

# New Technology Mirrors Old Habits: Online Buying Mirrors Cross-National Variance of Conventional Buying

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**ABSTRACT.** The purpose of this article is to examine the relationship between Internet shopping and national cultural differences, controlling for financial variables. Prior research suggested convergence of technology but continued divergence of usage and ownership of various product categories across countries, with culture being a stable predictor variable over time. This article examines if similar differences in product acquisition via the Internet exist as via conventional shopping channels (De Mooij 2004; De Mooij and Hofstede 2002). Results suggest that culture, relative to national wealth, is a significant predictor of Internet buying differences, supporting predictions from prior research (De Mooij and Hofstede 2002). In particular, cultural variables are significantly correlated with online buying for 11 of 14 product categories, similar to buying via conventional channels. Generally, changes in retail channels don't change existing variance. The implication is that online marketing managers must be culturally sensitive in their approaches.

**KEYWORDS.** Culture, Internet, shopping, products, retail, countries

## *INTRODUCTION*

The Internet has become part of everyday life and has facilitated communication (e-mail), research (search engines), and transactions (e-commerce). With relatively little cost, individuals and firms can now communicate globally, resulting in a “death of distance” (Cairncross 1997). To those who assume that new technology leads to convergence of consumer behavior across countries, this death of distance seems to reinforce the homogenization effects of globalization (Levitt 1983). The assumption that new technology would homogenize people's

behavior and values across nations dates from the 1960s, when television was introduced. It was the Canadian media philosopher Marshall McLuhan (1994) who coined the term “global village,” but who never said that this global village would lead to homogenization. Instead he argued that technological innovations are merely enhancements or extensions of ourselves. They allow us to do more of the same or doing the same things in a nicer or more efficient way (De Mooij and Hofstede 2002). This leads to the question whether the Internet will reinforce existing behavior or change behavior fundamentally. Now that the Internet is increasingly

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available across the world, and people are also increasingly shopping via the Internet, a specific question is whether consumers buy different products online than they do via conventional retail channels, and whether category differences across countries and their cultural relationships are different or similar to categories bought via the conventional channels.

Some research suggests that cultural differences are increasing over time, despite advances in Internet communications and emerging global wealth (De Mooij 2004; De Mooij and Hofstede 2002). However, there has been little large-scale empirical examination of trends in the influence of culture on Internet shopping. Such research is very important because worldwide e-commerce spending is projected to grow 23% annually, exceeding \$8.75 trillion in 2009 (IDC 2007), and marketers must understand how to best target their offerings.

The purpose of this exploratory study is to evaluate the effect of culture on the online purchase of specific types of products, extending the examination of cultural effects on traditional product purchases (De Mooij and Hofstede 2002) to Internet buying. Specifically, the main research question to be explored is "Are there cross-country differences in buying specific categories of products on the Internet, and can these be explained by culture?" The secondary questions explored are: "If so, do the types of cultural effects vary by product category?" and "Are cultural effects similar between online and traditional shopping?" Propositions are developed regarding cultural effects for the 14 different types of product categories that were included in the database that we used for this exploratory study (see Methodology), and for which prior research was available with respect to conventional shopping (e.g., De Mooij 2003, 2004, 2010; De Mooij and Hofstede 2002; Eurobarometer 2007, etc.). Potential accuracy is then explored using the available global Internet shopping data (e.g., A.C. Nielsen 2008).

This study contributes to the international consumer marketing literature by being the first (to the authors' knowledge) to explore online shopping cultural effects for multiple categories of products.

The article is organized as follows. First, prior literature is reviewed, which highlights opposing viewpoints about whether the Internet (or other global mass communications) diminishes cultural differences. Second, a number of research propositions will be presented and their accuracy explored using Internet shopping data. Third, the data, methodology, and the results are described. Fourth, the article concludes with a discussion and directions for future research.

## **LITERATURE REVIEW**

### ***The Case for Cultural Differences in Online Buying***

Prior research (De Mooij, 2004; De Mooij and Hofstede, 2002) asserts that converging technology and disappearing income differences across countries will not lead to homogenization of consumer behavior. Rather, with increased wealth consumer behavior will become more heterogeneous. With greater wealth, consumers are increasingly able to express their values (Giddens 2000), and these values vary by culture. New technology doesn't fundamentally change people; instead it reinforces existing behavior (De Mooij 2004). Differences in behavior across countries are quite stable. Whereas in the past some of the differences in ownership could be explained by variance of GNI/capita, with convergence of national wealth these differences can best be explained by cultural variables (De Mooij 2004). For example, variance of ownership of PCs and usage of the Internet was initially best predicted by national wealth, but culture ultimately replaced wealth as a predictor variable (De Mooij 2004). Also, countries may converge with respect to ownership of some products, but differences in how people use these products remain. An example is television. Although countries have converged with respect to ownership of TV sets, the differences between countries with respect to viewing time have remained stable (De Mooij 2004). This is also the case for Internet usage. Across countries people have different affinities and attitudes to the Internet and use it for different purposes.

Multiple factors can affect online shopping and site loyalty (e.g., Web site design, fulfillment/reliability, privacy/security, and customer service (Wolfenbarger and Gilly 2003), contact interactivity, convenience, cultivation, and choice (Srinivasan, Anderson, and Ponnavaolu 2002). Many of these are related to culture. Thus, standardization of Web strategies is ill-advised because people still need to feel engaged (culturally or contextually) with vendors (Lynch and Beck 2001) due to different cultural characteristics and consumer behaviors between nations (Kanso and Nelson 2002).

The importance of cultural customization is reinforced by positive outcomes generated from "tailoring" marketing efforts. Market orientation and cultural customization positively affect firm performance (e.g., Hult and Ketchen 2001; Knight, Madsen, and Servais 2004; Zhou, Yim, and Tse 2005), increase customer loyalty (De Wulf, Odekerken-Schroder, and Iacobucci 2001), and reduce the impact of cultural distance (Johnson, Lenartowicz, and Apud 2006). Some argue that national borders are "returning" (Castells 2001), since firms must still deliver goods locally and match Web content with user locations.

### ***The Case for Cultural Similarities in Online Buying***

Others keep viewing the world as having greater cross-cultural similarity. It has been suggested that consumer culture, in particular, knows no national boundaries and has become clearly global (e.g., Alden, Steenkamp, and Batra 1999). Global consumer culture positioning (GCCP; Alden et al. 1999) associates brands with widely understood visual and verbal symbols that signal membership in global consumer segments. Mass media and television have played central roles in the creation of global consumption symbols (Alden et al.). It might be expected that the Internet, with its extensive global reach, would aggregate global segments even more dramatically. However, not all products are as subject to global consumer culture. Proponents of GCCP (Alden et al.) suggest that GCCP is best applied for high-tech durable products, with household and personal

care products near the middle of the spectrum, and with foods varying considerably across cultures. Services, more difficult to homogenize than goods, are also less subject to GCCP than tangible products.

However, although global identity (sense of belongingness to a world culture) is assumed to be on the rise, people continue to hold their local identity and culture as well (Arnett 2002).

### ***Hofstede's Cultural Dimensions***

Hofstede (2001) and Hofstede and Hofstede (2005) maintain that cultural values are inherently stable, although some researchers (e.g., Clark 2003; Holden 2004; Hong et al. 2000) might disagree. However, Hofstede's cultural dimensions have been demonstrated to have strong explanatory power of country-level cultural differences. Recent reviews of global literature indicate that Hofstede's dimensions are robust (Leung et al. 2005, Magnusson et al. 2008), suggesting their validity for evaluating national cultural differences with respect to consumer behavior. Therefore, Hofstede's cultural variables will be used in this study for testing national cultural differences in online shopping. Hofstede (2001) identified five main factors that explain cultural differences:

1. High vs. Low Uncertainty Avoidance (stability vs. innovation)
2. High vs. Low Power Distance (unequal vs. equal distribution of power)
3. Individualism/Collectivism ("I" orientation vs. "We" orientation)
4. Masculinity/Femininity (gender role differentiation vs. overlapping roles)
5. Long-Term vs. Short-Term Orientation (future-oriented perspective vs. short-term results)

The five dimensions of the Hofstede model were originally found when measuring work-related values, so applying them to consumer behavior asks for additional conceptual analysis. Too often cross-country research begins with a research instrument without consideration of the underlying conceptual framework (Douglas and Craig 2006). There are a variety of manifestations of each dimension to consider before

defining research propositions. Such manifestations are based on findings from cross-cultural consumer behavior research and meta-analysis of consumer behavior data.

### **CONCEPTUALIZATION/RESEARCH PROPOSITIONS**

This research will first evaluate the convergence or divergence of overall Internet buying rates, defined as the percent of Internet users who purchased online in the past 1 month. Then, cultural effects are proposed (controlling for financial factors) for the different types of products or services bought online.

#### **Convergence, Culture, and Internet Buying Rate**

Over time, countries mostly converge with respect to new technology, although convergence of some products (e.g., mobile phones) is faster than others (e.g., PCs). For example, the coefficient of variation (CV = the ratio of the standard deviation to the mean) in 1997 for the number of PCs per 1,000 people worldwide (World Bank 2008) was .88. In 2005 it was .83. However, convergence of mobile phones went much faster. In 1996 the CV for mobile phones per 1,000 people was 1.05. In 2001 the CV for mobile subscribers was .52, and in 2007 it was .32. Similarly, we find that Internet buying rates have converged between 2001 and 2007, with CVs decreasing from .69 to .28. (see table 1, using Internet shopping data from A.C. Nielsen and TNS, as explained in Methodology). This convergence with respect to overall Internet buying rates might lead managers to assume that there has been cultural convergence in Internet buying across all product categories, but the propositions and data presented in this study suggest otherwise.

For exploring the relationship between Internet shopping and culture, we describe relevant manifestations of cultural dimensions based on previous research and consequently formulate research propositions. Across all propositions, the overall expectation is that

TABLE 1. Coefficient of Variation for Internet Shopping

Year	Internet Shopping Rate (%)	SE	CV
2001	12.4	8.5	.69
2005	48.5	13.8	.28
2007	49.7	14.1	.28

cultural differences across product categories sold online will mirror existing cultural relationships, since new technology tends to reinforce existing habits. Product-related propositions will be formulated for the following categories and will be explored using existing data: books, music, video games/DVDs, apparel/accessories, cosmetics/nutrition, electronics, toys/dolls, computers, computer software, airline tickets, hotel/travel reservations, event tickets, sporting goods, and groceries.

#### **Uncertainty Avoidance (UAI+/-)**

Uncertainty avoidance is the extent to which people feel threatened by and try to avoid uncertainty and ambiguity. Members of low uncertainty avoidance cultures adopt innovations faster than members of high uncertainty avoidance who prefer stability. Data on Internet access and Internet usage across countries have systematically been related to uncertainty avoidance, i.e., low uncertainty avoidance explains variance of Internet access (De Mooij 2003, 2004; De Mooij and Hofstede 2002). Uncertainty avoidance also explains differences in the adoption of innovations, with low uncertainty avoidance cultures being faster adopters of innovations (Tellis, Stremersch, and Yin 2003; Yenyurt and Townsend 2003). Over the years, computer ownership has been correlated with high GNI/capita and low uncertainty avoidance. Worldwide, GNI/cap explains variance, but across wealthy nations low uncertainty avoidance explains it best (wealth data from World Bank 2008). From the start, access to the Internet has also been related to low uncertainty avoidance, and there has been little change in recent years (e.g., for the relatively wealthy

European countries; Eurobarometer 2007). This leads to the following proposition with respect to online buying of computers.

P1: Uncertainty avoidance will be negatively associated with Internet buying rates of computers and computer software.

In 2007, strong uncertainty avoidance explained 63% of variance of Europeans of 24 different countries who said they had never read a book in the past 12 months. Weak uncertainty avoidance explained 63% of variance of those saying they had read five books in the last 12 months (Eurobarometer 2007). In view of this evidence, we would expect buying books online to be associated with low uncertainty avoidance.

P2: Uncertainty avoidance will be negatively associated with Internet buying rates of books.

Members of high uncertainty avoidance cultures like stability, so they are expected to travel less. When they decide to travel, they may want more detailed information from experts at travel agencies than members of low uncertainty avoidance cultures. This may result in a relationship between low uncertainty avoidance and online buying of airline tickets and hotel/travel reservations.

P3: Uncertainty avoidance will be negatively associated with Internet buying rates of airline tickets and hotel/travel reservations.

Members of low uncertainty avoidance cultures play more active sports than members of high uncertainty avoidance cultures. There are more members of sports organizations, they spend more on sports services, and they play more sports as leisure activity (De Mooij, 2004, 117). This suggests the following proposition.

P4: Uncertainty avoidance will be negatively associated with Internet buying rates of sporting goods.

### **Power Distance (PDI+/-)**

Power Distance reflects the extent to which less-powerful members of a society accept and expect that power is distributed unequally. In high power distance cultures, everyone has his or her rightful place in a social hierarchy. In low power distance cultures, equality and independence are highly valued (Hofstede 2001). In low power distance cultures, decision making is more information based as people consciously gather information in the decision-making process. Similarly, the effect of online research on the brand chosen correlates with low power distance and low uncertainty avoidance (Mediascope Europe 2008). In high power distance as well as collectivistic cultures, interpersonal flows of communication are more intensive (De Mooij 2004), and people rely on personal sources of information not always accessible online (Dawar, Parker, and Price 1996). Chinese consumers (high on power distance) rely on word-of-mouth communication because of the high contact rate among people (Cho et al. 1999).

Furthermore, low power distance is associated with more equal buyer/seller relations, including interaction and trust (Ndubisi 2004; Offerman, and Hellmann 1997), which are typical requirements for Internet purchase. There is a potential mismatch between Web sites of Western multinationals that reflect low power distance and buyers from cultures of high power distance. Western Web sites emphasize consumer-marketer interactivity, and Eastern high power distance cultures favor consumer-consumer interactivity (Cho and Cheon 2005), potentially resulting in more online purchases by low power distance countries. The data used for our study confirm this relationship. In the 3 years (2001, 2005, 2007) Internet buying rates were correlated with low power distance.

In high power distance cultures, as in collectivistic cultures, people are well groomed, in particular when going out in the streets. Position in the social hierarchy is defined by one's clothes, shoes, posture, and makeup. Outward appearance is important to upholding face. In low power distance cultures, people take less

care of their outer appearance and wear in public what they wear in private (De Mooij 2004). For example, the percentages of women who use lipstick across countries (De Mooij 2010) correlates positively with power distance.

P5: Online buying of cosmetics will be related to high power distance and/or collectivism.

If there is a relationship of online buying of apparel with culture, it may be correlated with low power distance where status needs are low, as there seems to be little status value linked to online buying as compared to traditional stores that sell fashion.

P6: Online buying of apparel will be related to low power distance.

Across cultures, the types of toys used by children vary. To our knowledge, no previous research has been conducted that finds cultural relationships with toys in general. Because in low power distance cultures parents play more with children as their equals and in high power distance children play more with each other, there might be a relationship with power distance, but this may vary by type of toy. We expect no cultural relationship with the whole category of toys online.

P7: There will be no relationship between online buying of toys and dolls and culture.

### ***Individualism/Collectivism (IDV/COL)***

In individualistic cultures, one's identity is in the person. People are "I"-conscious, and self-actualization is important. For individualists, pleasure, stimulation, variety, and adventure are key values. Individualistic cultures are also low-context communication cultures with explicit verbal communication. As in low power distance cultures, in individualistic cultures decision making is information based. In collectivistic cultures, people are "we"-conscious. Their identity is based on the social system to which they belong, and upholding face is important. Collectivistic cultures are high-context com-

munication cultures, with an indirect style of communication. This is particularly important for online buying because the Internet doesn't offer interpersonal face-to-face communication as in traditional shops. Therefore, trust in the company is critical to Internet sales. In collectivistic cultures, traditional retail channels are expected to be preferred to online shopping since trust in the company and personal contacts are important conditions for sales. The data used for our study confirm this relationship. In the 3 years (2001, 2005, 2007), Internet buying rates were correlated with individualism.

Expenditures on various leisure products and services are related to individualism and low power distance (De Mooij 2004, 257). Relevant individualistic values are pleasure, stimulation, variety, and adventure, fitting "pleasure" products and services like travel, theme parks, and cultural events (Milner, Fodness, and Speece 1993). In 1990, the World Values Survey (Inglehart, Basañez, and Moreno 1998) asked respondents how important leisure time was for them. Individualism explained 33% of variance of the answers. At the end of the twentieth century, ownership or household penetration of various electronics products used for leisure purposes, such as personal stereos, VCRs, and DVD players, was correlated with individualism and low uncertainty avoidance. At that time, these products were relatively new, which explains the relationship with low uncertainty avoidance, which we do not expect to find in 2007. Altogether, this evidence suggests that online sales of video games/DVDs and event tickets will be positively correlated with individualism and negatively with power distance.

P8: Individualism will be related to online sales of video games/DVDs, electronics, and event tickets.

In high power distance and low individualistic cultures with more interpersonal communication and contact rates, people will more likely socialize and talk to each other rather than listen to music, particularly in isolation via a personal digital music device. Individualism implies solitary behavior, which may promote listening to music captured online via digital

music devices. Music sales per person in 2001 were correlated with GNI/cap, low power distance, individualism, and low uncertainty avoidance (De Mooij 2004, 245). The relationship with low uncertainty avoidance may have disappeared in 2007 when downloading music became mainstream. This suggests that buying music online may be correlated with individualism and low power distance.

P9: Individualism will be related to online sales of music.

Previous research (De Mooij and Hofstede 2002) found that the percentages of household income spent on food were negatively correlated with individualism and that purchases of processed food were negatively correlated with uncertainty avoidance, reflecting a desire for purity. In collectivistic cultures variety and freshness of food is considered to be important, so there is more daily food shopping than in individualistic cultures where more processed food is bought that can be kept for a longer time. In collectivistic cultures and in particular in Asian countries, traditionally more food—not only packaged food, but also fresh food—has been delivered to the home. The Internet may be mainly a new technique to continue existing habits. As the data do not specify whether “grocery” means fresh food or processed food, a negative association of food purchases with either individualism or with uncertainty avoidance is expected to hold.

P10: The purchase of grocery/food products will be negatively associated with individualism and/or uncertainty avoidance.

### **Masculinity (MAS/FEM)**

In masculine cultures the dominant values are achievement, success, and performance, with role differentiation between males and females. The main values of feminine cultures are people orientation, caring for others, and quality of life with overlapping gender roles (De Mooij and Hofstede 2002; Hofstede 2001). In masculine cultures women do more of the conventional daily shopping chores than men. Data from Eurostat (2002) show that low masculinity ex-

plains 52% of variance of the proportion of men who spend time on shopping activities. Other research found that consumers from societies that score low on masculinity appear to be less involved in online shopping than those from more masculine societies (Stafford, Turan, and Raisinghani 2004). Product categories that reinforce role differentiation may be related to masculinity. Research suggests that masculinity has a positive association with the diffusion of technological innovations (Dwyer, Mesak, and Hsu 2005; Singh 2006). Furthermore, cultural masculinity is associated with greater responsiveness to information cues regarding product performance (Tai and Chan 2001), suggesting greater response to online marketing information. This evidence suggests that, although masculinity might be related to online buying rates in general, the specific products in this study do not appear to involve significant gender role differentiation, and thus masculinity is not expected to have product-specific effects.

### **Long-/Short-Term Orientation**

Long- versus Short-Term Orientation is the extent to which a society exhibits a pragmatic future-oriented perspective rather than a conventional historic or short-term point of view. Values included in long-term orientation are perseverance, ordering relationships by status, thrift, and having a sense of shame. The opposite is short-term orientation, which includes personal steadiness and stability; respect for tradition; and reciprocation of greetings, favors, and gifts. Focus is on pursuit of happiness rather than on pursuit of peace of mind. Long-term orientation implies investment in the future. Long-term orientation might suggest less receptivity to e-commerce and less desire for convenience, as well as less buying of products that fulfill pleasure needs, which suggests the following proposition:

P11: Long-term orientation will be negatively related to online sales of music and video games/DVDs.

## METHODOLOGY

### *Sample and Data*

The dependent variable for measuring overall online shopping is called *Internet shopping rate*, which measures the percentage of Internet users who have bought goods online in the past month. Data for the 2001 Internet shopping rate were derived from the “TNS interactive global eCommerce Report 2001” (Taylor Nelson Sofres 2001). This report comprised 36 countries, 33 of which are represented in Hofstede’s indexes (Hofstede 2001). A total of 42,742 people were interviewed across these 36 countries, with results weighted to be representative of the survey population. Prior research (Lim et al. 2004) revealed a strong correlation (0.89,  $n = 19$ ) between these data and similar but independently generated 2001 data from A.C. Nielsen (Nielsen/Netratings 2001), suggesting strong similarity/reliability of the data.

Data for 2005 Internet shopping rates were obtained from the A.C. Nielsen report, “Global Consumer Attitudes Toward Online Shopping.” The report included Internet shopping rates for 38 countries, 37 of which were also measured by Hofstede (Hofstede 2001). The 2005 survey was conducted globally in October 2005, with samples of 500 for all markets except China, France, Germany, the UK, and the U.S., where the sample was 1000 (total number of respondents = 25,000). Results were weighted to the Internet population in each country. Data for 2007 came from the A.C. Nielsen report “Trends in Online Shopping” and utilized the same questions as the 2005 Nielsen report. The 2007 survey, conducted from October to November, polled 26,312 Internet users in 48 markets from Europe, Asia Pacific, North America, and the Middle East. Targeted samples were 500 per country except for the U.S., China, France, the UK, and Germany, where the sample was 1000. In order to promote better comparison among report data from 2001, 2005, and 2007, only countries appearing in all reports (28) were compared for calculating total Internet shopping rate convergence. For the product-specific purchase analysis, the 2007 data were used, also for 28 countries.

### *Independent Variables*

The cultural variables of power distance, individualism, masculinity, uncertainty avoidance (for 28 countries) and long-/short-term orientation (for 24 countries) were obtained from Hofstede (2001). Financial control variables were GNI/capita at purchasing power parity (World Bank, World Development Indicators). We decided against including technological variables such as ownership of computers or Internet access. By definition, people who buy online are online (online shopping rates in the datasets are based on percent of Internet users in a country, not percent of the entire population), whether it is via a computer or another device. Other researchers may be interested in the how of access to the Internet, but we think this is not relevant for the purpose of our study. Similar to prior research (Lim et al. 2004), other variables such as GDP growth, unemployment, crime, and education rates were tested but were not significant and were removed from the analysis.

The dependent variable for online purchase of specific products is called *product buying rate*, which measures the percentage of Internet users who have bought a specific type of product online in the past 3 months (using the most recent 2007 A.C. Nielsen survey data). These data were used to evaluate cultural effects on the online purchase of 13 categories of products (using classifications from the 2007 A.C. Nielsen report). The same cultural (Hofstede 2001) and financial (GNI/capita) variables were used for the examination of specific product purchases.

Correlation analysis and stepwise linear regression (e.g., De Mooij and Hofstede 2002) were used to evaluate the potential influence of culture on Internet buying, using Hofstede’s cultural dimensions and GNI/capita. Internet shopping rate was the dependent variable, with the cultural indexes and GNI/capita the independent variables. Internet shopping rate was tested for each of the product categories individually.

## RESULTS

Although countries have converged with respect to overall Internet buying rates, there



TABLE 2. Correlation and Stepwise Regression for 28 Countries Worldwide, Internet Shopping (LTO Data for 24 Countries)

	Dimensions GNI/cap 207	Pearson <i>r</i>	Stepwise Regression <i>R</i> <sup>2</sup>	
2001 bought on Internet	GNI	.73***	PDI-	.58
past month	PDI	-.76***	GNI	.66
CV.68	IDV	.63***		
	UAI	-.38 <i>ns</i>		
2005 bought on Internet	GNI	.58***	PDI-	.39
past month	PDI	-.63***	MAS	.49
CV.28	IDV	.55***		
2007 bought on Internet	GNI	.31 <i>ns</i>	PDI-	.20
past month	PDI	-.44**		
CV.28	IDV	.43*		

Notes. *r* = Pearson product-moment correlation coefficient. Correlation analysis is one-tailed. Significance levels are indicated by \**p* < .05; \*\**p* < .01; \*\*\**p* < .005. Multiple linear regression analysis is done stepwise. *R*<sup>2</sup> = percentage of variance explained.

still is some variance that can be explained by culture. Table 2 shows the results of correlation and regression analysis of cultural relationships for overall Internet buying rates. The role of GNI/cap as an explaining variable disappeared in 2007, and culture remained an explaining variable. In the 3 years (2001, 2005, 2007), Internet buying rates were correlated with low power distance and individualism, and masculinity significantly explained 10% of variance in 2005. However, convergence of countries with respect to online buying has not resulted in convergence with respect to what people buy online.

### Product-Specific Results (2007 Data)

It was predicted that the online purchase of computers and computer software would be negatively associated with uncertainty avoidance. However, the results (see table 3) indicate that purchase of computers and computer software was positively related to uncertainty avoidance and negatively to long-term orientation, so P1 is not supported. This needs more explanation in view of the strong negative correlation between computer ownership and uncertainty avoidance. With respect to buying computers, the database includes a relatively large group of countries that can be considered the late majority (Rogers 1983) of computer buyers. This adopter category percentage correlates with high uncertainty avoidance (De Mooij 2004, 268). The negative

relationship with long-term orientation indicates the convenience aspect of the Internet.

It was hypothesized that the online purchase of books would be negatively associated with uncertainty avoidance. However, for this category no relationships with culture were found. So P2 was not supported. An explanation may be that most people buy books in their own language, and Internet bookstores may not be available in all countries.

P3 was supported for Internet buying of airline tickets and hotel/travel reservations. For both categories, low uncertainty avoidance explains 15% of variance.

Internet buying of sporting goods was hypothesized to be correlated with low uncertainty avoidance, analogous to the relationship with active sports. This was not found. Instead, a positive relationship was found with masculinity, which explains 18% of variance. Thus, P4 was not supported. An explanation can be that in feminine cultures people play sports for enjoyment, whereas in the masculine cultures people play sports to win and be successful and invest more in the sporting goods they use.

It was expected that the online purchase of cosmetics would be positively associated with high power distance and or collectivism. The results show that collectivism explains 17% of variance, so P5 is supported. The positive relationship with long-term orientation has a similar explanatory power, as upholding face also is an important value in long-term

TABLE 3. Correlation and Stepwise Regression for 28 Countries Worldwide, by Product (LTO Data for 24 Countries)

	Dimensions GNI/cap 2007	Pearson <i>r</i>	Stepwise regression <i>R</i> <sup>2</sup>
Books	No significant correlations		
Music	GNI	.52***	PDI- .53
	PDI	-.73***	IDV .62
	IDV	.72***	
	LTO	-.41*	
Video Games/DVDs	GNI	.40*	IDV .37
	PDI	-.56***	UAI- .47
	IDV	.61***	
	UAI	-.32 $ns$	
	LTO	-.44*	
Apparel/Accessories	No significant correlations		
Cosmetics/Nutrition	IDV	-.42*	IDV- .17
	LTO	.74***	
Electronics	No significant correlations		
Toys/Dolls	MAS	.35*	
Computers	UAI	.33*	
	LTO	-.44*	
Computer software	LTO	-.59***	
Airline Tickets	UAI	-.39	UAI- .15
Hotel/Travel Reservations	UAI	-.39	UAI- .15
Event Tickets	GNI	.51***	GNI .26
	PDI	-.48**	
	IDV	.38*	
Sporting Goods	MAS	.42*	MAS .18
Grocery	IDV	-.33*	MAS .15
	MAS	.39*	
	LTO	.64***	

Notes. *r* = Pearson product-moment correlation coefficient. Correlation analysis is one-tailed. Significance levels are indicated by \**p* < .05; \*\**p* < .01; \*\*\**p* < .005. Multiple linear regression analysis is done stepwise. *R*<sup>2</sup> = percentage of variance explained. LTO not included.

orientation cultures. Because of lacking country scores for LTO, regression analysis can only be done for 24 countries. This results in LTO explaining 55% of variance for 24 countries.

Online buying of apparel was hypothesized to be related to low power distance. However, no relationships were found, so P6 was not supported.

P7 suggested that we wouldn't find cultural relationships for online buying of toys/dolls. Purchase of toys/dolls, however, was positively associated with masculinity, so P7 was not supported. We suggested no explaining variable for the whole category of toys, not separately for toys for boys or toys for girls. Masculinity is a sound explanatory variable for dolls, as dolls are role affirmative for girls and thus reflect role differentiation of masculine cultures.

It was hypothesized that online purchase of video games/DVDs, electronics, and event tickets would be related to individualism. Indeed, individualism explains 37% of online buying of video games. Although GNI/cap explains most of the variance of event ticket buying, there also are significant correlations with individualism and low power distance. No significant correlations were found for electronics. So P8 is partly supported.

P9, the hypothesized relationship between online music buying and individualism, was supported. Low power distance explains 53% of variance and individualism an additional 9%.

It was predicted that the purchase of grocery/food items would be negatively associated with individualism and/or uncertainty avoidance. The results reveal that the purchase of grocery/food

items was negatively related to individualism, supporting P10, but it was not significantly related to uncertainty avoidance. Cultural masculinity was a stronger explaining variable, which we cannot explain. Also long-term orientation explains variance.

Finally, online sales of video games and music were hypothesized to be negatively related with long-term orientation. This relationship was found, so P11 was supported.

Overall, the initial results generally support the predictions regarding the influence of cultural variables on product-specific purchases.

## DISCUSSION

Prior research (De Mooij 2004; De Mooij and Hofstede 2002; Hofstede 2001) suggested that culture ultimately replaces wealth as a predictor in the purchase of new technologies. The results of this exploratory Internet shopping study are consistent with that idea, in that GNI per capita is an explaining variable for Internet shopping rates in early years (2001), but not in later years (2005, 2007), while culture remains significant over time. The product-specific analysis revealed that products are quite unique as to their relation to culture. For most product categories, online buying mirrors that of conventional product acquisition noted in prior research (e.g., De Mooij and Hofstede 2002). Thus, online marketers, like traditional marketers, must be sensitive to cultural differences. It should be mentioned that the lack of significant cultural explanatory variables for “high-tech durables” like computers and electronics lends some support to a more global consumer positioning (Alden et al. 1999) for these types of products.

### Implications

These product-specific results also suggest that culture is an important determinant of online product purchase differences by country, similar to traditional product purchase differences. The Internet hasn't fundamentally changed consumer behavior. When predicting online sales of specific product categories across

countries, international marketers should first analyze traditional sales across these countries.

The results suggest that online marketers must be sensitive to different cultural variables depending on the type of product being marketed, similar to the way marketers must be responsive in traditional shopping environments. For example, marketers should be especially sensitive to cultural differences in individualism for music and video games, uncertainty avoidance for travel, power distance for music, and masculinity for sporting goods. Such responsiveness to cultural differences should result in better consumer relations and increased international commerce.

The Internet is becoming mainstream and can be viewed as just another retail channel. To be successful it should offer the type of products that people of a culture prefer. Preferences vary by culture, and these can be uncovered by doing cultural research. As conventional stores are designed according to the cultural context in which they operate, Web sites should also adapt to the context of the culture of potential buyers. For example, people appear to perform information-seeking tasks faster when using Web content created by designers from their own culture (Faiola and Matei 2005). Furthermore, cultural adaptation not only enhances ease of use of the Web site but also leads to more favorable attitudes toward the Web site, which in turn affects the intention to buy (Singh et al. 2006).

### Limitations/Future Research

A potential limitation is the different data sets used in this study. A different research firm's data set (Taylor Nelson Sofres) was used for 2001 data compared to the 2005 and 2007 (A.C. Nielsen). However, the 2001 data source appears to be reliable and highly correlated with earlier Nielsen data (e.g., 2001 Nielsen data had a.89 correlation ( $n = 19$ ) with data from Taylor Nelson Sofres (Lim et al. 2004). Another limitation was that consolidated product categories may distort findings. In particular for three product categories—apparel/accessories, toys/dolls, and grocery—the consolidation potentially caused diffuse results. If the categories had been further specified as dolls only, fashion or ordinary apparel/accessories, and

fresh food or processed food, more meaningful relationships would probably have been found. Finally, future research specifically tailored to these research propositions should be conducted, so that findings can be corroborated from a multimethod approach.

## CONCLUSION

This study examined the effect of national culture on Internet shopping rates for multiple years (2001, 2005, 2007), after controlling for financial factors. As predicted, cultural variables tended to replace wealth in later years as a predictor of Internet shopping rates. Furthermore, the results indicate that specific types of products are associated with particular cultural dimensions, similar to traditional shopping. The implication is that the Internet doesn't fundamentally change differences in shopping behavior and that differences across countries follow the differences found for shopping via conventional channels. Culture is important to successful online selling, and cultural differences must be recognized through culturally appropriate marketing efforts.

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