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Privacy calculus model in e-commerce – a study of Italy and the United States

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Abstract
This study examines cross-cultural differences beliefs related to e-commerce use for Italy and the United States. We argue that for both cultures, the user's decision to make an online purchase is simultaneously influenced by a set of contrary factors. These include decision facilitators such as propensity to trust and institutional trust, and decision inhibitors such as perceived risk and privacy concerns. We argue that substantial cultural differences exist that affect the above factors and the relationships among them. We use Hofstede's cultural theory and Fukuyama's theory of trust and social capital, along with emic factors important for the Italian society, to develop the study's propositions. The hypotheses were empirically tested using LISREL structural equation modeling and multigroup analysis. The results revealed that the Italian society exhibited lower propensity to trust, institutional trust, privacy concerns, and higher perceived risk. The relationships between institutional trust and e-commerce use, privacy concerns and e-commerce use, and perceived risk and institutional trust are all weaker for Italy. The relationship between perceived risk and privacy concerns is stronger for Italy. The paper's major contribution is in validating an important model of e-commerce use across two cultures and showing the moderating effects of culture.
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Introduction

Privacy and the cross-country differences in privacy regulations are among the 10 most important trends that will impact the Internet in the first decade of the 21st century (Erbschloe, 2001). Building competitive advantage through providing relevant product information to customers, personalized services, customized incentives and products can only be realized when consumers provide personal information. The need to gather more personal data, however, increases the threat to customers' privacy and may affect the further growth of Internet usage because of growing privacy concerns. Furthermore, the global nature of the Internet and e-commerce is making privacy issues even more complex because the perceptions of privacy, trust, risk, and fair information practices vary across cultures and depend on government regulations (Milberg *et al*., 2000; Bellman *et al*., 2004). Designing the appropriate practices for information collection and addressing cultural variation in trust and privacy perceptions should allow global corporate marketers to more readily facilitate the free exchange of Internet services across countries.

MIS researchers (Milberg *et al*., 2000; Bellman *et al*., 2004) have found that there are differences in information privacy concerns across cultures.

However, few studies are available that examine how these privacy concerns affect the extent of Internet and e-commerce use and how the simultaneous influence of negative and positive factors affect the decision-making process of an international Internet user. Following Culnan & Bies' (2003) risk–benefit privacy calculus concept, Dinev & Hart (2003, 2006) conducted a study of contrary factors that simultaneously influence the e-commerce use. They showed that the most salient factors that influence Internet users' decisions are privacy concerns, perceived risk, and trust. We think that these vary among Italian and U.S. cultures and have chosen to study them in this context. The technological and regulatory conditions between the two countries are comparable although there are a number of socio-economic conditions precluding Internet adoption and e-commerce use in Italy as compared to the United States or Northern European countries. However, there are also substantial cultural differences which could account for the difference in the decisions to submit personal information or to use the Internet as a whole. These are the specific focus of the study. Our objective is to study cross-national differences of privacy, trust, and perceived risk and examine how they affect e-commerce use and the willingness to provide personal information.

Two different but complimentary cultural study approaches (Berry, 1980), etic and emic, were used in the theoretical development of the study. The etic approach focuses on the differences across cultures of a universal conceptual model. The emic approach is a qualitative examination of culture-specific values and focuses on constructs from within a specific culture seeking to understand the perspective of the people from within that culture (Church & Katigbak, 1988). Cross-cultural research requires both perspectives (Berry, 1980; Malhotra *et al*., 1996).

Internet and e-commerce diffusion in Italy

Italy has the fourth largest economy in Europe and the seventh largest in the world. Since the vast majority of Italy's economic development has occurred since the end of the World War II, its status as one of the world's largest economic powers is relatively recent. In the years since the end of World War II, Italy's economy has changed from primarily agrarian to post-industrial. This rapid economic development, unique among Western nations, has had a decidedly strong impact on Italian culture and society.

As measured by internet access, Italy is reported to be the third largest country in Europe, after Germany and U.K., by total people online (Nielsen, 2004). The high number of reported Internet users reflects a high number of Italian Internet Service Providers (among the highest in Europe) and does not translate automatically to individual Internet use *per se*. In fact, 66.1% of the respondents from the Internet Report Project (Mandella & Bossi, 2002) were not Internet users. Although the percentage of Italian companies conducting business online ranks in the middle among Western European countries, the number of businesses actually doing e-commerce is negligible. In fact, with respect to the latter, Italy is at the bottom of the rankings along with Spain, Portugal and Greece (Nielsen, 2004). Of the 8.5 million Italians who used the Internet in 2002, only 14.5% bought goods or services online, 8.3% less than in 2001, (Mandella & Bossi, 2002); and only 3.5% of Italian bank clients used online banking services, as opposed to 12% of German bank clients and 25% of Swedish bank clients who used online banking services. In conclusion, Italians use the Internet primarily to get information and develop social relationships, not to buy and sell, with most of the online sales coming from the B2B sector.

There are a number of socio-economic reasons impeding Internet adoption and e-commerce use in Italy as compared to the United States or Northern European countries (Barba, 2000; Barba & Ferro, 2000): (1) unfamiliarity with English, the primary language on the Web; (2) The Italian commerce structure, consisting of numerous small specialized family-run shops that lack the resources and incentives for rapid online migration and are poorly suited for e-commerce; (3) The relatively small rate of PC penetration at homes; (4) The high number of mobile phone users in Italy, the world's fourth-largest mobile telecommunications market, which has kept fixed-line telephone prices high, consequently, PC-based internet use expensive; (5) Lack of competitive pricing of online products and services as compared to the more traditional venues; (6) Low credit card usage; (7) A general fear of web-based interactions, including privacy concerns and credit card fraud vulnerabilities (Mandella & Bossi, 2002); (8) The historic diffidence of Italians towards commerce that is not face-to-face (historically success of mail order catalogue ventures have also been poor and the Italian public is still uncertain when it comes to stores that exist only virtually) (Mandella & Bossi, 2002). In addition, Italy, along with Spain, has the largest digital gender gap (UCLA, 2004) among European countries, with 42% of Italian men online compared with 22% of women.

While the economic factor differences are beyond the scope of this study, the psychological factors reflected in (7 and 8) above are of our prime interest. Our study uses the etic-based theoretical comparison of the cross-cultural variances in the constructs and hypothesized relationships. Culture-specific emic phenomena are then taken into account to form the research hypotheses.

Hofstede and Fukuyama cultural theories

In order to quantitatively measure a culture, a multi-dimensional approach has been successfully applied by cross-cultural psychologists and cultural anthropologists (Bourdieu, 1984, 1989; Triandis, 1995; Rhee *et al*., 1996). Hill *et al*. (1998), Straub *et al*. (2001), and Choudrie & Lee (2004) conceptualized cultural influence modeling by arguing that culture-specific beliefs and social norms,

technological culturation, and national policy/infrastructure affect systems usage.

Probably the best-known and most influential multidimensional approach is the cultural index developed by Hofstede (1980, 2003) whose framework clustered cultures based on five distinctly different dimensions: (1) Power Distance Index (PDI) refers to the extent of adherence to formal authority (i.e. how much a society accepts unequal distribution of power in institutions and organizations). Members of high PDI cultures are more comfortable with centralized powers than members of low PDI cultures. (2) Individualism-Collectivism (IND) focuses on the basic level of behavior regulation of an individual's relationships with respect to others. In a collectivist society, individuals regard group interest as more important than individual interest. Thus, collectivists might display great loyalty to their group. They prefer a cohesive and tightly knit social fabric and rarely move in and out of groups. A society high on individualism implies a loosely knit society in which people consider themselves independent of others, pursue personal goals, move in and out of groups easily. (3) Uncertainty Avoidance Index (UAI) measures the importance of rules and standards and how much people feel threatened by high levels of uncertainty and ambiguity in the environment. Individuals from high uncertainty avoidance societies attempt to reduce personal risk, while being more likely to resist innovative ideas and conform to rules. (4) Masculinity–Femininity (MAS). (5) Long-Term Time Orientation (LTO) – strategic and financial caution is highly prized by members of a high LTO society. They place great significance on thrift, persistence, and long-term alliances. Although there were substantial critics of the Hofstede theory (Myers & Tan, 2002; Ford *et al*., 2003) and its relevance to IT research almost 30 years after its development, his cultural classification is still the most widely used (e.g. Straub *et al*., 1997; Pavlou & Chai, 2002).

For this study, Hodstede's IND and UIA were used to explain the differences in privacy concerns, perceived risk and trust between the two societies under consideration. Another influential theory employed in this study is Fukuyama's theory of trust and social capital (Fukuyama, 1995). Fukuyama combines economic and cultural arguments to present a theory of trust, in which he correlates a country's economic prosperity with the amount of social capital within that country. The concept of social capital refers to the features of social organization, including trust and trustworthiness that improve efficiency by facilitating cooperative actions. The culture of trust as a source of spontaneous sociability allows enterprises to grow beyond family into professionally managed organizations. Fukuyama identified groups of 'high-trust' countries (e.g. U.S., Germany, and Japan) and 'low-trust' countries (e.g. Italy, France, Korea, and Taiwan). From this perspective, the U.S. and Italy are at opposite poles of Fukuyama's spectrum of trust.

Table 1 Hofstede cultural indices for Italy and the United States

Country	*Power distance*	*Individualism/Collectivism*	*Uncertainty avoidance*	*Masculinity*	*Long-term orientation*
Italy	50	76	75	70	69
United States	40	91	46	62	29

The Hofstede (1980, 2003) and Fukuyama (1995) theoretical frameworks provide a solid basis for observing cultural distances between Anglo-American and Mediterranean cultures. Table 1 lists Hofstede's scores for Italian and U.S. cultures. The cumulative cultural characteristics indicate that individuals in the U.S. tend to be informal, individualistic, achievement oriented. They value punctuality, voluntary associations, progress, innovation, and youth. Other empirical studies confirmed the U.S. as being first among individualistic societies (Triandis, 1995; Rhee *et al*., 1996). Paradoxically, Fukuyama's theory posits that the high U.S. individualism promotes a propensity to form communities and an inclination to join voluntary associations. Individuals in the U.S. historically possess strong and important communal structures that give the society resilience and dynamism and a sense of collectivism that translates into an ability to create large economical organizations more spontaneously (Fukuyama, 1995). Weber (1946) noted that U.S. democracy is not a 'sand heap' of individuals but a 'buzzing complex' of voluntary associations.

Italians score higher than U.S. Americans on all indices – PDI and collectivism (i.e. lower IND), UAI, MAS, and LTO. This implies that Italians are relatively more accepting of unequal power distributions and more concerned with in-group interest rather than self-interest. Italians tend to be relatively more formal, collectivistic, cooperative, and stability-oriented. Reflecting a low-trust society, Italian families play a central role, voluntary associations are relatively weak, and this translates into a lower ability to build large economic organizations (Fukuyama, 1995). In order to derive the difference in perceptions of privacy, risk, and trust and how they affect e-commerce use, we will consider the emic–etic complimentary approach in explaining certain characteristics that are important but not captured by Hofstede's five indices. Interestingly, these characteristics introduce paradoxical and counterintuitive privacy beliefs with respect to e-commerce.

Research hypotheses

The study adapted the model of privacy calculus developed by Dinev & Hart (2003, 2006). Their model (Figure 1) empirically explores the simultaneous effect of personal beliefs, including privacy risks, all associated with inhibiting or facilitating the intention to conduct

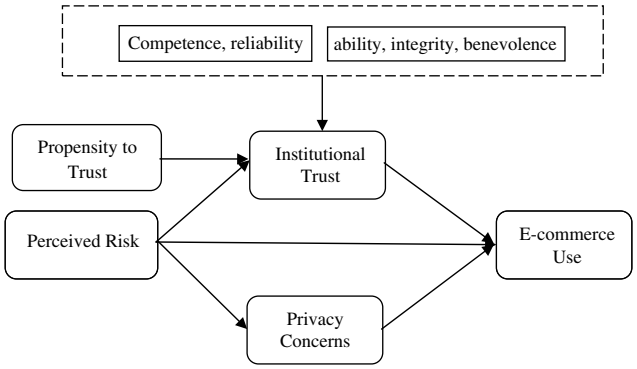

Figure 1 Privacy calculus model, adapted after Dinev & Hart (2006) with enhanced measurement of trust.

e-commerce transactions. As shown in their study, a user's decision to become involved in an e-commerce transaction is influenced simultaneously by two sets of contrary factors. The set of inhibitors are Internet privacy concerns and perceived risk. They were shown to hinder decisions to get involved in e-commerce transactions. The set of drivers are trust, personal interest, and perceived control over personal information submitted. These factors were shown to positively influence a purchase decision. The important concept in this model is the cumulative influence of the inhibitors and drivers, forming the so-called 'privacy calculus' (after Culnan & Armstrong, 1999) where each set can outweigh the other, determining the user's final decision on whether to transact online. If the cumulative effect of trust and control (Dinev & Hart, 2003) is higher than the cumulative effect of privacy concerns and perceived risk, the user will more likely make a decision to purchase online. Otherwise, a purchase outcome is less probable.

The methodology of global IT research (Loch & Straub, 2004) suggests that, following a specific model testing on one culture (e.g. U.S. culture), a submodel consisting of the original model's most salient factors is tested on two or three cultures to explore the differences. When choosing which factors to include in the submodel, one has to take into account how important these factors are for the second culture under consideration. Considering the specificity of Italian culture, as derived from the Hofstede and Fukuyama theories, the constructs we chose to test in this cross-cultural study were trust, privacy concerns, and perceived risk. Furthermore, as will be shown below, in Italian culture its rigorous measurement is crucial. For this reason, we included propensity to trust as an important antecedent to trust in this study.

Trust

In many recent MIS studies, trust was shown to be a crucial predictor of Internet use because the Internet environment is characterized by uncertainty and risk (Jarvenpaa *et al*., 2000; Lee & Turban, 2001; Tan & Thoen, 2000; McKnight *et al*., 2002; Gefen & Straub, 2003). Following Lee & Turban (2001) and Van der Heijden *et al*. (2003), we consider the following dimensions of Internet trust: trustworthiness in the Internet site (i.e. ability, integrity, benevolence), trustworthiness in the Internet medium (i.e. technical competence, reliability), and individual propensity to trust (i.e. the extent to which one is inclined to believe people in general, including trusting strangers). The first two categories are dimensions of institutional trust (Figure 1) whereas the third is personal trust which is an antecedent to institutional trust (Lee & Turban, 2001; McKnight *et al*., 2002).

The cognitive and affective dimensions of trust McAllister 1995 and one's propensity to trust in most cultures are influenced by the culture's collectivist and individualist orientations. Higher levels of trust are evident in social exchanges among group members in collectivist cultures (Hui *et al*., 1991; Parks & Vu, 1994). In these cultures, one is unlikely to be trusting and cooperative with individuals outside of the group. Group membership influences whether a person is trusted. On the other hand, the propensity to trust people in general, including strangers who are not from one's social group, has been shown to be greater among individuals in societies characterized by higher individualist orientations (Yamagishi & Yamagishi, 1994; Inglehart *et al*., 1998).

For Italy, however, the Hofstede index of individualism (IND) is not enough to explain the low level of trust present in this society. Indeed, a number of other countries have lower IND indices (i.e. are more collectivist than Italy), and yet have evolved to high-trust societies. For example, Japan, Germany and Austria (IND = 46, 67, and 55, respectively) are relatively more collectivist than Italy but in the Fukuyama theory of trust, all are rated as 'high-trust' societies. Fukuyama points to the specific historical, anthropological, and economical features of Italy's evolution to modernity which led to the development of what he calls 'pervasive' distrust (Bagnasco, 1988; Fukuyama, 1995) to the outsider in the Italian society. Banfield (1958) called the family-based isolation and the reliance on families as the sole source of trust and support 'amoral familism' and it is still more powerful than in any other European country (Bagnasco, 1988; Fukuyama, 1995). Numerous Italian historians and sociologists note the occurring government corruption, clientelism, and instability (Della Porta, 1992, 1994; Turone, 1992; Barca & Trento, 1994; D'Alberti & Finocchi, 1994; Mingione, 1994; Sapelli, 1994; Silj, 1994; Magatti, 1996; Bettini, 1998; Melis, 1999). All of them point out that this created a culture of general institutional distrust (see also Heidenheimer, 1996; Bull, 2001; Dickie, 2001). Furthermore, numerous sources and literature indicate, that all individuals in Italy have a lower propensity to trust than individuals in U.S. (Inglehart *et al*., 1998). Since the propensity to trust is an antecedent to institutional trust (Lee & Turban, 2001; McKnight *et al*., 2002; Van der Heijden *et al*., 2003), the lower propensity to trust will additionally affect institutional trust. Therefore:

H1: *Individuals in Italy will have lower institutional trust towards Internet businesses than individuals in the U.S. in both cognitive and emotional factors.*

The unique and extensive lack of trust in the Italian society calls for unique and extensive presence of trust-building practices and rituals that serve to facilitate communications and relationships among individuals and groups. Thus, several factors have evolved and shaped the trust-building process among Italians, namely, the higher context nature of the Italian culture, the importance of making a 'good personal impression' (*la bella figura*), and the need for face-to-face negotiations (Barzini, 1964). Partially as a result of the society's high UAI, these characteristics are evident in the political and artistic roots of Italy. Although Italians exhibit relatively higher UAI and collectivism as measured by Hofstede, they also have high insecurity acceptance (Gannon, 2004). Italians accept insecurity as part of life and events as they happen. This can also be seen in their reaction to the recently changing workplace with the old stability and certainty vanishing in favor of a higher propensity to change and risk (Bellotto, 1997). As a result, Italy exudes an aura of precariousness (Haycraft, 1985).

Thus, precariousness, coupled with low trust, reinforces the need for high context interpersonal communication which will serve to soften this aura. While individuals in the U.S., influenced by a fatherly cultural code of Anglo-Saxon relationships, tend to ignore the overture and get down to business quickly, Italians, whose social behavior is dominated by the motherly cultural code, emphasize communication, the need for a pleasant and colorful manner of personal introduction, interpersonal relations, and a positive relational climate (Bellotto & Trentini, 1989; Bellotto & Colautti, 1997). For example, recent psychological studies on the persuasion of advertisement (Mannetti, 2002; Russo, 2004a, b; Siri, 2004) show that negative and fearful messages have little success in Italy because of the motherly, protective, and group-oriented relationships as opposed to the individualist and pragmatic Anglo-Saxon and U.S. American relationships. Thus, in Italy a reassuring and protective message, typical of a relatively collectivist culture, is more effective than a violent and highly emotional one.

This pattern of behavior is typical in stores where Italians have a much higher tendency than Americans to interact with salespeople. In this sense, making a purchase the Italian way involves expressions of emotions, arguments, and persuasion. Even different voice tones may facilitate the final outcome of the sales (Gannon, 2004). These overtures reflect efforts to facilitate acceptance among individuals. They further facilitate building institutional trust among consumers and reducing the perceived risk that might be associated with completing business transactions. Therefore, trust, in the mind of the Italians, needs to be personalized as much as possible for a positive sales outcome and negotiation. The lack of personal communication in an e-commerce context will translate to a weaker relationship between trust in Internet businesses and a successful e-commerce transaction.

The importance of *fare bella figura* – the projection of a confident, capable, knowing person who makes a good impression (Brint, 1989) – cannot be overstated and explains why, even when negotiating the smallest deal, Italians prefer face-to-face communications (Gannon, 2004). The positive outcome of a negotiation and a transaction depend on the polish and elegance of a presentation because people and things tend to be judged primarily by their appearances (Barzini, 1964; Gannon, 2004). In the context of this cultural phenomenon, one can see the difficulty of an impersonal Internet medium for making purchases when competing with the colorful, dramatic, ritual-filled interpersonal communication even if high institutional trust is present. Italians try to avoid risk and uncertainty, preferring friends over strangers, familiar over new situations. Thus, lacking the personal, face-to-face communication when using the Internet, and having a higher UA. coupled with higher than U.S. collectivism, a higher institutional trust may not translate to higher e-commerce use. Therefore:

H2: *The relationship between institutional trust and e-commerce use will be weaker for individuals in Italy than in the U.S.*

Internet privacy concerns and perceived risk

Privacy as a psychological construct and sociological issue has been researched by a wide range of scholars in diverse fields (Laufer & Wolfe, 1977; Margulis, 1977). All scholars (e.g., Margulis, 2003) recognize its complexity and the existing dichotomy between the individual and others, and explore its multidimensional, elastic, context-specific, and dynamic nature (Westin, 1975; Laufer & Wolfe, 1977). Most of the extant MIS research involves employees' perceptions of privacy values and beliefs (e.g. Smith *et al*., 1996; Milberg *et al*., 2000). The explosive development of digital, Internet, and storage technologies has triggered MIS researchers' interest in privacy (Mason, 1986; Culnan, 1993; Clarke, 1998; Culnan & Armstrong, 1999). Privacy has been operationalized as privacy concerns (Smith *et al*., 1996; Culnan & Armstrong, 1999; Milberg *et al*., 2000) which measure the anticipation of a possible future loss of privacy.

The concept of privacy is related to the extent that individualism is sought after and reinforced in a culture (Etzioni, 1999). In the U.S., a highly individualistic society, legal precedent and public opinion highly value privacy as an expression and a safeguard of personal dignity (Laufer & Wolfe, 1977) and individual right (Westin, 1975; Etzioni, 1999).

The perception of space is associated with the notion of privacy (Laufer & Wolfe, 1977). What is private space and what is public space, as well as how much physical

distance between people is considered normal, are related to perceptions of privacy (Hall & Hall, 1990). The 'externalization' of Italians and their communication patterns in public, whether in public gatherings or waiting lines, allow for less personal physical space between individuals than for individuals in the U.S. The relatively higher collectivism and low-trust nature in Italy is expressed in very close, emotional family relationships (Fukuyama, 1995; Gannon, 2004). The family is considered the greatest resource and protection of all troubles. Family connections are extremely important in one's career success, company success, and job hiring (Brint, 1989). Family loyalty is automatically expected and geographical separations are generally not well accepted, even when they are due to job promotions, marriage, or studying abroad (McGoldrick, 1982). Therefore, the family structure diminishes personal space and privacy (Wilde-Menozzi, 2003). A broad public discussion has recently begun that addresses threats to citizen privacy in the age of digital technology but this is directed towards circles outside the immediate family and to large corporate businesses (Stella, 2004). Linguistically, the word 'privacy' is borrowed from English because of its non-existence in the Italian language.

A factor, not directly connected to Hofstede's individualism, but which contributes, through less privacy, to less individualism in Italian society is the Italian's relatively higher necessity of voice communications. 'Italians put great emotion into their language, speaking with passion, rhythm, and changing tonality' (Gannon, 2004, p. 291). Oral communication in Italy is of utmost importance and is punctuated by elaborate gestures. They analyze everything around them through conversation and talking and it is the favorite pastime for most Italians. Thus, privacy is easily compromised since the Italian love of conversation limits the chances of anything staying secret, including personal and business confidentiality. This phenomenon is known as externalization (Gannon, 2004).

In summary, U.S. individuals have a higher regard for privacy compared to individuals in Italy. Paradoxically, although Italy has a relatively more collectivist culture than the U.S. where individuals outside the group are less trusted, the cooperative element of the collectivist culture to reinforce mutual goals could be, in general, associated with a greater willingness to disclose personal information than in cultures that are more individualistic, such as the U.S. We conclude that although Italians are members of a low-trust society, they tend to surrender personal information more easily than individuals in the U.S. Once they trust the entity, they are comfortable with a lower state of privacy. Even though, in general, individuals in the U.S. tend to trust more easily, they are less comfortable with releasing personal information and would prefer to keep such information within 'their own space.'

H3: *Individuals in Italy will have lower privacy concerns than individuals in the U.S.*

H4: *The relationship between privacy concerns and e-commerce use will be weaker for the individuals in Italy than in U.S.*

Several research studies underscore perceived risk as an important factor inhibiting online transactions (Van der Heijden *et al*., 2003). Previous research has confirmed that perceived risk is an antecedent to privacy concerns (Dinev & Hart, 2004, 2006). Defined as a perceived potential risk that occurs when personal information is revealed, perceived risk is connected to the UAI of the culture. Higher uncertainty avoidance cultures would have higher sensitivity to possible risks, and thus, their perceived risk would be higher. Furthermore, the role of the perceived risk on privacy concerns and on trust would be more pronounced. Thus, we posit that the privacy concerns of a low-trust culture with high uncertainty avoidance index will be more strongly determined by the perceived risk than of an individualistic, high trust culture with a low uncertainty avoidance index:

H5: *Individuals in Italy will have higher perceived risk than individuals in the U.S.*

H6: *The relationship between perceived risk and privacy concerns will be stronger for individuals in Italy than in the U.S.*

Because the trust-building process for Italians requires, as argued above, face-to-face communication and making a good impression, a lower perceived risk will not necessarily yield higher institutional trust in the online business in Italy. Thus, we expect a weaker relationship between perceived risk and institutional trust. Similarly, lower perceived risk will not necessarily be as strongly connected to increased e-commerce use as in U.S. society. Lacking personal, face-to-face communication in an e-commerce transaction, when higher UAI is coupled with higher collectivism, even a lower perceived risk may not translate to higher e-commerce use in Italy. Therefore:

H7: *The relationship between perceived risk and institutional trust will be weaker for individuals in Italy than in the U.S.*

H8: *The relationship between perceived risk and e-commerce use will be weaker for individuals in Italy than in the U.S.*

Methodology and results

The hypotheses were empirically tested using data collected from a survey. The survey was administered to broad samples of individuals from Northern Italy and the Southeast U.S. who were asked to participate voluntarily. The demographic distribution of the 889 participants from Northern Italy and 422 participants from the southeast of U.S. (response rate 47%) are presented in

Table 2 Demographic information of respondents

Frequency	*Gender (female)*	*Age*	*Internet experience (years)*
Italy	33.6%	<20 years – 23.2% 21–30 years – 63.9% 31–40 years – 9.4 % Other – 3.5%	<2 years – 14.8% 2–5 years – 57.7% >5 years – 27.5%
United States	51.4%	<20 years – 13% 21–30 years – 58.1% 31–40 years – 17.3% Other – 11.6%	<2 years – 9.1% 2–5 years – 43.3% >5 years – 47.6%

Table 2. As seen from the demographics distribution, the sample is diverse, comprising a wide range of age, education, with approximately equal representation of genders at least in the U.S.

The Internet privacy and perceived risk instruments were taken from Dinev & Hart (2004, 2006), and the trust instrument was adapted from Gefen & Straub (2003), Jarvenpaa *et al*. (2000), and Lee & Turban (2001). As a behavioral item, Internet use, including e-commerce use, was adapted from Chau *et al*. (2002) and Pavlou & Fygenson (2005). The actual items were slightly modified from the original instruments to capture the context of this study.

The questionnaire was translated from English to Italian and then back to English following a generally accepted practice to ensure consistency in cross-lingual surveys (Karahanna *et al*., 2002). It was pretested with multiple respondents from Italy and U.S. who varied in age, gender, and education. No major problems were identified, but an instrument refinement and a few modifications in the Italian translation followed.

Measure validation for reliability was established through examining Cronbach's alpha coefficient for each construct, and discriminant and convergent validity was initially examined through exploratory principal component factor analysis with a Varimax rotation. The measurement of institutional trust encompassed the items for integrity, benevolence, technical competence and reliability, all loading into one factor. All items loaded on their hypothesized constructs, with low, below 0.20 cross-loadings. Confirmatory factor analysis with LISREL was then conducted to further validate the measures of the principal constructs. The high factor loadings (above 0.70), composite reliability, and the average variance extracted (AVE) for each construct all confirmed the reliability, convergent and discriminant validity of the instrument for both cultures (Table 3). Indeed, the square root of the AVE was much larger than all the other cross-correlations for both samples, and both AVE and the composite reliability were higher than the recommended lowest limit of 0.60. Table 3 also lists the mean values and standard deviations of each construct.

The moderating effect of culture on the constructs' mean values was analyzed through the paired-sample *t*-test on mean value differences of each construct (Table 3). As seen from Table 3, all constructs' mean differences between the two cultures exhibited statistical difference at level 0.01 and are in the hypothesized directions. Italians exhibited lower propensity to trust, as shown in numerous Italian studies, lower institutional trust, lower privacy concerns, and higher perceived risk, as stated in H1, H3, and H5, respectively.

In order to examine hypotheses H2, H4, H6, H7, and H8 of the study, a structural equation modeling (SEM) with LISREL 8.0 was employed (Figure 2) for each country. The model resulted in a converged, proper solution with a low χ^2 per degree of freedom and very good values of the fit indices for both countries (Table 4).

The path coefficients differences between the two SEM models (Figure 2) were statistically different, based on the *t*-test results, and were in the hypothesized direction. A more rigorous testing of the cultural effect is provided by the LISREL multigroup analysis through the χ^2 test. In

Table 3 Latent variable statistics

	Italy					*United States*				
	EU	*PC*	*IT*	*PT*	*PR*	*EU*	*PC*	*IT*	*PT*	*PR*
EU	**0.66 [0.63]**					**0.95 [0.93]**				
PC	**–0.20** (0.04)	**0.93 [0.86]**				**–0.42** (0.05)	**0.94 [0.76]**			
IT	**0.19** (0.04)	–0.01 (0.04)	**0.77 [0.73]**			**0.58** (0.05)	**–0.37** (0.05)	**0.76 [0.72]**		
PT	0.04 (0.04)	**–0.13** (0.04)	**0.14** (0.04)	**0.84 [0.81]**		**0.20** (0.06)	0.11 (0.05)	**0.17** (0.05)	**0.79 [0.75]**	
PR	**–0.09** (0.04)	**0.69** (0.02)	**–0.09** (0.04)	**–0.16** (0.04)	**0.82 [0.77]**	*–0.12* (0.06)	**0.39** (0.05)	**–0.32** (0.05)	**0.15** (0.06)	**0.76 [0.72]**
Cronbach's α	0.72	0.87	0.74	0.81	0.84	0.77	0.93	0.82	0.79	0.86
Mean values	1.59	3.53	2.82	2.87	3.41	**3.30**	**3.86**	**3.03**	**3.38**	**3.04**
SD	0.77	0.93	0.62	0.74	0.84	1.03	0.94	0.67	0.91	0.10

EU = e-commerce use, PC = privacy concerns, IT = institutional trust, PT = propensity to trust, PR = perceived risk.
Correlations with error terms (in paratheses) are the off-diagonal terms, and the composite reliabilities and the square root of AVE (in square brackets) are the diagonal terms. Significant coefficients and mean differences in means at $P<0.01$ level are shown in bold and at level $P<0.05$ in italics.

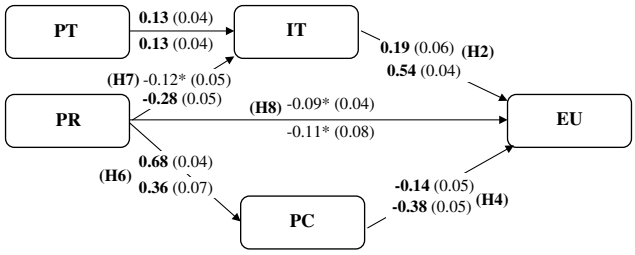

Figure 2 SEM completely standardized path coefficients, with error terms shown in parantheses.Top coefficients: Italy, bottom coefficients: United States. Bold denotes statistical significance at level 0.01, and * – at level 0.05.

Table 5 χ^2**-test for culture moderating effect**

Construct relationship	$(\chi^2)'$	$\Delta\chi^2$	*Significance*
EU-PC	344.85	13.11	0.01
EU-IT	479.47	147.73	0.01
EU-PR	332.79	1.05	Not significant
PR-PC	452.53	120.79	0.01
PR-IT	405.77	74.03	0.01
PT-IT	331.82	0.08	Not significant

$\Delta\chi^2 = (\chi^2)' - \chi^2$.

this test, a model is analyzed in which the path coefficient between any two constructs of the model is constrained to have the value of one in the corresponding model for the other culture. This constrained model's $(\chi^2)'$ is then compared to the original model's χ^2 where the correlation between the same two constructs was estimated freely.

Since the difference in degrees of freedom between the two models is 1, a difference in χ^2 greater than 3.84 suggests that the two constructs are statistically significant at level 0.05. This will prove the cultural moderating effect. The results from the χ^2 tests on the relationships are shown on Table 5. Thus, the relationships between institutional trust and e-commerce use (H2), privacy concerns and e-commerce use (H4), and perceived risk and institutional trust (H7) are all weaker for Italy, while the relationship between perceived risk and privacy concerns (H6) is stronger for Italy. The model showed no differences between U.S. and Italy for the relationship between propensity to trust and institutional trust, and between perceived risk and e-commerce use (H8). Thus, H8 was not supported by the empirical results.

The results of this study indicate that all of the research hypotheses, with exception of H8 were supported. The Italian culture, in general, shows a lower propensity to trust, lower institutional trust, higher perceived risk and, for the etic and emic considerations described in the theoretical section, lower privacy concerns than the individualistic U.S. culture.

Implications of the study and future work

The findings of this study are in accordance with the theoretical model and the expectations related to the presented etic and emic cultural arguments. This study makes several contributions. First, it advances our understanding of e-commerce behavior by validating the results from the Dinev & Hart's (2006) study. The factors presented in our study which influence e-commerce use, comprise a set of beliefs in a 'calculus'-like decision process in which contrary beliefs are weighed and where the strength of one may over-ride the influence of another. The relative strength of the inhibitors and the drivers provides insight into a complex process that leads to decisions to transact over the Internet. A high level of e-commerce use must be preceded by higher levels of trust than the levels of perceived risk and privacy concerns. Higher levels of negative beliefs would suggest user resistance to purchase online. The fact that our model includes contrary antecedents indicates that their relative influence needs to be taken into full consideration when attempting to understand planned behavior and supports a privacy calculus framework. While Dinev & Hart's (2006) model explored the behavioral intention to disclose personal information to conduct online purchases

Theoretical models based on the notion of a calculus can advance our understanding of the antecedents of behavioral intention by encouraging the examination of potentially contrary factors. While a number of prior studies have found that trust is an important antecedent to the intention to transact online (e.g., Jarvenpaa *et al*., 1999, 2000; Gefen, 2000; Gefen *et al*., 2003; Van Der Heijden *et al*., 2003; Pavlou and Gefen, 2004), the contribution of our study is that trust was included and found to be an important factor in a larger and more complex model incorporating also inhibiting beliefs like privacy concerns and perceived risk. The strength of the relationship between trust and e-commerce use supports the notion that trust is more necessary for countering the risk related to privacy uncertainty than perceived risk related to economic uncertainty that is often implied in other e-commerce investigations.

Table 4 Model assessment indices for both cultures. LISREL notation applied

Goodness of fit measures	χ^2 *(d.f.)*	χ^2*/d.f*	*NFI*	*CFI*	*IFI*	*NNFI*	*GFI*	*AGFI*	*RMR*	*RMSEA*
Italy	331.74 (97)	3.42	0.94	0.96	0.96	0.95	0.95	0.93	0.044	0.055
U.S.	210.27 (97)	2.17	0.95	0.97	0.97	0.96	0.93	0.91	0.062	0.055

While successful models of e-commerce use showing the importance of privacy concerns and trust beliefs have been developed, all of them were U.S. centered and used only the U.S. as the cultural base. The contribution of this study is that it is among the few attempts to validate an e-commerce model across two cultures in the IS literature. Validating models of Information Technology and e-commerce use across cultures is of utmost importance for a globalized economy and further development and expansion of information systems and their use. All the relationships were proven statistically significant for both U.S. and Italian cultures, thus showing the validity of the model beyond U.S. society.

Another major implication of the study is that, by applying two of the most influential cultural theoretical frameworks, those of Hofstede and Fukuyama, the study integrates the cultural effect of two Western but culturally distinguishable nations into a model of e-commerce use. It shows that, in the world of growing importance and presence of e-commerce, culture significantly moderates key antecedents and relationships. A major study by Zhu *et al*. (2003) involving 3100 businesses in eight European countries investigated the adoption of electronic business at the firm level. While this is one of the first cross-country IT studies, it limited itself to observing interesting cross-country differences without offering theoretical cultural explanations. Thus, with its theoretically rich cultural considerations, our study is a key contribution to the now emerging more comprehensive and deeper cross-cultural analysis of IT use in general and e-commerce and Internet use in particular (Pavlou & Chai, 2002).

This study confirms the previous findings on the role of trust, and it sheds light on its cultural dimensions. The importance of trust, especially in the low-trust Italian society and the highly individualist U.S. society cannot be understated. We show that both etic and emic aspects enhance the role of trust. Both collectivism and uncertainty avoidance indices can significantly contribute to cultural differences in both propensity to trust and institutional trust and explain the research hypotheses. In the cultural context of Italy, the e-commerce research model including trust is of utmost importance, and our findings are in line with Fukuyama's and Hofstede's concepts. The uncertainty avoidance index influences the perceived risk which, for Italian culture, is much higher than U.S. culture.

An important implication of this study is the reaffirmation of Fukuyama's argument about low-trust societies like Italy and its validation for e-commerce use. It is widely accepted that trust as a cultural resource acts as a lubricant that enhances the information flow, reduces transaction costs and makes economic exchanges more productive. Thus, trust fosters economic growth and facilitates innovative actions (Fukuyama, 1995; Zak & Knack, 2001; Volken, 2002). Fukuyama further argues that high-trust societies (e.g. U.S., Germany, Japan, and the U.K.) are associated with plentiful social capital and the ability to create large, modern, professionally managed business corporations. The economies of relatively low-trust societies (e.g. Taiwan, Hong Kong, France, and Italy) are traditionally populated by fragmented family-owned businesses (Fukuyama, 1995). Following Fukuyama, family values in certain societies can be too strong to permit formation of modern economic structures. Therefore, in the low-trust, familistic society of Italy, in order to enhance technology diffusion in general, and the Internet in e-commerce usage in particular, larger-scale businesses may need to be created or undertake the major portion of e-commerce business. This can happen, however, primarily through government 'initiatives, subsidizing, guidance, or even outright ownership' (Fukuyama, 1995, p. 30).

Our findings from H2 about the stronger need for face-to-face communication corroborate the results of recent Italian studies on development and use of on-line counseling by a large organization traditionally providing telephone counseling service for children (Russo & Colautti, 2004; Russo *et al*., 2004). Counselors expressed strong opposition to the on-line version of their telephone system, lamenting the reduction of personal contact and the difficulty in creating a trusting relationship with the help seeker. The on-line relationship was not perceived as natural, functional and able to substitute for the face-to-face communication (Russo, 2003).

We consider our study a contribution which will advance the theoretical and intellectual understanding of cross-cultural phenomena and their influences on economical and psychological differences of Internet and e-commerce use. Different activities are impacted by culture in various ways. For example, occupational similarities neutralize cultural differences, as in the case of doctors working together, or managers overseeing high-incentive, cross-country, joint projects where teams may tend to minimize cultural differences if attractive rewards for the goal achievement are available (Gannon, 2004). Sociologists have discussed the importance of Information Technology as an important catalyst of societal change having the effect of converging the social values, management practices, and social institutions (Kerr, 1946; Harbison & Myers, 1959; Farmer & Richman, 1965). In this respect, Escobar (1995) and Werther (1996) see the Internet and similar technologies leading to a single, global information-based society with a more uniform culture. In contrast, Wallace (1999) argues that the Internet has not brought in a 'global village.' Instead, individuals with common interests find one another and cluster on the Internet. In this way, the Internet has led to even more differentiation (Gannon, 2004). Similarly, Huntington (1993) argues that culture is becoming dominant with respect to economics and ideology and is becoming the major source of conflicts. Hofstede (1980, 2003), Schneider & Barsoux (1997), and Fukuyama (1995) contend that cultures are highly resistant to change and that has a major influence in management practices and institutions. Thus, at this time the

bidirectional influence between culture and IT is a source of two opposite social theories about societal changes. This confusion magnifies the need to understand the relationship of technology–culture and attempts to apply the findings to enhance the opportunities for globalization and cultural exchanges over the Internet and through e-commerce. Extending our study to implement longitudinal methodology, we could trace the effect of e-commerce on culture and how those relationships change with time. Knowing as much as possible about culture is critical in the globalized, interconnected world where people from different ethnic and cultural groups must work together effectively and form professional and personal relationships.

In addition to the etic framework, this research sheds light on the dimensions that require emic perspective. We progressively reflected on the emic perspective into the enforced general structure as suggested by Malhotra *et al*. (1996) and made our study more comprehensive than a mere comparison of the Hofstede and Fukuyama indicators. It has been recognized that cross-cultural studies in IS have innate problems, partly because they do not have the ability to operationalize 'culture' (Straub *et al*., 2002). Although dominating IS research, Hofstede's cultural theory is considered dichotomic and simplistic (Myers & Tan, 2002; Ford *et al*., 2003) and new, more multidimensional theories need to be adopted that avoid reliance on assumed espoused cultural values (Straub *et al*., 2002). Even though we used the common models for building our hypotheses, by presenting a more multidimensional and complex picture of cultural differences, we believe we went beyond these models of national character and moved closer to adopting a more dynamic view for studying the effects of the Internet and globalization on changing the perceptions of trust, privacy, and culture in general. Our reliance on Hofstede's cultural measures, which we used for hypotheses building was qualitative rather than quantitative. Recent changes in culture not captured by these measures bear less importance for our model.

There are several practical implications for managers considering e-commerce in Italy. First, the trust-building process should be taken in its full seriousness given that Italy is a low-trust society. Trust should be the key to facilitating the exchange of personal information in the Internet environment. Second, as Gannon (2004, p. 291) pointed out, 'the reliance on spectacle must be clearly grasped if one wants to understand the Italians. Spectacle helps people solve most of their problems and governs public and private life. It is one of the reasons why Italians have always excelled in activities in which impressions are important: architecture, decoration, landscape, opera, fashion, cinema.'

Thus, conveying a good impression on potential customers through proper design, functionality, use of style and taste in graphics and web design is of primary importance. Considerable management effort needs to be made in establishing a satisfactory online relationship before requesting detailed personal information. Expert advice, free gifts for returning customers, honest and comprehensive reviews, references and opinions through the chat room or bulletin board, customer service availability 24/7 can be some of the process-based mechanisms used to build a reputation for an excellent website and ensure a growing customer base. Receiving free advice and extra services may be equivalent to the crucial communication between store clerk and customer in face-to-face purchasing. Italians, being more group-oriented than U.S. citizens, might develop a sense of obligation to repay the shown generosity and goodwill, and thus become a returning customer due to their reciprocity norms. In contrast, in very individualistic societies such as in the U.S., concern about privacy can over-ride other factors that may influence online transactions. Since individualists are universalists, a special favor to a particular business is unlikely.

In addition to the common generalizability limitations due to demographic samples, several other limitations of this study should be mentioned that need to be addressed in future research. First, the constructs of trust, perceived risk, and privacy need to be incorporated into a more comprehensive model derived from the most influential social theories as applied to MIS, such as Theory of Planned Behavior or Technology Acceptance Model (Pavlou & Chai, 2002). The most salient constructs need to be selected so the parsimony of the model is not compromised while the predictive power is enhanced. Privacy and trust need to be considered in the nomological net of other important factors which contribute to the risk–benefit analysis of a potential e-commerce transaction. These include both inhibitors and facilitators, such as perceived control, self-efficacy, and general interest.

Second, the pronounced inhomogeneity of Italian culture needs to be taken into account and should inform of the generalizability limitations of the current study. Local subcultures such as the Venetian and the Piedmontese in the industrial North, and the Neapolitan and Calabrian in the South are characterized with substantial differences, including in trust and privacy attitudes. Finally, research should extend beyond e-commerce and include other aspects of Internet use, including use for social communications, hobby, and information seeking and acquisition. Preliminary findings, specifically for Italy, suggest that the Internet tends to be used more for social communication and hobby pursuits than for e-commerce. A greater understanding of cultural issues may inform prospective commercial website sponsors of how to better implement Internet technology to more successfully diffuse e-commerce in Italy.

Additionally, a deeper look into the demographic differences of Internet users of the two societies needs to be undertaken. One remarkable difference, for example, is the differences in Internet experience (Table 2). Given that about equal number of respondents were in the age groups of both societies, one can see that more

Internet users from U.S. have greater than 5 years of experience. This may lead us to the conclusion that the Italian Internet users started to use the Internet for e-commerce purposes relatively recently. This may also have a certain impact on the model in the sense that the e-commerce environment is relatively new for the Italians. Because the uncertainty avoidance index for the Italian society is higher, the relatively new e-commerce use may be characterized with higher perceived risk and lower institutional trust, and we may expect the first to become lower and the latter to increase in the future as e-commerce use becomes a more mature and tried activity. Again, a future longitudinal study is needed to see the effects of Internet experience on the model.

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Appendix A: Study's instrument items. All items employ 5-point Likert scale

Construct	*Item*	*Question*	*Response range*
E-commerce use (EU)		*How often do you use the Internet to do the following:*	Never – All the time
Adapted from Chau *et al*. (2002) and Pavlou & Fygenson (2005).	EU1	Buy something	
	EU2	Sell something	
	EU3	Conduct money transactions	
		How much do you agree with the following:	Strongly disagree – Strongly agree
Privacy concerns (PC)	PC1	I am concerned that the information I submit on the Internet could be misused.	
Adapted from Dinev & Hart (2004, 2006)	PC2	I am concerned about submitting information on the Internet, because of what others might do with it.	
	PC3	I am concerned about submitting information on the Internet, because it could be used in a way I did not foresee.	
	PC4	I am concerned that my private information can show up on the Internet.	
Propensity to trust (PT)	PT1	I am a trusting person	
Adapted from Lee & Turban (2001) and McKnight *et al*. (2002)	PT2	I trust people in general	
	PT3	I think most people can be trusted	
Institutional Trust (IT)	IT1	I trust online businesses that they will not mishandle my personal information	
Adapted from Gefen & Straub (2003), Jarvenpaa *et al*. (2000), and Lee & Turban (2001)	IT2	Internet websites are in general honest in conducting their business.	
	IT3	Internet website providers handle personal information submitted by users in a competent fashion.	
	IT4	Internet websites are safe and reliable places to exchange information with others.	

Appendix A Continued

Construct	*Item*	*Question*	*Response range*
Perceived risk (PR)		*How much risk do you believe is there if you use the Internet and give personal information (private or financial):*	Very low risk – Very high risk
Adapted from Dinev & Hart (2004, 2006)	PR1	Personal information submitted could be misused.	
	PR2	Personal information could be made available to others without my knowledge.	
	PR3	Personal information could be inappropriately used.	