

# Technology readiness and usage: a global-identity perspective

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**Abstract** The past several decades have witnessed the rapid globalization of consumption markets and widespread diffusion of information and communication technologies. However, the use of technology by consumers is not a foregone conclusion. We investigate the role of global self-identity on the orientation toward technology readiness and usage. Relying on a social-identity model of motivation as our theoretical framework, we propose a model which incorporates global self-identity (i.e., cosmopolitanism/parochialism and global/local identification) and self-regulation (i.e.,

promotion and prevention focus) in predicting technology readiness and usage in a self-service technology context. The proposed model is tested in two different cultures, the U.S. and China, and is contrasted with two theoretically-competing models as well. Results provide support for the hypothesized model, and a number of limitations, implications, and directions for future research are discussed.

**Keywords** Global identity · Technology readiness · Identity theory · Regulatory focus theory · Global consumer · Cosmopolitanism · Global identification · Promotion prevention focus · Self-service technology

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## Introduction

Over the past several decades the world has witnessed the globalization of markets and the rapid diffusion of information and communication technologies (Businessline 2006). China, for example, has experienced a growth curve for internet and mobile phone usage similar to that of the U.S. and the E.U. (Zhu and Wang 2005). However, even with the accelerating diffusion of technology throughout the world, the use of technology by consumers is not a foregone conclusion.

Studies investigating predictors of technology usage have generally focused on ease of use, usefulness, and other technology design features (Meuter et al. 2005; Zhu et al. 2007) as well as consumer demographics and traits (Dabholkar and Bagozzi 2002; Bruner and Kumar 2007; Weijters et al. 2007). However, recent research suggests that identity-related influences may be just as important as traditional variables in explaining technology usage. Studies have shown, for example, that self-identity and social expressiveness are significant drivers of intentions to use mobile messaging and interactive services (Nysveen et al. 2005; Thorbjørnsen et al. 2007). The logic underlying such

models focuses on how people attempt to understand and express their self-identity through technology usage.

This perspective is particularly relevant given the rise of the global consumer (Alden et al. 1999; Cavusgil et al. 2005). Globalization is thought to result in transformations of identity—an awareness in people of their relation to the global culture (Arnett 2002). Such consumers view the world as “their” marketplace in which they actively seek out products and experiences based on global standards instead of local standards (Cannon and Yaprak 2002). Given the central role of technology in the creation and propagation of a global consumer culture (e.g. Alden et al. 2006; Cannon and Yaprak 2002; Firat 1997), associating technology usage with a globally-oriented identity is a logical conclusion.

We investigate the role of global self-identity on the orientation toward technology usage and rely on a social-identity model of motivation (Oyserman 2007) as our guiding theoretical framework. The social-identity perspective explains that both social *self-identity* and *self-regulation* are necessary for attainment of goals related to some future self. Social self-identity, or the perspective of oneself in terms of social roles and interactions, provides the goals that one pursues, while self-regulation describes the channeling of energy and effort in the pursuit of these goals. Thus, from a social-identity perspective, the combination of how consumers view themselves, or self-identity, and how they pursue future goals, or self-regulation, would appear to have potential to explain orientation toward technology usage.

Therefore, we propose a model which incorporates global self-identity (i.e., cosmopolitanism/parochialism and global/local identification) and self-regulation (i.e., promotion and prevention focus) in predicting technology readiness and usage in a self-service technology context. The proposed model is tested in two different cultures, the U.S. and China, and is contrasted with two theoretically-competing models as well. Hence, we believe a primary contribution of this research is to offer a different perspective on technology readiness and usage by exploring the intersection of social identity, technology, and the global community. The remainder of this paper is organized as follows. First, we review the conceptual foundations underlying the proposed model and advance a number of hypotheses. This is followed by a discussion of the methods employed in this study and a presentation of the results. We conclude by noting several limitations and discussing theoretical and practical implications.

## Conceptual framework and hypotheses

### A social-identity model of motivation

A social-identity model of motivation explains that both social self-identity and self-regulation are necessary for the pursuit

and achievement of identity-related goals (Oyserman 2007). Social self-identity represents the socially-contextualized conception of the self in terms of social roles and interactions, and provides the self-goals (i.e., goals related to future possible selves) one pursues, while self-regulation describes the channeling and directing of energy in the pursuit of self-goals. Both self-identity and self-regulation operate simultaneously, are mutually-reinforcing, and are necessary for the pursuit and attainment of self-goals. Furthermore, self-goals are likely to be regulated differently, such that goals related to aspirations and achieving a future ideal self will be guided by promotion regulatory focus while goals related to safety and the minimization of losses will be guided by prevention regulatory focus. Studies have employed the social-identity model of motivation as an overarching theoretical framework in exploring organizational identity (e.g., Mael and Ashforth 1992), national identity (Keillor et al. 1996), and cultural identity (Markus and Kitayama 1991), as well as providing evidence as to the underlying processes at work in different identity contexts (e.g., racial-ethnic identities, see Oyserman et al. 2003). Hence, the social-identity model provides theoretical and empirical justification for the inclusion of both self-identity and self-regulation in our proposed model of technology readiness and usage. Each of these is now discussed in further detail.

*Self-Identity* Self-identity theory links self-attitudes, or identities, to the social role relationships and role-related behavior of individuals (Stryker 1968). A person’s social self-identity is made up of socially-grounded cognitive schemas, or more broadly, a collection of identities, each of which is based on occupying a particular social role (Stryker and Burke 2000). In some sense, identities can be defined as one’s answers to the question “Who am I?” (Stryker and Serpe 1982). These role identities in turn are said to influence behavior in that each role has a set of associated meanings and expectations for the self (Burke and Reitzes 1981). In other words, individuals continually strive to reinforce their self-identity through their behaviors in a process known as self-verification (Stryker and Burke 2000). Thus, self-identity has been described as a critical concept joining social structure to individual action (Hogg et al. 1995), as summarized in the insightful formula: “society shapes self shapes social behavior” (Stryker and Burke 2000, p. 285).

The influence of self-identity on behavior has been empirically supported. Studies show, for example, that salience of religious identities predicts time spent in religious activities (Stryker and Serpe 1982), that donor identity predicts frequency of blood donations (Callero 1985), and that a mother identity among first-time mothers explains whether they accept the burdens of motherhood and make sacrifices for their child (Nuttbrock and Freudiger

1991). Specifically in a technology context, studies have shown that self-identity and social-identity expressiveness, or how consumers display their own identity and values to themselves as well as others, has been shown to have a strong and positive relationship with intentions to use technology (Nysveen et al. 2005; Thorbjørnsen et al. 2007).

This research suggests that if an individual has a self-identity of being globally oriented, he will behave in a manner congruent with that identity. We argue that the globally-oriented consumer shares the values of being cosmopolitan and identifies with the global community. Cosmopolitanism is a value orientation describing a person's openness to other cultures, while global identification captures the degree of psychological and emotional investment one has to the global community (Cannon and Yaprak 2002; Der-Karabetian and Ruiz 1997). For these consumers, technology usage becomes a means by which they are able to reinforce their identity. The commonality among these traits is the general tendency to be progressive and 'reach out' for that which is new. Rogers (1995) used the term "cosmopolite" to refer to individuals oriented outside a social system, and suggested that the more "cosmopolite" individuals are, the more likely they are to be early adopters of technology. We rely on a similar rationale here, namely, that individuals who maintain a global self-identity will be likely to view technology favorably and be more disposed to using technology as part of their efforts to verify and reinforce their global self-identity.

*Self-Regulation* Self-regulation can be described as the channeling of energy, effort and motivation toward relevant self-goals (Oyserman 2007). Movement toward any relevant self-goal requires a parallel effort to control and channel the energy required in the pursuit of such self-goals. This pursuit is influenced by different regulatory systems, such that goals related to aspirations and achieving a future ideal self will be guided by promotion regulatory focus while goals related to safety and the minimization of losses will be guided by prevention regulatory focus (Higgins 1997; Oyserman 2007). Individuals with a promotion focus are more sensitive to the presence or absence of positive outcomes (gains and non-gains), while those with a prevention focus are more sensitive to the presence or absence of negative outcomes (losses and non-losses). In other words, promotion-focused individuals are concerned with aspirations and accomplishments, while prevention-focused individuals are concerned with protection, safety and responsibility (Higgins 1997).

Promotion and prevention focus has been shown to moderate emotional intensity (Higgins et al. 1997), explain inconsistencies in the interaction effects of expectancy and value (Shah and Higgins 1997), and explain differences in strategies employed in pursuit of a goal (Higgins et al. 1994). Furthermore, regulatory focus can be either chronic,

i.e. stable personality trait; or situational, i.e. temporary motivational behavior induced by situational factors. Our focus here is on the chronic orientation people have toward promotion-focused goals or prevention-focused goals.

*An Organizing Principle: Motivational Hierarchies* The interrelationships between personality traits and motivations are hierarchical in nature, whereby higher-order traits are thought to influence lower-order traits and related behavioral outcomes (Allport 1961; Bagozzi et al. 2003). One such hierarchy, the "3M Model" (Mowen 2000), posits that motivations and traits are organized into a hierarchy of elemental, compound, situational, and surface traits. Elemental traits are the highest-order, most fundamental traits. Compound traits are lower-order and culturally-influenced, while situational and surface-level traits represent dispositions, and ultimately specific behaviors, within a given context (Mowen 2000).

It is likely that both self-identity and regulatory focus occupy the same level in this hierarchy of traits, i.e. the compound trait level, because evidence suggests that both social self-identity and self-regulation are culturally embedded (e.g. Oyserman 2007), and cultural values such as individualism-collectivism may influence an individual's identity or regulatory focus. For example, an independent self, reflecting the broader trait of individualism, has been linked to the salience of promotion-focused rather than prevention-focused information (Lee et al. 2000). Moreover, Inglehart and Oyserman (2004) suggest that regulatory focus is related to enduring cultural outlooks based on economic development.

Consistent with the logic of a motivational hierarchy, the compound traits of global self-identity and regulatory focus affect lower-order traits of technology readiness and technology usage. Research has shown that motivational and personality variables affect behavior beyond what can be explained by attitude alone, especially when attitude toward the object rather than attitude toward the behavior is measured (Fishbein 1973), as is the case with technology readiness. Prior studies have shown that self-identity and regulatory focus can influence behaviors directly independent of attitude (Terry et al. 1999; Herzstein et al. 2007) or influence behaviors indirectly through attitude-like constructs (Sparks and Guthrie 1998; Wang and Lee 2006). Consequently, we suggest that self-identity and regulatory focus will affect both the attitudinal construct of technology readiness as well as directly affect technology usage.

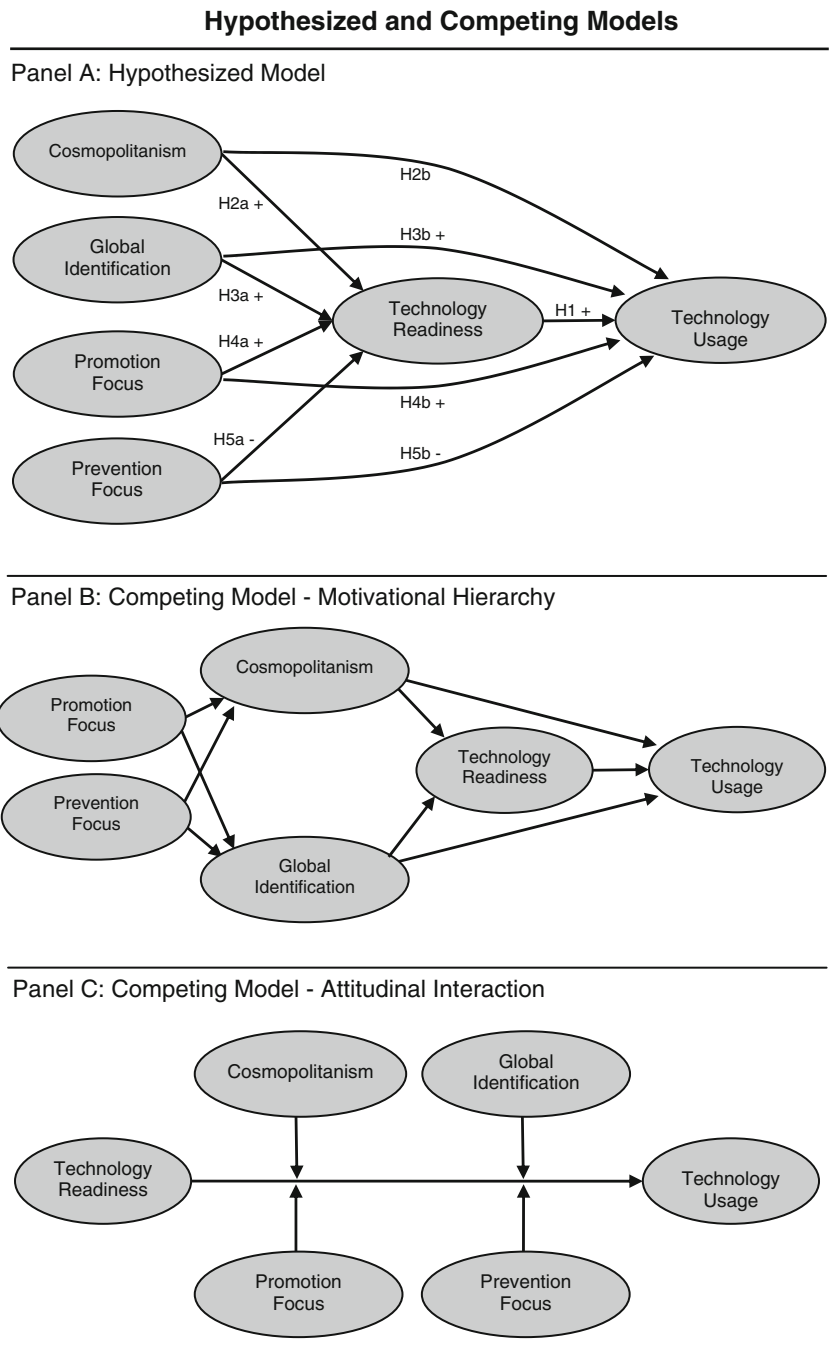
The proposed model is also consistent with the Rogers (1995) framework which suggests that compatibility of an innovation with an individual's values and needs is one of five main characteristics of an innovation predicting its usage. Further research provides evidence that compatibility is instrumental in shaping beliefs about technology and its subsequent usage (Karahanna et al. 2006). We suggest

globally-oriented consumers share values and motivations that lead them to be more technology ready and consequently more compatible with technology than less globally-oriented consumers. This conceptual framework is depicted in panel A of Fig. 1. Competing theoretical models in Panels B and C are discussed in a later section.

Hypothesis development

*Technology Readiness and Usage* Technology readiness is an attitudinal construct referring to an individual’s predisposition to use new technologies for accomplishing goals in life, and consists of four dimensions: optimism, innova-

**Figure 1** Hypothesized and competing models. Note: In panel A, hypotheses 2c, 3c, 4c and 5c are indirect effects of the iv’s on technology usage mediated by Technology Readiness.



Note: In panel A, hypotheses 2c, 3c, 4c and 5c are indirect effects of the iv’s on technology usage mediated by Technology Readiness.

tiveness, discomfort, and insecurity (Parasuraman 2000). The first two are considered facilitators of technology usage, while the latter two are inhibitors of technology usage. Optimism reflects one's belief that technology allows them more control, flexibility and efficiency in their lives, while innovativeness reflects one's inclination to be an early adopter of technology. Discomfort reflects one's feeling of intimidation or lack of control over technology, and, insecurity reflects one's skepticism that technology will work properly. Underlying this construct is the acknowledgment that technology has been shown to simultaneously trigger both positive and negative feelings (Mick and Fournier 1998). While acknowledging this paradox, Parasuraman (2000) suggests that one or the other of these feelings will exhibit relative dominance in the individual. Thus, individuals' attitudes towards technology in general will range on a continuum from strongly positive to strongly negative.

Parasuraman (2000) found strong evidence for the ability of the TRI to predict the usage of technology-based services finding that those rating higher on technology readiness were more likely to buy or sell stocks over the internet, use machines to purchase a plane or train ticket, own cell phones, and have internet access. Similar results have been found in other research (e.g., Lin and Hsieh 2006; Zeithaml et al. 2002). This is theoretically grounded in the values → attitudes → behaviors framework (e.g., Rosenberg 1960) where technology readiness represents a consumer's general attitude towards technology which explains consumers' technology behavior, i.e. technology usage. Accordingly, we advance the previously well-established hypothesis that technology readiness is positively related to technology usage.

H<sub>1</sub>: Technology readiness is positively related to technology usage.

#### Antecedents of technology readiness and usage

*Global Self-Identity: Cosmopolitanism/Parochialism* Cosmopolitanism has been described as a set of acquired cultural orientations (Cannon and Yaprak 2002), and a "toolkit" from which consumers develop strategies for action (Tse et al. 1989). However, at its core cosmopolitanism is really a value orientation describing a person's openness to other cultures and unbiasedness when processing foreign cultural experiences (Cannon and Yaprak 2002). In the consumer behavior literature, cultural values are recognized as powerful influences on consumer consumption patterns (Tse et al. 1989).

Cannon and Yaprak (2002) suggest that cosmopolitans are "not expected to be closed to foreign cultures, overly patriotic, overly conservative, or unduly influenced by

collective versus individual evaluations of quality and desirability" (p. 34). In other words, unlike their opposites, i.e. parochials, cosmopolitans are more likely to be open, tolerant and accepting of that which is foreign. But beyond lacking an ethnocentric orientation, cosmopolitans engage in a pattern of consumption of looking broadly for standards of excellence and deliberately avoiding local people and culture in favor of perceived global standards (Cannon and Yaprak 2002). The general orientation towards tolerance and acceptance of that which is foreign is analogous to the acceptance of progress and change. Thus, cosmopolitans will not unduly subject themselves to the influence of their local culture and are more likely to experiment with new products and technologies, i.e. be more technology ready, in search of global standards of excellence.

Cosmopolitans are also sensitized to the power of technology and foreign ideas, and the growing ubiquity and visibility of new technologies provide cosmopolitans more opportunities to try them. Global communications, e.g. email, internet, and international television programming, are also becoming more prevalent and available, thus, providing opportunities for cosmopolitans to not only reach out and experience other cultures, but also to expand the scope of their search for products and services (Cannon and Yaprak 2002). Rogers (1995) suggested that "cosmopolites" are more likely to be early adopters of technology; therefore, cosmopolitans likely have a more positive attitude towards technology, i.e. technology readiness. Thus, we suggest that the higher an individual's cosmopolitan value orientation, the greater their technology readiness and subsequent technology usage.

H<sub>2a</sub>: Cosmopolitanism is positively and directly related with Technology Readiness.

H<sub>2b</sub>: Cosmopolitanism is positively and directly related with technology usage.

H<sub>2c</sub>: Cosmopolitanism is indirectly related with technology usage through Technology Readiness.

*Global Self-Identity: Global/Local Identification* Global identification moves beyond the sense of belonging to any one particular nation and instead suggests that the individual embraces humanity in general as a point of reference. In essence, it captures the degree of psychological and emotional investment one has to the global community (Der-Karabetian and Ruiz 1997). Individuals who identify with a global community recognize that the world is much bigger than their own home country, and are likely to be more open to new ideas and broaden their search for products and services beyond their local community. Those with a high global identification feel that they are next-door neighbors with people living in other parts of the world and believe that they are more similar rather than dissimilar.

Conversely, those with high local identification demonstrate a high degree of attachment to their local community (Der-Karabetian and Ruiz 1997).

In essence, global and local identification captures the degree of psychological and emotional investment one has to the global or local community. Evidence suggests that high local identification is associated with nationalistic tendencies and ethnocentrism (Keillor et al. 1996; Keillor and Hult 1999), suggesting a predisposition for being conservative, resistant to change, and more concerned with safety and preservation. Technology may be a tool that enables individuals with high global identification to connect with other members of their “global community”. Thus, global identification may relate to the facilitating dimensions of technology readiness. Based on the above arguments, we suggest that high global identification individuals will exhibit higher technology readiness and be more likely to use technology than low global identification individuals.

H<sub>3a</sub>: Global identification is positively and directly related with Technology Readiness.

H<sub>3b</sub>: Global identification is positively and directly related with technology usage.

H<sub>3c</sub>: Global identification is indirectly related with technology usage through Technology Readiness.

*Self-Regulation: Promotion and Prevention Focus* Research has shown that regulatory focus offers starkly different perspectives about how people view and think about their surrounding environment. First, research on decision-making shows that regulatory focus influences the choices people make when faced with stability or change. Stability represents current alternatives in one’s environment (e.g., an action, like a daily routine, or an object, like a product or brand), while change represents new alternatives. When a new alternative becomes available, a promotion-focused individual will be more inclined to try the new alternative if it is perceived as having potential to offer advancement, even if the original action or object is satisfactory (Lieberman et al. 1999). On the other hand, individuals with a prevention focus, given their orientation to safety and security, will prefer original alternatives to new ones.

Second, this reasoning is consistent with cognitive tuning theory (Friedman and Förster 2002), which suggests that people are fundamentally different in terms of how they view their surrounding environment based on their regulatory focus orientation. Since a promotion focus entails an orientation toward positive states, stimuli, and outcomes (Higgins 1997), then individuals who are promotion-focused view their environment as benign and satisfactory, requiring no particular corrective action. Such

individuals are then freer to engage in exploratory behavior, attend freely to relationships among items, think more abstractions, engage in relational processing (generating overarching connections between concepts), and in general are more creative and playful (Friedman and Förster 2002; Semin et al. 2005). On the other hand, prevention-focused individuals are more vigilant about an environment perceived as potentially threatening and problematic, and are more analytical, assessing matters carefully in precise detail, thinking about items in concrete and specific terms, and engaging in behaviors cautiously (Friedman and Förster 2002; Semin et al. 2005; see also Zhu and Meyers-Levy 2007). Consequently, the degree of technology readiness should be accordingly influenced by an individual’s regulatory focus. Prevention focus with its preference for stability is likely to tap into the inhibitors of technology readiness, e.g. the insecurity dimension of TRI; while promotion focus with its preference for change may tap into the facilitators of technology readiness, e.g. the optimism dimension of TRI.

Hence, promotion-focused individuals not only exhibit a general disposition for change and trying newer things, such as technology, but also are more capable of connecting this technology to their self-identity through relational elaboration and expansive and creative thinking. For example, promotion-focused individuals may more readily connect email usage to maintaining larger, more diverse, and geographically-distant social networks. However, prevention-focused individuals, preferring stability to change, are less willing to try new or different products, and are less able to connect the usage of technology to their self-identity. This reasoning therefore suggests that a promotion focus will be positively related to attitudes toward technology as well as actual usage, while a prevention focus will be negatively related.

H<sub>4a</sub>: Promotion regulatory focus is positively and directly related with Technology Readiness.

H<sub>4b</sub>: Promotion regulatory focus is positively and directly related with technology usage.

H<sub>4c</sub>: Promotion regulatory focus is indirectly related with technology usage through Technology Readiness.

H<sub>5a</sub>: Prevention regulatory focus is negatively and directly related with Technology Readiness.

H<sub>5b</sub>: Prevention regulatory focus is negatively and directly related with technology usage.

H<sub>5c</sub>: Prevention regulatory focus is indirectly related with technology usage through Technology Readiness.

#### Competing models

Although our proposed model is well-grounded in a social-identity framework, two plausible competing models can be

advanced based on alternative theoretical perspectives. Each of these is discussed in more detail below, and is empirically compared to the proposed model in a later section.

*Competing Model 1: Motivational Hierarchy Theory* Although motivational hierarchy theory provides theoretical justification for organizing self-identity and self-regulation at the same trait level in the hierarchy, a plausible counter-argument can also be made that, rather than coexisting at the same trait level, self-regulation is antecedent to the self-identity variables. Specifically, since promotion and prevention focus reflect fundamental approach and avoidance orientation in human personality, an argument can be made that these variables are more basic and higher-order traits, similar to the elemental traits in the 3M Model. Since cosmopolitanism and global identification represent the confluence of society and the individual self (Hogg et al. 1995), then these variables are better classified at a lower level, similar to the compound-trait level in the 3M Model. Further, since technology readiness refers to an individual's disposition toward context-specific behaviors, namely using new technologies for accomplishing goals (Parasuraman 2000), accordingly technology readiness is best conceptualized at the situational trait level. Finally, according to the 3M Model, surface-level and functional traits are more tangible manifestations of the situational traits (Mowen 2000). Since the usage of technology is a behavioral manifestation of technology readiness (Parasuraman 2000), one could expect that the usage of technology closely corresponds to lower-order traits in a motivational hierarchy. Panel B of Fig. 1 illustrates this competing perspective.

*Competing Model 2: Attitudinal Interaction Model* Extant research also suggests that consumer values and traits affect technology usage through an interaction effect with perceived ease of use, perceived usefulness and enjoyment (Dabholkar and Bagozzi 2002; Srite and Karahanna 2006). Dabholkar and Bagozzi (2002) suggest, for example, that consumers confident in their ability to use technology, i.e. self-efficacy, would not only make ease of use less important, but that the likelihood of having fun using the technology is greater, increasing the importance of enjoyment in the model. Srite and Karahanna (2006) found that espoused cultural values such as masculinity, i.e. a value orientation emphasizing work goals, material success, and assertiveness, moderates the relationship between perceived ease of use and intentions to use technology. These studies were based on previous researchers (e.g., Ajzen et al. 1982; Baron and Kenny 1986) suggesting that it may be more meaningful to explore moderating rather than direct effects of external factors such as consumer traits. These two

examples both employ the technology acceptance model (Davis 1989), which is a measure of attitude towards a specific technology. Technology readiness measures attitude towards technology in general, rather than towards a specific technology; nonetheless, the findings from Dabholkar and Bagozzi (2002) and Srite and Karahanna (2006) justify testing the potential interaction of the technology readiness construct with the consumer traits of cosmopolitanism, global identification, promotion and prevention focus. This competing perspective is illustrated in panel C of Fig. 1.

## Method

### Technology usage context

Given the growing use and importance of technology in the delivery of services (Reinders et al. 2008), e.g. automated teller machines, self-checkout kiosks at hotels and grocery stores, the context of the present study is the use of self-service technologies. A self-service technology is defined as a “technology-based interface that allows consumers to produce and consume the service without direct assistance from service personnel” (Yen 2005, p. 642). This includes technologies such as touch screens in department stores, self-checkout at the grocery store or at hotels, ticketing kiosks at train stations or movie theaters, but also options such as telephone and online banking and online shopping that are not produced and consumed on-site (Dabholkar and Bagozzi 2002; Forbes 2008).

Self-service technologies fit within various typologies of technology. For example, since self-service technologies represent a new way of performing a service it would represent what Tushman and Anderson (1986) refer to as a competence-destroying process discontinuity. Within Chandy and Tellis' (1998) typology, self-service technologies with a high degree of technological newness and an ability to provide greater customer benefits per dollar indicates that they are “radical innovations”. However, the more recent typology offered by Garcia and Calantone (2002) may provide the most appropriate description of self-service technologies as “really new innovations”. These innovations have the potential to create technology discontinuities at the macro-level and both marketing and technology discontinuities at the micro-level. They are generally new to entire industries and substantially impact how consumers interact with businesses.

While the technology used in these really new innovations is generally based on existing underlying platforms, the reconfiguration of the base technology to match industry needs results in “design innovations” (Sood and

Tellis 2005, p. 153). Self-service technology design innovations often deliver substantial new consumer benefits that Chandy and Tellis (1998) refer to as market breakthroughs. For example, consumers can save time by using self-service technologies when service personnel are otherwise unavailable, or enjoy new services previously unavailable such as printing out airline boarding passes in the hotel lobby. Furthermore, these innovations often change how consumers interact with firms from human-to-human interaction to human-to-machine interaction changing the role of the consumer to that of co-creator of value (Michel et al. 2008). Thus, the source of newness of the innovation lies in the technology design innovation itself, the new consumer benefits delivered, and the new consumer-to-business interaction process. Really new innovations are, by definition, unfamiliar to consumers and require changes in behavior to use them. They carry additional technological uncertainty, unfamiliarity, and risk compared to more continuous or incremental innovations, which become key factors that influence consumer evaluations and use of innovative products (Veryzer 1998).

### Sample

Two samples were collected to study the proposed theoretical framework. Given the growing concern that marketing research focuses too heavily on U.S. data (Zinkhan 2006), we collected samples not only from the U.S., but also China, in order to test the relationships in an intercultural context. Since the central concept of this study is technology usage, a non-student convenience sample was collected for the U.S. dataset which included a subsample of student respondents (approximately 17%) for the purpose of oversampling the younger demographic. The rationale behind this is to include the demographic which historically uses technology more frequently. We adopted the data collection technique suggested by Bitner et al. (1990). Potential respondents were identified and contacted with the assistance of upper-level undergraduate business students trained in recruitment and data collection procedures. Students were instructed to identify non-student participants, including family, friends, and co-workers over 21 years of age. Respondents were required to provide their name and contact information for verification of their participation in the research study. One week after the close of the survey, 10% of the respondents were randomly selected and contacted to verify their participation in the research project. No problems were detected. The identification, recruitment, and data collection period lasted 3 weeks. In a separate task designed to ensure oversampling of a younger demographic, students ( $n=59$ ) also completed one specially-marked survey. No substantive differences were found between the responses of the non-student group

and the group inclusive of students; therefore, the student surveys were combined with the rest of the sample for analysis, yielding a total sample size of 341. After the elimination of five incomplete cases, our final U.S. sample consisted of 336 usable responses.

The Chinese version of the survey was translated from English to Chinese by a marketing doctoral student who is a native Chinese speaker, and subsequently back-translated from Chinese to English by another native Chinese speaker who is an international business instructor at a U.S. university. The back translation suggested that the Chinese language survey was comparable to the English language survey. The Chinese sample was collected by an instructor at a college in the Fujian province in southeast China over a period of 1 week and included both students and non-students resulting in a sample size of 155, which after the elimination of incomplete surveys yielded a usable total of 150 responses. Although neither sample was randomly collected, the demographic characteristics for both samples exhibited broad representation in the categories of income and education levels with equal gender representation and a mean age of twenty-eight for the U.S. sample and thirty-four for the Chinese sample.

### Measures

Established scales were adapted in order to measure each of the constructs of interest. Table 1 reports the psychometric properties of all scales employed, while Table 2 reports the correlations between model constructs. Each item was measured with five-point likert scales. The TRI was employed exactly as prescribed by Parasuraman (2000). The TRI is a thirty-six item measure with each dimension accounting for seven to ten of the total items. Consistent with previous uses of the technology readiness index (Parasuraman 2000; Lin and Hsieh 2006; Zhu et al. 2007), we created a composite TRI based on the averages of each dimension. Hence, the final construct is a latent construct with four indicators. Finally, three self-service technologies were selected based on prior studies (Parasuraman 2000; Curran et al. 2003; Dabholkar et al. 2003) to measure technology usage, including banking ATM, online purchase of products which require shipping, and “self-checkout” at grocery stores. Only ATM usage and online purchases were measured for the Chinese sample due to lack of availability of grocery self-checkout technology.

### Validity and reliability

We assessed the validity and reliability of the latent constructs through a series of psychometric procedures. First, corrected item-total correlations were examined for each set of items representing their respective latent construct. Items not having a corrected item-total correla-

**Table 1** Measurement scales with source, item loadings, CR, and AVE

|  | Loadings |       |
|--|----------|-------|
|  | U.S.     | China |
| <b>Cosmopolitanism — Parochialism</b> (Yoon et al. 1996)   |          |       |
| (US: CR=0.87, $\alpha$ =0.87, AVE=0.58; China: CR=0.82, $\alpha$ =0.82, AVE=0.50)                |          |       |
| 1. I do, or wish I could, speak at least one foreign language.                                   | –        | –     |
| 2. I like immersing myself in different cultural environments.                                   | 0.70     | 0.56  |
| 3. I enjoy getting news from all over the world.   | 0.84     | 0.86  |
| 4. World issues concern me a great deal.   | 0.80     | 0.77  |
| 5. When I make an important decision, I look for information from a diverse set of sources.      | 0.73     | 0.68  |
| 6. I like to have contact with people from different cultures.                                   | 0.73     | 0.62  |
| <b>Global Identity — National Identity</b> (Der-Karabetian and Ruiz 1997)                        |          |       |
| (US: CR=0.76, $\alpha$ =0.72, AVE=0.45; China: CR=0.86, $\alpha$ =0.87, AVE=0.62)                |          |       |
| 1. I feel like I'm living in a Global village.   | –        | 0.70  |
| 2. I feel what I do could touch someone all around the world.                                    | 0.52     | –     |
| 3. I feel like I am 'next door neighbors' with people living in other parts of the world.        | 0.82     | 0.78  |
| 4. I feel that I am related to everyone in the world as if they were my family.                  | 0.71     | 0.84  |
| 5. I feel that people around the world are more similar than dissimilar.                         | 0.60     | 0.83  |
| <b>Promotion-Focus</b> (Semin et al. 2005)   |          |       |
| (US: CR=0.72, $\alpha$ =0.70, AVE=0.40; China: CR=0.87, $\alpha$ =0.86, AVE=0.63)                |          |       |
| 1. How often have you accomplished things that got you "psyched" to work even harder?            | 0.60     | –     |
| 2. How often do you do well at things that you try?  | 0.61     | –     |
| 3. I try to reach that in my life, in which I believe.   | –        | 0.60  |
| 4. I feel like I have made progress toward being successful in my life.                          | 0.67     | 0.82  |
| 5. I am a fanatic when trying to realize my goals.   | –        | 0.89  |
| 6. I am someone who looks forward to situations in which I expect to have success.               | 0.64     | 0.84  |
| <b>Prevention-Focus</b> (Semin et al. 2005)  |          |       |
| (US: CR=0.80, $\alpha$ =0.80, AVE=0.52; China: CR=0.75, $\alpha$ =0.75, AVE=0.51)                |          |       |
| 1. Growing up, how often would you cross the line and do things your parents would not tolerate? | 0.70     | 0.64  |
| 2. How often did you get on your parents' nerves when you were growing up?                       | 0.67     | 0.82  |
| 3. Growing up, how often did you act in ways that your parents thought were objectionable?       | 0.90     | 0.67  |
| 4. Not being careful enough has gotten me into trouble at times.                                 | 0.57     | –     |
| 5. I find that there are things that I have not thought about when I choose something.           | –        | –     |
| 6. I will break rules to reach my goal.  | –        | –     |
| <b>Technology Readiness</b> (Parasuraman 2000)   |          |       |
| (US: CR=0.70, $\alpha$ =0.70, AVE=0.38; China: CR=0.75, $\alpha$ =0.71, AVE=0.45)                |          |       |
| Optimism Average (10 items) <sup>1</sup>   | 0.75     | 0.78  |
| Innovativeness Average (7 items)   | 0.76     | 0.81  |
| Discomfort Average (10 items)  | 0.46     | 0.44  |
| Insecurity Average (9 items)   | 0.41     | 0.57  |
| <b>Technology Usage</b> (Parasuraman 2000; Curran et al. 2003)                                   |          |       |
| 1. Use an ATM?   | –        | –     |
| 2. Purchase products online that require shipping?   | –        | –     |
| 3. Use the "self-checkout" machine when you visit the grocery store?                             | –        | –     |

U.S. CFA Fit:  $\chi^2=445.15$ ,  $\chi^2$ /d.f. (179)=2.48, RMSEA=0.07, SRMR=0.06, CFI=0.92, NNFI=0.91

Chinese CFA Fit:  $\chi^2=372.75$ ,  $\chi^2$ /d.f. (160)=2.33, RMSEA=0.09, SRMR=0.09, CFI=0.90, NNFI=0.88

1. The items used to operationalize the four technology readiness attributes can be found in Parasuraman 2000.

tion above 0.40 were candidates for deletion. Subsequently, a series of measurement models were assessed in Lisrel 8.80 (Joreskog et al. 2000). Non-significant factor loadings, high modification indices, and high residuals forced the elimination of six items in the U.S. sample and seven items in the Chinese sample. Following the elimination of these items, unidimensionality and convergent validity was evident by all items significantly loading on their respective

constructs with few substantial modification indices. Reliability was evident in that CR and Cronbach's  $\alpha$  exceeded recommended thresholds (Fornell and Larcker 1981). However, some variance extracted estimates are below recommended thresholds (Anderson and Gerbing 1988), yet, recent research suggests that lower variance extracted estimates are acceptable for newer scales (e.g., Netemeyer et al. 2003).

**Table 2** Construct correlations. (China above the diagonal, U.S. below the diagonal)

|   |                              | 1      | 2      | 3      | 4      | 5     |
|---|------------------------------|--------|--------|--------|--------|-------|
|   | China AVE                    | 0.45   | 0.50   | 0.62   | 0.63   | 0.51  |
| 1 | Technology readiness         | –      | 0.52** | 0.71** | 0.49** | 0.01  |
| 2 | Cosmopolitanism/Parochialism | 0.30** | –      | 0.25** | 0.46** | 0.13  |
| 3 | Global/National Identity     | 0.14*  | 0.37** | –      | 0.27** | –0.11 |
| 4 | Promotion-focus              | 0.37** | 0.37** | 0.08   | –      | 0.18  |
| 5 | Prevention-focus             | 0.05   | 0.03   | 0.06   | 0.24** | –     |
|   | U.S. AVE                     | 0.38   | 0.58   | 0.45   | 0.40   | 0.52  |

\*  $p < 0.05$ , \*\*  $p < 0.01$

After confirming the validity and reliability of the individual latent constructs in both the U.S. and Chinese sample, the confirmatory factor analyses produced respectable fit: US:  $\chi^2=445.15$ ,  $\chi^2/d.f.$  (179)=2.48, RMSEA=0.07, SRMR=0.06, CFI=0.92, NNFI=0.91; China:  $\chi^2=372.75$ ,  $\chi^2/d.f.$  (160)=2.33, RMSEA=0.09, SRMR=0.09, CFI=0.90, NNFI=0.88). Discriminant validity was evident in that no confidence interval for the phi correlations between pairs of variables contained 1.0 (e.g., Anderson and Gerbing 1988), and all squared phi correlations were less than the respective variance extracted estimates for all pairs of constructs (e.g., Fornell and Larcker 1981), except for the global identification/TRI pair in the Chinese sample ( $\varphi^2=0.50$ , TRI AVE=0.45). Therefore, a chi-square difference test (Anderson and Gerbing 1988; Bearden et al. 1989) was conducted, and the model with the correlation fixed to unity between global identification and TRI fit significantly worse than the unrestrained correlation ( $\Delta\chi^2$  (1)=42.91,  $p < 0.001$ ). Therefore the weight of the evidence from three separate tests supports discriminant validity between all model constructs.

Finally, considering the employment of perceptual measures, we also assessed the potential for common method variance (CMV) through two recommended procedures. First, we employed Harman’s one-factor test within a confirmatory factor analysis setting. If common method variance poses a serious threat, a single latent factor would account for all manifest variables (Podsakoff et al. 2003), whereas a worse fit of the one-factor model indicates that CMV does not pose a serious threat. The one-factor model resulted in a  $\chi^2$  (189)=1703.85 in the U.S. sample compared with the CFA  $\chi^2$  (179)=445.15. In the Chinese sample, the one-factor model resulted in a  $\chi^2$  (170)=1275.62, compared with  $\chi^2$  (160)=372.75.

Second, Podsakoff et al. (2003) also suggest controlling for CMV by incorporating a theoretically unrelated variable, a marker variable, to parcel out the effects of CMV (Lindell and Whitney 2001). If the structural parameters between the independent and dependent variables remain stable both with and without the inclusion of a marker

variable, there is evidence that CMV is not an issue (Podsakoff et al. 2003). Satisfaction with life (SWL) was included in the study as a marker variable because it is well established, but theoretically unrelated to the constructs of interest. In the U.S. sample, the inclusion of SWL did not alter any of the relationships of interest. In the Chinese sample, the significance level of one structural parameter (promotion focus to TRI) deteriorated from.05–.10, while the remaining parameters remained stable. As a result of this test, combined with the Harman’s one-factor test, we conclude that bias due to CMV does not pose a serious threat to the findings of this study. In sum, the evidence suggests that the measures proposed exhibit acceptable unidimensionality, reliability and validity in both the U.S. and Chinese samples and are fit for further analysis.

**Analysis and results**

The results are summarized in Table 3 and Fig. 2. A structural equation was estimated in Lisrel 8.80 to assess the direct and mediated effect of our independent variables on technology readiness and SST usage. In general, both the U.S. and the Chinese samples support the social-identity model of motivation proposed in this study as the results support the effect of cosmopolitanism, global identity, promotion focus, and prevention focus on technology usage.

Specifically, as predicted, consumers’ general technology propensity is positively related with technology usage in both the U.S. (ATM:  $\beta=0.32$ ,  $p < 0.001$ ; online shopping:  $\beta=0.56$ ,  $p < 0.001$ ; Self-checkout:  $\beta=0.38$ ,  $p < 0.001$ ) and in China for ATM usage ( $\beta=0.56$ ,  $p < 0.001$ ) but not for online shopping ( $\beta=0.27$ ,  $p > 0.1$ ), which provides full support for H1 in the U.S. sample and partial support in the Chinese sample. H2 relates cosmopolitanism with technology readiness and technology usage. In the U.S. sample, we find a significant direct effect between cosmopolitanism and technology readiness ( $\beta=0.19$ ,  $p < 0.05$ ), which supports H2a. Only one of the technologies was related directly

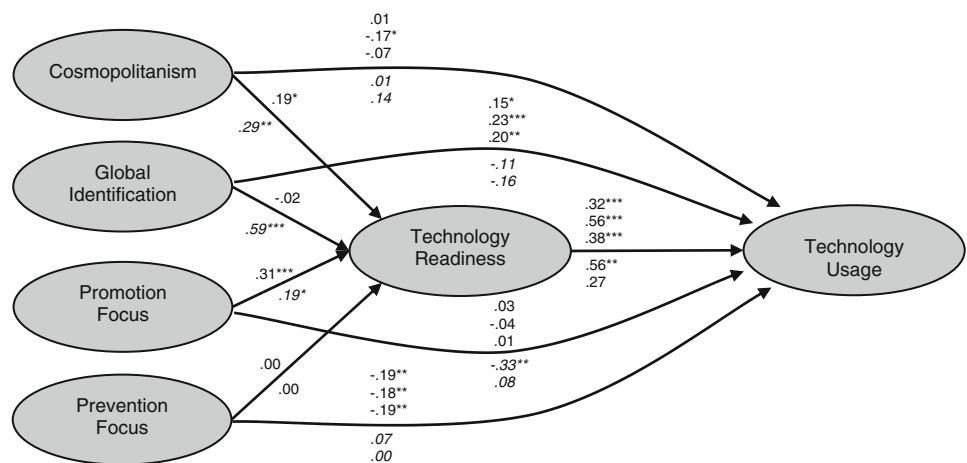
**Table 3** Standardized results of the hypothesis testing

| Independent variable  | Dependent variable        | U.S. (n=336)  |                 | China (n=150) |                   | Hypotheses |       |    |    |
|-----------------------|---------------------------|---------------|-----------------|---------------|-------------------|------------|-------|----|----|
|                       |                           | Direct effect | Indirect effect | Direct effect | Indirect effect   | U.S.       | China |    |    |
| Technology readiness  | ATM                       | 0.32***       | –               | 0.56**        | –                 | H1:        | S     | PS |    |
|                       | Online shopping           | 0.56***       | –               | 0.27          | –                 |            | S     |    |    |
|                       | Self-checkout             | 0.38***       | –               | –             | –                 |            |       |    |    |
| Cosmopolitanism       | TRI                       | 0.19*         | –               | 0.29**        | –                 | H2a:       | S     | S  |    |
|                       | ATM                       | 0.01          | 0.06*           | 0.01          | 0.16*             |            | H2b:  | NS | NS |
|                       | Online shopping           | –0.17*        | 0.11*           | 0.14          | 0.08              |            | H2c:  | S  | PS |
| Global identification | Self-checkout             | –0.07         | 0.07*           | –             | –                 |            |       |    |    |
|                       | TRI                       | –0.02         | –               | 0.59***       | –                 | H3a:       | NS    | S  |    |
|                       | ATM                       | 0.15*         | –0.01           | –0.11         | 0.33**            |            | H3b:  | S  | NS |
| Online shopping       | 0.23***                   | –0.01         | –0.16           | 0.16          | H3c:              |            | NS    | PS |    |
| Promotion-focus       | Self-checkout             | 0.20**        | –0.01           | –             | –                 |            |       |    |    |
|                       | TRI                       | 0.31***       | –               | 0.19*         | –                 | H4a:       | S     | S  |    |
|                       | ATM                       | 0.03          | 0.10**          | –0.33**       | 0.11 <sup>a</sup> |            | H4b:  | NS | NS |
| Online shopping       | –0.04                     | 0.17***       | 0.08            | 0.05          | H4c:              |            | S     | PS |    |
| Prevention-focus      | Self-checkout             | 0.01          | 0.12**          | –             | –                 |            |       |    |    |
|                       | TRI                       | 0.00          | –               | 0.00          | –                 | H5a:       | NS    | NS |    |
|                       | ATM                       | –0.19**       | 0.00            | 0.07          | 0.00              |            | H5b:  | S  | NS |
| Online shopping       | –0.18**                   | 0.00          | 0.00            | 0.00          | H5c:              |            | NS    | NS |    |
| Fit statistics        | Self-checkout             | –0.19**       | 0.00            | –             | –                 |            |       |    |    |
|                       | $\chi^2$                  | 630.08        |                 | 472.44        |                   |            |       |    |    |
|                       | $\chi^2$ /d.f. (230, 191) | 2.74          |                 | 2.47          |                   |            |       |    |    |
|                       | RMSEA                     | 0.07          |                 | 0.10          |                   |            |       |    |    |
|                       | SRMR                      | 0.06          |                 | 0.09          |                   |            |       |    |    |
|                       | CFI                       | 0.90          |                 | 0.88          |                   |            |       |    |    |
|                       | NNFI                      | 0.88          |                 | 0.86          |                   |            |       |    |    |
| IFI                   | 0.90                      |               | 0.88            |               |                   |            |       |    |    |

<sup>a</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ , S = Supported, NS = Not Supported, PS = Partially Supported

**Figure 2** Standardized path coefficients for hypothesized model. Note: Standardized values reported for US sample above the path and Chinese sample below the path in italics. Direct paths to technology usage are for ATM, online purchases, and grocery self-checkout usage from top to bottom. Chinese sample did not include grocery self-checkout due to lack of availability.

**Standardized Path Coefficients for Hypothesized Model**



Note: Standardized values reported for US sample above the path and Chinese sample below the path in italics. Direct paths to technology usage are for ATM, online purchases, and grocery self-checkout usage from top to bottom. Chinese sample did not include grocery self-checkout due to lack of availability.

to cosmopolitanism and in the opposite direction as hypothesized, which means H2b must be rejected, but significant indirect effects in support of H2c (ATM:  $\beta=0.06$ ,  $p<0.05$ ; online shopping:  $\beta=0.11$ ,  $p<0.05$ ; self-checkout:  $\beta=0.07$ ,  $p<0.05$ ). The findings were similar for the Chinese sample. We find support for H2a with a significant direct effect with TRI ( $\beta=0.29$ ,  $p<0.01$ ), we reject H2b since cosmopolitanism is not directly related with technology usage, and finally we partially support H2c with a significant indirect effect for ATM usage ( $\beta=0.16$ ,  $p<0.05$ ).

Global identification has no direct relationship with technology readiness in the U.S. sample, which means H3a and H3c are rejected. However, we find significant direct effects with technology usage, which supports H3b (ATM:  $\beta=0.15$ ,  $p<0.05$ ; online shopping:  $\beta=0.23$ ,  $p<0.001$ ; self-checkout:  $\beta=0.20$ ,  $p<0.01$ ). In contrast, in the Chinese sample, cosmopolitanism is significantly related with technology readiness, in support of H3a ( $\beta=0.59$ ,  $p<0.001$ ) and indirectly with ATM usage, in support of H3c ( $\beta=0.33$ ,  $p<0.01$ ), but not directly with technology usage, which means H3b must be rejected.

Promotion-focused orientation is significantly related with technology readiness in the U.S. sample, in support of H4a ( $\beta=0.31$ ,  $p<0.001$ ), and indirectly with technology usage, in support of H4c (ATM:  $\beta=0.10$ ,  $p<0.01$ ; online shopping:  $\beta=0.17$ ,  $p<0.001$ ; self-checkout:  $\beta=0.12$ ,  $p<0.01$ ), but we do not find evidence of a direct relationship between promotion focus and technology usage, so H4b is rejected. In the Chinese sample, the findings were not as conclusive. Promotion focus has a marginally significant indirect effect on ATM usage ( $\beta=0.11$ ,  $p<0.1$ ), but a significant direct negative effect on ATM usage ( $\beta=-0.33$ ,  $p<0.01$ ).

Prevention-focus orientation has a significant direct effect with technology usage in the U.S., in support of H5b (ATM:  $\beta=-0.19$ ,  $p<0.01$ ; online shopping:  $\beta=-0.18$ ,  $p<0.01$ ; self-checkout:  $\beta=-0.19$ ,  $p<0.01$ ), but no direct relationship with technology readiness, which means H5a and H5c must be rejected. Finally, in the Chinese sample, prevention focus is not related with any of the dependent variables, which means H5a-c are all rejected.

In sum, the results of this bi-cultural study lend credibility to the social-identity model of motivation proposed in this study. All of the independent variables are directly or indirectly related with technology usage in both the US and Chinese sample (with the exception of prevention focus in the Chinese sample). It is not the intent of this research to explicitly compare model parameters from two different cultures; rather it is to provide support from an alternate cultural context. To further substantiate the hypothesized model, we next analyze two competing theoretical perspectives.

## Analysis of competing models

For parsimony reasons, the competing models were tested in the U.S. sample only. A re-specified model based on the motivational hierarchy perspective (Fig. 1: Panel B) reveals a significant path between promotion focus and cosmopolitanism ( $\beta=0.41$ ,  $p<0.01$ ). However, promotion focus was not significantly related with global identification and prevention focus was not significant with either variable. Furthermore, the fit of this respecified model ( $\chi^2=696.90$ ,  $\chi^2/\text{d.f.}(239)=2.92$ , RMSEA=0.08, SRMR=0.09, CFI=0.88, NNFI=0.86, IFI=0.88) was worse than the data fit for the hypothesized model ( $\chi^2=630.08$ ,  $\chi^2/\text{d.f.}(230)=2.74$ , RMSEA=0.07, SRMR=0.06, CFI=0.90, NNFI=0.88, IFI=0.90). The change in  $\chi^2$  was significant ( $\Delta\chi^2=66.82$ ,  $p<0.001$ ). Thus, we conclude that the hypothesized model is superior to the alternative motivational hierarchy perspective.

To test the attitudinal interaction model (Fig. 1: Panel C), we relied on Ping's (1995) technique for modeling interactions in SEM. The main effects from the original hypothesized model remain stable with the inclusion of the multiplicative interaction variables. For an overall comparison of data fit, a regular chi-square difference test is not suitable due to the non-nested nature of this model. However, Homburg et al. (2005) recommend comparing Akaike's information criterion (AIC) when a regular chi-square difference test is inappropriate. The AIC comparison supports the original hypothesized model (AIC=770.08) over the competing interaction model (AIC=910.99).

Finally, in addition to the theoretically competing models, an alternative specification of the hypothesized model as a full mediation model with no direct effects of the exogenous variables on technology usage was tested in the larger U.S. sample. It was found to be a worse fitting model than the hypothesized model:  $\Delta\chi^2=54.34(12)$ ;  $p<.001$ . In sum, the hypothesized model received support as the best fitting model compared to the alternative specification, i.e. full mediation model, and the two competing theoretical perspective models, i.e. motivational hierarchy and attitudinal interaction models.

## Discussion

The results of the study provide intercultural support that in the context of the globally oriented consumer, technology readiness and usage can be explained through a social-identity model of motivation perspective. Evidence is found for effects of cosmopolitanism, global identification, promotion and prevention focus on technology usage in both the U.S. and China. As predicted, cosmopolitanism, global identification and promotion focus are all positively related

to technology usage, while prevention focus is negatively related.

While the relationships are found to be in some cases direct and in others mediated through the attitudinal construct of technology readiness, the evidence from the present study clearly demonstrates the propensity of globally-oriented consumers to use technology, and provides initial evidence of the usefulness of explaining technology usage through a social-identity model of motivation. Technology has been strongly associated with the global consumer culture (e.g., Alden et al. 2006; Cannon and Yaprak 2002; Firat 1997), while the process of globalization has the psychological consequence of influencing identities and how people think of themselves in relation to the social environment (Arnett 2002). Therefore, individuals who have a self-identity of being globally oriented will behave in a manner that supports their identity, the process of self-verification (Stryker and Burke 2000).

In sum, individuals are more likely to approach and use technology when they exhibit cosmopolitanism, global identification, and chronic promotion regulatory focus. In the context of the proposed social-identity model of motivation, technology readiness and usage is consistent with a globally-oriented identity and the predisposition towards aspiration, accomplishment and change as suggested by a promotion orientation. The diffusion of global communication technology, e.g. internet web sites, email, cellular phones, has enabled globally-oriented individuals to expand their sphere of living and gain exposure to the practices and standards of cultures far and wide. Thus, the association of technology usage with cosmopolitanism and global identification is based on its ability to facilitate “self” maintenance.

The independent effects of global identification while controlling for the effects of cosmopolitanism are significant. On the surface, the two constructs appear to lack discriminant validity. However, the results here offer evidence not only of their independence, but also statistically validate earlier research by Cannon and Yaprak (2002) that argued “localism” was not the polar opposite of cosmopolitanism. Therefore, combined with the earlier work’s qualitative support through in-depth interviews, this finding lays the groundwork for further exploration of Cannon and Yaprak’s (2002) two-by-two classification matrix that suggests there are two different types of cosmopolitans, one anchored in a local context and the other not. The difference between the effects of cosmopolitanism and global identification may be based on the difference in how an individual views one’s self in relation to the collective group. It seems logical that a cosmopolitan focusing more on objective evaluations and worldwide standards may be more individualistic; while individuals

that have a strong identification with a group, either global or local, may be more collectivistic.

Promotion regulatory focus was significantly related to technology usage. Promotion focused individuals may enjoy a feeling of accomplishment by learning how to use new technology, while prevention focused individuals may experience a fear of failure or embarrassment. This could be especially true in the case of using technology in public spaces like the self-checkout machine at the grocery store. Thus, the association between technology and regulatory focus is based on the individual’s motivational strategy for achieving goals. Those who are more comfortable with risk and uncertainty, and who demonstrate a general openness to new innovations, i.e. promotion focus, are more likely to embrace technology. Conversely, those who use the motivational strategy based upon protection and safety, i.e. prevention focus, are more likely to use traditional means of conducting transactions, i.e. employee assisted service.

The use of samples from two substantially different cultures, the U.S. and China, was employed to explore the proposed relationships in an intercultural context. The two cultures differ greatly in terms of economic development, cultural values and political governance. Thus, given that both samples support the proposed model suggests some degree of universality and generalizability of the results. While we do not attempt a direct cross-cultural comparison of levels of technology readiness and usage, we do note that the model seems to have greater support in the U.S. sample as opposed to the Chinese sample. Weaker results in the Chinese sample may be due to low availability of self-service technology in general in China removing the opportunity for globally oriented and promotion focused individuals to use technology. Cultural values may also play a role. China’s collectivist culture value that places the welfare of the group over the welfare of the individual may dampen enthusiasm for the use of technology that may replace the need for employee-based service, as many self-service technologies are designed to do. Research suggests that cultural values such as individualism and collectivism may play a role in technology usage (e.g. Srite and Karahanna 2006), and may help explain the results of the Chinese sample. Additional research investigating potential cultural effects is clearly needed to fully understand the differences between the U.S. and Chinese results.

As the process of globalization and a growing global consumer culture continues, marketers should identify consumer segments that cross national boundaries (Cleveland and Laroche 2007). The globally-oriented consumer represents one such segment. The implication for marketers is that those planning to deploy technology should consider the characteristics of their targeted consumers. The evidence

here demonstrates that consumers who are more cosmopolitan, identify with the global community and are promotion-focused represent a fertile opportunity because they are already predisposed to using technology.

Self-service technologies were proposed to represent “really new innovations” as opposed to “radical” or “incremental” innovations according to the Garcia and Calantone (2002) typology of innovations. Thus, this research provides some evidence that a social-identity model of motivation can explain the usage of “really new innovations”. However, the question remains whether or not the effects differ across the three types of innovations, incremental, really new, and radical.

#### Limitations and future research

Reasonable attempts were made to control for common method bias, and the resulting statistics suggest that common method bias does not pose a serious threat in the present study. However, common method bias remains a possibility in behavioral research. Additionally, the mean age of the sample is somewhat young (U.S. = 28, China = 34); therefore, generalizability of these findings to consumers beyond early adulthood should be taken cautiously. Furthermore, the Chinese sample was somewhat small ( $n=150$ ) which likely lowered statistical power. In addition, although the Chinese language survey was translated and back-translated by native Chinese speakers, the use of constructs and measures designed largely for western subjects may result in weak construct equivalence between the two cultures, although our focus has largely been on within-culture relationships and not on between-culture measurement invariance. Despite these limitations the proposed model received support in both the U.S. and Chinese context.

Future research should focus on identifying observable characteristics of cosmopolitanism, global identification, and promotion regulatory focus. Media consumption may be a promising method for identifying these consumers as the relationship between global-orientation and foreign media exposure has been documented (Alden et al. 2006). In addition, we tested just one identity, the globally oriented identity, and its relationship to technology usage. Other identities may be worth examining as well. Also, although the general framework received support in both the U.S. and China, there were some inconsistencies between the two samples. For example, although it had a positive indirect effect, cosmopolitanism also had a negative direct effect in the U.S. Similarly, in China, promotion focus had a positive indirect effect on ATM usage, but a negative direct effect. It may be fruitful to explore whether these inconsistencies are the result of the aforementioned limitations, or if perhaps differences in the socio-cultural environment plays a role in the model.

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