



The effects of national cultural values on individuals' intention to participate in peer-to-peer sharing economy

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ABSTRACT

This study examines the role of cultural values on individuals' intention to rent out and rent products in peer-to-peer exchanges. We collected survey data from participants in eleven countries - China, India, Jamaica, Namibia, Pakistan, the Philippines, Russia, South Korea, Turkey, the United Kingdom, and the United States. Our findings provide evidence that, while both collectivism and masculinity positively affect individuals' intention to rent out and rent products, uncertainty avoidance significantly discourages individuals from renting out their products to others. We also find that the product category significantly affects renting out and renting intentions of individuals using peer-to-peer exchanges.

1. Introduction

The growth of the peer-to-peer (P2P) exchanges that allow individuals to rent out their under-utilized products for a fee to those who are temporarily in need of them in the past few years has been phenomenal (Cusumano, 2015). Some have predicted that this industry, popularly known as the sharing economy, could be as big as the Industrial Revolution (Botsman & Rogers, 2010). While P2P exchanges continue to emerge around the world, business scholars have only recently started to consider the importance of studying cultural differences in understanding the sharing economy. The need for incorporating a cultural lens into this stream of research is critical because individuals from different countries espouse different cultural values (Hofstede, Hofstede, & Minkov, 2010), norms (Minkov, Blagoev, & Hofstede, 2013; Vaclair & Fischer, 2011), and beliefs (Belk, 2010) about sharing. For example:

In much of Asia, the tea cups are quite small, and the beer bottles are quite large. For, in contrast to contemporary Western drinks, the beverages in these containers are meant to be shared [and not individually consumed].

(Belk, 2010; p. 715).

Although most cultures have rituals and practices that involve sharing, these practices manifest themselves in different ways and carry different assumptions about the meaning of these shared practices.

Thus, there is no single universal prescription that can “be applied for promoting [P2P exchanges] across the globe” (Davidson, Habibi, & Laroche, 2018; p. 370). This study seeks to understand the impact of cultural differences on individuals' propensity to rent out and rent products using P2P exchanges. To the best of our knowledge, thus far, there is only one study - Davidson et al. (2018) - that has examined the role of cultural differences in the renting behaviors of Indian and American participants of a P2P ridesharing company. However, it has two shortcomings. First, Davidson et al. (2018) did not measure the cultural values of their participants and, instead, used the country name as a proxy to explain the differences between Indian and American participants. Second, their study only explored the consumer (i.e., renting) side and did not consider the provider (i.e., renting out) side of the sharing economy. Recently, Benoit, Baker, Bolton, Gruber, and Kandampully (2017) have criticized the lack of research about providers' role in the sharing economy. According to Wilhelms, Henkel, and Falk (2017), this lack of research is attributed to “the existing research [that] merely explores users of business-to-consumer (B2C) exchange services (such as Zipcar) where an individual can rent, but not rent out (Wilhelms et al., 2017; p. 38). Kumar, Lahiri, and Dogan (2018) further argue that matching the provider (supply) side and consumer (demand) side is critical for the long-term success of peer-to-peer exchanges.

Consequently, this study considers both the provider and consumer sides in P2P exchanges and is guided by the following research questions:

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RQ1: Does culture affect individuals' propensity to rent out products (i.e., as peer providers) using P2P exchanges?

RQ2: Does culture affect individuals' propensity to rent products (i.e., as peer consumers) using P2P exchanges?

Additionally (**RQ3**), we examine the effects of product category on individual's propensity to rent out and rent using P2P exchanges.

This study contributes to the field of the sharing economy by delineating a theoretical and practical need to separate a P2P exchange participant's role into provider and consumer types. This allows investigating the factors that may affect an individual's renting out and renting behaviors differently, especially regarding their cultural values. This study yields actionable insights to marketing managers of existing and upcoming P2P exchanges to account for cultural differences while targeting potential participants (i.e., providers, consumers, or both) of peer-to-peer exchanges in different regions. Furthermore, by employing a diverse group of respondents from 11 different countries, this study addresses the concerns regarding the lack of empirical and cross-cultural research in the field of the sharing economy.

Next, we explore the literature that informs our theory development and testing, the methods we use to collect and examine our data, and discuss the results of our investigation. We conclude with implications of our research for theory and practice.

2. Literature review and hypotheses

The label “sharing economy” is used in the popular press and academic literature to describe the Internet-mediated markets that enable individuals to get temporary access to a product for a fee. However, there are some who have criticized the use of this label because sharing in a true sense implies a nonreciprocal pro-social behavior with no monetary form of exchange (Benkler, 2004). Habibi, Davidson, and Laroche (2017) addressed these concerns by developing a continuum with “pure sharing” and “pure exchange” as its two extremes. Pure sharing refers to the traditional sharing in which there is no money involved and no expectation of reciprocity. By comparison, pure exchange refers to buying a product directly from a store (Habibi et al., 2017). The focus of this study is on peer-to-peer (P2P) exchanges, which connect individuals who are willing to rent out their under-utilized products to those who are temporarily in need of such products (Cusumano, 2015). Since P2P providers charge a fee for the time a product is rented by peer consumers, a P2P exchange lies far away from the pure sharing side but lies closer to the pure exchange side (Habibi et al., 2017). In the next section, we describe Belk's theory of sharing and Hofstede's theory of cross-cultural framework.

2.1. Theory of sharing

Based on the seminal work in the field of consumer behavior (e.g., Fiske, 1991; McGraw, Tetlock, & Kristel, 2003) and his past work, Belk (2010) suggested a theory of sharing. Primarily, the theory proposes four dimensions (i.e., the drivers or inhibitors) of sharing: (1) possessiveness, (2) independence versus interdependence, (3) privacy and contagion, and (4) utilitarianism. Possessiveness is the extent to which one has feelings of attachment to one's possessions. Independence versus interdependence captures materialism, which is the extent to which one values objects more than people. Privacy and contagion is the degree to which one desires privacy and worries about contamination of objects due to touching by others. Utilitarianism is the extent to which one is driven by economic motivations. While individuals who exhibit high levels of possessiveness, value independence, and are concerned about contagion are less likely to share, those who perceive economic utility in sharing products are more likely to participate in the sharing economy (Belk, 2010).

Not only does Belk's theory of sharing shed light on why individuals may (or may not) rent from others, but it also explains why individuals

may (or may not) rent out their products to others. Unlike traditional industries in which an individual can only be a consumer, the P2P exchange allows an individual to provide and consume products. Therefore, in this study, we look at the two dependent variables – *peer provider propensity* and *peer consumer propensity*. *Peer provider propensity* is defined as an individual's intention to rent out his or her products to others using an Internet-mediated P2P exchange. *Peer consumer propensity* is defined as an individual's intention to rent products from others using an Internet-mediated P2P exchange.

2.2. Hofstede's cross-cultural theory

This study focuses on the four dimensions of culture - collectivism, masculinity, uncertainty avoidance, and power distance - as proposed by Hofstede (1980). Collectivism is the extent to which individuals value the welfare of a group over self. Masculinity is the extent to which members of a society are assertive, performance-oriented, and ambitious. Uncertainty avoidance measures the extent to which individuals in a society are risk-averse. Power distance captures the extent to which individuals in a society deals with inequality.

2.2.1. Collectivism and P2P exchange

A primary trait of individuals in collectivist cultures is that they tend to be more group-oriented than self-oriented, which implies individualism (Hofstede, 1980). While collectivists have a strong sense of community, individualists tend to be materialistic such that the individual needs, success, and reward are considered more important than the collective success (Akbar, Mai, & Hoffmann, 2016; Earley & Gibson, 1998; Hofstede, 1980). Put simply, collectivism captures the emphasis on (collective) “We” versus (individual) “I” (Hofstede, 1980).

In this sense, collectivism relates to Belk's independence (“I”) versus interdependence (“We”) dimension of sharing. According to Belk (2010), materialists tend to share less because they avoid being dependent on others in order to use products. By comparison, non-materialists value warm relationships with others and do not mind being dependent on others for using products. Children in individualistic cultures learn from an early age that “neither practically nor psychologically” one is supposed to be dependent on others. By comparison, children in collectivistic cultures learn that interdependence “is both practical and psychological” (Hofstede, 1980; p. 91). Not only do collectivists tend to be non-materialists, but they are also less likely to be possessive and emotionally attached to their products (Wong, 1997).

According to Belk (1985, 2010), both possessiveness and materialism inhibit sharing and lead to owning. On the contrary, participation in peer-to-peer exchanges requires non-materialism and lack of attachment to one's possessions, both of which are collectivistic traits (Bauer, Wilkie, Kim, & Bodenhausen, 2012; Burroughs & Rindfleisch, 2002; Wong, 1997). In a recent exploratory “interviews-based” study, Albinsson and Yasanthi (2012) found that sense of community, which refers to the feelings of interconnectedness and interdependence and well-being of the group over self, was described as the main driver of individual participation in a non-monetary sharing environment. Similarly, Krush, Pennington, Fowler, and Mittelstaedt (2015) suggested that Freecycle communities, where individuals give away goods that their household deems no longer necessary, are examples of greater human welfare on a collective level. While the focus of these two studies was on the pure sharing side, it does provide some evidence that collectivistic cultural values are likely to encourage participation in P2P exchanges through renting and renting out.

Another study by Lamberton and Rose (2012) found that the perception of similar others would likely increase individuals' propensity to rent products. While Lamberton and Rose's study explored the renting side of the sharing economy, given that collectivists tend to favor individuals perceived similar to themselves, we propose that collectivistic individuals, in addition to having higher peer consumer propensities, will likely have higher peer provider propensities. Thus, we posit:

Hypothesis 1a. Collectivism will have a positive effect on peer provider propensity of renting out products.

Hypothesis 1b. Collectivism will have a positive effect on peer consumer propensity of renting products.

2.2.2. Masculinism and P2P exchange

Masculinism measures the extent to which individuals in a society are assertive, performance-oriented, and ambitious. By comparison, individuals in feminine societies value nurturing, quality of life, and modesty (Srite & Karahanna, 2006). A major difference between the two opposing ends of this dimension lies in the degree to which individuals in a society are driven by concrete, pragmatic economic motivations (Hofstede et al., 2010). In masculine societies, there is a strong emphasis on economic achievements, and thus individuals strive hard to increase their earnings. Individuals in feminine societies, by comparison, are driven by emotions (Hofstede, 1980).

According to Belk (2010), those who are driven by pragmatic economic motivations are more likely to share because, by sharing products, individuals can reduce their expenditures and increase their earnings. Economic cost was also found to be a major factor that encouraged individuals to rent products from others (Lamberton & Rose, 2012). On the other hand, Philip, Ozanne, and Ballantine (2015) found that individuals who rent out their under-utilized products felt contented by recouping costs for acquiring the item. Not only does a P2P exchange allow individuals to become peer providers and earn additional income from their under-utilized products, but it is also economical since it enables individuals to rent expensive or infrequently used products from others at a lesser cost (Belk, 2010, 2014; Cusumano, 2015). Thus, we posit:

Hypothesis 2a. Masculinism will have a positive effect on peer provider propensity of renting out products.

Hypothesis 2b. Masculinism will have a positive effect on peer consumer propensity of renting products.

2.2.3. Uncertainty avoidance and P2P exchange

Uncertainty avoidance is the extent to which members of a society feel anxious in their dealing with ambiguous situations (Hofstede, 1980). While some societies accept that life is uncertain and cannot be controlled, others consider uncertainty to be a threat. High uncertainty avoidance societies tend to be risk or ambiguity-averse, whereas low uncertainty avoidance societies reflect risk-taking behaviors.

When individuals rent out their products (as peer providers), there is always some uncertainty regarding how the renter will use the product. These uncertainties can be attributed to customer misbehavior, such as inappropriate handling, damage, or overuse of the rented out product (Schaefers, Wittkowski, Benoit, & Ferraro, 2016). Past research suggests that individuals in strong uncertainty avoidance cultures are concerned about cleanliness (i.e., products getting dirty) (De Mooij, 2010, 2013). In addition to customer misbehavior, providers are also likely to experience anxiety due to a possibility of economic loss (Harrison, 2014; Kim, Yoon, & Zo, 2015; Philip et al., 2015). There are also risks associated with a peer provider getting involved in injury cases because of the lack of maintenance (or improper use) of the rented out product by the consumer (Kohda & Masuda, 2013). Thus, we hypothesize:

Hypothesis 3a. Uncertainty avoidance will have a negative effect on peer provider propensity of renting out products.

By comparison, renting allows individuals to avoid risks due to product obsolescence and further prevents them from making an incorrect product selection by trialing before purchase (Philip et al., 2015). This is because renting provides individuals with a variety of options to rent from and avoid buyer's remorse. Therefore, we posit:

Hypothesis 3b. Uncertainty avoidance will have a positive effect on peer consumer propensity of renting products.

2.2.4. Power distance and P2P exchange

Power distance captures how a society deals with inequality (Hofstede, 1980). Inequality in a society is apparent in the presence of different social classes - lower, middle, or upper. Due to their (higher) social class, some individuals may have more power (i.e., status and respect) than others. Besides social class, a society can have several stratifications based on prestige, intellectual and education levels, wealth, occupations, and political ranks (Bochner & Hesketh, 1994). While all societies are unequal, some are more unequal than others.

Individuals in low power distance societies are less likely to differentiate others based on societal stratifications while renting or renting out products. On the contrary, the strong stratifications in high power distance societies may discourage sharing of products, especially if the exchange is between rich and poor or between individuals of higher socioeconomic status and individuals of lower class or social rank.

However, the interesting characteristic of P2P sharing is that all communication, such as initial contact and payment transactions, between the provider and the consumer, is managed through the Internet. Internet-enabled communication is less synchronous than face-to-face communication because several physical, visual, and verbal symbols get filtered out by the lean nature of the communication media (Dennis, Fuller, & Valacich, 2008). Due to the absence of these symbols, the parties involved in a P2P exchange will find it difficult to differentiate each other based on their social class or rank. Moreover, in high power distance societies, individuals are expected to comply with the opinions of their organizational or societal leaders without question (House, Javidan, Hanges, & Dorfman, 2002). So, if the individuals, who are perceived to have power in an organization or are considered influential in society, participate in the peer-to-peer exchange, those with espoused power distance values will likely follow in their footsteps. Therefore, we hypothesize:

Hypothesis 4a. Power distance will have a positive effect on peer provider propensity of renting out products.

Hypothesis 4b. Power distance will have a positive effect on peer consumer propensity of renting products.

Having proposed hypotheses regarding cultural values, in the next section we present our discussion and hypotheses for the relationship between product category and individuals' propensity to rent and rent out products using P2P exchanges.

2.2.5. Product categories and P2P exchange

As the sharing economy continues to expand, an increasing number of P2P exchanges have emerged offering a variety of products. However, "most existing studies only consider one form [product category] of the sharing economy" (Böcker & Meelen, 2016; p. 29). The current study focuses on seven different product categories: accommodations, bicycles, cars, clothes, household goods, jewelry, and paintings. We chose different products because the category of a product being exchanged will likely affect peer provider and peer consumer propensities (Böcker & Meelen, 2016; Philip et al., 2015).

Researchers in the consumer behavior field argue that individuals tend to lower their evaluations and purchasing intentions of touched products due to concerns of contagion. Contagion refers to the feeling of disgust that a product has been physically touched by others (Rozin & Fallon, 1987; Rozin, Markwith, & McCauley, 1994). While it is common for shoppers to open the packaging of products, "after deciding to make a purchase, [they often] select a fresh one from the back of the display" (Argo, Dahl, & Morales, 2006; p. 81). Although Argo et al. (2006) discuss shopping behaviors specific to retail "packaged" goods, according to Underhill (2009), this behavior applies to most product categories.

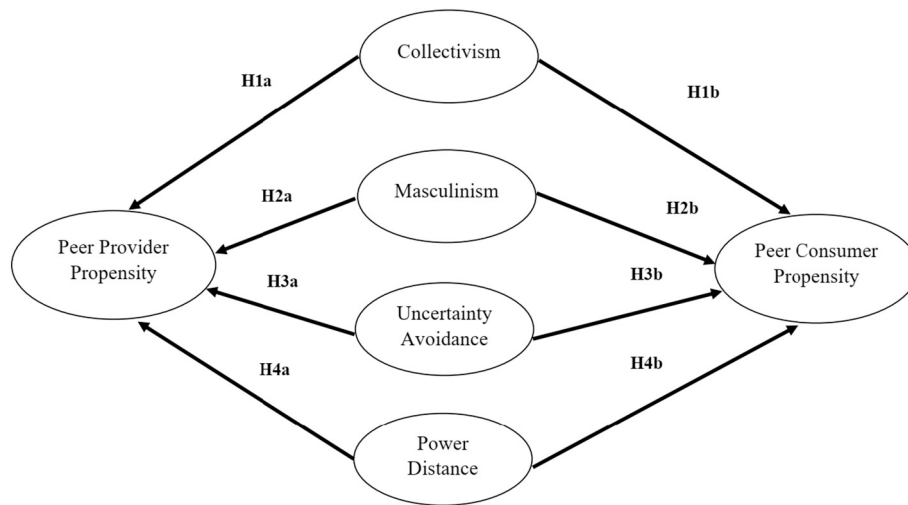


Fig. 1. Research hypotheses.

In an interpretive study of Zipcar users, participants raised concerns of contagion (Bardhi & Eckhardt, 2012). Researchers suggest that the greater the degree of intimacy between an individual and a product, the greater the concerns of contagion (Argo et al., 2006; Gregson & Crewe, 2003). Therefore, the fear of contagion will likely be stronger for product categories, such as clothes, jewelry, headphones, and cosmetics, with which individuals have direct, close, intimate contact (Angyal, 1941; Argo et al., 2006; Underhill, 2009). Specifically, the products that are worn will likely have low peer provider and peer consumer propensities. In sum, due to concerns of contagion, product category will likely affect peer provider and peer consumer propensities (Fig. 1). Thus, we posit:

Hypothesis 5a. Product category will affect peer provider propensity such that individuals will be less likely to rent out products with a high degree of intimacy.

Hypothesis 5b. Product category will affect peer consumer propensity such that individuals will be less likely to rent products with a high degree of intimacy.

3. Methods

To test our proposed hypotheses, we surveyed 1163 participants in 11 countries (see Table 1 for sample demographics). Participants were undergraduate students in the business schools, and they were given course credit for their participation. We used college-aged subjects because they are millennials (i.e., individuals born between 1982 and 1999), who do not only represent the youngest generation in today's workforce, but they are also the most active participants of the sharing

economy (Maycotte, 2015; Twenge, Campbell, Hoffman, & Lance, 2010). Participants were first provided with a definition of the peer-to-peer market and were then presented with two sets of statements that measured their peer provider and peer consumer propensities. Each set of statements consisted of seven scenarios (see Appendix A), one for each of the seven product categories: accommodations, bicycles, cars, clothes, household goods, jewelry, and paintings. The scenarios were randomized within each set such that the order of the seven statements was different for every participant. The authors and five business school professors, from different countries used in the sample with knowledge of P2P exchanges, reviewed all scenarios. Participants chose an option based on a 5-point Likert-type scale that assessed the degree to which they were likely to rent out and rent products (where 1 meant *Highly Unlikely*, and 5 meant *Highly Likely*).

Before the survey was administered to participants, a pilot survey of 50 undergraduate students was first conducted at a large Midwestern university in the United States to check the survey for readability, clarity, and ease of completion in an Internet-based environment. Following this, for China, Russia, South Korea, and Turkey, the survey was translated into Mandarin Chinese, Russian, Korean, and Turkish languages respectively using translation and back-translation procedures (Gelfand et al., 2011). Given the proliferation of English language for societal and Internet use in India, Pakistan and the Philippines, especially among the college-aged population, the survey questions were presented in English (Chavez, 2014; Khan, Moss, Quratulain, & Hameed, 2018). The respondents in these countries attended English-speaking universities and, according to local collaborators, English was the most suitable language to administer the survey in these countries. In addition to this, we conducted measurement invariance tests

Table 1
Sample demographics and country-level means for cultural dimensions.

Country	Language of survey	Count	# of females	# of males	Age (± SD)	COL	PD	UA	MAS
China	Mandarin	101	58	43	22.3 ± 2.1	3.29	2.57	3.95	3.39
India	English	109	51	58	20.4 ± 1.7	3.43	2.27	3.98	1.98
Jamaica	English	105	54	51	22.0 ± 2.9	2.83	2.52	3.83	2.38
Namibia	English	103	47	56	22.4 ± 6.3	3.04	2.14	4.24	2.25
Pakistan	English	108	60	48	21.5 ± 1.8	3.19	2.56	3.88	2.76
Philippines	English	100	59	41	20.0 ± 4.3	2.88	2.12	4.11	2.05
Russia	Russian	102	46	56	22.8 ± 6.5	2.60	2.88	3.94	3.19
South Korea	Korean	107	52	55	23.4 ± 2.6	2.48	1.91	3.59	2.35
Turkey	Turkish	111	64	47	21.5 ± 3.1	2.88	2.11	4.00	2.23
UK	English	101	60	41	22.7 ± 5.6	2.75	2.21	3.88	1.81
USA	English	116	56	60	21.0 ± 2.0	3.00	2.49	3.72	2.05
Total		1163	605	558	21.8 ± 4.0				

(discussed in detail in Section 3.2) to ensure that regardless of the differences in the survey language and between participants from different countries, the participants interpreted the questions in the same manner.

3.1. Individual-level analysis of cross-cultural data

In Table 1, we also report country-level means for the four cultural constructs that we use in this study (more details about the measures in Section 3.3). However, the order of the country-level mean scores on cultural dimensions does not mirror the ones reported by Hofstede et al. (2010). This is because obtaining a nationally representative sample is highly challenging (Uz, 2015). Several cross-cultural studies aggregate the individual-level cultural scores at the national level, and then use these national-level scores to suggest differences between countries. However, these studies often address in their limitations section that their samples were not nationally representative (e.g., Gelfand et al., 2011). To address this limitation, it has been recommended to conduct cultural analysis at the individual level instead of national level (e.g., Davidson et al., 2018; Hoehle, Zhang, & Venkatesh, 2015; Sharma, 2010; Srite & Karahanna, 2006; Yoo, Donthu, & Lenartowicz, 2011).

Davidson et al. (2018), who compared American and Indian sharing economy users, agreed that not collecting (and thus analyzing) the cultural data at the individual level was a major limitation of their recent study. Therefore, they indicate that it is “customary to measure cultural values at the individual level since that will lead to ‘more precise findings and [greater] external validity’” (p. 370).

Moreover, with the advent of globalization, there is a significant cross-cultural diversity among people of any country (Yoo et al., 2011). Additionally, individuals espouse their country's (national) cultural values to a varying extent (Hoehle et al., 2015; Kirkman, Lowe, & Gibson, 2006; Srite & Karahanna, 2006). Thus, assigning all individuals in a country the same national cultural score is not theoretically and methodologically appropriate. Past research by Aaker and Lee (2001) and Dawar and Parker (1994) has been criticized for treating all Chinese participants as collectivists and all American participants as individualists (Yoo et al., 2011). Most importantly, several leading methodologists have questioned the use of consensus (aggregated) national-level models due to their dependency on the mean scores and lack of sensitivity to variance across individual responses (Cole, Bedeian, Hirschfeld, & Vogel, 2011; Roussin, MacLean, & Rudolph, 2016).

To further illustrate this point, following the past research (e.g., De Mooij & Hofstede, 2002; Goodrich & de Mooij, 2014), we aggregated participants' responses for renting out propensity, renting propensity, and four cultural dimensions for each country. We then calculated Pearson correlations between the derived aggregated country-level cultural scores and renting out and renting propensities. The correlation between country-level renting out propensity and the four cultural dimensions were: collectivism (0.56), power distance (−0.04), masculinity (0.42), and uncertainty avoidance (0.05). For renting propensities, the correlations were: collectivism (0.41), power distance (−0.25), masculinity (0.35), and uncertainty avoidance (−0.04). Statistically, none of the eight correlations were significant. Consequently, in this study, following Davidson et al. (2018) and others, we run our analysis at the individual level.

Before pooling the data from 11 countries, based on the recommendation in the cross-cultural literature, we first establish the measurement invariance (or cross-cultural equivalence) of cultural measures (Yoo et al., 2011). Establishing measurement invariance is particularly important when the survey is administered across different cultural groups and is translated into different languages (Cheung & Rensvold, 2002).

3.2. Cross-cultural measurement equivalence

The measurement invariance assesses whether each item relates to its focal construct in the same manner across different groups (Milfont & Fischer, 2015). According to a corpus of methodological literature, when the primary goal of the research is to test the relationship between the independent and dependent variables, it is important to test for configural, metric, and factor invariances (Byrne, 2016; Milfont & Fischer, 2015; Steenkamp & Baumgartner, 1998). To do so, we used the maximum likelihood estimation procedure in AMOS 24 to test the three types of measurement invariances across the 11 groups.

Configural invariance checks whether the latent constructs have the same conceptual structure (or configuration) across different groups (Milfont & Fischer, 2015). To test for configural invariance, we first assessed an unconstrained four-factor model - collectivism, masculinity, uncertainty avoidance, and power distance - across 11 groups. The unconstrained model ($\chi^2 = 1672.00$, $df = 1078.00$, $P < .001$) showed an excellent fit. χ^2/df or normed χ^2 (= 1.55) was between the recommended value of 1 and 3, RMSEA (= 0.022) was below 0.08, CFI (= 0.90) was satisfactory given that the data were modeled using 11 groups, and Gamma Hat (GH = 0.940) was excellent (Hair, Black, Babin, Anderson, & Tatham, 2006; Hu & Bentler, 1999). It should be noted that AMOS does not provide GH value, and thus we calculated it using the formula provided by Hu and Bentler (1998). The χ^2 test is sensitive to the total sample size and also to the sample sizes of the groups, and thus several scholars have recommended using other goodness-of-fit (GOF) indices such as RMSEA, CFI, and GH instead of the χ^2 and the χ^2 difference test (Cheung & Rensvold, 2002; Milfont & Fischer, 2015). We also checked for all the factor loadings (λ) across the 11 groups. All the factor loadings were significant at the $P < .01$ level, indicating that all λ values were salient (i.e., substantially different from zero) (Steenkamp & Baumgartner, 1998). Thus, the cultural measures employed in this study exhibit configural invariance across the 11 groups.

Metric invariance is the evidence that participants from different groups attribute the same meaning to the measures of a latent construct (Steenkamp & Baumgartner, 1998). To test for the metric invariance, we used the configural model from the previous step and then constrained it by restricting the factor loadings for collectivism, masculinity, uncertainty avoidance, and power distance constructs to be invariant across the 11 groups. The restricted model ($\chi^2 = 1865.00$, $df = 1198.00$, $P < .001$) showed an excellent fit: χ^2/df (= 1.56), RMSEA (= 0.028), CFI (= 0.89), and Gamma Hat (GH = 0.933). We then assessed the differences in multiple fit indices (i.e., Δ RMSEA, Δ CFI, and Δ GH) between the unconstrained configural model and the restricted metric model (Milfont & Fischer, 2015; Yap et al., 2014). The three Δ GOF indices - Δ RMSEA (0.006), Δ CFI (0.01), and Δ GH (0.007) - satisfied the recommended cutoff values of ≤ 0.015 , ≤ 0.02 , and ≤ 0.008 respectively (Chen, 2007; Cheung & Rensvold, 2002; Milfont & Fischer, 2015). Thus, the measures used in this study exhibit (full) metric invariance.

We further assessed factor variance invariance, which indicates whether the factor variances are equal across the groups. A test for this was conducted using the configural model and then restricting the four-factor variances to be equal across the 11 groups. The restricted model ($\chi^2 = 1791.00$, $df = 1118.00$, $P < .001$) showed an excellent fit: χ^2/df (= 1.60), RMSEA (= 0.023), CFI (= 0.89), and Gamma Hat (GH = 0.932). We then assessed the differences in multiple fit indices between the configural model and the restricted model. The three Δ GOF indices - Δ RMSEA (0.001), Δ CFI (0.01), and Δ GH (0.007) - satisfied the recommended cutoff values of ≤ 0.015 , ≤ 0.02 , and ≤ 0.008 respectively (Chen, 2007; Cheung & Rensvold, 2002; Milfont & Fischer, 2015). Thus, the 11 groups are factor invariant.

Having established the configural, metric, and factor variance

invariances, we can conclude that the measures in this study demonstrate excellent cross-cultural equivalence. Following this, we pooled the data from the 11 countries.

3.3. Measuring the cultural dimensions

To capture the degree of collectivism, uncertainty avoidance, masculinism, and power distance, we relied on empirically-validated individual-level measures (Appendix B) of cultural dimensions (Srite & Karahanna, 2006). Collectivism was measured by asking questions such as the extent to which *group success is more important than individual success*, while power distance was captured by asking the extent to which *employees should not question their manager's decisions*. Questions such as *the extent to which rules and regulations are important because they inform workers what the organization expects of them* measured uncertainty avoidance. Masculinism was measured by asking questions such as the extent to which *it is preferable to have a man in a high-level position rather than a woman*. All of these questions allowed us to capture each of the four cultural traits at the individual level.

Before running the data analysis, we first checked for the multicollinearity of all the cultural measures. The variance inflation factors for all the cultural constructs were below 1.29, indicating that multicollinearity was not a concern in this study (Petter, Straub, & Rai, 2007). The reliabilities, as assessed by Cronbach's α , of all the cultural measures were above 0.7 (see Appendix B). Following this, the cultural measures were averaged.

4. Results

As evident by the hypotheses, there are two dependent variables - peer provider propensity and peer consumer propensity - in this study. Since each participant answered seven questions for each product category, data were analyzed using a repeated measures linear mixed model (LMM) design in SPSS (Version 20). The LMM design requires data to be set up in the long format in which the product category variable is used as the repeated measure. The results of the LMM analyses for the two dependent variables are shown side by side in Table 2. Participants' age and gender were used as control variables.

Table 3 provides a list of all the supported/not supported hypotheses. For peer provider propensity as the dependent variable, we find support for four hypotheses. Consistent with our conceptualization, (H1a) collectivism has a significant positive effect ($\beta = 0.24, P < .001$) on peer provider propensity. We also find support for the positive relationship between (H2a) masculinism and peer provider propensity ($\beta = 0.11, P < .01$). The hypothesis about uncertainty avoidance (H3a) is supported ($\beta = -0.12, P = .017$), while the one involving power distance (H4a) is not supported. Product category has a significant effect on peer provider propensity, thereby supporting H5a. Of the control variables, gender and age does not have any significant effect on peer provider's propensity.

Table 2
Type III - repeated measures LMM results comparison.

Source	DV = peer provider propensity				DV = peer consumer propensity			
	Numerator df	Denominator df	F	Sig.	Numerator df	Denominator df	F	Sig.
Intercept	1	1157.391	49.932	<i>P < .001</i>	1	1158.261	55.849	<i>P < .001</i>
COL	1	1156	35.577	<i>P < .001</i>	1	1156	18.094	<i>P < .001</i>
MAS	1	1156	8.335	<i>P < .01</i>	1	1156	6.030	<i>P = .014</i>
UA	1	1156	5.697	<i>P = .017</i>	1	1156	0.735	0.392 (ns)
PD	1	1156	2.345	0.126 (ns)	1	1156	0.023	0.879 (ns)
Product category	6	1162	74.973	<i>P < .001</i>	6	1162	132.112	<i>P < .001</i>
Gender	1	1156	2.259	0.133 (ns)	1	1156	3.473	0.063 (ns)
Age	1	1156	0.021	0.886 (ns)	1	1156	0.289	0.591 (ns)

Notes 1: DV = Dependent Variable; Repeated Measure = Product Category; ns = not significant; P-values in **bold** are significant.

Notes 2: COL = Collectivism, MAS = Masculinism, UA = Uncertainty Avoidance, PD = Power Distance.

We further conducted the Bonferroni test (see Table 4) to identify differences in peer provider propensity across products. Our participants showed relatively high propensities to rent out bicycles, accommodations, paintings, cars, and household goods; on the contrary, clothes, and jewelry were two products that they were less likely to rent out. As discussed in the hypotheses section, clothing and jewelry are products that are worn by individuals, thereby making them highly intimate.

For peer consumer propensity as the dependent variable, we find support for three hypotheses. Consistent with our conceptualization, (H1b) collectivism has a significant positive effect ($\beta = 0.18, P < .001$) on peer consumer propensity. We find support for the positive relationship between (H2b) masculinism and peer consumer propensity ($\beta = 0.10, P = .014$), while H3b is not supported. The hypothesis about power distance (H4b) is not supported while H5b about the relationship between the product category and peer consumer propensity is significant. Of the control variables, gender and age does not have any significant effect on peer consumer propensity.

We further conducted the Bonferroni test (see Table 5) to identify differences in peer consumer propensity across a variety of products. Our participants showed relatively high propensities to rent accommodations, cars, bicycles, household goods, and paintings. By comparison, they were less likely to rent clothes and jewelry from others using the P2P exchange. These findings are consistent with the ones for peer provider propensity.

5. Discussion

This study examined the impact of four national cultural values on individuals' propensity to rent out and rent products in peer-to-peer exchanges. The study also examined whether the product type affects individuals' P2P sharing behaviors. The findings yield interesting implications for both research and practice.

5.1. Theoretical implications

In the past few years, business scholars have suggested factors, such as saving costs, the opportunity to meet others, and a sense of community, that may affect individuals' behaviors in the sharing economy. However, the majority of the extant research on the sharing economy has primarily focused on the consumer or renting aspects (e.g., Bardhi & Eckhardt, 2012; Davidson et al., 2018; Lamberton & Rose, 2012). Unlike traditional consumer markets, P2P exchanges offer a unique business model where an individual can not only rent from but also rent out to others. In order to have a comprehensive understanding of the P2P sharing phenomenon, this study describes both the provider and consumer aspects of an individual participating in P2P exchanges. This is a valuable contribution to the academic literature on the sharing economy in which only handful studies (e.g., Wilhelms et al. (2017), Philip et al. (2015)) have focused on the providers (or suppliers).

Table 3
Hypotheses results.

#	Hypotheses	Supported
1a	Collectivism will have a positive effect on peer provider propensity of renting out products	Yes
1b	Collectivism will have a positive effect on peer consumer propensity of renting products	Yes
2a	Masculinism will have a positive effect on peer provider propensity of renting out products	Yes
2b	Masculinism will have a positive effect on peer consumer propensity of renting products	Yes
3a	Uncertainty avoidance will have a negative effect on peer provider propensity of renting out products	Yes
3b	Uncertainty avoidance will have a positive effect on peer consumer propensity of renting products	No
4a	Power distance will have a positive effect on peer provider propensity of renting out products	No
4b	Power distance will have a positive effect on peer consumer propensity to rent products	No
5a	Product category will affect peer provider propensity such that individuals will be less likely to rent out products with a high degree of intimacy	Yes
5b	Product category will affect peer consumer propensity such that individuals will be less likely to rent products with a high degree of intimacy	Yes

Second, the findings suggest differing effects of cultural values on individuals' renting and renting propensities. While the cultural dimensions of collectivism and masculinism positively affected individuals' renting out and renting propensities, uncertainty avoidance negatively affected renting out propensities and did not affect renting propensities. This makes sense because individuals, in general, are more familiar with renting products as most people rent products routinely when on business or holiday; however, it is the distinctive nature of P2P exchanges that enables them to try their hands at the not so common and rather risky activity of renting out products to others. The uncertainty surrounding how the consumer will use the product may discourage individuals, especially those who have high levels of uncertainty avoidance, to provide/rent out their products to others.

5.2. Practical implications

One of the major reasons for the failure of P2P exchanges is the lack of equilibrium between supply and demand (Kumar et al., 2018). Unlike traditional businesses, P2P exchanges need to maintain a balance between peer providers and peer consumers. Either under-supply or over-supply will lead to problems (Kumar et al., 2018). For example, *WhyOwnIt*, a popular P2P exchange app that allowed renting out/renting of household goods in Germany, had to shut down. According to its founder, while everyone wanted to rent products from others, only a few were willing to rent out their own products to others (theheur-eka.com, 2015). Other examples of failures due to similar reasons include Stayzilla, a P2P exchange for homestays in India, and Sidecar, a P2P exchange for ridesharing in the United States. Our findings about the role of uncertainty avoidance helps explain why individuals may be less willing to rent out their products. We find that risk-averse individuals are less likely to offer their products to others because of the uncertainty regarding how the consumer will use their products (such as improper handling and possibility of economic loss). Therefore, it is critical for P2P exchanges to reduce individuals' perceptions of risk regarding renting out of one's products to others. This can be done, for instance, by assuring peer providers that strict action will be taken against peer consumers for inappropriate handling of their products and that providers will be appropriately compensated in case the rented out product is stolen or damaged.

Additionally, P2P exchanges will need to tailor their marketing

strategy across countries and within a country based on cultural demographics. Given that cultural dimensions of collectivism, masculinism, and uncertainty avoidance are independent of each other, P2P exchange marketers can use the findings of this study to identify potential participants and create the right marketing mix to target individuals in a country or region based on their cultural traits (Vandello & Cohen, 1999; Yoo et al., 2011). While targeting countries/regions with a high degree of collectivism (such as Pakistan and South Korea), the focus should be on presenting a P2P exchange as a digital platform that brings individuals together in a community. For the regions with a high degree of masculinism (such as Jamaica, the United Kingdom, and the United States), the strategy should emphasize P2P exchanges as an effective medium to earn/save money. By comparison, for the countries high on uncertainty avoidance (such as Russia, Turkey, and South Korea), the focus should be on lowering (potential) peer providers' perceptions of risk to encourage participation.

Our research highlights the importance of product categories in P2P exchanges. While the phenomenal success of P2P exchanges such as AirBnB and Uber is indeed an encouraging sign for P2P exchange startups, the findings suggest that individuals may not be receptive to provide or consume all product categories; especially the ones with a high degree of intimacy.

5.3. Limitations and future research

Like any research, this study has limitations, which also yield significant opportunities for future research. First, this study used college-aged subjects. One way to address this limitation would be to include a broader sample of individuals from different age groups. Second, while prior research suggests that the degree of government regulations in a country tends to significantly correlate with its cultural values (Gelfand et al., 2011; Hofstede, 1984), we did not control for government regulations in this study. Third, we did not measure participants' experience of using P2P exchanges; instead, the survey questions only captured their intention to use P2P exchanges as peer providers and peer consumers. Fourth, we did not control for participants' income in this study. Although our sample consisted of comparable business undergraduate students from 11 countries, it is likely that students in some countries may belong to less privileged backgrounds or may earn lower income than the ones from other countries. Fifth, given that the

Table 4
Peer provider propensity differences across products (per Bonferroni).

Category	Mean	Std. error	Significantly (< or >) different from:
Accommodation	3.05	0.049	> [Car, clothes, household goods, and jewelry]
Bicycle	3.17	0.049	> [Car, clothes, household goods, jewelry, and paintings]
Car	2.83	0.048	> [Clothes and jewelry]; < [accommodation and bicycle]
Clothes	2.23	0.043	< [Accommodation, bicycle, car, household goods, and paintings]
Household goods	2.72	0.045	> [Clothes and jewelry]; < [accommodation and bicycle]
Jewelry	2.24	0.041	< [Accommodation, bicycle, car, household goods, and paintings]
Paintings	2.87	0.049	> [Clothes and jewelry]; < [bicycle]

Table 5
Peer consumer propensity differences across products (per Bonferroni).

Category	Mean	Std. error	Significantly (< or >) different from:
Accommodation	3.48	0.050	> [Clothes, household goods, jewelry, and paintings]
Bicycle	3.40	0.049	> [Clothes, household goods, jewelry, and paintings]
Car	3.45	0.049	> [Clothes, household goods, jewelry, and paintings]
Clothes	2.14	0.041	< [Accommodation, bicycle, car, household goods, jewelry, and paintings]
Household goods	2.82	0.046	> [Clothes and jewelry]; < [accommodation, bicycle, and car]
Jewelry	2.46	0.045	> [Clothes]; < [accommodation, bicycle, car, household goods, and paintings]
Paintings	2.71	0.047	> [Clothes and jewelry]; < [accommodation, bicycle, and car]

participants in our study were students, some of our product scenarios about their intention of renting and renting out jewelry and paintings may not apply to them.

Sixth, we did not directly measure participants' perception of the degree of intimacy associated with each of the seven product categories. Instead, we relied on past literature which suggested that the degree of intimacy depends on the extent to which an individual has direct, close contact with the product (Argo et al., 2006; Underhill, 2009). Finally, this study focused on the four cultural dimensions by Hofstede and did not consider the role of long-term orientation and indulgence cultural dimensions. Focusing on the four cultural dimensions allowed us to

reduce the questionnaire length and minimize participant fatigue significantly. Due to the newness of the indulgence-restraint cultural dimension, the evidence on the applicability of this dimension across cultures is limited. On the other hand, the cultural dimension of long-term orientation has been subject to philosophical criticism (Chen & Zahedi, 2016; Fang, 2003; Redpath & Nielsen, 1997). However, future research should consider these two cultural dimensions, particularly long-term orientation, because someone with a short-term orientation may likely focus on immediate costs in comparison to someone with a long-term orientation who values thrift.

Appendix A. Renting out and renting scenarios

Peer-to-peer (P2P) market is an online market that enables individuals to rent out their products (e.g., car, house, clothes, etc.) when they do not need them to individuals who are in need of these products. P2P market manages payments, handles insurance, provides 24/7 customer support, and can be accessed via computers, smartphones, and tablets.

Product	Renting out scenarios	Renting scenarios
Accommodation	RentAccommodation is an online P2P market that enables home owners to rent out their accommodations (e.g., room, apartment, or house) on the days they do not need them to those who are looking for a place to stay.	RentAccommodation is an online P2P market that enables people to rent accommodations (e.g., room, house, or apartment) directly from home owners.
Bicycle	RentBike is an online P2P market that enables bicycle owners to rent out their bicycles on the days they do not need them to those who are looking to rent a bicycle.	RentBike is an online P2P market that enables people to rent bicycles directly from bike owners.
Car	RentCar is an online P2P market that enables car owners to rent out their cars on the days they do not need them to those who are looking to rent a car.	RentCar is an online P2P market that enables people to rent cars directly from vehicle owners.
Clothes	RentClothes is an online P2P market that enables people to rent out their clothes on the days they do not need them to those who are looking to rent clothes.	RentClothes is an online P2P market that enables people to rent clothes directly from their owners.
Household goods	RentGoods is an online P2P market that enables people to rent out their household goods (e.g., furniture items, tools, electronics, etc.) on the days they do not need them to those who are looking to rent household goods.	RentGoods is an online P2P market that enables people to rent household goods (e.g., furniture items, tools, electronics, etc.) directly from those who own them.
Jewelry	RentJewel is an online P2P market that enables people to rent out their jewelry on the days they do not need it to those who are looking to rent jewelry	RentJewel is an online P2P market that enables people to rent jewelry directly from those who own them.
Paintings	RentArt is an online P2P market that enables people to rent out their paintings on the days they do not need them to those who are looking to rent paintings.	RentArt is an online P2P market that enables people to rent paintings directly from those who own them.

Appendix B. Cultural measures and descriptives

Construct	Item	Mean	SD	
Collectivism (α = 0.78)	COL1	Being accepted as a member of a group is more important than having autonomy and independence ^a	NA	NA
	COL2	Being accepted as a member of a group is more important than being independent ^a	NA	NA
	COL3	Group success is more important than individual success	3.10	1.189
	COL4	Being loyal to a group is more important than individual gain	3.28	1.171
	COL5	Individual rewards are not as important as group welfare	2.81	1.142
	COL6	It is more important for a manager to encourage loyalty and a sense of duty in subordinates than it is to encourage individual initiative	3.16	1.173
Power distance (α = 0.79)	PD1	Managers should make most decisions without consulting subordinates	2.12	1.050
	PD2	Managers should not ask subordinates for advice, because they might appear less powerful	1.89	0.997
	PD3	Decision making power should stay with top management in the organization and not be delegated to lower level employees	2.40	1.159
	PD4	Employees should not question their manager's decisions	2.05	1.065
	PD5	A manager should perform work which is difficult and important and delegate tasks which are repetitive and mundane to subordinates	2.62	1.188
	PD6	Higher level managers should receive more benefits and privileges than lower level managers and professional staff ^b	NA	NA
	PD7	Managers should be careful not to ask the opinions of subordinates too frequently, otherwise the manager might appear to be weak and incompetent ^a	NA	NA

Uncertainty avoidance ($\alpha = 0.84$)	UA1	Rules and regulations are important because they inform workers what the organization expects of them	2.31	1.360
	UA2	Order and structure are very important in a work environment	3.25	1.342
	UA3	It is important to have job requirements and instructions spelled out in detail so that people always know what they are expected to do	2.02	1.245
	UA4	It is better to have a bad situation that you know about, than to have an uncertain situation which might be better ^a	NA	NA
	UA5	Providing opportunities to be innovative is more important than requiring standardized work procedures ^a	NA	NA
	UA6	People should avoid making changes because things could get worse ^a	NA	NA
Masculinism ($\alpha = 0.80$)	MAS1	It is preferable to have a man in high-level position rather than a woman.	4.25	0.853
	MAS2	There are some jobs in which a man can always do better than a woman ^a	NA	NA
	MAS3	It is more important for men to have a professional career than it is for women to have a professional career	3.26	1.083
	MAS4	Solving organizational problems requires the active forcible approach which is typical of men	3.76	0.953
	MAS5	Women do not value recognition and promotion in their work as much as men do	2.29	1.109

All questions were asked using 5-point Likert-type scale (1 = Strongly Disagree and 5 = Strongly Agree).

M = Mean; α = Cronbach's alpha; NA = not applicable as the item was dropped.

^a Item dropped from analysis.

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