,	For novices, priming drives differences in external search that, in turn, drive differences in choice. For experts, there are differences in choice that are not mediated by changes in external search, which confirms that on-line atmospherics in electronic environments could have a significant influence on consumer choice.
Mathwick and Rigdon [2004] JCR	This study examines the conditions necessary to transform online information search into "play," a highly positive experience capable of delivering intrinsic value in the form of escapism and enjoyment.		110 respondents	state of mind,	perception of play	high/low involvement in search	attitudes toward the focal Web site, attitudinal loyalty toward the focal firm and its brands.	Moderated by product involvement, play serves as a link between flow theory and the online consumer attitude formation process.
McKnight et al. [2002b] JSIS	This paper develops and tests a model of consumer trust in an electronic commerce vendor. Three factors are proposed for building consumer trust in the vendor: structural assurance (that is, consumer perceptions of the safety of the web environment), perceived web vendor reputation, and perceived web site quality.	experiment	1729 undergraduate students	perceived vendor reputation, perceived website quality, structural assurance of the web, perceived web risk	trusting intentions (willingness to depend on vendor), trusting beliefs in vendor		intention to follow vendor advice, intention to share personal information, intention to purchase	All three factors significantly influenced consumer trust in the web vendor. That is, these factors, especially web site quality and reputation, are powerful levers that vendors can use to build consumer trust, in order to overcome the negative perceptions people often have about the safety of the web environment.
Oorni [2003] EJIS	The aim of this paper is to evaluate the relative efficiency of product search in current travel service markets.	experiment	92 students	consumer search, market efficiency			electronic/conventional markets	The electronic markets observed were found to be at best as efficient as their conventional counterparts. The results suggest that poor availability of product information and a lack of systems integration severely limit the efficiency of consumer search in present electronic markets.
Pavlou [2001] AMCIS	This paper develops and empirically validates a model to predict intentions to transact by integrating trust in electronic commerce (EC) with the Technology Acceptance Model (TAM.).	survey	52 undergraduate students	privacy perceptions, security perceptions, PEOU, PU, reputation	trust, perceived risk		intention to transact	Perceived risk is shown to be a direct negative antecedent of intention to transact, while trust was an indirect antecedent acting through risk perceptions. Privacy and security perceptions influenced trust, rendering support for two important antecedents of trust in EC that indirectly reduce perceived risk and influence intentions to transact. Given the high variance explained for intentions to transact, trust and TAM are likely to become essential components of EC.

Payton [2003] JOCEC	This article examines health care consumers' views of an existing health maintenance selection process.	face-to-face interviews	75 faculty members					HR-enabled health care web portals must include consumer-defined features such as rank-ordered preferences by employees, privacy/security functions, and electronic enrollment during the selection process.
Qiu and Benbasat [2004] AMCIS	A laboratory experiment was designed to empirically test the effects of information presentation mode and animated embodiment on consumer trust towards the serviceperson.	lab experiment	72 university students	information presentation mode, animated embodiment			emotional trust towards serviceperson, cognitive trust towards serviceperson	The results demonstrate that the presence of TTS voice significantly increases consumer's cognitive and emotional trust toward the serviceperson.
Salam et al. [2003] CACM	This article examines consumer-perceived risk of transactions over the Internet specifically focusing on the financial dimension.	web survey	3987 respondents	institutional trust, economic incentive			perceived financial risk	Consumer-perceived risk is found to be reduced with the increase in institutional trust.
Shang et al. [2004] IM	This study examined whether such intrinsic motivations can be used to explain consumers' acceptance of on-line shopping.	web survey	478online consumers (Taiwan)	cognitive absorption, fashion involvement	PU, PEOU		online shopping	Results of this empirical study showed that perceived usefulness is not an antecedent of on-line shopping, while fashion and a cognitive absorption experiences on the web were more important than their extrinsic factors in explaining on-line consuming behavior.
Stafford [2003] ECR	This study, based on data from a broad sample of America Online customers, operationalizes adoption behavior along a continuum of user experience levels and helps to build an understanding of the differences between innovative early adopters, the profitable mainstream majority, and laggard technological adopters.	web survey	1006 online users	adopter category	self-efficacy		content gratification, process gratification (online service adoption)	Innovators score consistently higher on all measures than other adopter categories.

<p>Strader and Ramaswami [2004] CACM</p>	<p>While there is little argument that the presence of the online channel has affected the customer policies of traditional financial service firms, our study took a consumer perspective, examining individual consumer perceptions of the two channels.</p>	<p>survey</p>	<p>112 online users</p>	<p>reduced cost of transactions convenience opportunity for taking personal control ease of conducting transactions increased rate of return Investment education trustworthiness access to information of value meet personal financial goals manage risk level</p>		<p>users/non-users</p>	<p>online channel vs. Traditional channel preference.</p>	<p>The online channel was perceived by the survey respondents as better than the traditional channel on four of the 10 features: reduced cost of transactions, convenience, greater personal control, and easier-to-execute transactions. For the other six features, no differences were found. Overall, these findings agree with prior research on the common benefits of using an online channel: transaction cost reduction, convenience, control, and ease of use</p>
<p>Tan and Teo [2000] JAIS</p>	<p>A research framework is used to identify the attitudinal, social and perceived behavioral control factors that would influence the adoption of Internet banking.</p>	<p>web survey.</p>	<p>316 online users (Singapore)</p>	<p>relative advantage, compatibility, complexity, triability, risk, subjective norms, self-efficacy, facilitating conditions</p>			<p>intention to use online banking</p>	<p>The results revealed that attitudinal and perceived behavioral control factors, rather than social influence, play a significant role in influencing the intention to adopt Internet banking. In particular, perceptions of relative advantage, compatibility, trialability, and risk toward using the Internet were found to influence intentions to adopt Internet banking services.</p>
<p>Tang et al. [2003] CACM</p>	<p>This paper suggests using an "insurance" approach as a proxy in order to create trust for e-commerce activities on the Internet.</p>	<p>survey+ interviews</p>	<p>35 Singapore companies and 38 South Korea companies</p>	<p>experience with the Internet, view on trust, view on the use of insurance to protect online transactions, pricing of ITI</p>				<p>People showed enthusiasm about using insurance as a proxy for effecting trust on the Internet.</p>
<p>Teo et al. [2004] HICSS</p>	<p>This study employed a 2*2*2 experimental design to examine the effects of reputation, fair information practices, and reward on the online consumer behavior of volunteering two types of personal information - demographic and personal identifiable information - on the Internet.</p>	<p>experiment</p>	<p>147 subjects from Singapore</p>	<p>reputation, fair information practices, rewards</p>		<p>personal information/ demographic information</p>	<p>provide personal information</p>	<p>The study provides strong evidence on the effects of reward, FIP, and reputation on the provision of accurate personal identifiable information.</p>

<p>Treiblmaier et al. [2004] ICIS</p>	<p>This paper proposes a framework and a measurement model that depicts important factors influencing users' online payment behavior.</p>	<p>survey</p>	<p>631 Internet users</p>	<p>experience</p>	<p>frictionless use, trust in e-payment security, attitude towards e-payment</p>		<p>intention to use e-payment.</p>	<p>Trust can be seen as an important antecedent for the adoption of online payments on the part of the users. From the government's point of view, the potential for exerting influence seems to be somewhat limited: While national institutions in developed countries are usually perceived as trustworthy, users' attitudes toward the Internet may be more skeptical, depending on their previous experience.</p>
<p>van der Heijden [2003] EJIS</p>	<p>This paper explores factors that influence consumer's intentions to purchase online at an electronic commerce website, using two different perspectives: a technology-oriented perspective and a trust-oriented perspective.</p>	<p>survey</p>	<p>228 potential online shoppers</p>	<p>trust in online store, perceived risk, PU, PEOU</p>	<p>attitude towards online purchasing</p>		<p>online purchase intention</p>	<p>The trust-antecedent 'perceived risk' and the technology-antecedent 'perceived ease-of-use' directly influenced the attitude towards purchasing online.</p>
<p>van der Heijden et al. [2001] HICSS</p>	<p>This article examines study into the antecedents of online purchase intention for B2C websites based on two models (replication)</p>	<p>web survey</p>	<p>227 undergraduate students,</p>	<p>perceived size of the company, perceived reputation</p>	<p>trust in store, attitude towards online purchasing, perceived risk</p>		<p>online purchase intention</p>	<p>Online purchase intention at the website is strongly determined by attitude towards online shopping at the website. Trust in the company does not influence attitude directly, but indirectly through a significant impact on perceived risk. Website usefulness does not significantly influence attitude towards shopping and online purchase intention</p>
<p>Van Slyke et al. [2002] CACM</p>	<p>This article studies whether gender is a significant predictor of intention to purchase on the Web.</p>	<p>survey</p>	<p>511 subjects</p>	<p>gender, full-time work experience, computer use, major age, web use, email use, word processing use, web browser use, prior web use, access to credit card, access to the web</p>			<p>intention to purchase</p>	<p>Men are more likely to intend to shop on the Web. Further, perceptions of complexity, compatibility, relative advantage, result demonstrability, and trust significantly differ by gender, while perceptions of image did not. In each case, men perceived Web shopping more positively than women.</p>

<p>Vatanasombut et al. [2004] CACM</p>	<p>This study focuses on leading bank's online services and illustrates what it takes to keep novice and sophisticated users happy and loyal (service retention).</p>	<p>survey</p>	<p>2 samples, novice and advanced users (no size)</p>					<p>It was found that novice users cease online banking because of simple technological problems, such as browser compatibility or forgetting passwords. On the other hand, sophisticated users tend to terminate the service because the online banking experience did not meet their expectations in terms of features, performance, quality, and cost. They reported various termination causes, ranging from server speed, to the ability to download transactions into their personal software.</p>
<p>Vijayasathy [2004] IM</p>	<p>Proposition of an augmented TAM and test.</p>	<p>survey</p>	<p>260 online users</p>	<p>usefulness, ease of use, compatibility, privacy, security, normative beliefs, self-efficacy</p>	<p>attitude</p>		<p>intention</p>	<p>Compatibility, usefulness, ease of use, and security were found to be significant predictors of attitude towards on-line shopping, but privacy was not. Further, intention to use on-line shopping was strongly influenced by attitude toward on-line shopping, normative beliefs, and self-efficacy.</p>
<p>Walczuch and Lundgren [2004] IM</p>	<p>This paper attempts to identify major psychological antecedents of trust. In the context of online retailing</p>	<p>survey</p>	<p>107 Dutch students</p>	<p>perceived reputation of e-retailer, perceived investment of e-retailer, perceived similarity of e-retailer, perceived normality, perceived control, perceived familiarity, extraversion, neuroticism, agreeableness; conscientiousness . openness to experience, experience over time, satisfaction, communication, attitude towards computers & the internet, attitude towards online shopping, Information practices, security technology</p>			<p>trust in online retailing</p>	<p>Perception based factors are the main determinants of consumer trust in e-retailing. The majority of significant factors (reputation, word-of-mouth, information from friends and relatives, perceived investment, perceived similarity, perceived control, perceived familiarity) are all directly related to the customer's perception of e-retailing.</p>

Westland [2002] JOCEC	This paper investigates e-cash acceptance through a survey of merchant and customer preferences for cash.	survey	77 merchants in Hong Kong				E-cash is unlikely to compete well against cash and credit cards for 3 reasons: switching costs, technology risk and insufficient market differentiation.
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APPENDIX VI. THEORETICAL PAPERS REVIEWED

Reference	Description	Type	Indep. variables	Moderating variables	Dep. variables	Dep. variables	Definitions
Cazier [2003] AMCIS	This paper explores the role of value compatibility and trust in the e-commerce environment by answering the question of how the perceived actions or lack of actions of organizations regarding moral, social, environmental and political issues affect e-commerce users in their trusting beliefs and their behavioral intentions toward those organizations.	Research report	value compatibility	benevolence, ability, integrity, trust		behavioral intention	Trust is defined as the willingness to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party. (Mayer et al. 1995) Ability is the group of skills, competencies and characteristics that enable a party to have influence within some specific domain. Benevolence is the extent to which a trustee is believed to want to do good for the trustor, aside from an egocentric profit motive. Integrity is trustor's perception that the trustee adheres to a set of principles that the trustor finds acceptable. Value compatibility is a measure of how closely an customer's personal values and the perceived values of an organization overlap
Chang et al. [2004] AMCIS	this paper focuses on predicting about what information to present based on inferences made from cognitive models of the customer. It presents one approach to collecting and analyzing data that could be used to construct such models.	Research report (pilot study)	product involvement, price			behavioral impact	
Chiravuri and Nazareth [2001] AMCIS	This paper examines trust and its antecedents, and presents an alternative framework, using the Technology Acceptance Model (TAM), of the consumer's usage of the Internet for e-commerce.	Research report	familiarity, company reputation, factual signals/ heuristic cues, Information quality, ease of understanding, ease of finding, quality of experience	trust, usefulness, ease of use, intention to use	extent of experience	usage	Trust: the willingness of a party to be vulnerable to the actions of another party based on the expectations that the other party will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party (Mayer et al. 1995)
Ciganek et al. [2004] AMCIS	This paper examines how consumers of different national cultures and gender use pieces of information to develop trust.	Research report (pilot study)	national culture, gender	social norms and values, cognitive processes		trust belief	Trust: the belief of consumers about an e-merchant to be honest, willing, capable, in the consumer's interest, to deliver products and/or services as promised (McKnight and Chervany, 2001/2002).

<p>Clarke [1999] CACM</p>	<p>This article argues that the current debates about privacy and the Internet are the harbingers of a substantial shift. A framework is proposed.</p>	<p>practical</p>					
<p>Dekleva [2000] CAIS</p>	<p>This article introduces an electronic commerce paradox by observing that while electronic commerce grows rapidly it is, at the same time, based on unsettled foundations. It describes how 22 constraints for global electronic commerce were identified, and analyzes them in depth. The constraints fall into four themes: Building trust for users and consumers, Establishing ground rules for the digital marketplace, Enhancing information infrastructure, Maximizing benefits.</p>						
<p>Friedman et al. [2000] CACM</p>	<p>The paper explores the nature of trust and how and where it flourishes online. A conceptual framework for understanding trust, then offer 10 characteristics of online interaction that can help engineer trust online and distinguish between trust in e-commerce activities and trust in online interpersonal interactions.</p>	<p>practical</p>					

<p>Hsiao [2003] JSIS</p>	<p>This study interprets fears towards technology use to account for the challenge of e-marketplace adoption. An insight derived from this study is that when an e-marketplace is adopted, such adoption includes not only the use of technology but also the transfer of the embedded trust production mechanisms as well as the transformation of economic assumptions and cultural beliefs about how a market system operates.</p>	<p>theory building, interpretative method</p>				<p>trust building</p>	
<p>Kim and Benbasat [2003] JECR</p>	<p>This paper discusses the trust related issues and arguments (evidence) Internet stores need to provide in order to increase consumer trust. The paper develops a framework that identifies key trust-related issues and organizes them into four categories: personal information, product quality and price, customer service, and store presence.</p>	<p>trust model developed in existing IS literature + content validity (trust IS literature)</p>					<p>Trust: willingness to be vulnerable (Mayer et al. 1995) trusting beliefs are consumers' perceptions of particular characteristics of Internet stores, including the abilities, the integrity, and the benevolence exhibited by the stores when they handle the consumers' transactions (Gefen and Straub, 1999; McKnight et al., 2002).</p>

<p>Konana and Balasubramanian [2004] DSS</p>	<p>By integrating social, economic, and psychological perspectives, this paper proposes to build a Social–Economic–Psychological (SEP) Model of technology adoption and usage, and to apply the model to understand the behavior of online investors.</p>	<p>theory building + hypotheses generation (face-to-face interviews + telephonic and email discussions +survey)</p>	<p>perceived operational competence, convenience, investor overconfidence, self-attribution, mental accounting, normative social pressures, embarrassment avoidance, pursuit of social class membership, the illusion of knowledge and/or control, investor's risk attitude, perceptions of fairness, social/institutional safeguards</p>			<p>utilitarian outcomes and their evaluation, trust in e-broker, hedonic gains</p>	<p>Online investing: the set of activities undertaken by individual investors in connection with the independent management of their investing accounts with online brokers Perceived operational competence of the online broker reflects the investor's belief that the broker (a) executes trades efficiently and accurately, and (b) provides current and correct information related to financial markets. Convenience may be defined as the ability to efficiently perform online investing-related tasks on an anywhere, anytime basis. Mental accounting is defined as the accounting system implicitly invoked by consumers when they evaluate the gains and losses related to a certain sphere of activity. Illusion of control can be defined as an expectancy of a personal success probability inappropriately higher than the objective probability would warrant Risk attitude of an investor describes the investor's willingness to trade off between lower uncertainty of returns to investing and higher (expected) returns to investing. Self attribution refers to the tendency to associate the causes of events with the self rather than to chance, or to others. Overconfident investors trade in a way that reflects stronger beliefs in their own evaluations of stocks and the market compared with the beliefs of others. Impartiality (or fairness) may be defined as the moral imperative requiring that conflicting claims to scarce resources be evaluated without prejudice [46].</p>
<p>Massad et al. [2004] AMCIS</p>	<p>This paper investigated the aspects of individual online transactions (i.e., electronic service encounters) that are most likely to satisfy customers, thereby increasing the likelihood of building and maintaining relationships with customers.</p>	<p>Content analysis</p>					

<p>McKnight et al. [2000] ICIS</p>	<p>This study investigates the development of trust in a Web-based vendor during two stages of a consumer's Web experience: exploration and commitment. Through an experimental design, the study tests the effects of third party endorsements, reputation, and individual differences on trust in the vendor during these two stages.</p>	<p>research report</p>	<p>web experience, disposition to trust, third party icon</p>	<p>institution based trust, vendor reputation, perceived site quality</p>		<p>trusting beliefs, trusting intentions</p>	<p>Trust means a combination of trusting beliefs, defined as the belief that another is benevolent, competent, honest, or predictable in a given situation, and trusting intention, meaning one's willingness to depend on another in a situation (McKnight et al. 1998).</p>
<p>Midha and Nemati [2004] AMCIS</p>	<p>This paper proposes a theoretical model incorporating information privacy concerns and consumers' options and rights as the two antecedents for trust in an organization.</p>	<p>research report</p>					
<p>Moon and Sanders [2004] AMCIS</p>	<p>This study proposes the concept of "psychological ownership" for examining the impact of e-Commerce sites' personalized spaces on customer perception and behavior.</p>	<p>research report</p>	<p>perceived level of key experience with spaces.</p>	<p>degree of ownership towards spaces, task support satisfaction, interface satisfaction</p>		<p>e-loyalty</p>	
<p>Park et al. [2003] AMCIS</p>	<p>The paper explores B2C channel attributes as antecedents for customer satisfaction. The relationship between the attribute-level performance and overall satisfaction is investigated; the relationship generally has been conceptualized as linear and symmetric. Asymmetric and nonlinear impact of attribute-level performance on overall satisfaction.</p>	<p>research report</p>					
<p>Rose et al. [1999] AMCIS</p>	<p>This paper extends the work of Rose and Straub (1999) to identify how this technology impacts the success or failure of EC initiatives, using marketing and systems response time theories</p>	<p>research report</p>					

<p>Rose [1999] CAIS</p>	<p>This article identifies six categories of technological impediments: (1) download delays, (2) limitations in the interface, (3) search problems, (4) inadequate measurement of Web application success, (5) security (real and perceived) weaknesses, and (6) a lack of Internet standards.</p>	<p>theory building</p>					
<p>Sha [2004] AMCIS</p>	<p>This study examines the influence of different types of structural assurance on consumer trusting intentions in business-to-consumer (B2C) electronic commerce.</p>	<p>research report</p>	<p>perceived vendor guarantee, perceived seals of approval, perceived credit card protection, perceived legal and tech protection.</p>	<p>Procedural Justice, psychological contract, perceived risk</p>		<p>intentions.</p>	<p>Psychological contract is defined as "an individual's belief in mutual obligations between that person and another party such as an employer (either a firm or another person)" (Rousseau and Tijoriwala, 1998). Perceived risk is defined as a consumer's cognitive evaluations of the risky nature of possible decision outcomes (McKnight, Choudhury and Kacmar, 2002b).</p>
<p>Shankar et al. [2002] JSIS</p>	<p>A stakeholder theory of trust is proposed which articulates a broad conceptual framework of online trust including its underlying elements, antecedents, and consequences, and proposes some promising future research avenues in online trust. (very good review of the "trust" concept)</p>	<p>theory building (marketing, management, IS and e-commerce literature review about trust)</p>				<p>online trust</p>	<p>Trust can be defined as the belief by one party about another party that the other party will behave in a predictable manner (Luhmann, 1979).</p>
<p>Shneiderman [2000] CACM</p>	<p>The papers proposes principles and their guidelines in order to enhance cooperative behaviors and win user/customer loyalty by giving assurances, references, certifications from third parties, and guarantees of privacy and security.</p>	<p>practical</p>					
<p>Swan and Rosenbaum [2004] AMCIS</p>	<p>This study explores issues of trust that affect online consumers' decisions to purchase goods on an electronic publishing firm's e-business web site.</p>	<p>content analysis, usability analysis and interviews</p>	<p>interface elements</p>			<p>trust</p>	<p>Trust is "the willingness of a party to be vulnerable to the actions of another party based on the expectations that the other party will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party." (Mayer et al., 1999).</p>

<p>Wells et al. [2003] HICSS</p>	<p>this research effort is to adapt and apply Task-Technology Fit Theory to an EC domain. TTF constructs for an EC task domain are derived by applying factors/principles from web usability research. The TTF determinants of task, technology, and individual characteristics are modified to fit an EC domain. An electronic commerce TTF instrument is presented along with a research model for better understanding the relationships between independent and dependent variables.</p>	<p>TTF extension, construct and instrument development validation</p>	<p>task structure, task complexity, logical interface, physical interface, mobility, socio-economic, motivational attitudinal and internet proficiency characteristics</p>				
<p>Wells et al. [2004] AMCIS</p>	<p>The purpose of this research effort is to apply Task-Technology Fit (TTF) theory to understand how to effectively support experiential consumer tasks.</p>	<p>2x2 experiment design</p>	<p>task type, mode of interface, personality</p>			<p>performance impacts</p>	
<p>Zo and Ramamurthy [2002] AMCIS</p>	<p>This study presents a model to argue that (perceived) website quality and consumer differences (in terms of prior web experience) are key variables in explaining the price dispersions.</p>	<p>Research report</p>	<p>product price, information quality, presentation quality, service quality, functional quality, indirect awareness, direct awareness, prior web experience</p>			<p>website choice</p>	

APPENDIX VII. INSTRUMENT DEVELOPMENT PAPERS REVIEWED

Reference	Description	Type	Sample	Conceptualization	Operationalization
Aladwani [2002] EJIS	The study describes the development of two multi-item instruments to measure perceived easiness and usefulness of transactional Web site from the perspective of Web users.	survey	387 web users		
Aladwani and Palvia [2002] IM	this article reports the development of an instrument that captures key characteristics of web site quality from the user's perspective.	Delphi method, survey	104 web users		Website quality: specific content, content quality, appearance and technical adequacy.
Bhattacharjee [2002] JMIS	This paper theoretically conceptualizes and empirically validates a scale to measure individual trust in online firms.	2 surveys			Trust: trustee's ability, benevolence, and integrity
Cao et al. [2004] AMCIS	This article examines and integrates four sets of factors that capture e-commerce Website quality: system quality, information quality, service quality, and attractiveness. Based on TAM, a framework is developed relating Web site quality to customers' beliefs (perceived usefulness and ease of use), attitudes (preferences for the site), and intentions (to revisit the site).	survey	71 students	Perceived usefulness is defined as the degree to which a person believes that use of the system will enhance his or her performance. Perceived ease of use is defined as the degree to which a person believes that use of the system will be free from difficulty. Service Quality is defined as how well a delivered service level matches customer expectations (Parasuraman et al., 1985). Trust refers to the extent to which customers believe the Web site is legal, ethical, and credible and is able to protect their privacy (Wan, 2000). Empathy refers to the extent to which a Web site provides caring, individualized information and attention to customers.	Website Quality: system quality, information quality, service quality, attractiveness

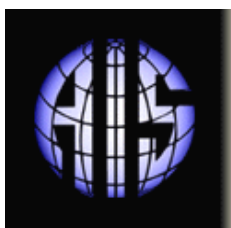
<p>Chang et al. [2004] IM</p>	<p>This study examines the two hypothesized measurement models and the proposed second-order models that were introduced by Keeney (1999) based on two sets of variables: means and fundamental objectives for Internet shopping.</p>	<p>survey</p>	<p>337 experienced online shoppers</p>		<p>Recommended means objectives: Internet product choice, Online payment, Internet vendor trust, Shopping travel, Internet shipping errors. Recommended fundamental objectives: Shopping convenience, Internet ecology, Customer relation, Product value.</p>
<p>Iwaarden et al. [2004] IM</p>	<p>A survey was undertaken to identify the quality aspects perceived to be most important in the design and use of websites.</p>	<p>survey</p>	<p>541 students</p>	<p>Tangibles: physical facilities, equipment and appearance of personnel. Reliability: ability to perform the promised service dependably and accurately. Responsiveness: willingness to help customers and provide prompt service. Assurance (including competence, courtesy, credibility and security): i.e., knowledge and courtesy of employees and their ability to inspire trust and confidence. Empathy (including access, communication, and understanding the customer): caring and individualized attention that the firm provides its customers.</p>	
<p>Kim and Stoel [2004] IM</p>	<p>This study used Loiacono's WebQual scale to examine the dimensional hierarchy of the quality of apparel websites</p>	<p>survey</p>	<p>273 female online apparel shoppers</p>		<p>Website Quality: Informational fit-to-task, tailored communication, Online completeness, Relative advantage, Visual appeal, Innovativeness, Emotional appeal, Consistent image, Ease of understanding, Intuitive operations, Response time, Trust</p>

<p>McKinney et al. [2002] ISR</p>	<p>This paper develops constructs for measuring web-customer satisfaction during the information phase.</p>	<p>2 surveys</p>	<p>330/238 students</p>	<p>Satisfaction: an affective state representing an emotional reaction to the entire web site search experience. Web IQ: the customers' perception of the quality of information presented on a website. Web SQ: the customers' perception of a website's performance in information retrieval and delivery. Expectation: the aggregation of individual belief element in a consumer's cognitive structure. Perceived performance: customers' perception of how product performance fulfills their needs, wants, and desires. Disconfirmation: consumer subjective judgments resulting from comparing their expectations and their perceptions of performance received.</p>	<p>Web IQ: understandability, reliability, usefulness Web SQ: access, usability, navigation</p>
<p>McKnight et al. [2002a] ISR</p>	<p>This paper proposes and validates measures for a multidisciplinary and multidimensional model of trust, based on four levels: disposition to trust, institution-based trust, trusting beliefs, trusting intentions</p>	<p>experiment</p>	<p>1403 students</p>	<p>Trusting intentions: the truster is securely willing to depend, or intends to depend, on the trustee. Trusting beliefs: the confident truster perception that the trustee has attributes that are beneficial to the truster. Trust-related behavior: actions that demonstrate dependence on a web vendor, that make one vulnerable to the vendor or increase one's risk. Institution-based trust: the belief that needed structural conditions are present to enhance the probability of achieving a successful outcome in an endeavor like e-commerce. Disposition to trust: the extent to which a person displays a tendency to be willing to depend on other across a broad spectrum of situations and persons.</p>	

<p>Torkzadeh and Dhillon [2002] ISR</p>	<p>This study examines the two hypothesized measurement models and the proposed a second-order model that was introduced by Keeney (1999) based on two sets of variables: means and fundamental objectives for Internet shopping.</p>		<p>199+421 students</p>	<p>Fundamental objectives: the ends that a decision maker may value in a given context. Means objectives: the methods to achieve the ends. Internet commerce: the sale and purchase of products and services over the internet.</p>	
<p>van der Heijden [2004] IM</p>	<p>The study develops a valid measure for the components of an online store image, and examined the relationships of these components to attitudes and intentions to purchase online.</p>	<p>lab experiment</p>	<p>312 undergraduate students</p>	<p>store image: the personality the store presents to the public or a complex of meanings and relationships serving to characterize the store to the populace</p>	<p>Store image: online store usefulness (six items), online store enjoyment (three items), online store ease of use (three items), online store style (five items), enterprise image (five items), logistical settlement performance (five items) and financial settlement performance (three items).</p>
<p>Wang et al. [2001] JECR</p>	<p>This study develops a comprehensive model and instrument for measuring customer information satisfaction (CIS) for web sites that market digital products and services.</p>	<p>survey</p>		<p>customer information satisfaction for digital marketing: a summary affective response of varying intensity that follows consumption, and is stimulated by focal aspects of sales activities, information systems (websites), digital products/services, customer support, after-sales service, and company culture.</p>	<p>Customer information satisfaction: Ease of Use, Information Content, Innovation, Security, Customer Support, Digital Products/Services, Transaction and Payment</p>
<p>Wand and Tang [2004] IJEB</p>	<p>This study uses confirmatory factor analysis to test alternative models of underlying factor structure and to assess the reliability and validity of factors and items of the customer information satisfaction (CIS), instrument that assess the success of e-commerce systems in a digital market context.</p>	<p>survey</p>	<p>260 adult respondents</p>	<p>customer information satisfaction for digital marketing: a summary affective response of varying intensity that follows consumption, and is stimulated by focal aspects of sales activities, information systems (websites), digital products/services, customer support, after-sales service, and company culture.</p>	<p>Customer information satisfaction: Ease of Use, Information Content, Innovation, Security, Customer Support, Digital Products/Services, Transaction and Payment</p>

APPENDIX VIII. REVIEWED DESIGN PAPERS

Reference	Description	Sample	Results
Christ et al. [2001] HICSS	Drawing upon advances in semi-parametric, group-based statistical modeling, the paper examines whether there are distinctive clusters of trajectories of change over time in number of visits to Web sites.	longitudinal data from 1995-1998	WWW users can be clustered into four groups with distinct trajectories of use. These groups achieve saturation in their extent of Web usage as measured in the number of distinct Web sites they visit over time.
Gupta et al. [2004] DSS	This paper develops an economic model that captures consumer shopping channel choices based on shopping channel characteristics and consumer risk profiles: risk-neutral or risk-averse.		After making purchases through one channel, electronic or traditional, risk-averse consumers tend to be more loyal customers than risk-neutral consumers. The two types of consumers may exhibit split channel behavior—risk-neutral consumers prefer one channel and risk-averse consumers prefer the other. Risk-neutral consumers are not always more likely to prefer electronic channel than risk-averse consumers.
Hitt and Frei [2002] MS	This paper analyzes how characteristics or behaviors might differ between customers who use electronic delivery systems and those who use traditional channels.	60 individuals from various functions in PC banking + consumers' data.	PC banking customers are apparently more profitable, principally due to unobservable characteristics extant before the adoption of PC banking. Demographic characteristics and changes in customer behavior following adoption of PC banking account for only a small fraction of overall differences, retention is higher for customers of the online channel.
Kim et al. [2004] DSS	This research builds a model of multidimensional trust formation for online exchanges in B-to-C electronic commerce and studies the relative importance of the dimensions between two expert groups (academics and practitioners),	literature review, two semantic network and content analyses	Practitioners are more likely concerned with the issues related to application levels of trust building from e-merchant viewpoints, i.e., issues such as current technological constraints, technical platforms, viable product features and characteristics, and technical solution/implementation of trust building, while academic researchers are more concerned on foundational levels of trust-building mechanisms, such as the impacts of consumer e-marketing behavioral, and web information trustworthiness in terms of quality and credibility of web content dimensions.



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