

# Global Consumer Innovativeness: Cross-Country Differences and Demographic Commonalities

Gerard J. Tellis, Eden Yin, and Simon Bell

## ABSTRACT

*Despite extensive research on consumer innovativeness, the literature does not contain a parsimonious construct that has been validated for use across countries, demographics, and categories. This study attempts to fill this gap by studying consumer innovativeness across 15 major world economies. Significantly, the authors find that four negatively valenced items constitute a construct of innovativeness that seems reasonably applicable across most countries. Although this construct of innovativeness varies systematically from country to country, common demographic antecedents emerge across countries. Within these commonalities, a measure of innovativeness shows some distinct category  $\times$  demographics and category  $\times$  country differences.*

**Keywords:** consumer innovativeness, global strategy, cross-cultural research, innovation, new products

**W**e define “consumer innovativeness” as a consumer’s propensity to adopt new products. Measuring consumer innovativeness is of growing and vital importance today for several reasons. First, markets are becoming increasingly global. In this context, firms need to understand consumer similarities and differences across markets. Second, firms are introducing new products with increasing frequency throughout the world. As such, they need to know consumers’ propensity to adopt new products and how this propensity varies across world markets (Chandrasekaran and Tellis 2008). Such knowledge may help firms husband scarce

resources by targeting expensive new products to countries whose consumers are the most innovative. Third, innovation has been a primary means for advancing consumer welfare by improving the benefits of products while also reducing their prices (Golder and Tellis 1997). The success of this process depends as much on firms’ innovation as on consumer innovativeness. Therefore, consumer innovativeness may be an important factor that drives a country’s economic progress and its position in global competition. Thus, governments and public policy makers can benefit from understanding global consumer innovativeness.

Prior research has indicated that the takeoff and diffusion of new products vary dramatically by country (e.g., Gatignon, Eliashberg, and Robertson 1989; Talukdar, Sudhir, and Ainslie 2002; Tellis, Stremersch, and Yin

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2003). However, current measures of economics and culture do not explain all the intercountry variation in the takeoff and diffusion of new products. In particular, Hofstede's (1991) four measures of culture, which are the most commonly used in cross-cultural research, are at best weak predictors of intercountry differences in the takeoff of new products (Tellis, Stremersch, and Yin 2003). Thus, the field could benefit from a new parsimonious measure of consumer innovativeness that can predict consumers' adoption of new products.

Consumer innovativeness has been researched extensively in marketing and related fields. Our review of the literature suggests that this research can be classified into three groups: (1) measurement of innovativeness (e.g., Goldsmith 1990; Goldsmith and Hofacker 1991; Midgley and Dowling 1978; Roehrich 2004; Venkatraman and Price 1990); (2) relationship between innovativeness and new product adoption or other behavioral constructs (e.g., Foxall 1988, 1995; Foxall and Goldsmith 1988; Goldsmith, Freiden, and Eastman 1995; Hirschman 1980; Manning, Bearden, and Madden 1995; Midgley and Dowling 1993); and (3) antecedents of innovativeness, including personal and demographic characteristics (e.g., Im, Bayus, and Mason 2003; Midgley and Dowling 1993; Steenkamp, Hofstede, and Wedel 1999; Venkatraman 1991).

Despite this extensive body of research, three limitations emerge. First, there is no consensus on the definition or measures for the construct of consumer innovativeness. Second, in general, consumer innovativeness has not been studied across the major countries and cultures of the world. The exception is Steenkamp, Hofstede, and Wedel (1999), who examine it across 11 European countries. However, no study has compared consumer innovativeness across the major economies of North America, Asia, Europe, and South America. Third, current measures for consumer innovativeness have not controlled or corrected for social desirability bias. This bias is common, especially when measuring any dimension of innovativeness, because many consumers like to think of themselves and prefer others to think of them as innovative.

The central goal of this study is to address these issues. In particular, it seeks answers to the following questions:

1. Is there a parsimonious set of items that measures consumer innovativeness?
2. Does innovativeness vary across countries and categories?

3. Conversely, do key demographics predict consumer innovativeness across countries of the world? That is, is there a global innovator? If so, what are his or her characteristics?

4. Does consumer innovativeness predict consumer adoption of new products across countries?

In the next section, we present the study's theoretical framework and our rationale for selecting consumer innovativeness dimensions. Then, we describe the demographic antecedents of consumer innovativeness. Subsequent sections indicate the study's method and results and provide a discussion of our findings.

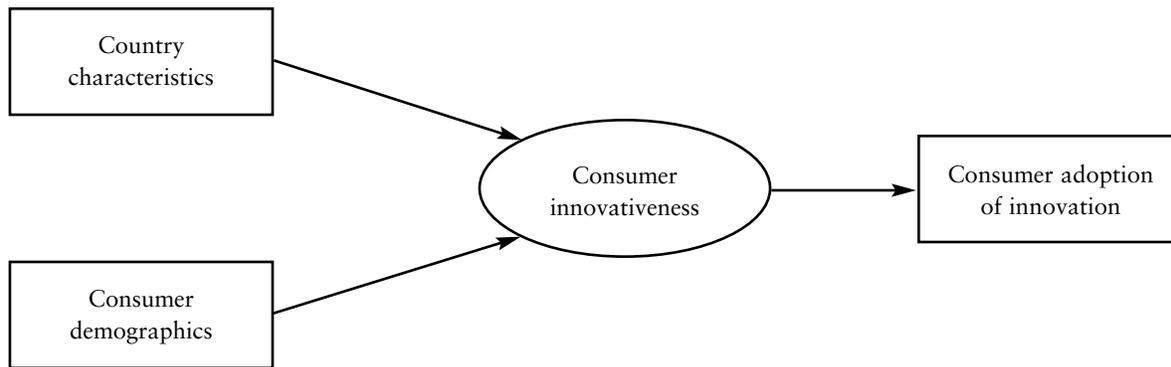
## THEORY

### Theoretical Framework

We use the term "product" generically to cover goods, services, ideas, and lifestyles. We define consumer innovativeness as the propensity of consumers to embrace new products. Our definition is consistent with the marketing literature's long tradition of portraying innovativeness as an individual trait. Examples are a willingness to change (Hurt, Joseph, and Cook 1977; Im, Bayus, and Mason 2003), a predisposition to buy new products (Hirschman 1980; Midgley and Dowling 1978; Steenkamp, Hofstede, and Wedel 1999), and a preference for new and different experiences (Hirschman 1980; Pearson 1970; Raju 1980; Venkatesan 1973, 1991; Venkatraman and Price 1990).

Figure 1 presents our theoretical framework. Our model draws on trait theory (Allport 1967), which posits that human behavior is influenced by personality traits, which tend to differ among individuals and are relatively stable over time. Therefore, adoption behavior is a function of a consumer's enduring personality traits that create a predisposition toward innovative products. Although results have been equivocal at times (e.g., Lassar, Manolis, and Lassar [2004] find a negative relationship between consumer innovativeness and the adoption of online banking), a well-established body of literature provides support for this relationship (e.g., Goldsmith, Freiden, and Eastman 1995; Im, Bayus, and Mason 2003; Manning, Bearden, and Madden 1995; Midgley and Dowling 1978). Recent studies also have indicated that consumer innovativeness enhances the actual adoption of new high-tech products (Hirunyawipada and Paswan 2006) and indirectly influences the adoption of consumer electronics through increased innovation salience (Im, Mason, and Houston 2007).

**Figure 1.** Theoretical Framework for Consumer Innovativeness, Its Antecedents, and Its Impact on Adoption of Innovation



A central tenet of trait theory is that dimensions of personality differ among people. There is also support for the view that though people’s personality traits are relatively enduring, they are also subject to change over time. Although some researchers suggest that individual traits are “hard wired” and not subject to change (e.g., Eysenck and Eysenck 1985), more recent thinking suggests that personality traits develop over time and are subject to contextual influences (e.g., Srivastava et al. 2003). Accordingly, in our model, we incorporate the potential for consumer demographics (e.g., age, gender, income, education) to distinguish people’s level of innovativeness. We also identify nationality to account for the possibility that cultural differences lead to varying levels of consumer innovativeness.

Previous work has found support for the relationship between consumer innovativeness and demographic variables, such as income, age, life cycle, and family size (Dickerson and Gentry 1983; Gatignon and Robertson 1985; Im, Bayus, and Mason 2003). There is also support for the relationship between contextual variables, such as elements of national culture, and personality traits more generally (e.g., Hofstede and McCrae 2004) and consumer innovativeness specifically (Steenkamp, Hofstede, and Wedel 1999). The next three subsections describe the dimensions, measures, and demographic antecedents of innovativeness.

### Measures of Innovativeness

Researchers have developed a variety of measures for consumer innovativeness (Roehrich 2004). These measures differ from one another in various ways, though

they also bear some similarities. Although some measures may not be relevant for some cultures or categories, exploring a broad set of measures provides the opportunity to capture diverse aspects of innovativeness. From this wide array of measures, our goal is to identify a parsimonious set of key items to measure consumer innovativeness. Parsimony is important because extensive item redundancy puts a considerable burden on the study of consumer innovativeness across countries and categories. More important, multi-item measures may reduce the quality of respondent responses and add very little information over a single-item measure (Drolet and Morrison 2001). An extensive search of the literature on innovativeness and related concepts led us to ten key dimensions along which researchers have tried to define consumer innovativeness. We briefly describe each dimension together with the supporting studies and items used to measure consumer innovativeness.

*Novelty Seeking.* Novelty seeking is “the desire to seek out the new and different” (Hirschman 1980, p. 285). Research suggests that novelty seeking is a key component of innovativeness (Hirschman 1980; Manning, Bearden, and Madden 1995). Manning, Bearden, and Madden (1995) also confirm that novelty seeking plays an essential role in the early stages of consumers’ adoption of new products. Dabholkar and Bagozzi (2002) find that innate novelty seeking increases the likelihood of consumers’ trial of a technology-based self-service product.

*Risk Taking (Venturesomeness).* Risk taking is a preference for taking risks or being adventurous (Raju 1980). Raju (1977) indicates that risk taking is an important component and the primary motivator of innovativeness.

Other research also shows that willingness to take risks is positively related to innovative behavior (e.g., Gatignon and Robertson 1985; Robertson, Zielinski, and Ward 1984; Rogers 1995). Sometimes, risk taking has been conceptualized as venturesomeness, and it is often related significantly to innovativeness (Ostlund 1974).

*Variety Seeking.* We consider variety seeking at only the product level, though the construct has been studied also at the brand level. Variety seeking is the adoption of a new product for the sole purpose of decreasing boredom or obtaining a change of pace (e.g., Steenkamp and Baumgartner 1992). It is sometimes regarded as a manifestation of consumers' desire for exploration (Raju 1980). McAlister and Pessemier (1982) suggest that variety seeking is a key element of consumer innovativeness. Research has linked variety seeking to new product adoption (Raju 1980).

*Opinion Leadership.* Midgley and Dowling (1993) use opinion leadership as a measure for innovative predisposition. They postulate that a propensity for opinion leadership could lead consumers to buy products early to advise peers in the social system. Indeed, empirical evidence shows an overlap between innovators and opinion leaders (Summers 1970). Another aspect of opinion leadership is independence from others' opinions, which also could explain a person's innovativeness (Fromkin 1971). Along this line of reasoning, Midgley (1977) defines innate innovativeness as independence from external communications. Similarly, Midgley and Dowling (1993) define innovators as consumers who make adoption decisions independently of the opinions of others. Such consumers are not held back by social pressure and thus are more likely to adopt new products. Closely related to opinion leadership is the notion of social distinctiveness, or the desire to be seen as unique in society. Several authors suggest that the desire for social distinctiveness enhances the tendency to buy new products (Burns and Krampf 1992; Fromkin 1971; Raju 1980).

Opinion leadership is the opposite of social dependence, another aspect of innovativeness. Social dependence reflects the degree to which a consumer's innovative decision depends on the communicated experience of others. Research suggests that dependence on the judgment of others in making decisions about innovations is correlated negatively to a person's receptivity to new ideas (Hirschman 1980). Midgley and Dowling (1978) suggest that consumer innovativeness involves communication independence. Gatignon and Robertson (1985)

suggest that consumers who depend greatly on the influence of others or a desire for conformity adopt new products slowly.

*Stimulus Variation.* Stimulus variation is a consumer's native preference for unfamiliar external stimuli over the familiar. Research indicates that need for stimulation is an important component of innovativeness (Hebb 1955; Hirschman and Wallendorf 1979; Leuba 1955). Indeed, this notion underpins the extensive literature on optimum stimulation level (Mittelstaedt et al. 1976; Raju 1980; Steenkamp and Baumgartner 1992). Hirschman and Wallendorf (1979) argue that stimulus variation is associated with both knowledge and adoption of innovations. They also maintain that the time between awareness of an innovation and its adoption is shorter for consumers who seek a high level of stimulus variation. Furthermore, Raju (1980) suggests that curiosity is one of the basic traits underlying these overt measures of stimulation.

*Habituation.* Habituation is consumers' resistance to change, and it reflects a consumer's rigidity or general reluctance to try new behaviors over time. Several studies suggest that habituation is correlated negatively with innovativeness and risk taking, either directly or indirectly through various mediating variables (e.g., Kogan and Wallach 1964; Robertson 1971; Robertson and Wind 1980; Schaninger 1976). The notion of habituation is closely related to that of inertia. Zeelenberg and Pieters (2004) define customer inertia as the absence of goal-directed behavior. In other words, inertia means that customers might "do nothing" even when faced with disappointing consumption experiences on the one hand and opportunities to benefit from radical innovations on the other hand.

*Nostalgia.* Nostalgia is a longing for the past and a preference for products and contexts that were prevalent in prior periods. Holbrook (1993) identifies this trait among consumers who tend to glorify the old. Steenkamp, Hofstede, and Wedel (1999) argue that consumers' attitudes toward the past contribute to their level of innovativeness. Holbrook and Schindler (1994) find that consumers with more favorable attitudes toward the past tend to display stronger preferences for products associated with older time periods than consumers with weaker preferences for the past. A more positive attitude toward the past also involves a negative feeling toward the future (Holbrook 1993).

*Suspicion.* Suspicion is consumers' fear or doubt of the intentions of marketers of new products and services.

This dimension has not been explored as extensively as the others described here. However, this issue is becoming increasingly important in an electronic age. Many people refrain from adopting new goods and services (e.g., Internet banking, global positioning systems) because of an inherent suspicion that the new product is part of a larger conspiracy by governments, firms, or organizations to exploit them in one way or another. For example, in recent decades, the complexity of new electronics and genetically modified drugs and agriculture products has led some segments of societies to suspect the underlying motives of these products' marketers. For these reasons, we decided to include this dimension in our measure of innovativeness. We found only one study that explores suspicion (Parasuraman 2000).

*Effort.* The term "effort" refers to consumers' reluctance to expend time and effort to adopt a new product. The available research on effort is sparse, perhaps owing to a research tradition grounded in rationality, choice, and benefit maximization. Some research on inertia may be loosely linked to effort. Reluctance to expend effort in buying new products also may be explained by a stream of research that suggests that consumers are "cognitive misers" (Bettman 1979; Fiske and Taylor 1984) or that they minimize the cost of thinking (Shugan 1980). Other research concludes that people have limited cognitive resources and conserve these resources during decision making (Berry, Seiders, and Grewal 2002; Fennema and Kleinmuntz 1995; Fiske and Taylor 1984).

*Frugality.* Frugality is consumers' reluctance to pay high prices for new products because of their desire to conserve and not to waste resources on uncertain new products. We are not aware of studies that have explored this dimension of innovativeness. However, after the third pretest (described in the section "Development of Instrument"), we decided to include this factor because we consider it a key component of consumers' overall innovativeness. When launched, most new products are priced at a premium to the market as firms attempt to recoup their development costs while enjoying quasi-monopolistic market conditions (Golder and Tellis 1997). Innovative consumers must be willing to expend their discretionary budget on adopting such products. Therefore, frugality is an important dimension of innovativeness, especially in less developed economies. In such societies, which have coped with scarce resources over hundreds of years, people and cultures develop a deep sense of the

value of conserving resources. This value will more likely lead to the purchase of older, trusted products than to the purchase of new products.

*Measures.* We treat consumer innovativeness as a construct. We employed one item from each of the dimensions to measure consumer innovativeness for the following reasons: First, most researchers have tested a few of these dimensions with a large number of items, most of which have the same valence and vary only by a few words. For example, studies have employed between 6 and 15 items per dimension. Adopting a similar approach for 10 dimensions would require more than 100 items. When added to questions designed to collect demographic and purchase data, the result would be a lengthy and unwieldy survey instrument that would be impractical to use for large samples of consumers in more than 15 countries.

Second, our ultimate goal is to identify a few items of innovativeness that could be used in as wide a context as possible. For example, Rossiter (2002, pp. 317–18) notes that "[i]t is obviously important, if eliciting-attribute measures such as personality traits are going to be adopted by practitioners, that brief multiple-item scales be developed for them." Using a large number of similar items adds costs and potential noise to the achievement of this goal. Indeed, doing so may spuriously inflate the construct's correlation with other constructs (Feldman and Lynch 1988).

Third, many of the consumer innovativeness dimensions are similar. Thus, having multiple (and similar) items for each dimension involves considerable redundancy. For example, recent research has demonstrated that when faced with an increasing number of similar items, "respondents distinguish less between them, and the influence of an earlier item on a later item appears greater" (Drolet and Morrison 2001, p. 200).

Fourth, when choosing items for a dimension, experts in survey research suggest using distinct items rather than highly similar ones (Campbell and Fiske 1959). There is a tendency among marketing scholars to employ a set of synonyms of the main verb as measures of a construct (Rossiter 2002). By choosing one item from supposedly different dimensions of innovativeness, we avoided generating a similar battery of items to measure consumer innovativeness.

In short, our approach involves selecting ten distinct but conceptually related items to measure consumer innovativeness. We used various analyses to ascertain the con-

struct and predictive validity of this approach and its variation across categories and countries.

### Demographic Antecedents of Innovativeness

Researchers have long suspected that the innovative consumer can be described by various demographics. Identifying these demographics remains important to marketers because they help with targeting decisions. Our literature review suggests no clear consensus about the relationship between demographics and consumer innovativeness (see Table 1). Largely, the lack of consensus is due to the absence of a clear conceptualization of consumer innovativeness. Throughout the 1960s and 1970s, consumer innovativeness was conceptualized as “the degree to which an individual is relatively earlier in adopting new ideas than other members of the social system” (Rogers and Shoemaker 1971, p. 27). In essence, this is a behavioral definition, which is inconsistent with the view that innovativeness is an individual trait. Midgley and Dowling (1978) may have been the first to make the distinction between actual innovative behavior and innovativeness as a trait (see also Hirschman 1980). Because various researchers have used different definitions of innovativeness, findings on how innovativeness is related to demographics are neither consistent nor conclusive. In addition, many studies have not had adequate statistical power to obtain significant effects.

We incorporated ten important demographics as antecedents of the construct of consumer innovativeness. Of these, six have been considered in prior studies and often are used in market segmentation: gender, age, education, income, number of children, and mobility. We have the following expectations about these variables: We expect income to be associated positively with innovativeness because it makes people less resistant to pricey new products. We expect education and mobility to be related positively to innovativeness because they broaden people’s outlook and render them more open to new ideas, ways of living, and products. We expect age (after controlling for income) to be associated negatively with innovativeness because of consumer habituation. We expect number of children to be associated negatively with innovativeness because it directs parents’ attention inward to the family rather than outward to new products. Finally, although we have no a priori general hypothesis about gender, because of the typical division of chores and shopping in households, we expect men to be more innovative for high-tech products and automobiles and women to be

more innovative for cosmetics, grocery products, and household appliances.

Because our plan is to conduct a cross-national survey, we also included four other demographics: country of residence, native language, region of residence, and primary ethnicity with which a respondent associates him- or herself. The literature does not provide any strong or clear rationale for how these four demographics might affect consumer innovativeness. Except for country, we do not test the effect of the other three demographics on consumer innovativeness.

## METHOD

### Development of Instrument

*Questionnaire Development.* The first stage of instrument development involved a review of published literature with reflection and discussion to identify the constructs relevant to consumer innovativeness. As discussed previously, we identified ten major dimensions of innovativeness. We developed a large pool of items to measure these dimensions, drawing from the literature when available and developing our own otherwise. After discussion, we narrowed this pool down to three items for each dimension on the basis of face validity. To test for convergent validity, we also included Hurt, Joseph, and Cook’s (1977) four-item general innovativeness scale and Raju’s (1980) ten innovativeness items. Both are widely used measures of innovativeness (e.g., Goldsmith 2002; Joachimsthaler and Lastovicka 1984; Steenkamp, Hofstede, and Wedel 1999) and overlap with more recently established measures of innovativeness (e.g., Baumgartner and Steenkamp 1996). We employed these general measures for validation purposes because general or “global” innovativeness is often found to be positively associated with domain-specific innovativeness (e.g., Goldsmith 2002; Goldsmith, Freiden, and Eastman 1995). We measured all items on a five-point Likert-type scale (1 = “strongly disagree”; 5 = “strongly agree”).

We included questions to capture the ten demographics mentioned in the preceding section. We also included items to assess consumers’ level of adoption of 11 new products: DVD, mobile phone, microwave oven, broadband Internet service, high-definition television, digital camera, online banking, organically grown fruit, automobile navigation system, and combination washer/dryer. For each of these items, we used the following four-point scale: 1 = “seen,” 2 = “seen but never bought,” 3 = “bought once,” and 4 = “repurchased.”

**Table 1.** Literature on Consumer Innovativeness and Demographics

Demographics	Authors and Dates	Effects of Demographics	Parameter Estimate
Age	Im, Bayus, and Mason (2003)	•Not significant	-.01
	Steenkamp, Hofstede, and Wedel (1999)	•Significant	-.006
	Steenkamp and Burgess (2002): DV as OSL	•Significant	-.113 (white customers)
	Venkatraman and Price (1990)	•Cognitive: Not significant •Sensory innovativeness: Significant	
Income	Im, Bayus, and Mason (2003)	•Not significant	.06
	Steenkamp, Hofstede, and Wedel (1999)	•Not significant	-.0011
	Steenkamp and Burgess (2002): DV as OSL	•Significant	.126
	Venkatraman and Price (1990)	•Cognitive: Not significant •Sensory innovativeness: Not significant	
Education	Im, Bayus, and Mason (2003)	•Not significant	.06
	Steenkamp, Hofstede, and Wedel (1999)	•Not significant	-.0094
	Steenkamp and Burgess (2002): DV as OSL	•Not significant	.015
	Venkatraman and Price (1990)	•Cognitive: Significant •Sensory innovativeness: Not significant	
Gender	Steenkamp and Burgess (2002): DV as OSL	•Significant	1.677 (male)
	Venkatraman and Price (1990)	•Cognitive: Significant •Sensory innovativeness: Not significant	
Mobility	Im, Bayus, and Mason (2003): “Length of residence” used	•Not significant	-.01

Notes: DV = dependent variable, and OSL = optimum stimulation level.

To control for social desirability bias, we included two more new products: a personal valet (a home dry-cleaning system), which exists but, at the time of the study, had been launched in only a niche market (home builders) in only one country (the United States), and a home liver function testing machine, a fictitious product. To control for yea-saying and nay-saying, we included negatively and positively worded items. We also made a point to randomly change the order of the valence of the questions.

The questionnaire was distributed to colleagues for comments in relation to design, wording, and content

(Churchill 1979). We adjusted several items to improve their clarity while retaining the underlying concepts.

*Pretests.* In the second stage, we refined the questionnaire by running four pretests with consumers from four primary ethnicities, each in their home country:

- A convenience sample of 56 Chinese consumers,
- A convenience sample of 88 Australian consumers,
- A convenience sample of 41 Finnish consumers, and
- A convenience sample of 98 U.S. university students in a major, multicultural U.S. city.

These various pretests led to several refinements in the questionnaire. First, we improved the wording of some items and deleted others that were ambiguous, poorly worded, or redundant. Second, respondents in the first two pretests stated that for 22 of the items, their level of innovativeness was category specific. Therefore, for the third pretest, we explicitly allowed for differences in response across four product classes: apparel and cosmetics, appliances and gadgets, food and other grocery products, and entertainment and recreational services. The new format required respondents to report their response to items across these four classes of goods (arranged in columns) along each of the 22 items (arranged in rows).

This new format resulted in a complex and cumbersome questionnaire, which many respondents found annoying. To reduce this complexity while keeping the precision of the instrument, for the fourth pretest, we tested a format in which respondents focused their responses on a particular category (e.g., high-tech products such as electronic goods) but also subsequently stated how these responses would vary across 12 other categories of goods and services. This format is efficient, informative, and reasonably reliable. The primary purpose of this pretest was to assess the differences in innovativeness across categories. In general, the mean innovativeness of respondents was significantly different across categories, so we retained this structure of the questionnaire. Note that because the base category is known and we explicitly asked for how consumers' responses would vary across product categories, this format does not suffer from bias (in which the direction and size of variation may be unknown).

Finally, given our objective of surveying 5000 respondents from 15 countries, we needed to identify only one item to represent each dimension of consumer innovativeness. Therefore, a goal of the pretests was to pare down the large number of items into a smaller, more manageable battery. To identify the most information-laden items, we conducted a stepwise regression of the ownership variables on the items used in the four pretest samples. This resulted in a final set of ten items.

In summary, the final bank of ten items comprises five negatively valenced items and five positively valenced items (see the Appendix). In the final version of the scale, we alternated the positively and negatively valenced items to control for acquiescence bias. We also reduced the number of product categories across which consumers' relative eagerness to buy would be captured from 12 to 6. The resulting categories are major home appliances (e.g.,

refrigerators), automobiles, cosmetics, food and grocery products, sporting goods, and financial services. We retained high-tech products for use as the base product category. Against this category, we evaluated consumers' eagerness to buy new products across other categories.

## Sampling

We used three criteria in selecting countries: (1) They represent the largest economies in the world, (2) they are among the most populous in the world, and (3) they are known for having innovative consumers. Using these criteria, we identified the following 15 countries:

- Europe: the United Kingdom, France, Germany, Italy, the Netherlands, and Sweden;
- Asia-Pacific: China, India, Japan, Korea, Singapore, and Australia; and
- Americas: the United States, Canada, and Brazil.

Then, the questionnaire was translated and back translated into 12 additional languages (Portuguese, Dutch, Swedish, French, German, Italian, Hindi, Urdu, Tamil, Mandarin, Japanese, and Korean). We resolved any discrepancies in the translation through further discussion with the translators. Then, under the supervision of two of the authors, the staff of a large multinational consulting corporation administered the survey to a sample of consumers in each of the 15 countries.

We used telephone interviews in the interest of speed, response rate, and convenience. The target respondents' telephone numbers were generated through random dialing from a phone list of consumers purchased by the practitioner collaborator. This method provides a way of contacting all households with mobile and landline telephones, and it is also a cost-effective way of obtaining respondents in countries in which no other sample source is readily available. Although we initially set the mix of mobile and landlines at 50/50 (i.e., interviewers were instructed to call 50% landlines and 50% mobiles), in China the interviewers found a much better response rate by calling landlines; therefore, they did not strictly follow the 50/50 split for China. This method produced representative samples in each country, with the exception of India and China. Because we were faced with a trade-off between a minimum sample size (for subcategory analysis) and available budget and time, we targeted a sample of 400 respondents from those two countries.

## RESULTS

### Sampling Results

Response rates varied from country to country. In general, approximately 50% of telephone numbers were out of service, not in use, disconnected, or connected to a fax machine. Approximately 20% of calls went through to a voice mail system or a live person who was not willing to answer the call. Approximately 10% of calls went through to a live person who hung up halfway through the call. Eventually, 20% of calls went through to a live person who fully completed the questionnaire. This procedure and experience resulted in a sample of 5569 respondents, distributed across the countries (see Table 2).

To assess the quality of the telephone survey, we reviewed the survey experience with key interviewers. Although the interviews were consistent with guidelines, we discovered several problems. There was a fair amount of social desirability bias in the sample, espe-

cially in some countries. We assessed the extent of this bias by examining the responses to ownership of two as yet unavailable products: the home dry-cleaning system and the liver function testing machine. Approximately 16.5% of the respondents indicated that they owned, repurchased, or had seen these products, though that was not possible. We accounted for this by holding out respondents who said that they repurchased, bought once, or had seen the home liver testing machine and/or had bought once or repurchased the home dry-cleaning system. The remaining sample consisted of 4653 observations. (We refer to this sample as the cleaned sample.) However, the results of our analyses using the total sample and the cleaned sample do not differ significantly. Accordingly, the findings we report pertain to the total sample.

Using the levels of three key demographic variables—education, age, and gender—as criteria, we compared the proportion of respondents in each country with the

**Table 2.** Sample Characteristics

Country	N		Age <sup>a</sup>		Gender		Income <sup>b</sup>		Education <sup>c</sup>	
	Initial	Valid	M	SD	Male	Female	M	SD	M	SD
Australia	395	366	3.52	1.28	192	201	3.09	1.15	2.68	.84
Brazil	382	338	2.98	1.25	131	168	1.95	1.16	2.39	.86
Canada	331	311	3.92	1.25	119	204	3.2	1.07	2.69	.73
China	392	313	2.90	1.30	202	167	1.72	.90	2.55	.77
France	370	299	3.34	1.34	166	172	2.84	.98	2.55	1.10
Germany	374	273	3.48	1.29	187	179	2.91	1.27	2.57	.95
India	430	396	3.06	1.09	309	115	2.07	.99	3.11	.87
Italy	363	250	3.72	1.25	142	212	2.72	1.07	2.44	1.08
Japan	357	289	3.58	1.29	166	173	2.92	1.21	2.48	.68
Korea	338	279	2.94	1.29	162	167	2.6	1.4	2.78	.90
The Netherlands	345	290	3.46	1.36	157	182	2.86	1.03	2.70	.89
Singapore	340	195	2.88	1.20	166	170	2.67	1.28	2.56	.78
Sweden	346	314	3.53	1.34	182	159	2.66	.81	2.33	.94
United Kingdom	405	363	3.52	1.33	170	232	2.44	1.01	2.49	.68
United States	401	329	3.90	1.27	149	239	3.38	1.13	2.82	.81

<sup>a</sup>1 = younger than 19 years, 2 = 20–29 years, 3 = 30–39 years, 4 = 40–49 years, and 5 = 50 years and older.

<sup>b</sup>1 = less than US\$500 (net, per month), 2 = US\$500–\$1,000, 3 = US\$1,000–\$3,000, 4 = US\$3,000–\$5,000, and 5 = greater than US\$5,000.

<sup>c</sup>1 = primary school, 2 = secondary school, 3 = undergraduate college or university, 4 = graduate college or university, and 5 = PhD.

proportion of the population of the same country. Unfortunately, our sample was biased toward better educated, male, and younger consumers, especially in less developed countries. To correct for these biases, we multiplied means on variables by the ratio of the proportion of the population in a demographic segment divided by the proportion of the sample in that segment. (We refer to this sample as the reweighted sample.) However, for a few countries, this correction did not work, because we did not have an adequate number of respondents in some categories for those countries.

We validated the results for the United States by comparing ownership of four new high-tech products in the reweighted and cleaned sample with that of market penetration in the population. Ownership is the proportion of respondents who said that they bought or repurchased one of those products. Market penetration is an estimate of the proportion of households that own one of those products according to published reports. Table 3 shows the deviations between these two variables before and after correction by cleaning and reweighting the sample. The results show that the corrected predictions of ownership in the United States (based on the survey) are fairly close to that of penetration (based on the market data). Despite the fast growth of some innovations, such as the mobile phone and digital camera, uncorrected deviations range from a low of 3% to a high of 11%. Correcting the sample by age, education, or gender leads to smaller deviations. The correction by education yields the best

results. The large deviation for the auto navigation system is due to a high level of market penetration obtained from published reports. However, we are confident in the more conservative estimates obtained from our survey.

Overall, the results in Table 3 provide external validity for the measures of new product ownership in our survey for the United States. It also provides some validity for the corrections we used for exaggerated ownership of products and for sampling biases.

### Measuring Innovativeness

We applied exploratory factor analysis to the whole sample to ascertain the presence of any commonalities among the items. The results show that three factors captured such commonalities, which we call openness to new things, enthusiasm for new products, and reluctance to adopt new products (see Table 4). Openness captures consumers' general attitudes toward new things and is measured by two positively and one negatively valenced items: variety seeking (+), stimulus variation (+), and habituation (-). Enthusiasm refers to consumers' natural interest in new products and is picked up by three positively valenced items: novelty seeking, risk taking, and opinion leadership. Reluctance refers to consumers' negative propensity to adopt new products and is picked up by four negatively valenced items: effort, nostalgia, suspicion, and frugality. Using confirmatory factor analysis techniques, we estimated the

**Table 3.** Penetration Estimates Based on Survey and External Reports (United States)

Product	Deviation <sup>a</sup> (Ownership–Market Penetration)						
	Sample Correction Category	Ownership (Based on a Survey)	Marked Penetration (Based on Published Reports)	Weighted Sample			
				Total Sample	Cleaned Sample <sup>b</sup>	Corrected by Education	Corrected by Age
			Uncorrected	Uncorrected			
Surround sound system	36.6%	28.0%	-8.6%	-6.3%	-3.9%	-8%	-5.3%
Mobile phone	76.3%	68.0%	-8.3%	-5.5%	-1.8%	14.1%	-4.5%
Digital camera	43.2%	40.0%	-3.2%	-2.6%	2.3%	7.4%	-10.3%
Auto navigation system	10.0%	17.6%	7.6%	8.8%	9.4%	14.0%	7.8%
N	401		401	329	329	329	329

<sup>a</sup>Deviation is the difference between the estimated penetrations of products at the time of survey based on external data and penetrations based on the survey.

<sup>b</sup>We cleaned the sample by removing respondents who claimed to own fictitious products.

**Table 4.** Factor Analysis of Items Measuring Innovativeness

Factor		Loading
Openness	Variety seeking	.46
	Stimulus variation	.60
	Habituation	-.27
Enthusiasm	Novelty seeking	.73
	Risk taking	.31
	Opinion leadership	.37
Reluctance	Effort	.36
	Nostalgia	.42
	Frugality	.28
	Suspicion	.37
<b>Fit</b>		
Chi-square		303.36
<i>p</i> -value		.00
RMSEA		.04
CFI		.90
GFI		.99
AGFI		.98

Notes: RMSEA = root mean square error of approximation, CFI = comparative fit index, GFI = goodness-of-fit index, and AGFI = adjusted goodness-of-fit index. N = 5569. All countries were included, based on the whole sample.

measurement model for these factors, which show a reasonably good fit to the data (see Table 4). The factors are only moderately related to one another, indicating discriminant validity.

We also tested for configural and metric invariance across countries to ensure that the same measurement structure holds in each country and that difference scores across items can be meaningfully compared (Steenkamp and Baumgartner 1998). Because testing for invariance for three constructs across 15 countries requires a far larger sample size than ours, we first created four groups of countries that share a similar cultural and economic background: English speaking: Canada, the United States, the United Kingdom, and Australia; European: Italy, Germany, the Netherlands, France, and Sweden; developing countries: Brazil, China, India, Korea, and Singapore; and Japan.

We followed the procedure Steenkamp and Baumgartner (1998) suggest; although we established configural invariance across all countries (i.e., factor loadings are significant in each country), we did not find support for full metric invariance. To test the hypothesis of full metric invariance, we constrained the matrix of factor loadings to be invariant across groups. Because there was a significant increase between the configural model invariance and the full metric model invariance ( $\Delta\chi^2(21) = 51.88, p = .001$ ), we did not find support for full metric invariance. However, prior research has suggested that “full measurement invariance is particularly unlikely” (Steenkamp and Baumgartner 1998, p. 81) and should be considered scientifically unrealistic (Horn, McArdle, and Mason 1983), whereas partial metric invariance can be regarded as sufficient (Byrne, Shavelson, and Muthén 1989). To identify cases in which full metric invariance was not met, we examined the critical ratio for each pair of factor loadings for instances of difference across the four groups. The critical ratio tests the hypothesis that two parameters are equal. Thus, absolute values greater than 1.96 imply that those two parameters are significantly different (i.e., there is no measurement invariance). We found that only 9 of 42 parameters (i.e., 21.43%) were different; moreover, there were no clear patterns in these differences. These findings are largely consistent with Steenkamp and Baumgartner (1998). Therefore, we found support for partial metric invariance in our data.

To validate these three factors as potential constituents of a construct of innovativeness and assess their predictive validity, we compared country rankings on these dimensions with rankings on market penetration for 16 new products computed from Euromonitor’s market data. First, we calculated each country’s innovativeness by taking the mean of the factor scores on openness, enthusiasm, and reluctance. Second, we obtained mean market penetration of the 16 new products in all the countries from the work of Chandrasekaran and Tellis (2008). Third, we compared rankings on the innovativeness dimensions with rankings on market penetration.

The results revealed that market penetration correlates negatively with reluctance (−.48) (see Table 5). We expected the negative sign because reluctance is based on negatively valenced measures of innovativeness. However, we did not expect openness and enthusiasm to correlate negatively as well with market penetration. These results suggest that openness and enthusiasm are poor, and perhaps seriously biased, measures of innova-

**Table 5.** Correlation of Market Penetration with Dimensions of Innovativeness

	Market Penetration
Enthusiasm	-.68
Reluctance	-.48
Openness	-.39

Notes: The results are based on the whole sample (N = 5569).

tiveness. It may be that some consumers overrate their level of innovativeness on openness and enthusiasm but not on reluctance. Intuitively, it seems that respondents (more so in some countries) understand that high scores on the positively valenced measures reflect socially desirable traits and rate themselves high on these. However, they fail to see that high scores on the negatively valenced items reflect socially undesirable traits and so reveal their true positions on the latter items. Accordingly, reluctance is a less biased (more honest) representation of consumers' actual innovativeness than openness and enthusiasm.

### Effects of Demographics on Innovativeness

To assess the relationship between consumer innovativeness and demographics, we regressed reluctance on the six key demographics variables. One of them (gender) was dichotomous; for the others, we used interval scales (see the Appendix). The results indicate that five of these demographic variables are significantly different from zero (see Table 6). Note that for all these five, the results are in the direction we expected, given that reluctance is a negatively valenced measure of innovativeness. Reluctance is best explained by age and income, closely followed by mobility, education, and gender. Family size is not significant. These results combine to suggest that we can identify the profile of a global innovator across countries as one who is more likely to be wealthy, young, mobile, educated, and male. However, these demographics effects vary by categories, as we show in the following section.

Although these results are plausible, are consistent with our expectations, and provide face validity to the study, we need to emphasize three points. First, many studies that have examined the link between demographics and innovativeness either are qualitative or do not specifi-

**Table 6.** Regression of Reluctance on Demographics

Independent Variables	Beta	t-Value
Gender (male = 1, female = 2)	.04	-2.95
Age	.10	5.22
Education	-.07	-4.81
Income	-.11	-6.51
Low mobility	.03	1.73
Family size	.01	.46
Adjusted R-square	.03	

Notes: The results are based on the whole sample (N = 5569).

cally investigate the causal relationship between these two variables (e.g., Goldsmith and Goldsmith 1996; Midgley and Dowling 1993; Venkatraman 1991). Those that do examine causality are unable to indicate consistent significant effects of demographic variables (e.g., Im, Bayus, and Mason 2003; Steenkamp and Burgess 2002; Steenkamp, Hofstede, and Wedel 1999; see Table 1). Second, studies in the literature have not found a particularly strong impact of demographic variables on any measure of innovativeness. For example, Steenkamp, Hofstede, and Wedel (1999) find a significant, negative effect of age on innovativeness and find age to be the second-best explanatory variable of innovativeness. However, they find no significant effects of education and income. Im, Bayus, and Mason (2003) find no significant effects of age, income, or education at all. Third, our strong effects are evident even though our study spans 15 countries and 13 languages. No study has found consistent effects of demographics across so many countries.

### Category Differences in Innovativeness

To analyze between-categories differences in innovativeness, we asked respondents how their "eagerness to buy new products" varies from that in high-tech products (e.g., DVD players, computers). Because this is a within-respondent, between-categories comparison, individual biases in response are factored out.

Note that a response at the median of this item (3) implies no difference in innovativeness across categories. We first calculated the mean of the absolute value of the response on this item minus three for each category across all

respondents (see Table 7). A mean value that equals zero implies that innovativeness does not vary across categories. In contrast, if the mean is significantly different from zero, it implies that innovativeness varies across categories. The independent t-tests indicated that all the means are significantly different from zero. These results demonstrate that there are significant differences between consumers' eagerness to buy high-tech products and their eagerness to buy the other products. We next explored two types of category differences in innovativeness: by demographics and by countries.

*Demographics × Category Differences.* We analyzed differences in respondents' eagerness to buy across categories by demographics. We carried out the analysis by comparing means of all respondents on eagerness to buy new products by classes of each demographic characteristic. The most salient results are described here (for complete results, see Table 8).

For gender, women are more eager to buy home appliances ( $t = 8.54$ ), cosmetics ( $t = 35.86$ ), and food and grocery products ( $t = 11.46$ ), and men are more eager to buy automobiles ( $t = 6.15$ ) and sporting goods ( $t = 10.00$ ). These results confirm widely held beliefs about gender differences, though they have not been tested on the scale of our study. With regard to age, younger consumers (those between 20 and 29 years of age) are significantly more eager to buy automobiles than other age groups. With regard to education, more highly educated consumers are significantly more eager to buy financial services than those with less education. For income, consumers whose income exceeds US\$20,000 are significantly more eager to buy financial services than other income groups. Finally, for household size, house-

holds without any children are significantly more eager to buy sporting goods than those with children. All these results are plausible and provide face validity for the measure eagerness to buy across categories as well as for the study in general. The importance of the results arises from the cross-country and cross-category scope of the study.

*Country × Category Differences.* We analyzed the extent to which respondents' eagerness to buy new products, in various categories relative to high-tech products, differed by country. Table 9 shows the mean responses on eagerness to buy by country × category relative to the high-tech product categories. The values in this table show the difference between the original scores and a score of 3 (indicating the same level). Many distinct results emerge; some are plausible, providing face validity to the analysis, and some are surprising.

Across all but one country (India), respondents indicated a much higher eagerness for new products in food than in any other category. This is probably because the cost of buying new food products is relatively low, while the opportunity to sample new food products is relatively high. Eagerness for new products in food products was highest in Sweden (1.35), Canada (1.26), and Italy (1.23). Although the result for Italy is perhaps not surprising, we did not expect such strong results for Canada and Sweden. The general pattern of widespread eagerness to buy new food products does not hold for India ( $-0.03$ ), though this difference was not significant. The relative lack of interest in new food and grocery items is most likely because innovative food products may be relatively expensive and less available in India.

Another plausible result is that other than for food and grocery products, Singapore residents have the highest eagerness for new products in the high-tech category, because their mean scores are significantly below 3.00 for every other category (i.e., home appliances,  $t = -7.95$ ; automobiles,  $t = -3.58$ ; cosmetics,  $t = -9.87$ ; sporting goods,  $-4.13$ ; financial services,  $t = -3.12$ ). In contrast, Brazilians are less eager to buy high-tech products than all other categories (though this difference is significant across only three categories: home appliances,  $t = 3.41$ ; automobiles,  $t = 6.44$ ; food and grocery items,  $t = 7.33$ ). Many countries, such as Korea and Japan, showed similarities in their relative eagerness to buy across product categories. Others are France–Italy, Canada–Australia, and United States–United Kingdom. These country pairings are plausible because of the language, historic evo-

**Table 7.** Comparison of Mean Eagerness for New Products by Categories (Relative to High-Tech Products)

Product Category	M	t-Value
Home appliances	.24	5.44
Automobiles	.31	5.40
Cosmetics	.49	6.95
Food	.73	7.14
Sporting goods	.22	3.69
Financial services	.30	4.52

**Table 8.** Mean Eagerness for New Products by Categories × Demographics (Relative to High-Tech Products)

Gender	Male	Female			
Home appliances	2.96	3.26			
Automobiles	3.38	3.18			
Cosmetics	1.90	3.10			
Food and grocery products	3.52	3.92			
Sporting goods	2.98	2.64			
Financial services	2.81	2.78			
Age	≤19 Years	20–29 Years	30–39 Years	40–49 Years	≥50 Years
Home appliances	2.70	2.98	3.09	3.20	3.29
Automobiles	3.30	3.41	3.28	3.25	3.15
Cosmetics	2.68	2.64	2.46	2.45	2.49
Food and grocery products	3.48	3.62	3.69	3.75	3.88
Sporting goods	3.12	2.91	2.83	2.85	2.59
Financial services	2.57	2.82	2.82	2.82	2.79
Education	Primary School	Secondary School	Undergraduate College or University	Graduate College or University	PhD
Home appliances	3.10	3.24	3.00	3.08	3.05
Automobiles	2.94	3.33	3.28	3.25	3.24
Cosmetics	2.38	2.59	2.56	2.37	2.16
Food and grocery products	3.83	3.81	3.64	3.65	3.78
Sporting goods	2.59	2.82	2.82	2.87	2.94
Financial services	2.48	2.76	2.84	2.97	2.83
Income (US\$ per year)	<2,000	2,000–4,000	4,000–12,000	12,000–20,000	>20,000
Home appliances	3.03	3.20	3.14	3.11	3.04
Automobiles	3.20	3.27	3.30	3.31	3.41
Cosmetics	2.68	2.61	2.49	2.38	2.36
Food and grocery products	3.63	3.71	3.83	3.75	3.55
Sporting goods	2.79	2.71	2.85	2.92	2.92
Financial services	2.70	2.75	2.76	2.85	3.02
Family Size	0	1	2	3	4 or More
Home appliances	2.90	3.20	3.25	3.34	3.28
Automobiles	3.31	3.24	3.27	3.20	3.21
Cosmetics	2.57	2.55	2.46	2.50	2.44
Food and grocery products	3.61	3.78	3.75	3.89	3.90
Sporting goods	2.94	2.76	2.74	2.66	2.64
Financial services	2.75	2.88	2.83	2.79	2.75

Notes: The results are based on the whole sample (N = 5569).

**Table 9.** Mean Eagerness for New Products by Categories × Countries (Relative to High-Tech Products)

	Australia	Brazil	Canada	China	France	Germany	India	Italy
Home appliances	.35	.18	.58	.07	-.20	-.06	.17	.10
Automobiles	.72	.37	.69	.19	.00	.19	.32	-.09
Cosmetics	-.61	.06	-.28	-.37	-.52	-.42	-1.09	-.48
Food	1.08	.41	1.26	.56	.99	.34	-.03	1.23
Sporting goods	-.05	.01	.00	-.05	-.11	.02	-.76	-.29
Financial services	.30	.07	.10	.11	-.69	.09	-.18	-.88

	Japan	Korea	Netherlands	Singapore	Sweden	United Kingdom	United States	Total
Home appliances	-.06	-.19	-.51	-.53	.20	.30	.16	.11
Automobiles	.05	.25	.27	-.30	.65	.40	.19	.26
Cosmetics	-.62	-.61	-.09	-.76	-.74	-.22	-.42	-.48
Food	.51	.26	.88	.59	1.35	.65	.85	.72
Sporting goods	-.66	-.27	-.13	-.32	.14	-.20	-.23	-.20
Financial services	-.71	-.22	-.04	-.28	-.20	-.43	-.25	-.21

Notes: All scores are relative scores, indicating the difference between their original value and 3 (e.g., “same level of eagerness”). The top three scores per category are in bold. The results are based on the whole sample (N = 5569).

lution, and cultural distance of the countries. Most other countries have unique patterns of intercategory differences in eagerness to buy new products.

Surprisingly, respondents showed the most eagerness for new products in automobiles in Canada, Australia, and Sweden but not in Japan and the United States, the two largest automobile-producing countries. We could find no explanation for this result. The lack of eagerness for new products in automobiles is highest in Singapore (-.30) and Italy (-.09). Again, we could find no consistent reasons for these effects. The most perplexing result in this analysis is the strong eagerness for new products in financial services in Australia, Brazil, Canada, and China and the opposite tendency in France, Italy, Japan, and the United Kingdom.

## DISCUSSION

Our goal was to arrive at a parsimonious construct of consumer innovativeness. Beginning with a large bank of items of innovativeness, a series of pretests reduced the set to ten reasonably stable but greatly varying items of innovativeness. Then, we tested this measure on approximately 400 consumers across 15 countries. This section presents the key findings, limitations, and implications of the study.

## Key Findings

Our analyses of these data lead to six findings, each with unique and important qualifications. First and most important, a four-item, negatively valenced construct of reluctance is a relatively good predictor of consumer adoption of new products across various countries. In contrast, constructs based on positively valenced items did not do as well. To appreciate this result, consider the following analyses. Our factor analysis of the ten items reflecting various constructs of innovativeness revealed three dimensions, which we called openness, enthusiasm, and reluctance. The first two dimensions are primarily positively valenced, while the third one is negatively valenced. Our analysis shows that the positively valenced items suffer from social desirability bias, while the negatively valenced scale, reluctance, does not. Moreover, reluctance predicts aggregate market penetration of new products well, while openness and enthusiasm have the wrong sign. We suggest that this may be because consumers (in some countries more than others) are more prone to respond in a socially desirable way to positively valenced items than to negatively valenced items.

Second, consumers overestimate their own innovative behavior. For example, approximately 16% of our respondents claimed to have seen, owned, or repurchased

nonexistent products. This tendency is greater in some countries (e.g., Brazil, Italy) than in others. In research on innovation, this bias is often not controlled and thus significantly hampers the validity of research findings.

Third, countries differ systematically on innovativeness as measured by reluctance. We found that these differences are consistent with other studies we and other colleagues have carried out, particularly when the market penetration of new products is based on publicly reported studies.

Fourth, five of the ten demographic variables—age, income, mobility, education, and gender—are key predictors of consumer innovativeness measured in terms of reluctance. Family size is not significant. The importance of this result is that it holds across a wide variety of countries and occurs despite a literature that has obtained ambiguous results on this issue (see Table 1).

Fifth, consumers' eagerness for new products varies substantially by product category and demographics. In particular, women are more eager to buy home appliances, cosmetics, and food and grocery products, while men are more eager to buy automobiles and sporting goods. Younger consumers (those between 20 and 29 years) are more eager to buy automobiles than other age groups. Highly educated consumers are more eager to buy financial services. Consumers whose income exceeds US\$20,000 and those without children are more eager to buy sporting goods and financial services than those in other income groups.

Sixth, consumers' eagerness for new products varies substantially by product category and country. Respondents in almost all countries indicate a much higher eagerness for new products in food than in any other category. This eagerness is highest in Sweden, Canada, and Italy and lowest in India, Korea, China, and Brazil. Brazilians show a higher eagerness for new products in cosmetics than in any other category. Indians show almost the same low level of eagerness for new products in cosmetics and sporting goods that they do in food. Japanese have the highest level of eagerness for new products in the high-tech category. Four pairs of countries show similarities in their scores: Japan–Korea, France–Italy, Canada–Australia, and United States–United Kingdom.

## Implications

This study has implications for research and strategy. Researchers need to be cautious when collecting information on consumers' innovativeness and adoption of new

products. The often-used positively valenced measures for innovativeness may suffer from social desirability bias. This bias is more acute in some countries than in others. To correct for such biases, researchers should include fictitious products as a benchmark, much as drug experiments use a placebo. In addition, researchers should consider using negatively valenced items of innovativeness. We find that a four-item, negatively valenced scale provides a reasonably valid measure of innovativeness in most countries. Our findings on the four-item negatively valenced scale suggest a parsimonious set of measures, which still show considerable validity and reliability across a wide cross-section of countries. Such a parsimonious measure enables quick, easy, and frequent replications to serve the needs of the multinational corporations that frequently launch new products globally.

Despite increasing globalization, strategists need to realize that countries differ systematically in innovativeness, in general and specific categories. Because of these differences, firms should consider a waterfall strategy of introducing new products one country at a time, rather than adopting a sprinkler strategy of introducing simultaneously into all countries. The pressure to do the latter is growing because of increasing globalization and faster technological evolution. However, we found that certain small countries stand out as being highly innovative overall and in specific categories, such as Sweden, Canada, and Australia. Therefore, firms should especially consider introducing first in small but highly innovative countries. Such a waterfall strategy reduces risk, increases quick adoption, and increases senior management support, when they see quick results at low cost.

Our findings also suggest variables along which strategists can segment to more efficiently target marketing support for new product introductions. In particular, we found five demographics to predict innovativeness consistently across countries. By targeting the most innovative demographic segments, firms can exploit the quasi workforce of early adopters to promote their new products. In addition, we found differences across demographics  $\times$  categories and categories  $\times$  countries, which can help firms fine-tune their segmentation and entry strategy depending on the characteristics of the specific products being launched.

## Limitations

Several limitations of the study suggest areas for further research. First, our sample is biased in several coun-

tries. We tended to sample wealthier and better-educated consumers, especially in less developed countries. This bias is primarily a function of mobile phone and landline ownership, which is more limited in some countries, such as India and China. Second, postsurvey debriefings with interviewers revealed that consumers from some countries more than others are hesitant to answer questions that are of a personal nature. This is particularly the case in Japan and Korea. Thus, further research could focus on developing items and instru-

ments that are better suited to such cultures. Third, respondents' understanding of new products varies substantially across cultures. Therefore, a pictorial representation of new products, together with examples and detailed description, may be more appropriate, especially for countries in which new products are introduced later. Finally, our study contains a rich source of cross-cultural data. We have focused mostly on the main effects. There is much opportunity for analysis of second- and third-order interactions.

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## Appendix. Final Questionnaire

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Good Morning/Afternoon/Evening. My name is \_\_\_\_\_.

We're doing some research at Cambridge University on consumer behavior. Could I ask you just a few brief questions on this—it would just take a couple of minutes?

OK, thank you very much. When you respond, please answer the questions with reference to your behavior, as honestly as possible. There is no right or wrong answer.

---

**A. Your answer should be between 1 and 5, where 1 indicates “strongly disagree” and 5 indicates “strongly agree.” If you have a “neutral opinion,” please answer 3. I am now going to ask you the questions.**

Scale	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I like being exposed to new ideas.	1	2	3	4	5
2. I hate any change in my routines and habits.	1	2	3	4	5
3. I constantly find new ways of living to improve over my past ways.	1	2	3	4	5

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**B. The following 8 questions refer to your purchase of high-technology products such as DVD players or computers. On each question please respond to each statement using the same 5-point scale:**

Scale	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
4. I enjoy the novelty of owning new products.	1	2	3	4	5
5. Purchasing new products takes too much time and effort.	1	2	3	4	5
6. I relish the gamble involved in buying new products.	1	2	3	4	5
7. Products are getting shoddier and shoddier.	1	2	3	4	5
8. Others often ask me for advice about new products.	1	2	3	4	5
9. Many new products allow firms or governments to spy on individuals.	1	2	3	4	5
10. New products have an unacceptably high price.	1	2	3	4	5
11. I am eager to buy new products as soon as they come out.	1	2	3	4	5

C. Would you please provide some personal information, purely for our analysis. On the following six items, please circle the group which best fits your status:

12. Gender	Male	Female			
13. Which age category are you in?	≤19	20–29	30–39	40–49	≥50
14. What is your highest education level?	Primary school	Secondary school	Undergraduate college or university	Graduate college or university	PhD
15. How much overnight travel do you do?	>2 per week	1–2 per week	1 per month	2–10 per year	<2 per year
16. How many children do you have?	0	1	2	3	4 or more
17. What is your monthly net income + allowances?	<2,000	2,000–4,000	4,000–12,000	12,000–20,000	>20,000
18. Which city/state do you live in?					
19. Which city and country did you grow up?					
20. What is your mother tongue?					
21. With what ethnic groups do you most closely identify?					

D. The next questions are about whether you know about or own certain new products. In this section please answer by saying “never seen it,” “seen it but never bought it,” “bought it,” or “repurchased it.”

	Never Seen	Seen but Never Bought	Bought Once	Repurchased
22. Surround sound system	1	2	3	4
23. Mobile phone	1	2	3	4
24. High definition TV	1	2	3	4
25. Digital Camera	1	2	3	4
26. Online banking	1	2	3	4
27. Automobile navigation system	1	2	3	4
28. Combination washer-dryer	1	2	3	4
29. Home clothes dry-cleaning machine	1	2	3	4
30. Bread maker	1	2	3	4
31. Organically grown vegetables	1	2	3	4
32. Alcohol free beer	1	2	3	4
33. Cholesterol-reducing butter	1	2	3	4
34. Home liver testing machine	1	2	3	4

E. This is the last section. Could you please indicate on a 5-point scale if you are more (or less) eager to purchase these products & services, relative to high-tech products (where 1 = “much less eager,” and 5 = “much more eager”)

Scale	Much Less Eager	Less Eager	Same	More Eager	Much More Eager
35. Major home appliances (e.g., refrigerators)	1	2	3	4	5
36. Automobiles	1	2	3	4	5
37. Cosmetics	1	2	3	4	5
38. Food and grocery products	1	2	3	4	5
39. Sporting goods	1	2	3	4	5
40. Financial services	1	2	3	4	5

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